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ABSTRACT

The No Child Left Behind Act of 2001 requires that all teachers receive state certification by the end of the 2005-06 school year. Waivers will no longer be allowed. Each state has established standards for licensing teachers. Licensure tests aligned with teacher preparation standards are required for certification. As a result of teacher shortages, many states have implemented alternative certification programs to get teachers into classrooms quickly. In spite of great unevenness in alternative certification program quality, such programs provide an important way for prospective rural teachers to become credentialed. A Minnesota study examined whether the use of teachers without full certification affected the performance of either rural or urban students. Student achievement and teacher characteristic data for all 331 Minnesota school districts with secondary students indicated that rural teachers had more experience than nonrural teachers, but were less likely to have a master's degree. Nine percent of rural teachers were teaching out of their field of licensure or under an emergency permit, compared to 5.2 percent of nonrural teachers. Teacher experience had a significant negative impact on student achievement in math and reading. Students of teachers who were relatively better paid had higher math and reading achievement. Neither teacher experience or pay had any effect on writing achievement. Differences in teacher qualifications had little impact on student achievement in math, reading, or writing. Policy implications are discussed. (Contains 25 references) (TD)

Preparing Rural Educators to Teach Students in an Era of Standards-Based Reform and Accountability

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Schools located in sparsely populated areas often find it difficult to recruit and retain highly qualified teachers. Few teacher preparation programs are specifically designed to prepare teachers for the unique challenges of rural areas. Rural educators need to be able to differentiate curriculum and provide multi-grade instruction. They also often must be able to teach a number of different subject areas and prepare materials for several different courses. Rural teachers need to know how to personally interact with parents and other community members (Herzog and Pittman, 1999; Muse and Thomas, 1992).

Figure 1. Sections of the No Child Left Behind Act of 2001 Pertaining to Teacher Quality.

No Child Left Behind

The No Child Left Behind Act of 2001 (NCLB) requires that by the end of the 2005-2006 school year all teachers will be "highly qualified". NCLB (Public Law 107-110, Section 9101(23)) defines highly qualified as:

The term 'highly qualified'—

(A) when used with respect to any public elementary school or secondary school teacher teaching in a State, means that—

(i) the teacher has obtained full State certification as a teacher (including certification obtained through alternative routes to certification) or passed the State teacher licensing examination, and holds a license to teach in such State, except that when used with respect to any teacher teaching in a public charter school, the term means that the teacher meets the requirements set forth in the State's public charter school law; and

(ii) the teacher has not had certification or licensure requirements waived on an emergency, temporary, or provisional basis (U.S. Department of Education, 2002b).

According to the U.S. Department of Education (2002a), teacher quality is more closely related to student achievement than other factors, including class size, per pupil expenditures,

and instructional materials. Several pieces of recent federal legislation have sought to improve teacher preparation. As shown in Figure 1, the No Child Left Behind Act of 2001 (NCLB) requires that all teachers be "highly qualified" by 2006 (U.S. Department of Education, 2002b). Rural educators often receive waivers that permit them to teach outside of their field of licensure, but NCLB will no longer permit that option.

The 1998 reauthorization of Title II of the Higher Education Act (1998) requires institutions of higher education and alternative-certification programs that receive federal aid to develop standards for teachers, to set requirements for initial certification, and to report this information on a "report card" that can be used to evaluate the quality of their teacher training program. Title II defines highly qualified teachers as those who have state certification and solid content knowledge (U. S. Department of Education, 2002c).

The public attention that NCLB and Title II of the Higher Education Act have directed toward teacher quality has largely been focused on urban schools, while the unique needs of rural schools have largely been ignored. Schools in sparsely populated areas often find it difficult to recruit and retain fully certified teachers, and districts often use teachers with emergency permits. Rural teachers with emergency permits often must travel to distant locations to take courses to become fully certified.

Purpose

The purpose of this paper is to review the teacher preparation process in the United States with a particular emphasis on the impact of NCLB on rural schools. The paper will then use data from the state of Minnesota to analyze whether the use of teachers without full certification has negatively impacted the performance of rural students.

Teacher Preparation Programs and Standards

Each state has established standards for licensing teachers, with many states having

reciprocity agreements that recognize the licenses of teachers trained in other states. In recent years a number of states have eliminated course requirements, and have instead used only performance-based standards for teacher licensure to evaluate licensure candidates (Tom, 1997).

