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TEACHERS TEACHING TEACHERS ™

FOR A DYNAMIC COMMUNITY OF TEACHER LEADERS

THE GOOD, THE BAD, AND THE IRRELEVANT:
A brief guide to education research

By Kristine Chadwick, Caitlin Howley, and Carla Thomas McClure

Nearly everyone agrees that the best available research evidence should inform education policy and practice. But finding and interpreting high-quality research is not as simple as one might hope. With no mechanism in place for the systematic delivery of important findings, where can busy education leaders find good research? How do they determine the relevance and practical value of the research they read? What should they be looking for? How should they interpret what they read?

Googling for answers isn't the answer

Although the Internet allows easy access to a plethora of research information, a Google search doesn't always yield the best results. An example involving an NSDC member illustrates its limitations:

After reading a research brief in *Teachers Teaching Teachers (T3)*, the NSDC member went online to search for the peer-reviewed journal article cited in the brief. He found a research paper with the same title and written by the same authors. But the paper's conclusions differed from those reported in the *T3* article. "Could you please help me with this discrepancy?" he wrote.

A quick e-mail query to the researchers revealed that the online paper was a preliminary report presented at a conference where feedback was solicited from other researchers. The authors revised the paper and submitted it to a journal for publication. The journal's peer reviewers suggested that the authors analyze the data differently. When they did, the authors drew substantially different conclusions. However, the early unrevised paper remained online as part of the con-

NSDC's purpose: Every educator engages in effective professional learning every day so every student achieves.
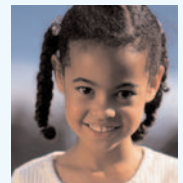
WHERE TO START

American Educational Research Association
http://aera.net

Education Resources Information Center
www.eric.ed.gov

Education Week
www.edweek.org

U.S. Department of Education, Institute of Education Sciences (IES)
http://ies.ed.gov

Comprehensive Centers
- *Assessment and Accountability Comprehensive Center*
  www.aacompcenter.org
- *National High School Center*
  www.betterhighschools.org
- *Center on Innovation and Improvement*
  www.centerii.org
- *Center on Instruction*
  www.centeroninstruction.org
- *National Comprehensive Center for Teacher Quality*
  www.ncctq.org

National Center for Education Statistics
www.nces.ed.gov

National Center for Research on Evaluation, Standards, and Student Testing
www.cse.ucla.edu

Regional Educational Laboratories
http://ies.ed.gov/ncee/edlabs

What Works Clearinghouse
www.whatworks.ed.gov

ference proceedings.

Tip: *Just because something is online doesn't mean it's up-to-date or has met professional standards.*

Let professionals screen the research for you

One way to find research that has met minimal professional standards is to read peer-reviewed journals. Articles published in these journals have been reviewed by professional researchers who have scrutinized the author's assumptions, methods, and conclusions. Although peer review doesn't guarantee that research findings will hold up under further scrutiny, the process does weed out poorly designed studies and those with unsupported conclusions.

Of course, you probably don't have time to read all the research you'd like. A practical approach is to read research syntheses, meta-analyses, and literature reviews on topics relevant to your work. These are often published by professional organizations such as the National School Boards Association, by research centers, and by the U.S. Department of Education and its federally funded programs. Research syntheses can provide an overview of what's known on a particular topic, and you can use the reference list to track down research reports that you want to read in full.

Tip: *Look for research that has been peer reviewed and/or published by a trusted source.*

Use research syntheses to help you get "up to speed" on research in a particular topic area.

Use the web wisely

Where do you go to find research you can trust? As long as you steer clear of its pitfalls, the Internet is a good place to start. The Education Resources Information Center (ERIC), for example, provides free access to more than a million bibliographic records of journal articles and other materials, sometimes including links to full text. Respected online subscription databases for social science research and evaluation are PsychINFO, Academic Search Premier, JSTOR, ProQuest Education Journals, and Wilson Education Abstracts. If you have library privileges at a university, you may have access to some of these databases from your home computer. Most university libraries allow the public to use computers and online databases located in their facility. Check with the librarian.

