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research: how it supports teaching and learning

By Natalie Zwerger and Elizabeth Greninger

Educators, academics, and social scientists conduct educational research across the globe, producing scientific evidence that can inform teaching practice. How can such research aid teachers in using effective practices in their classrooms? How can teachers ensure that educational research is applicable to the diverse groups of learners in their classrooms? How does research-based instruction support student learning?

What is research-based instruction?

The National Research Council suggests that educational research has two purposes: "...to add to fundamental understanding of education-related phenomena and events, and to inform practical decision making" (Towne, Wise, & Winters, 2004). As any teacher or school administrator knows, there are countless journals, articles, and websites that produce educational research, so practitioners must be savvy about selecting research to apply to their classroom. Pearson (1999) contends that educators "have a professional responsibility to forge best practice out of the raw materials provided by our most current and most valid readings of research." The No Child Left Behind Act of 2001 defined "scientifically based research" as research that employs systematic, empirical methods, involves rigorous analysis of data, relies on methods that are reliable and valid, and has been peer-reviewed ((20 U.S.C. § 1411(e)(2)(C)(xi)).

How can research-based instruction support learning?

There have been many scientifically based studies demonstrating that the use of a wide range of research-based strategies can support the academic achievement of students in a variety of settings. The following are examples of research that demonstrate effective educational practice:

- Mosteller, Light, & Sachs (1996) reported that a reduction in class sizes in grades K-3 had the effect of improving reading and math test scores.

Photos by John T. Consoli



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- The National Reading Panel (2000) conducted a study of more than 100,000 students and reported that those receiving interventions in phonemic awareness and phonics read more proficiently than 70 percent of their peers in a control group.
- Campbell, Ramey, Pungello, Sparling, & Miller-Johnson (2002) reported that high quality child care and preschool for low-income children resulted in improved educational outcomes, such as college attendance, later in life.

The Coalition for Evidence-Based Policy (2003), in collaboration with the U.S. Department of Education, created a user-friendly guide and detailed checklist to assist practitioners in evaluating whether or not a study is supported by rigorous evidence.

How can teachers implement research-based instruction?

The way in which teachers implement research-based strategies can affect student achievement. Factors contributing to the way a strategy is implemented include the fidelity with which the teacher duplicates the strategy, the teacher's willingness to attempt the use of a new instructional practice, and the level of

administrative and collegial support offered to the teacher in the application of the innovative practice. In addition to considering the technical aspects of a piece of research, practitioners must also determine how they can best duplicate specific research-based methods within the context of their own classrooms.

Robert Marzano has conducted many studies within the field of education, one of which involved almost 8,000 students being placed in experimental groups to receive a particular instructional strategy and over 6,000 other students placed in control groups not receiving the strategy. In a pre-test/post-test comparison, the students in the experimental groups gained 16 percentage points over the students who did not receive the strategy (Marzano & Haystead, 2009). In evaluating the results of this type of study, it is important for educators to realize that simply implementing a strategy does not necessarily equate to improved student learning outcomes. The teacher must also use the strategy as designed and with fidelity.

TEACHERS MUST BE WILLING TO ATTEMPT THE USE OF NEW INSTRUCTIONAL PRACTICES

Anyone who has been a teacher or who knows one can attest to the many demands on a teacher's time: planning for instruction, developing differentiated

instruction for students at various levels, collaborating with colleagues, documenting results of assessments, communicating with parents, and generally responding to any and all emergencies, surprises, and daily challenges that occur in the classroom. Being willing to learn, apply, and reflect on new instructional practices is time-consuming and challenging. No effort will be successful if the teacher is not open to experimenting and self-reflecting on his or her pedagogy. In addition to the commitment of the individual teacher to try new strategies, the teacher must feel supported by the administration and colleagues.



