NATIONAL COMPREHENSIVE CENTER FOR TEACHER QUALITY

Recruiting Quality Teachers in Mathematics, Science, and Special Education for Urban and Rural Schools

TQ Source Tips & Tools:

Emerging Strategies to Enhance Teacher Quality

LEARNING POINT Associates®

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The shortage of math, science, and special education teachers, especially in the nation's urban and rural schools, is critical. Urban schools serve millions and continually need high-quality teachers for their students. Providing highly qualified teachers in rural schools is also no small matter as nearly one third (30.3 percent) of America's public schools and teachers are located in rural areas. During the 2002–03 school year, 27 percent (12.5 million) of public school students attended schools in communities of fewer than 25,000 people; 19 percent (8.8 million) attended schools in communities of fewer than 2,500 people.

Researchers have noted that mathematics and science subject areas suffer from teacher shortages that, in large part, result from particularly high teacher turnover in these areas. Furthermore, the U.S. Bureau of Labor Statistics recently noted that employment of special education teachers is expected to increase through 2014 faster than the average occupation (U.S. Bureau of Labor Statistics, 2006–2007). Two significant reasons for this are (1) increases in the number of students requiring services and (2) position openings that are expected as a result of special education teachers switching to general education, changing careers entirely, or retiring. A lack of highly qualified teachers in these areas is leaving students in urban and rural classrooms without successful teachers—and ultimately leaving them behind.

There is an urgent need for urban and rural schools to attract experienced mathematics, science, and special education teachers who have the content knowledge, intellectual flexibility, and demonstrated commitment to the teaching profession to meet the unique challenges and capitalize on the unique opportunities for teaching in these challenging settings. Strong recruitment strategies can help these districts compete for teachers in shortage areas. Approaches such as grow-your-own strategies, financial incentives, and alternative licensure can assist a district and school in being competitive in the job market and luring students interested in teaching.

Tips

Remember to do the following when recruiting mathematics, science, and special education teachers for urban and rural schools:

- Implement strategies that provide meaningful incentives for prospective teachers.
- Specifically target those teachers with the experience and education to meet the needs of your school.
- Build a relationship and craft a strategy with input from local institutions of higher education.
- Begin recruiting before prospective teachers graduate or do their clinical internships. Do not expect to get early access to prospective teachers if you are not willing to build strong partnerships with college or university-based teacher preparation programs.
- View strategies as part of a larger effort to recruit and retain high-quality teachers for every subject at every grade level.
- Take advantage of the local supply of potential teachers.
- Use the Internet to increase the reach of your recruitment efforts.
- Support new teachers through strong induction and professional development opportunities.
- Provide high-quality opportunities for people in other professions to transfer into teaching.
- Be selective in accepting candidates from alternative preparation programs.
- Broaden the diversity of prospective teachers.
- Join with other groups to provide amenities and improve conditions in the community. Recruitment and retention are a whole-community effort, not just a school effort.
- Help school-aged students have a successful high school experience and connect well with their community, which will increase the likelihood that they will want to return to their community to work.
- Be willing to "disequalize" teacher pay across disciplines, districts, and schools in order to recruit and retain mathematics and science teachers.
- Use distance telecommunications technologies to reach and train preservice and practicing special education teachers in rural areas.
- Remember that licensure reciprocity is necessary to allow teachers to move from state to state. However, this strategy has limited promise for alleviating shortages in low socioeconomic communities where teachers are needed most.

TQ Tips and Tools: Emerging Strategies to Enhance Teacher Quality is an online resource designed to help education practitioners tap into strategies and resources they can use to enhance teacher quality. Information is currently available for two topic areas:

- Recruiting Quality Teachers for Mathematics, Science, and Special Education (2006)
- Teacher Quality in At-Risk Schools (2005)

This publication offers a sampling of strategies, resources, and tips for educators and policymakers engaged in the recruitment of mathematics, science, and special education teachers—specific to urban and rural schools and districts.