The Internet can also help you stay up-to-date on education research. Several organizations (for example, American Educational Research Association, American Evaluation Association, American Education Studies Association, Phi Delta Kappa, and *Education Week*) offer research information and updates via web sites or electronic newsletters. Some organizations publish research reviews online or invite educators to "ask-an-expert."

FOR MORE INFORMATION

Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W.H., & Shavelson, R.J. (2007). *Estimating causal effects using experimental and observational designs.* Washington, DC: American Educational Research Association. http://www.aera.net/publications/Default.aspx?menu_id=46&id=3360

Shavelson, R.J. & Towne, L. (Eds.) (2002). *Scientific research in education.* Washington, DC: Center for Education. http://books.nap.edu/openbook.php?isbn=0309082919

Tip: *Build a list of trustworthy web sources on topics of interest. Know your sources and beware of bias. Advocacy groups, for example, may selectively report on research that promotes their point of view. When research is reported in the popular press, read past the headlines; news reports sometimes oversimplify issues or over-state study results.*

Learn to read and interpret research

The now-familiar term scientifically based research describes research that bases its conclusions on scientific methods of observations, hypotheses, and data collection. In 2002, the Committee on Scientific Principles for Education Research concluded that education research should (1) pose significant questions, (2) link to relevant theory, (3) use valid tools, (4) rule out alternative explanations, (5) produce findings that can be replicated, and (6) survive scrutiny.

The "gold standard" of scientifically based research is experimental research, in which students, classrooms, or schools may be randomly assigned to either an experimental or control group. Experimental studies control for variables. This helps researchers rule out alternative explanations and determine cause-and-effect relationships. But such studies aren't always feasible. Can you imagine, for example, randomly withholding reading instruction from 1st graders to test what happens?

But experiments are not the only route to solid findings. In 2007, the American Educational Research Association issued a report from a panel of scholars explaining that new, sophisticated statistical techniques and improved quasi-experimental approaches allow researchers to analyze relationships among variables rigorously and to reach conclusions that can be generalized to various settings.

Other types of research cannot be used to prove cause and effect but can provide an in-depth look at how a program or practice operates within a particular context. Case studies, for example, can incorporate a variety of research strategies — including interviews, focus groups, document reviews, structured observation, and data analysis — to provide a comprehensive

description of a program or issue under study. Well-designed surveys can help researchers answer important questions by collecting information from a representative sample of a defined population.

Tip: *To find research that is most relevant to schools in your system, look for research that is experimental or conducted in a context similar to your own.*

Integrate research knowledge Into organizational culture

Don't feel like you need to read it all and know it all. Educators (and ultimately, students) are more likely to benefit from research when leaders share the responsibility for using it when making decisions about policy and instruction. Leaders can use the following tactics to integrate research knowledge into organizational culture:

1. Help others improve their ability to find and interpret research (for example, by sharing this article).
2. Support and encourage educators at all levels to use research findings in their work and to share findings with others.
3. Talk about research and cite it yourself when working with staff, explaining what type of research design was used so that staff become comfortable with the terminology.
4. Participate in research projects.

Put research knowledge into perspective

Keep in mind that all research knowledge — especially from social and education research — is tentative because no method can control for every variable, nor account for change. Research suggests what may work in certain instances, but it will never be able to say definitively that this or that program or strategy will be universally effective. In addition, there are always other factors to take into account — even if you use research — when making decisions: local context, affordability, sustainability, alignment with current efforts, ethics, politics, and so forth.

In short, research alone may not provide "the answer," but it does offer good, solid evidence for decision makers' consideration. ◆

Kristine Chadwick and Caitlin Howley direct the Institute for the Advancement of Research and Evaluation at Edvantia. Chadwick also codirects Edvantia's Center for Education Research and Evaluation Studies (with Marshall University) and Howley codirects the Appalachia Regional Comprehensive Center. Carla Thomas McClure is a staff writer at Edvantia; her research summaries are featured regularly in *Teachers Teaching Teachers (T3),* in this issue on p. 8.

Can teacher leaders go stale?

My wife Elizabeth is a wonderful woman — but in many ways, we're the pure definition of opposites attract. She loves to stay up late and I'm an "early-to-bed" kind of guy. She's reserved and polite, while I'm loud and obnoxious! She loves a clean and tidy bedroom, while my clothes are strewn from one corner to another.