TEACHERS NEED SUPPORT WHEN IMPLEMENTING NEW INSTRUCTIONAL PRACTICES

When teachers of different experience levels work together for the betterment of their students and their school, it fosters a collegial environment that can lead to effective teaching and learning (Kardos, Johnson, Peske, Kauffman, & Liu, 2001). Hargreaves (1991) describes some productive forms of collegiality, such as team teaching, collaborative planning, peer coaching, mentor relationships, professional dialogue, and collaborative action research. Stanovich and Stanovich (2003) define action research as researching one's own practice in order to improve it. While self-reflection is extremely useful for a teacher trying out a new research-based instructional strategy, discussions with colleagues, observations of colleagues using the strategy, and collaborative planning also serve to strengthen the learning experience for the teacher.

Administrators that build trust between themselves and staff members tend to encourage collaboration and teacher development that demonstrate a shared responsibility for school success (Kardos, Johnson, Peske, Kauffman, & Liu, 2001; Youngs, 2007). Through both direct and indirect actions, such as providing time, space, and resources for teachers to work together, and by being responsive to teachers' changing needs, school administrators can signify to teachers that it is an important school goal to help them develop as professionals.

How can teachers access research-based studies?

When a teacher is continuously exposed to new studies on teaching and learning, he or she is opening up a range of possibilities for success that have been documented among other groups of students. There are several resources teachers can use to access research-based studies, including professional literature, communities of practice, and literature groups.

PROFESSIONAL LITERATURE

Professional literature available to teachers includes, but is not limited to, education journals, non-fiction texts, websites, webinars, and web-based courses. Each provides information on current trends, studies, techniques, and strategies to support learners. There are also scientific research-based studies available at the following websites (although this list is not exhaustive):

- U.S. Department of Education website—www.ed.gov
- What Works Clearinghouse—<http://ies.ed.gov/ncee/wwc/>
- American Educational Research Association—www.aera.net
- *Journal of Educational Psychology*— www.apa.org/pubs/journals/educ
- *Reading Research Quarterly*—
www.reading.org/General/Publications/Journals/RRQ.aspx
- *Journal of Literacy Research*—<http://jlr.sagepub.com>
- *Journal of Learning Disabilities*—<http://ldx.sagepub.com>
- *Scientific Studies of Reading*—www.nrrf.org/sci_studies.htm

PROFESSIONAL DEVELOPMENT

By reading professional literature and engaging in dialogue with other like-minded professionals, educators may access information and new ideas that empower them to take action in their own classrooms. Apart from reading studies in journals, practitioners can volunteer to participate in studies being conducted at local colleges and universities or become involved in research being conducted at their own school. Educators can also contact the original researcher of a study they have read to inquire about having the researcher come to the school to discuss the findings or present a professional development session for the staff.

Practitioners can also rely on professional development as a source for the latest research on educational issues. The quality of professional development and whether or not it allows teachers to actively participate in hands-on learning can impact the implementation of strategies learned (Blank, de las Alas, & Smith, 2007). As suggested by Cherubini (2007), collegial relationships can develop as experienced teachers model and share effective practices, often having the effect of developing a mutual exchange of ideas and resources between teachers. Much of what educators learn through their review of current educational research can then be turned into a professional development opportunity for groups of teachers with a particular interest or need.

COMMUNITIES OF PRACTICE

Wenger (2006) defines *communities of practice* as a group of people who engage in a process of collective learning, or “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (p.1). Within communities of practice, teachers have the opportunity to analyze data from their classroom, discuss with colleagues, reflect on personal experience, and develop responsive, research-based instruction (Darling-Hammond & Richardos, 2009). These planned and purposeful opportunities for teacher collaboration can promote research and evidence-based practices.

LITERATURE GROUPS

In addition to communities of practice, practitioners can become involved in article studies or book study groups in which they read professional literature, engage in self-reflection about the topic at hand, and have a dialogue with their colleagues on the content of the professional resource. There are several spin-off activities that can result from a literature study, which may include additional professional development sessions, teacher modeling and observation, and classroom action. Ideally, teachers will be motivated to attempt new techniques in the classroom, collect data on the effectiveness of such techniques, and share their learning with colleagues—all of which will have the effect of improving student learning outcomes and opening the door for future professional development opportunities.