A vast array of information on this topic, beyond what is provided in this publication, is available online (www.tqsource.org/strategies/) on the National Comprehensive Center for Teacher Quality website.

Strategies and Resources

The following strategies and resources, when implemented effectively, can have a positive and lasting impact on the recruitment of highly qualified mathematics, science, and special education teachers. These strategies and resources were chosen as a sampling of the many available online. They are not provided here in any order of importance, nor are they deemed more important than the additional strategies and resources available online.

Strategy 1: Grow-Your-Own Mathematics, Science, and Special Education Teachers

Both urban and rural districts could benefit by encouraging members of the community to consider teaching. These recruitment efforts should begin early: in middle school classrooms and through extracurricular activities that encourage students who excel in mathematics and science, or who have a passion for children with special needs, to pursue a career in teaching. By the time students reach high school, formal recruitment programs should be in place to provide encouragement, mentoring, training, and financial assistance toward certification.

Another viable approach is recruiting paraprofessionals already assisting in mathematics, science, and special education classrooms, as well as parents and community leaders looking to change careers. With encouragement, support, and high-quality alternative certification routes, members of the community can become effective certified teachers. These recruits know well the community's needs and challenges and represent cultural and racial differences within the urban district.

Resources

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Berrigan, A., & Schwartz, S. (2000). *Urban teacher academy project toolkit: A guide to developing high school teaching career academies.* Belmont, MA: Recruiting New Teachers, Inc..

Illinois State Board of Education. (2006). *"Grow Your Own" Teacher Education Initiative archive* (Title 23 Illinois Administrative Code 60). Retrieved March 27, 2007, from http://www.isbe.state.il.us/rules/archive/pdfs/60ARK.pdf

North Carolina Model Teacher Education Consortium. (2006). *Services overview.* Retrieved March 27, 2007, from http://www.ncmtec.com/services.htm

North Carolina Teachers of Excellence for All Children—NC TEACH. (n.d.). *Program overview.* Retrieved March 27, 2007, from http://ncteach.ga.unc.edu/generalinfo.html

Old Dominion University, Darden College of Education. (2006). *Paraprofessional preparation for extraordinary teaching.* Retrieved March 27, 2007, from http://education.odu.edu/cseep/home/programs/ppet.shtml

Strategy 2: Form Partnerships With Institutions of Higher Education and Create High-Quality Alternative Routes to Certification

Collaborating with universities is beneficial for schools and districts on many fronts. Districts can work with universities to produce more mathematics and science teachers. Through strong partnerships, districts can help evaluate the quality of university graduates and have a voice to reform teacher preparation programs. Many alternative routes to certification are based at local universities and allow paraprofessionals, military personnel, and other professionals with a background in mathematics and science to transition into teaching. When candidates demonstrate interest in teaching and schools identify staffing needs, alternative routes to certification provide a path for moving certified teachers into the classroom. Alternative routes often are attractive to midcareer changers and other nontraditional prospective teachers who want to become certified teachers.

Resources

American Board for Certification of Teacher Excellence. (2006, May 11). *ABCTE to host 17 events to jumpstart mathematics & science teacher recruitment initiative: Project 5,000* [Press release]. Retrieved March 27, 2007, from http://www.abcte.org/node/989/

Cegelka, P. A., & Alvarado, J. L. (2000). A best practices model for preparation of rural special education teachers. *Rural Special Education Quarterly*, 19(3/4), 15–29.