One of our greatest differences surrounds our attitudes towards expiration dates on food. Like many guys, I'll literally eat anything and rarely do expiration dates even cross my mind. My wife, on the other hand, looks over expiration dates religiously — and simply refuses to eat anything "past-its-prime." We've had countless afternoon meals interrupted by emergency trips to the grocery store for new bottles of ketchup!

On a recent trip to replace some dinner rolls that were a bit crunchy around the edges, I got a call from an assistant principal friend of mine who has been urging me to move into a new role beyond the classroom for years now. "I heard that there's an opening in central office," Parry said, "Are you planning to apply?"

"Never!" I responded, "You leave the classroom only when you can't hack it anymore. Those kinds of jobs are where teachers go to die!"

"What's that supposed to mean?" Parry pushed back. "There's tons of great work being done beyond the classroom. A new position might just allow you to see education from a broader perspective if you ever bothered to look. In many ways, you've limited your influence and

your own professional growth by staying a teacher, Bill."

Frustrated and starving, I hung up — but I haven't stopped thinking about expiration dates!

You see, much of what I think makes me unique as a teacher leader is that I haven't left the classroom yet. Selfishly — and somewhat arrogantly — I cringe when professionals who haven't worked directly with students for decades describe themselves as teacher leaders. "When was the last time they actually taught?" I sarcastically wonder. "They're clearly beyond their expiration dates!"

But even though I'm somewhat hung up on the idea that being a practicing teacher brings a measure of freshness to my work as a leader, I also recognize that there are far more opportunities to be a difference-maker beyond my classroom than there are in it. Influential decisions affecting thousands of kids are made by those filling the instructional leadership roles that I've consistently turned away from.

So I guess what I'm left to wonder is when does distance from the classroom decrease a teacher's credibility? Do your skills drift almost immediately? After one year? Five years? Ten years? Does your credibility with colleagues ever completely expire?

How can teachers extend their "shelf-life," holding on to a legitimate understanding of what it means to be a classroom teacher after stepping into leadership roles beyond the classroom? What actions can accomplished educators take to remain master practitioners when they are no longer practicing? ◆

Bill Ferriter is a 6th-grade social studies and language arts teacher at Salem Middle School, Apex, N.C.

Join the conversation with Bill by visiting www.nsdc.org/blog/ and offering your opinion. Bill posts his provocative ideas frequently — be sure to return often.

Coach creates a bond

Q **How do you, as a young, new coach, approach veteran teachers?**

The Number 1 thing is creating a bond with the teacher. It's creating a subtle emotional connection that fosters trust and leads to open collaboration.

I do an interview — it's all about listening and finding out a few vital questions. "Do you have any professional goals beyond teaching in the classroom?" "Where do you see yourself in 10 to 15 years?" People enjoy talking about their lives and the possibilities for their futures. That gives me insight into their approach to their classrooms. And then it's finding out about their class-

es this year, their challenges, their students' strengths, how (that teacher) learns best. It's research for myself. I want to know how to interact with them, present them information, and get information from them.

Be honest and upfront: "I'm really excited about this position. I know these are the roles and responsibilities for me. I hope that you're going to be cool with the whole observation piece." And be very clear that it's a nonjudgmental position, that you're there for all the teachers, to accomplish a common goal: students' success.

A coach has to have the personality to get information across in a friendly, nonthreatening way. It's sharing strategies and creating relationships and bonds with all the teachers. ◆

Paul Devoto with a poster saying "You are who you choose to be." He is a math teacher and first-year math coach at Jonas Salk High-Tech Academy in the San Juan Unified School District in Carmichael, Calif. You can contact him at paul.devoto @sanjuan.edu.