Teacher preparation programs have traditionally used course-based models that required aspiring teachers to pass a certain sequence of courses in particular content areas in order to become eligible for licensure. The number of courses required and the content of those courses varied greatly between states. Prospective teachers in licensure programs often had relatively few practicum opportunities prior to licensure (Tom, 1997). The traditional course-based model provided aspiring teachers with an understanding of pedagogical theories and methods, but often provided little training that would prepare beginning teachers for the unique challenges of teaching in rural schools (Sher, 1981). Carlsen and Monk (1992) found that rural science and mathematics teachers had less subject-matter coursework than their nonrural peers.

Many states have recently implemented teacher licensure standards that use competency-based or performance-based models. The state standards are often aligned with standards set by national organizations for the preparation and licensure of teachers. Licensure standards can be used to measure whether teachers trained in either traditional programs or through alternative certification programs have needed skills and knowledge, but the unique needs of rural schools are seldom addressed in these policies (Ludlow, 1998). Forty-two states had state-approved standards in place for teacher licensure in 2000, with the remaining states in the process of developing standards (Council of Chief State School Officers, 2000).

Figure 2. Alignment of Student Content Standards to Teacher Certification Requirements.

Student Academic Content Standards	→	Student Curriculum	→	Teacher Education Standards	→	Teacher Preparation Program	→	Certification Test

Figure 2 shows how teacher preparation standards are linked to student academic content standards. Academic content standards articulate the skills and knowledge that students need to have. Twenty-four states have linked these academic content and achievement standards with teacher preparation standards as a way to ensure that beginning teachers have the skills and knowledge needed to create a high-quality learning environment (U.S. Department of Education, 2002a). States then often link the teacher preparation standards with the licensure test(s) that are used in the state. Teacher preparation institutions are motivated to align their training programs with the material expected to be covered on licensure examinations, so that their students will do well on the licensure examination.

Even though national standards drive the certification process in many states, the standards vary substantially between states. Two organizations that have developed model standards for teacher competence and licensure are the Interstate New Teacher Assessment and Support Consortium (INTASC) and the National Council for Accreditation of Teacher Education (NCATE) (Wise & Leibbrand, 2001).

Interstate New Teacher Assessment and Support Consortium

The Interstate New Teacher Assessment and Support Consortium (INTASC) is a consortium of states organized by the Council for Chief State School Officers (CCSSO) and members include state education agencies, higher education institutions, and national education organizations. The consortium developed model standards in 1992 that are designed to serve as a starting point for states to develop standards for teacher credentialing. As shown in Figure 3, the INTASC standards include ten "principles" that define the knowledge, skills, and dispositions that are considered essential for entry-level teachers. Thirty states base their teacher preparation standards on the INTASC standards (Council of Chief State School Officers, 2000).

Figure 3. Abbreviated Version of the Interstate New Teacher Assessment and Support Consortium Model Standards.*

Principle 1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

Principle 2: The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

Principle 3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse students.

Principle 4: The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

Principle 5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Principle 6: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

Principle 7: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

Principle 8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

Principle 9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

Principle 10: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being (Interstate New Teacher Assessment and Support Consortium, 1992).

*The complete annotated standards can be found at http://www.ccsso.org/intasct/html.

The core INTASC standards are currently being expanded to provide detailed standards for specific disciplines. INTASC has released standards for mathematics, special education, science, arts, and foreign languages. English language arts, social studies and elementary

education are in the process of being developed (Interstate New Teacher Assessment and Support Consortium, 2003).

National Council for the Accreditation of Teacher Education (NCATE)

The National Council for the Accreditation of Teacher Education (NCATE) is another organization that has developed teacher preparation standards. NCATE is a voluntary association that includes representatives from four groups: teacher educator programs, classroom teachers, policymakers, and professional specialty areas (Lucas, 1997). For colleges to receive NCATE accreditation, their teacher preparation programs are required to meet certain standards. The NCATE standards (see Figure 4) are designed to provide benchmarks that universities can use as they reform their teacher preparation program requirements to better align with the INTASC performance standards.