Clewell, B., & Villegas, A. (2001). *Ahead of the class: A handbook for preparing new teachers from new sources.* Washington, DC: The Urban Institute. Retrieved March 27, 2007, from http://www.urban.org/UploadedPDF/ahead_of_the_class.pdf

Marian College. (n.d.). *About Marian: Marian College joins "Education Plus" program.* Retrieved March 27, 2007 from http://www.marian.edu/aboutmarian_newsbriefs.asp?ID=186

North Carolina Teachers of Excellence for All Children—NC TEACH. (n.d.) *Home* [website]. Retrieved March 27, 2007, from http://ncteach.ga.unc.edu

Office of Innovation and Improvement. (2004). *Alternative routes to teacher certification.* Washington, DC: U.S. Department of Education. Retrieved March 27, 2007, from http://www.ed.gov/admins/tchrqual/recruit/altroutes/report.pdf

University of Alaska–Fairbanks. (2002). *Rural Educator Preparation Partnership.* Retrieved March 27, 2007, from http://www.uaf.edu/catalog/catalog_02-03/resources/res15.html

Strategy 3: Offer Incentives to Attract High-Quality Math, Science, and Special Education Teachers to Urban and Rural Districts

Teachers for hard-to-staff subjects—such as mathematics, science, and special education—are difficult to find, especially for traditionally hard-to-staff urban or isolated rural districts. Districts and states must consider paying these teachers differently to encourage them to weigh the possibilities of such an assignment. Districts and states can offer financial incentives, including signing bonuses, student loan forgiveness and scholarships, housing assistance, and higher base salary for high-quality teachers.

The "best" teachers rarely list pay as the reason for entering the teaching profession. Yet, given equal pay across assignments, most will choose to work in better resourced systems in high-amenity communities with higher performing students. Likewise, newly certified teachers tend to avoid the most needy schools and districts, including urban and rural ones. Teacher pay should be structured to encourage the natural distribution of highly qualified teachers across districts, schools, and content areas.

States and districts have offered an array of incentives to attract teachers in high-needs areas to schools that need them. However, no single incentive—including increased pay—has proven successful on a large scale.

Resources

Azordegan, J., Byrnett, P., Campbell, K., Greenman, J., & Coulter, T. (2005). *Diversifying teacher compensation* (Issue Paper). Denver, CO: Education Commission of the States. Retrieved March 27, 2007, from http://www.ecs.org/clearinghouse/65/83/6583.pdf

Tennessee Department of Education, Division of Special Education. (n.d.). *Become a Special Educator in Tennessee (BASE-TN).* Retrieved March 27, 2007, from http://www.state.tn.us/education/base-tn/

Clotfelter, C., Glennie, E., Ladd, H., & Vigdor, J. (2006). *Teacher bonuses and teacher retention in low performing schools: Evidence from North Carolina $1,800 teacher bonus program.* Retrieved March 28, 2007, from http://www.pubpol.duke.edu/people/faculty/clotfelter/PFRpaper50906.pdf

Hassel, B. C. (2002). *Better pay for better teaching: Making teacher compensation pay off in the age of accountability.* Washington, DC: Progressive Policy Institute. Retrieved March 28, 2007, from http://www.ppionline.org/documents/Hassel_May02.pdf

Jimerson, L. (2003). *The competitive disadvantage: Teacher compensation in rural America* (Policy Brief). Washington, DC: Rural School and Community Trust. Summary retrieved March 28, 2007, from http://www.ruraledu.org/site/apps/nl/content3.asp?c=beJMIZOCIrH&b=1842453&ct=1146997

Johnson, J., & Strange, M. (2005). *Why rural matters 2005: The facts about rural education in the 50 states.* Washington, DC: Rural School and Community Trust. Retrieved March 28, 2007, from http://files.ruraledu.org/whyruralmatters/WRM2005.pdf

Milanowski, A. (2003). An exploration of the pay levels needed to attract students with mathematics, science and technology skills to a career in K–12 teaching. *Education Policy Analysis Archives, 11*(50). Retrieved March 28, 2007, from http://epaa.asu.edu/epaa/v11n50/

Prince, C. D. (2002). *Higher pay in hard-to-staff schools: The case for financial incentives.* Arlington, VA: American Association of School Administrators. Retrieved March 28, 2007, from http://www.aasa.org/files/PDFs/Publications/higher_pay.pdf

Strategy 4: Streamline the Hiring Process

Many high-quality applicants for teaching positions unfortunately are discouraged by the bureaucracy of the hiring process. Well-qualified applicants often have grown frustrated and found other jobs by the time some schools and districts get around to calling them for an interview. At a time of great competition for mathematics and science teachers, especially at the middle school level, school districts that have taken steps to simplify and streamline their hiring process will have an advantage over school districts bogged down by red tape and slow responses.