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by Joellen Killion and Cindy Harrison

Taking the Lead

New roles for teachers and school-based coaches

JOELLEN KILLION

CINDY HARRISON

This book explores the complex, multi-faceted roles played by teacher leaders and school-based coaches as well as examining district and school expectations, hiring practices, and deployment of these educators. NSDC, 2006
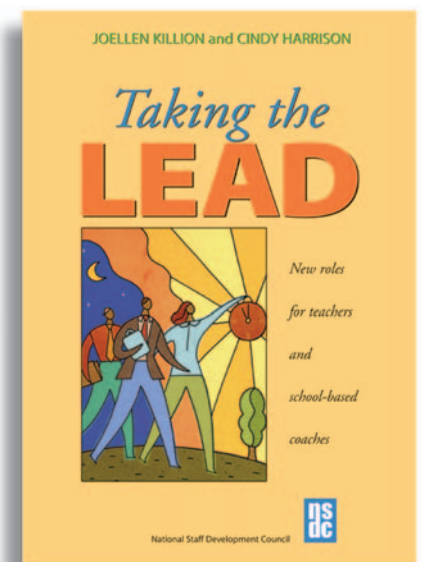
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Research can improve practice

Joellen Killion is deputy executive director of National Staff Development Council.

The phrase *research-based* has become a buzzword in education. Yet, what does that phrase really mean? Understanding this term has become especially important since No Child Left Behind was passed because it requires using research-based or evidence-based practices in instruction and professional development. Implementing practices that have evidence of being successful increases the potential for their success. Since resources are limited, learning about successful practices will help ensure that educators use those limited resources wisely.

Research means inquiry or in-depth study using established and rigorous processes to make discoveries through experimentation or investigation, add to the knowledge base, identify or confirm theories, laws, or conclusions, or confirm, clarify, or identify facts. Research ranges along a continuum of collected information to original research.

Some refer to information gathering as research. However, this is not research in the scientific sense. This form of research involves collecting ideas and summarizing or synthesizing them. It misses, however, a crucial aspect of scientific research, interpreting the data to answer an identified question or solve an identified problem.

There are multiple ways of describing

RESEARCH-BASED
Staff development that improves the learning of all students prepares educators to apply research to decision making.

research. Most common are qualitative and quantitative, basic and applied, and experimental and non-experimental. Some believe that the most rigorous form of research is the experimental study. Experimental studies are designed to demonstrate a causal interaction among variables by manipulating some variables for some (treatment group) and not for others (non-treatment group). However, disagreement exists among researchers themselves about what kind of research is best and what type of research is best in education. Regardless of which approach one prefers or assumes to be better, research has some essential features that information gathering, summarizing, or synthesizing do not.

These features include:
- Beginning with a problem or question;
- Following a rigorous and prescribed scientific inquiry process or methodology;
- Collecting, analyzing, and interpreting data;
- Permitting critical review from peers and experts in the field; and
- Adhering to standards of the field.

Most teacher leaders or coaches, unless enrolled in graduate school programs or conducting action research, do not conduct research. Rather, they use research to inform their practice. To that end, they must know how to access research, read and analyze it, and create a
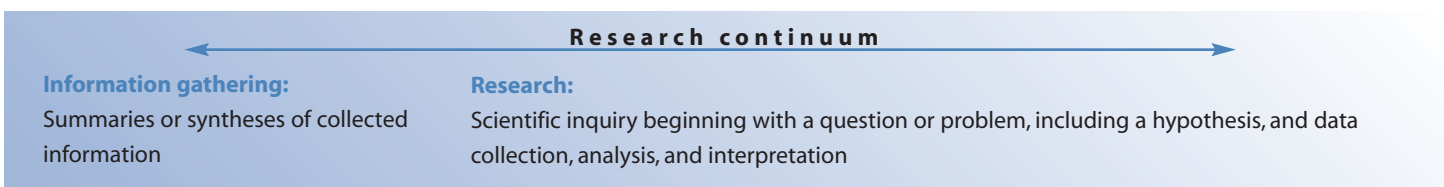
For more information about NSDC's Standards for Staff Development, see www.nsdc.org/ standards/ index.cfm

Research continuum

Information gathering:
Summaries or syntheses of collected information

Research:
Scientific inquiry beginning with a question or problem, including a hypothesis, and data collection, analysis, and interpretation

research-minded orientation within the teams in which they work.

Research-minded

Many teachers claim to have research phobias. They don't believe they have the expertise to review research. They also report not having easy access to research or time to read or relate research to their practice. If teachers enjoy reading and analyzing research, they report having difficulty keeping up with the volume of research in education.