Figure 4. Abbreviated Version of the NCATE Accreditation Standards.*

Standard 1: Candidate Knowledge, Skills, and Dispositions
Candidates preparing to work in schools as teachers or other professional school personnel know and demonstrate the content, pedagogical, and professional knowledge, skills, and dispositions necessary to help all students learn. Assessments indicate that candidates meet professional, state, and institutional standards.

Standard 2: Assessment System and Unit Evaluation
The unit has an assessment system that collects and analyzes data on applicant qualifications, candidate and graduate performance, and unit operations to evaluate and improve the unit and its programs.

Standard 3: Field Experiences and Clinical Practice
The unit and its school partners design, implement, and evaluate field experiences and clinical practice so that teacher candidates and other school personnel develop and demonstrate the knowledge, skills, and dispositions necessary to help all students learn.

Standard 4: Diversity
The unit designs, implements, and evaluates curriculum and experiences for candidates to acquire and apply the knowledge, skills, and dispositions necessary to help all students learn. These experiences include working with diverse higher education and school faculty, diverse, candidates, and diverse students in P-12 schools.

Standard 5: Faculty Qualifications, Performance, and Development
Faculty are qualified and model best professional practices in scholarship, service, and teaching, including the assessment of their own effectiveness as related to candidate performance. They also collaborate with colleagues in the disciplines and schools. The unit systematically evaluates faculty performance and facilitates professional development.

Standard 6: Unit Governance and Resources
The unit has the leadership, authority, budget, personnel, facilities, and resources, including information technology resources, for the preparation of candidates to meet professional, state, and institutional standards (National Council for Accreditation of Teacher Education, 2001).

*The complete annotated standards can be found http//www.ncate.org.

Like INTASC, NCATE requirements emphasize that aspiring teachers should be able to demonstrate certain competencies rather than just take a certain sequence of courses. The INTASC standards, however, focus on the skills, knowledge, and dispositions needed by entry-level teachers, whereas the NCATE standards focus on the characteristics of teacher-credentialing programs. Universities must meet certain clinical practice, diversity, and resource requirements for a school to receive accreditation. Teacher preparation programs are encouraged to work closely with K -12 schools to provide high-quality training opportunities for prospective teachers as they proceed through the licensure process (Wise, 2000).

Many colleges try to comply with NCATE regulations because accreditation is often seen as a sign of quality. Most universities that have large teacher education programs have NCATE accreditation, but many smaller programs do not. In some states, the department of education works closely with NCATE to develop teacher licensure requirements and may require all programs in their state to meet NCATE standards, while relatively few institutions in other states may have NCATE accreditation. In 1996, 481 schools belonged to NCATE; by 2001, the number had increased to 517 (National Council for Accreditation of Teacher Education, 2001).

Licensure Examinations

Statewide assessment systems are a key component of the standards-based teacher certification process. Beginning in the fall of 2002, all new elementary school teachers were

required to pass tests in subject knowledge and teaching skills in math, reading and writing. New middle and high school teachers were required to pass rigorous subject-matter tests or have the equivalent of an undergraduate major, graduate degree or advanced certification in fields they teach (U.S. Department of Education, 2002a). According to Darling-Hammond, Wise, and Klein (1995) policymakers may be less likely to micro-manage teacher education programs when a state has a licensing examination.

Licensure tests usually are designed to measure the skills, abilities, and knowledge needed by entry-level teachers and generally are aligned with the teacher-preparation standards in a state. The tests are usually taken either near the midpoint of a preservice teachers' academic preparation program or near program completion. In 2000, 39 states required assessment of the basic skills, 30 states required a subject-matter test in the area of licensure; and 28 states required a test of pedagogical knowledge. The Educational Testing Service tests, the Praxis I and the Praxis II, were the most commonly used tests, though some states have designed their own assessments (Council of Chief State School Officers, 2000). Passing scores are established by each state and not by the test publisher, which can make it difficult to determine how well beginning teachers are prepared if a state sets the passing level very low (Nagel and Peterson, 2001; Huange, Yi, and Haycock, 2002).