Resources

Levin, J., & Quinn, M. (2003). *Missed opportunities: How we keep high-quality teachers out of urban classrooms.* New York: The New Teacher Project. Retrieved March 28, 2007, from http://www.tntp.org/docs/reportfinal9-29.pdf

Useem, E., & Farley, E. (2004). *Philadelphia's teacher hiring and school assignment practices: Comparisons with other districts* (Research Brief). Philadelphia: Research for Action. Retrieved March 28, 2007, from http://eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/2c/72/34.pdf

Wise, A. E., Darling-Hammond, L., & Berry, B. (with Berliner, D., Haller, E., Praskac, A., & Schlechty, P.). (1987). *Effective teacher selection: From recruitment to retention.* Santa Monica, CA: RAND. Retrieved March 28, 2007, from http://www.rand.org/pubs/reports/2005/R3462.pdf

Strategy 5: Improve Working Conditions and Provide Support for Mathematics, Science, and Special Education Teachers

One of the biggest complaints of teachers in rural and urban schools is the work environment. New teachers often cite lack of support and guidance, little parental involvement, few materials, and old buildings as major factors in their decision to leave or stay in their classrooms. Districts must improve working conditions in order to retain teachers in shortage areas such as mathematics, science, and special education.

Research shows that one third of teachers leave within the first three years of teaching, and one half leave after five years (Kelley, 2004). Support for beginning teachers is critical to their success. Most urban schools and districts already struggle to recruit mathematics, science, and special education teachers, so it makes good sense to support them. This support can be offered through induction, mentoring, and professional development; quality programs have shown success in retaining new teachers.

Resources

California Beginning Teacher Support and Assessment Induction Program. (2007). *BTSA basics.* Retrieved March 28, 2007, from http://www.btsa.ca.gov/BTSA_basics.html

Center for Teaching Quality. (n.d.). *Teacher working conditions: What we're doing.* Retrieved March 28, 2007, from http://www.teachingquality.org/twc/whatwedo.htm

Connecticut State Department of Education. (2007). *Beginning Educator Support and Training (BEST) program.* Retrieved March 28, 2007, from http://www.sde.ct.gov/sde/cwp/view.asp?a=2607&Q=319186

Peter Harris Research Group. (2004). *Supporting new teachers: The view from the principal's office.* Belmont, MA: Recruiting New Teachers, Inc.

Strong, M. (2006). *Does new teacher support affect student achievement? Some early research findings* (Research Brief 06-01). Santa Cruz, CA: New Teacher Center. Retrieved March 28, 2007, from http://www.newteachercenter.org/pdfs/NTCResearchBrief.06-01.pdf

National PTA. (1997). *National Standards for Parent/Family Involvement Programs.* Summary and ordering information retrieved April 4, 2007, from http://www.pta.org/pr_magazine_article_details_1118251710359.html

New Teacher Center. (n.d.). *The New Teacher Center at the University of California, Santa Cruz.* Retrieved March 28, 2007, from http://www.newteachercenter.org

Strategy 6: Stem the Tide of Attrition and Migration

Schools, districts, and states must work to stem the tides of attrition (teachers leaving the profession to pursue other career paths) and migration (teachers moving from school to school or district to district), and they must provide environments that allow good teaching to happen. State policymakers should ensure more equitable and adequate funding and reduce the financial competition for teachers between poor and wealthy districts. Teachers who leave the profession cite limited opportunity for growth, insufficient materials and resources, student behavior, and lack of parental support among their reasons for leaving. Special educators specifically cite unclear and sometimes conflicting responsibilities, noninstructional assignments that reduce time on task, isolation from colleagues, excessive pupil loads, stress, overwork, and burnout.

