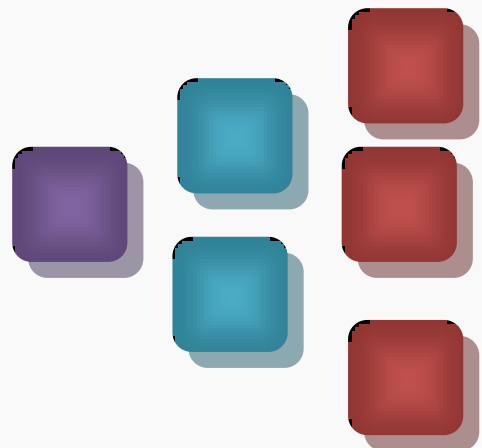


**MAKING INFORMED DECISIONS
ABOUT PROGRAMS, POLICIES, PRACTICES,
STRATEGIES, & INTERVENTIONS**



Making Informed Decisions About Programs, Policies, Practices, Strategies, & Interventions

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Table of Contents

Defining Evidence-Based Decision-Making	1
The Evidence-Based Decision-Making Cycle	4
Appendix A: Further Reading on Evidence-Based Education	9

At SERVE Center, we believe that education is advanced through knowledge, innovation, and action. For two decades SERVE Center has been committed to improving education for all students by:

- Building new knowledge through rigorous and relevant research;
- Promoting “best practices” and offering accessible and user-friendly resources and services; and
- Transforming knowledge into action through quality professional development and hands-on technical assistance for educational professionals.

Making Informed Decisions About Programs, Policies, Practices, Strategies, & Interventions

Educators regularly make decisions about what to do to improve student motivation and achievement. They use data, research, and evaluation to inform their decisions.

- **Use of data:** Educators are familiar with the idea of basing school improvement plans on the results of prior years' student test results, and monitoring trends in the data over time. With the increasing sophistication of state and district databases, educators have access to important information about student progress over time.
- **Use of research:** Educators are also aware of the need to examine available research on the effectiveness of programs they are considering, particularly Scientifically-Based Research (SBR) studies that compare an intervention's impact on students or teachers to a "business as usual" group.
- **Use of evaluation:** Finally, leaders realize that important improvement initiatives should be evaluated to find out whether they worked as intended, had the expected results, and how the plans of action could be improved.

One term that stresses the need to make more informed decisions using all these sources is "evidence-based decision-making."

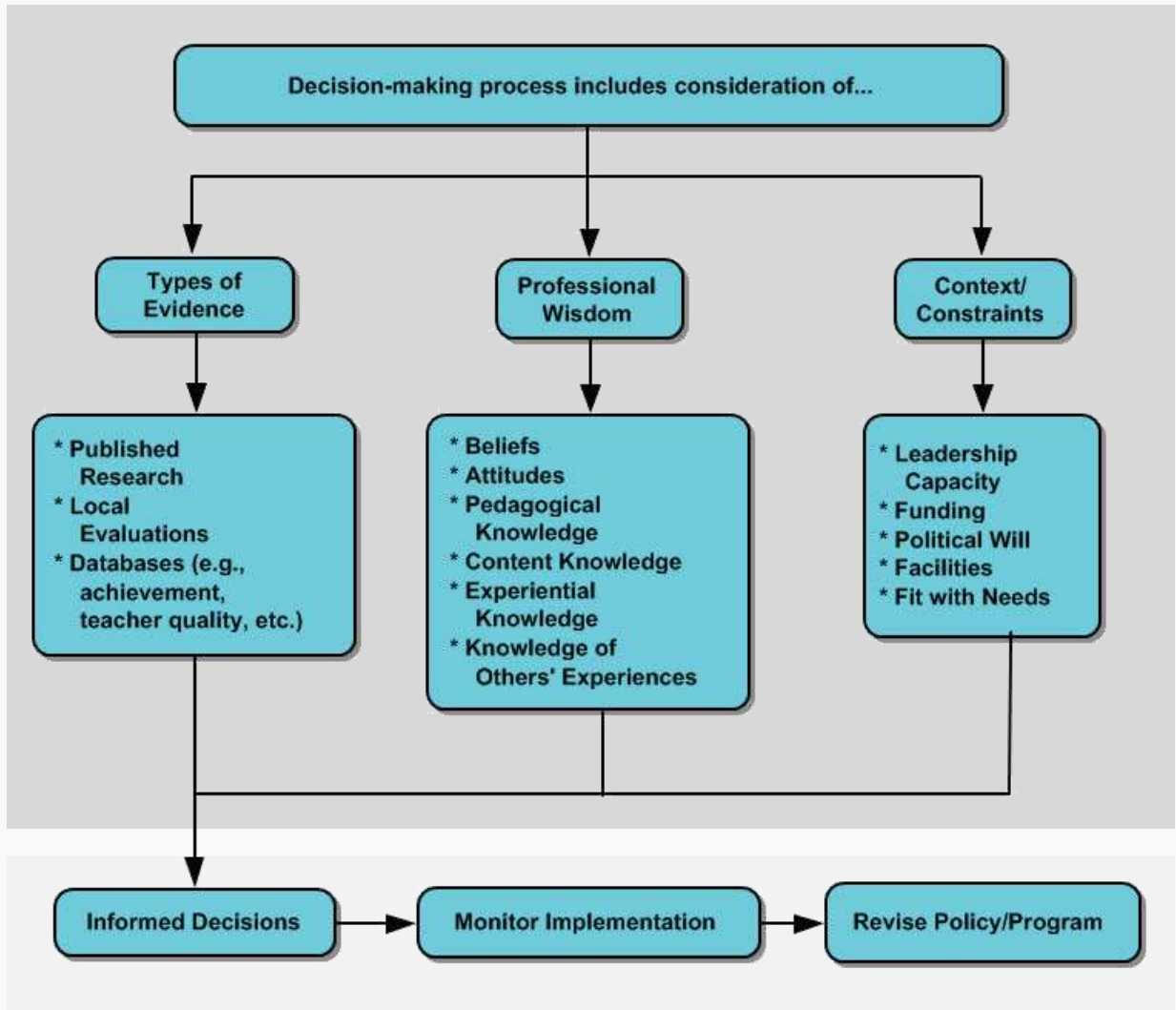
Evidence-based decision-making is a term that is being used across many professions which are trying to apply research and evaluation to their decision-making about clients. For example, the Oncology Nursing Society has produced "Evidence-Based Education Guidelines" for its members (who are practitioners) to use in presenting at meetings. The implication of the guidelines is that nurses should be able to articulate the "evidence base" for the nursing practices they recommend to others.