Alternative Certification

As a result of teacher shortages, many states have implemented alternative certification programs to get teachers into the classroom quickly, but a tension exists between ensuring that there are enough teachers and ensuring teacher quality. Alternate teacher certification routes have the potential to prepare individuals in remote locations to become teachers without requiring them to travel to distant locations for extended periods of time. Alternate routes to licensure generally assume that if a prospective teacher has subject-area knowledge as

represented by a bachelors degree in a content area, then student teaching and pedagogical coursework can be compacted into a very short time period. Distance education programs are one way that prospective teachers may be able to receive needed instruction to qualify for alternative certification. Alternate certification programs often rely heavily on the results of licensure examinations to determine which licensure candidates are qualified. Darling-Hammond, Wise, and Klein (1995) found that alternative-route certified teachers were very unevenly prepared to teach with some program graduates doing quite well, while others lacked needed skills. In spite of possible limitations, alternative certification programs probably will continue to expand in the future and may provide an important way for prospective teachers in sparsely populated areas to become credentialed.

Career Ladders

Alternate certification programs that quickly get prospective teachers into the classroom have blurred the distinction between student teachers and first-year teachers. Many states have designed tiered licensure systems that have a career continuum with teachers progressing from "novice teacher" to "fully-certified teacher" to "master teacher". Some states require school districts to have induction programs that are designed to provide novice teachers with support and mentoring from a master teacher. A goal of induction programs is to reduce the high turnover rate of new teachers. The mentoring teacher also has the opportunity to continue to learn new skills and grow as an educational professional (Berliner & Scherer, 2001). An experienced teacher in a rural school who mentors a new teacher can provide the training and support that will help the new educator become a highly skilled rural educator.

The Case of Minnesota

The impact of teacher training and experience on student achievement was analyzed for rural and nonrural Minnesota school districts. Minnesota was selected for this study because it

has a large rural population with 21 percent of all students attending a rural school (National Center on Educational Statistics, 1998). It also has one of the most rigorous teacher licensure processes in the United States. In 2001, only 15 urban teachers--and no rural teachers, were credentialed through alternative certification programs in the state; however, teachers with waivers were widely used in both rural and urban school districts because of teacher shortages (U.S. Department of Education, 2002c). The term "waiver" within the context of this paper can be defined as an emergency permit or out-of field authorization that permits a teacher without full certification to teach in a public school.

The goal of this research was to analyze whether the use of teachers without full certification affected the performance of either rural or nonrural students in Minnesota. The implication of this research is that if rural students are not negatively impacted by the use of teachers who are not considered "highly qualified" according to NCLB guidelines, perhaps policies should be enacted that permit rural schools to not comply with all the NCLB teacher qualification requirements. A related implication of this research is that alternate certification programs may be able to eliminate the need to use educators teaching under waivers in rural schools.

Method

This study used student achievement and teacher characteristic data for all 331 Minnesota school districts with secondary students. Two hundred eight of the districts were classified as rural, while 123 districts were nonrural. These data were obtained from the Minnesota Department of Children, Families, and Learning for the 2001-2002 school year. All of the data used were school- and district-level data. Moreau (1987) asserts that district-level data is an appropriate level of analysis for educational policy research because school boards and legislatures need district-level information about how alterable policy variables can transform

education to improve student performance. Most of the rural school districts in this study had only a single secondary school or had one middle school and one high school, so rural school-level data for a particular grade was often identical to district-level data.

For each school district, the results of the Minnesota Basic Skills Tests (MBST) were used as a measure of student achievement. In 2002, the MBST were considered the exit examinations in the state with math, reading, and writing tests administered. The math and reading tests were administered to eighth grade students, while the writing test was given to students in tenth grade. State-wide assessments were also administered to students in third and fifth grades in Minnesota, but the results from those grades were not included in this study, because the MBST provides a better overall assessment of how the educational process in the various school districts impacts student leaning than an elementary assessment.

The first phase of this study analyzed whether student achievement, various student demographic characteristics, and various teacher characteristics differed between rural and nonrural school districts. The second phase used regression analysis to examine the how various teacher characteristics impacted student achievement.

Phase 1 Results

Table 1 summarizes the differences between rural and nonrural school districts in Minnesota. The t-test of independent groups was used to measure the statistical significance of differences between the groups.

Student Demographic Characteristics. Minnesota is a state that is predominantly White, though there are areas of the state where a large percentage of the students are of other ethnic groups including Black, American Indian, Hispanic, and Asian. There were no statistically significant differences between rural and nonrural school districts in the percentage of the students who were White or from other ethnic/racial groups. However, rural students were

significantly more likely to live in poverty than their nonrural counterparts. The percentage of students who receive free/reduced price lunches is commonly used as a measure of poverty. An average of 33.9 percent of the students in the rural school districts qualified for free/reduced lunches, while 20.9 percent of the students in the nonrural districts qualified.