The Teacher as Lifelong Learner

There is nothing more refreshing than encountering educators who pride themselves on being lifelong learners. These lifelong

learners are individuals who continuously see their pedagogy as evolving in response to new discoveries of how students learn and process information. Currently, there is a striking disconnect between educational policy researchers and teachers. Neither can optimally support learning without an understanding of how the other operates. Policies and legislation are not able to effectively address the needs of students if policy makers are not aware of the reality of life in America's schools. Likewise, teachers are not able to offer the maximum level of support to their students if they are unaware of the most up-to-date, cutting edge research on effective educational practices. Both parties are working towards the same goal of creating supportive, responsive learning environments for students. Now these groups need to acknowledge that by developing a collective understanding of research-based practice, the efforts of each will be strengthened and maximized to ensure that effective teaching and learning occurs in each and every classroom in America's schools.

References

Blank, R. K., de las Alas, N., & Smith, C. (2007). *Analysis of the quality of professional development programs for mathematics and science teachers*. Washington, DC: Council for Chief State School Officers.

Campbell, F. A., Ramey, C. T., Pungello, E., Sparling, J., & Miller-Johnson, S. (2002). Early childhood education: Young adult outcomes from the Abecedarian Project. *Applied Developmental Science*, 6(1), 142-157.

Cherubini, L. (2007). Speaking up and speaking freely: Beginning teachers' critical perceptions of their professional induction. *The Professional Educator*, 29(1), 1-12.

Coalition for Evidence-Based Policy. (2003). *Identifying and implementing educational practices supported by rigorous evidence: A user-friendly guide*. Washington, DC: U.S. Department of Education, The Council for Excellence in Government.

Darling-Hammond, L., & Richardos, N. (2009). Teacher learning: What matters? *Research Review*, 46-53.

Hargreaves, A. (1991). The micropolitics of teacher collaboration. In J. Blase (Ed.), *The politics of life in schools* (pp. 46-72). New York: Sage.

Kardos, S. M., Johnson, S. M., Peske, H. G., Kauffman, D., & Liu, E. (2001). Counting on colleagues: New teachers encounter the professional cultures of their schools. *Educational Administration Quarterly*, 37, 296-321.

Marzano, R., & Haystead, M. (2009). *Meta-analytic synthesis of studies conducted at Marzano Laboratory on instructional strategies*. Englewood, CO: Marzano Research Laboratory.

Mosteller, F., Light, R., & Sachs, J. (1996). Sustained inquiry in education: Lessons from skill grouping and class size. *Harvard Education Review*, 66(4), 250-257.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific literature on reading and its implications for reading instruction*. Report of the National Reading Panel. Retrieved December 14, 2011, from www.nicbd.nih.gov/publication/s/nrp/upload/smallbook_pdf.pdf

No Child Left Behind Act of 2001, Pub. L. No. 107-110.

Pearson, P. D. (1999). A historically based review of preventing reading difficulties in young children. *Reading Research Quarterly*, 34, 231-246.

Stanovich, P., & Stanovich, K. (2003). *Using research and reason in education: How teachers can use scientifically based research to make curricular*

and instructional decisions. Washington, DC: Partnership for Reading. Retrieved December 14, 2011, from www.eric.ed.gov/PDFS/ED482973.pdf

Towne, L., Wise, L., & Winters, T. (2004). *Advancing scientific research in education*. Washington, DC: National Academy of Sciences, Committee on Research in Education, National Research Council.

Wenger, E. (2006). *Communities of practice: A brief introduction* (p. 1-5). Retrieved December 14, 2011, from www.evenger.com/theory/

Youngs, P. (2007). How elementary principals' beliefs and actions influence new teachers experiences. *Educational Administration Quarterly*, 43(1), 101-137.

Resources

Feuer, M., Towne, L., & Shavelson, R. (2002). Scientific culture and educational research. *Educational Researcher*, 31(8), 4-14.

National Institute of Child Health and Human Development. (2001). *National reading panel reports combination of teaching phonics, word sounds, giving feedback on oral reading most effective way to teach reading*. National Institutes of Health. Retrieved December 14, 2011, from <http://nicbd.nih.gov/news/releases/nrp.cfm?FROM=reading&renderforprint=1>