Each year, more than 13 percent of special educators leave the profession or transfer to general education; every four years, half of all special education teachers have departed (McLeskey, Tyler, & Flippin, 2003, p. 27). Although such transfers support the inclusion of students with disabilities in general classrooms, they create shortages in the special education workforce. The rate of transfer from general to special education is much lower than the reverse.

Resources

Carlson, E., Chen, L., Schroll, K., & Klen, S. (2003). *SPeNSE: Study of personnel needs in special education: Final report of the paperwork substudy.* Washington, DC: Westat. Retrieved March 28, 2007, from http://ferdig.coe.ufl.edu/spense/Finalpaperworkreport3-24-031.pdf

Center on Personnel Studies in Special Education. (2005). *Growing and improving the special education workforce: A focus on beginning teachers can help* (PB-22). Gainesville, FL: Author. Retrieved March 28, 2007, from http://www.coe.ufl.edu/copsse/docs/PB-22/1/PB-22.pdf

Collins, T. (1999). Attracting and retaining teachers in rural areas. *ERIC Digest.* Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED438152). Retrieved March 28, 2007, from http://www.ericdigests.org/2000-4/rural.htm

Ingersoll, R. M. (2001). *A different approach to solving the teacher shortage problem.* (Teaching Quality Policy Brief No. 3). Seattle, WA: Center for the Study of Teaching and Policy. Retrieved March 28, 2007, from http://depts.washington.edu/ctpmail/PDFs/Brief_three.pdf

White, M., & Mason, C. (2003). *Mentoring induction principles and guidelines.* Washington, DC: Council for Exceptional Children. Retrieved March 28, 2007, from http://www.cec.sped.org/Content/NavigationMenu/ProfessionalDevelopment/ProfessionalStandards/mip_g_manual_11pt.pdf

Additional Resources

Coble, C., & Allen, M. (2005). *Keeping America competitive: Five strategies to improve mathematics and science education*. Denver, CO: Education Commission of the States. Retrieved March 28, 2007, from http://www.ecs.org/clearinghouse/62/19/6219.pdf

Fideler, E. F., Foster, E. D., & Schwartz, S. (2000). *The urban teacher challenge: Teacher demand and supply in the great city schools*. Belmont, MA: Recruiting New Teachers, Inc. Retrieved March 28, 2007, from http://www.cgcs.org/pdfs/utc.pdfp

National Association of State Directors of Special Education, Inc. (n.d.). *Center for Teacher Quality*. Retrieved March 28, 2007, from http://www.nasdse.org/projects.cfm?pageprojectid=18

National Center for Special Education Personnel & Related Service Providers. (n.d.). *Our mission. Voices from the field. What's new?* Retrieved March 28, 2007, from http://www.personnelcenter.org/

National Commission on Mathematics and Science Teaching for the 21st Century. (2000). *Before it's too late: A report to the nation from the National Commission on Mathematics and Science Teaching for the 21st Century*. Washington, DC: U.S. Department of Education. Retrieved March 28, 2007, from http://www.ed.gov/inits/Math/glenn/report.pdf

National Science Board. (2006). *America's pressing challenge—Building a stronger foundation* (NSB-06-02). Arlington, VA: National Science Foundation. Retrieved March 28, 2007, from http://www.nsf.gov/statistics/nsb0602/nsb0602.pdf

Oregon Department of Education. (2006). *Oregon Special Education Recruitment & Retention Project*. Retrieved March 28, 2007, from http://www.tr.wou.edu/rrp/index.htm