Student Achievement. Rural students did significantly less well on the math test than their more urban counterparts. The mean pass rate in rural school districts was 75.4, while it was 77.7 for nonrural districts. There were no statistically significant differences between the pass rates on the reading and writing tests. Slightly more than 80 percent of both rural and nonrural students passed the reading test, while more than 92 percent of all students passed the writing test.

Table 1. Differences Between Selected Student and Teacher Characteristics, Rural and Nonrural Schools.

Characteristic	*Rural*		*Nonrural*		Test – statistic
	Mean	Standard Error	Mean	Standard Error	
Student characteristics					
Race					
White (%)	91.3	0.84	90.8	1.05	0.34
Minority (%)	8.7	0.84	9.2	1.05	- 0.38
Free/reduced lunch (%)	33.9	0.99	20.9	1.17	8.42
Student achievement					
Math achievement (%)	75.4	0.77	77.7	0.93	- 1.91*
Reading achievement (%)	80.7	0.60	82.6	0.70	- 0.82
Writing achievement (%)	93.1	0.31	92.9	0.44	0.23
Teacher characteristics					
Ave. years experience	15.4	0.16	14.3	0.22	3.80**
Ave. salary (000)	37.5	2.43	41.5	3.70	- 8.86**
Masters degree (%)	21.5	0.93	38.4	1.61	- 8.96**
Out of field/Waiver (%)	9.0	0.79	5.2	0.38	4.27**

* $p < .05$, ** $p < .01$

Teacher Characteristics. There were statistically significant differences between rural and nonrural school districts for all the teacher characteristics analyzed in this study. Teachers in

rural schools had a mean of 15.4 years of experience, whereas their more urban peers had 14.3 years of experience. The typical rural teacher earned about $4,000 less per year that his/her more urban counterpart.

Even though rural teachers were more experienced, they were less likely to have received a masters degree. About 21 percent of rural teachers had masters degrees while more than 38 percent of nonrural teachers had the degree. Nine percent of rural teachers were teaching out of their field of licensure or under an emergency permit, compared to 5.2 percent of the nonrural teachers.

Phase 2 Results

The second phase of the analysis used multiple regression to examine the relative contribution of the four teacher characteristic variables to student achievement in math, reading and writing. Student demographic variables were also included to control for other factors that

Table 2. Models predicting impact of teacher characteristics on student achievement.

	Model 1: Math Achievement		**Model 2: Reading Achievement**		**Model 3: Writing Achievement**	
R^2	*.40*		*.41*		*.29*	
Variable	**Coefficient**	**T-Statistic**	**Coefficient**	**T-Statistic**	**Coefficient**	**T-Statistic**
Constant	79.62	12.08**	82.47	16.24**	96.60	31.96**
Minority	- 0.39	- 8.14**	- 0.33	- 8.91**	- 0.13	- 5.87**
Free/reduced lunch	- 0.25	- 6.26**	- 0.18	- 5.84**	- 0.09	- 4.96**
Dummy (1=rural)	2.25	1.85*	1.59	1.69*	0.44	0.79
Teacher variables						
Years experience	- 0.46	- 2.00**	- 0.47	- 2.58**	0.15	1.40
Salary	0.36	1.93*	0.35	2.46**	- 0.05	- 0.54
Masters degree	- 0.03	- 0.80	- 0.03	- 1.01	- 0.02	- 1.23
Waiver	- 0.02	- 0.28	0.02	0.57	0.01	0.51

* $p < .05$, ** $p < .01$

may have affected student achievement. A dummy variable (1 = rural, 0 = nonrural) was used to predict the effects of ruralness on student achievement.

As shown in Table 2, both the minority and free/reduced lunch variables were found to be statistically significant at the .01 level for all three achievement tests. The higher the percentage of minority students in a school, the lower the percentage of students who passed the math, reading, and writing tests. The higher the percentage of students who were economically disadvantaged, as measured by their being qualified to receive free/reduced lunches, the lower percentage of students expected to pass each of the tests. The dummy variable for ruralness was found to be statistically significant at the .05 level for the math and reading tests.