Teacher leaders and coaches can benefit from becoming research-minded or research literate. To understand more fully what they experience in their work, to make decisions, and to improve practice, research is helpful. To use research, teacher leaders will want to understand research and learn how to read, analyze, and apply it to their work. They stay abreast of research trends and share those trends with their colleagues.

Teacher leaders and coaches can help their colleagues use research to make better decisions, improve their practices, and make schoolwide improvements. They can facilitate review of research by teams of their colleagues including school improvement teams, study teams, or department or grade-level teams. They can organize reviews in some of these ways:

• Each team member reads and summarizes one article for the team and makes a brief presentation to the team on the article.

• Team members read the same article reporting on research related to their content area, students, or discipline and discuss the implications for their practice.

• Team members read research abstracts and determine which articles merit more in-depth reading.

• Team members read a variety of different research studies on one topic that the team is interested in studying in depth.

When educators use research to make informed decisions about their work, they will exhibit responsibility with their limited resources, and increase the efficiency and effectiveness of their work. ◆

See "The good, the bad, and the irrelevant: A brief guide to education research" on p. 1 to learn more about how to identify legitimate research.

See the tool on p. 10 for one example of how to read research.

Leading students to 'I can'

With minimal training, teachers can implement instructional strategies that increase student self-efficacy

By Carla Thomas McClure

Thirty years of research has revealed a positive relationship between self-efficacy and academic performance. A new study published in the *Journal of Advanced Academics* demonstrates that teachers can significantly increase student self-efficacy after receiving two hours of targeted professional development.

How important is self-efficacy to student achievement?

Studies conducted across a variety of subject areas have shown that students with strong "I can" beliefs are more likely than students with low self-efficacy to tackle new tasks, work hard, persist, and attain academic goals.

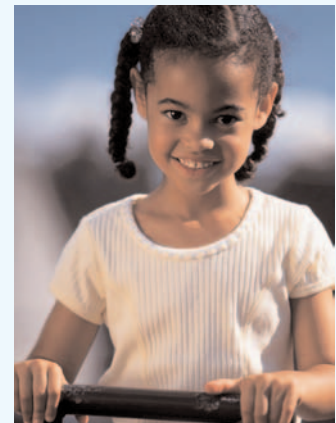**How do students decide that they "can" or "can't" succeed at a task?**

Previous research has shown that individual judgments about one's own abilities are based on four types of information: (1) past performance, (2) vicarious experiences of observing the performances of others, (3) verbal persuasion of one's own capabilities, and (4) physiological cues (e.g. a relaxed feeling vs. sweaty palms). Of these, successful past performance is the strongest predictor of success.

What can teachers do to increase students' self-efficacy?

Teachers can increase students' self-efficacy by using feedback and instructional strategies to increase students' awareness of their own abili-

ties, skills, efforts, growth, and accomplishments. (See box above.)

What was the purpose of the recent study?

Researchers Del Siegle and D. Betsy McCoach wanted to know "whether teachers who received staff development on classroom self-efficacy strategies would effect changes in students' mathematics self-efficacy."

How was the study done?

Using a cluster-randomized pretest/posttest design, researchers assigned 15 volunteer schools in six states to either the treatment or control condition. In the control group were 442 students

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Daily strategies for increasing student self-efficacy

- Review lesson accomplishments from the previous day; post objectives, refer to objectives during instruction, and review objectives at the end of lesson.

- Have students record something they learned or something they did well.

- Prompt students to attribute success to effort.

- Draw students' attention to their own growth, and compliment them on their specific skills.

- Have students model a problem-solving technique or some other aspect of the lesson so that other students see peers mastering the material.

EDVANTIA

Carla Thomas McClure is a staff writer at Edvantia (www.edvantia.org), a nonprofit research and development organization that works with federal, state, and local education agencies to improve student achievement.

in 19 5th-grade classrooms in eight schools. The teachers in this group received no training in self-efficacy strategies. In the treatment group were 430 students in 21 5th-grade classrooms in seven schools. The teachers in this group received two hours of training in self-efficacy strategies. The training focused on goal setting, teacher feedback, and modeling (having students observe classmates as they successfully performed learning tasks). Teachers in both groups taught the same four-week unit on measurement and used the same materials, with one difference: The teachers who were provided self-efficacy training received suggestions for integrating the strategies into the first two weeks of lessons and a reminder to continue using the strategies during the last two weeks.