Project Pipeline. (2003). *Seeking out special educators: An in-depth look at California's special education teacher shortage*. Sacramento, CA: Author. Retrieved March 28, 2007, from http://www.projectpipeline.org/specialEducationReport.pdf

Rowan University. (2006). *McSiip: Mathematics, Computer and Science Instructional Improvement Program*. Retrieved March 28, 2007, from http://www.rowan.edu/open/mcsiip/mspgrant.htm

Rural School and Community Trust. (2006). *Helping rural schools and communities get better together*. Retrieved March 28, 2007, from http://www.ruraledu.org

Sindelar, P. T., Bishop, A. G., Gill, M. G., Connelly, V., & Rosenberg, M. S. (2003). *Getting teachers where they're needed most: The case for licensure reciprocity* (COPSSE Document No. RS-8E). Gainesville, FL: Center on Personnel Studies in Special Education. Retrieved March 28, 2007, from http://education.ufl.edu/copsse/docs/RS-8E/1/RS-8E.pdf

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U.S. Department of Education. (2007). *Teacher Quality Enhancement grants*. Retrieved March 28, 2007, from http://www.ed.gov/programs/heatqp/index.html

Westat. (2002). *SPeNSE [Study of Personnel Needs in Special Education] summary sheet: Recruiting and retaining high-quality teachers*. Washington, DC: Author. Retrieved March 28, 2007, from http://ferdig.coe.ufl.edu/spense/polic

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Kelley, L. M. (2004). *Induction makes a difference* (Eye on Research No. 2). Boulder, CO: University of Colorado School of Education. Retrieved March 28, 2007, from http://www.colorado.edu/education/pdfs/EdResearch_Fall04.pdf

McLeskey, J., Tyler, N., & Flippin, S. (2003). *The supply of and demand for special education teachers: A review of the research regarding the nature of the chronic shortage of special education* (COPSSE Document No. RS-1). Gainesville, FL: Center on Personnel Studies in Special Education. Retrieved March 28, 2007, from http://www.coe.ufl.edu/copsse/docs/RS-1/1/RS-1.pdf

U.S. Bureau of Labor Statistics (2006–2007). Teachers—special education. In *Occupational outlook handbook* (Bulletin 2600). Washington, DC: Author. Retrieved March 29, 2007, from http://www.bls.gov/oco/pdf/ocos070.pdf

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About NCCTQ

The National Comprehensive Center for Teacher Quality (NCCTQ) was launched on October 2, 2005, after Learning Point Associates and its partners—Education Commission of the States, ETS, and Vanderbilt University—entered into a five-year cooperative agreement with the U.S. Department of Education to operate the teacher quality content center.

NCCTQ is a part of the U.S. Department of Education's Comprehensive Centers program, which includes 16 regional comprehensive assistance centers that provide technical assistance to states within a specified boundary and five content centers that provide expert assistance to benefit states and districts nationwide on key issues related to the goals of the No Child Left Behind (NCLB) Act.

Primary Goals

- Promote successful implementation of NCLB teacher quality requirements by disseminating critically reviewed research, strategies, practices, and tools.
- Ensure a highly qualified teacher workforce by developing needs-based solutions.
- Broaden the understanding and use of successful models and practices relating to teacher quality.
- Galvanize public and policymaker support to meet NCLB demands related to teacher quality.

Online Resources

NCCTQ Website
www.ncctq.org
Website that provides access to teacher quality resources and information about NCCTQ.

Teaching Quality (TQ) Source Website
www.tqsource.org
Comprehensive national source on teaching quality, providing online resources on teacher preparation, teacher recruitment and retention, certification and licensure, and accountability and advancement.

NCLB Highly Qualified Teacher and Paraprofessional Database
www.ecs.org/html/hq.htm
Comprehensive database of state definitions and processes for meeting NCLB "highly qualified" teacher and paraprofessional requirements, including the high objective uniform state standard of evaluation (HOUSSE) plan.

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