Math Achievement. Teacher experience had an unanticipated statistically significant negative impact on the percentage of students who passed the mathematics test. For every additional year of experience, the percentage of students who passed the math test decreased by 0.46 percent. Older, more experienced teachers may have less energy and enthusiasm than their less experienced counterparts. Also, recently trained teachers may be using more effective instructional techniques that their more experienced peers who completed their teacher education program years ago.

Teacher salary had a statistically significant effect on student achievement on the math test at the .05 level. Teachers who were relatively better paid may have been more motivated and qualified to provide an effective learning environment for students. The percentage of teachers with masters degrees and the percentage of educators teaching out of their field of licensure had little impact on student math achievement.

Reading Achievement. Years of teacher experience and teacher salary were found to be statistically significant indicators of student performance on the reading test. Like the results of the math model, teacher experience had a negative impact on student achievement in reading as measured by the Minnesota Basic Skills Test. The percentage of teachers with masters degrees

and the percentage of teachers who were not fully credentialed to teach all their courses had little impact on student achievement.

Writing Achievement. None of the teacher variables had a significant effect on student achievement on the writing test. Overall student achievement on the writing test was very high with the constant term being 97.1, but differences in teacher qualifications or salary had little impact on achievement levels.

Policy Implications

This study provides evidence that various teacher characteristics can impact student achievement. Four important policy implications for rural teacher certification will be discussed in detail.

1. Permit rural schools to use teachers who are not fully credentialed. Even though rural teachers are less likely to be fully credentialed than their more urban counterparts, there was almost no impact of the use of teachers with waivers on student achievement. Ballou and Podgursky (1998) assert that the high quality of the "social environment" of rural schools can compensate of the lack of teacher training. The NCLB requirement that all teachers must be fully certified for all areas that they teach by 2006, may be placing an unnecessary burden on rural schools. Perhaps policymakers should consider permitting rural areas to continue to allow teachers to teach with emergency permits or outside their field of licensure. Alternate certification programs might also serve as a way for rural school districts to phase out the use of waivers.

2. Design teacher preparation programs, including alternative certification programs, that prepare teachers to teach in remote locations. Specialized teacher preparation programs that focus on preparing rural educators are needed. Some of these programs may take the form of distance education programs that offer teacher credentialing while enhancing

program accessibility for both prospective and practicing teachers in isolated rural areas. Innovative distance education programs could be provided in a variety of ways, including through the use of Internet and web-based materials, interactive television, computer conferencing, and multi-media modules.

Field-based teacher preparation programs that get aspiring teachers into the classroom quickly while they complete program requirements also have much potential for rural areas. Several rural districts might work together with a university to implement alternative certification programs designed to provide highly-qualified candidates with the skills needed to meet the unique challenges of rural schools.

3. Provide professional development opportunities to rural teachers to ensure that both new and experienced teachers know how to use instructional strategies that promote student achievement. The average number of years of teacher experience in a school district had a statistically significant negative effect on student achievement on both the math and reading tests. Maybe less experienced teachers have more energy and enthusiasm so they are better able to provide instruction that improves student performance. Also, perhaps more experienced teachers have not kept their skills up to date so they do not know the most current techniques for increasing student achievement. An analogy could be drawn with the medical field, where the argument has been made that outcomes tend to be better when a patient has a younger doctor who know the latest techniques (i.e., older physicians often do not keep up with current research) (Helliker, 2002).

Further research is needed to determine why years of teacher experience has a negative impact on student achievement. Rural school districts may need provide teachers with professional development opportunities that will help them keep up with emerging knowledge about teaching and student learning.

4. Review state and national teacher licensure standards to ensure that the standards require *all* teachers, both rural and nonrural, have the skills, knowledge, and dispositions needed to effectively teach the next generation of youth. Policymakers in the past have often ignored the unique skills that highly-qualified rural teachers need. Many skills needed by rural educators, such as the ability to use experiential learning techniques and to differentiate instruction, are also skills that high-quality nonrural teachers should be able to use. Now is the time to review teacher licensure standards and certification processes to ensure that state policies are thoughtfully designed to ensure that teachers, both in rural areas and nonrural areas, are prepared to effectively teach all students.

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