Before the study began, teachers were asked to rate their students' math ability. Before and after completion of the instructional unit, students took the Student Mathematics Survey, which asked students to judge their self-efficacy, as related to measurement, on a seven-point scale ranging from not good to super good. Students also took a pre- and post Math Achievement Test in measurement.

How did teacher professional development affect student self-efficacy?

At the end of the study, the average math self-efficacy was higher in the treatment group than in the control group. This held true across students of varying ability levels and students of both genders. Although results of the math achievement tests showed no difference between the math achievement of students in the treatment vs. control groups, "students whose teachers were trained in self-efficacy showed a stronger relationship between posttest self-efficacy and posttest achievement than students of teachers who were not trained." This finding supports the large body of research connecting self-efficacy and achievement.

What is the educational importance of this study?

The study demonstrates that teachers can modify instructional strategies in ways that increase students' self-efficacy — and that "these increases can be achieved during a short period of time with minor changes in instructional style."

Any cautions?

Yes. In this study, 92% of the students were Caucasian. These students "benefited from feedback complimenting their skills," say the researchers, but "students from other cultural backgrounds may not." They suggest that the study be "replicated with a more culturally diverse population." They also suggest replicating the study over a longer time period to see if the approach leads to eventual increases in academic achievement.

Reference

Siegle, D. & McCouch, D.B. (2007). Increasing student mathematics self-efficacy through teacher training. *Journal of Advanced Academics, 18*(2), 278-312. ◆

READING RESEARCH

Name of study/article:

Name of journal or web site where the article was published:

Date of publication/date of access:

Synopsis: In your own words, describe the researcher's findings.

_____

_____

Is this quality research?

Does the evidence address a question that is important to your needs?

☐ **YES**   ☐ **NO**

Do the researchers provide evidence that their research links to and flows from relevant theory and theory-based research?

☐ **YES**   ☐ **NO**

Do the research procedures, analyses, and findings support the researcher's claims?

☐ **YES**   ☐ **NO**

If the researchers claim a causal relationship between the intervention (product, service, program) and an outcome measure (e.g. student achievement), did they include a control or comparison group in the study?

☐ **YES**   ☐ **NO**

Were the study participants (usually students, teachers, or schools) selected randomly or assigned randomly to experimental vs. control/comparison groups?

☐ **YES**   ☐ **NO**

Do the researchers provide sufficient information to determine whether the research design, instruments, and procedures are appropriate for answering the research questions posed by the researchers?

☐ **YES**   ☐ **NO**

Were the research instruments and procedures applied with consistency, accuracy, and for the purpose intended?

☐ **YES**   ☐ **NO**

Did the researchers use carefully planned, logical steps?

☐ **YES**   ☐ **NO**

Did someone besides the publisher or developer conduct the research?

☐ **YES**   ☐ **NO**

With the information provided, is it likely that the same researchers could repeat the study and obtain the same or highly similar results?

☐ **YES**   ☐ **NO**

With the information provided, is it likely that other researchers could replicate the study's methodology and obtain the same or highly similar results?

☐ **YES**   ☐ **NO**

Does the research evidence include data or data summaries?

☐ **YES**   ☐ **NO**

Are significance levels and effect sizes reported?

☐ **YES**   ☐ **NO**

Are the conclusions drawn by the researchers clearly supported by the data?

☐ **YES**   ☐ **NO**

What implications does this research have for your school or system?

_____

_____

_____

Do you want to consider implementing these recommendations?

☐ **YES**   ☐ **NO**

What modifications might you have to make in order to implement in your school or system?

_____

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What questions were raised for you? What other research do you want to explore before making a decision for your school or system?

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Adapted from Scientifically Based Research: A Planning Look for Educators, by Doris Redfield. This six-page guide is available at www.edvantia.org/products/pdf/SBROnlineGuide.pdf