"Evidence-based practice (EBP) is based upon the belief that the use of the strongest available evidence in clinical decision-making contributes to quality patient care and a better outcome for patients."

Evidence-based practice means delivering services to students (clients) in ways that integrate the best available evidence from data, research, and evaluation; professional wisdom gained from experience; and contextual knowledge of the particular classroom, school, district, or state that might impact the design or implementation.

Defining Evidence-Based Decision-Making

The graphic below provides an overview of evidence-based decision-making. The terms included are described following the graphic.



Evidence base: In making decisions about a course of action that will affect significant numbers of students, education leaders need an understanding of the evidence base for the programs or practices under consideration. In addition to seeking out high quality research studies on the effectiveness of the interventions, programs, or strategies under consideration in the planning stage, effective leaders also continuously improve their programs, once implemented, through the use of data.

- 1) **Published research on intervention effectiveness:** The importance of seeking out the best available research on a program or practice is a thread running throughout the No Child Left Behind legislation. The term used for such research about whether an intervention “works” (or is effective in achieving the outcomes desired with the target audience) is Scientifically-Based Research (SBR). The term implies that educators should put a priority on trying to find out whether or not the interventions they consider have been shown to be effective through well-designed experimental studies.
- 2) **Local evaluations to answer questions about implementation or impact in your context:** As compared to “research” which implies studies conducted to expand the knowledge base relative to what works and other kinds of questions, evaluation implies information collected to directly assist particular decision-makers in their decision-making. Even though a research study might show a particular intervention improved achievement significantly when compared to a control group that didn’t experience the intervention, implementation of that intervention in a new school setting might not have the same impact. Thus, it is critical for leaders to collect evaluation data on implementation and outcomes when an important new program, practice, or intervention is implemented. Formative evaluation data should help to refine the features of the program to make it work better in a particular setting. Summative evaluation data should help you consider whether the program is getting the intended results.
- 3) **Databases:** Monitoring trends in data over time is critical for developing a clear understanding of what is going on with a particular subgroup or program. More and more schools and districts have access to extensive state and district databases that allow them to create reports that answer particular questions about current conditions. These longitudinal data systems are powerful sources of information for decision making.

The **evidence base** (information gathered from research, evaluation, and data) needs to be understood by educators working to address a particular need for improvement. However, the evidence base is not the only input into decision making. Information from research, evaluation, and data should be considered in light of the following:

Professional wisdom: This is the judgment that individuals acquire through experience (e.g., beliefs, attitudes, pedagogical knowledge, content knowledge, etc.). Individual professional wisdom differs from collective professional wisdom in that a single teacher accumulates an individual experiential history that informs beliefs and actions, but a collection of individuals (as in a faculty or a department) can also develop a common experiential history that guides their collective thinking about improvements needed.

Context/Constraints: The importance of considering context comes from the common finding that a change implemented in one school may not transfer well to all other schools. That is, context involves the interrelated conditions in which something exists or occurs—the current or historical setting (e.g., leadership capacity, politics, client needs, etc.). Context and interventions interact in ways that are sometimes predictable. For example, high quality principals or school leaders are considered an important pre-condition for the success of most complex school reforms. On the other hand, less effective principals are often mentioned as a barrier to the successful implementation of a new program or initiative in particular schools.

In sum, evidence based decisions involve the integration of professional wisdom with the best available empirical evidence in making decisions that impact schools, teachers and students.

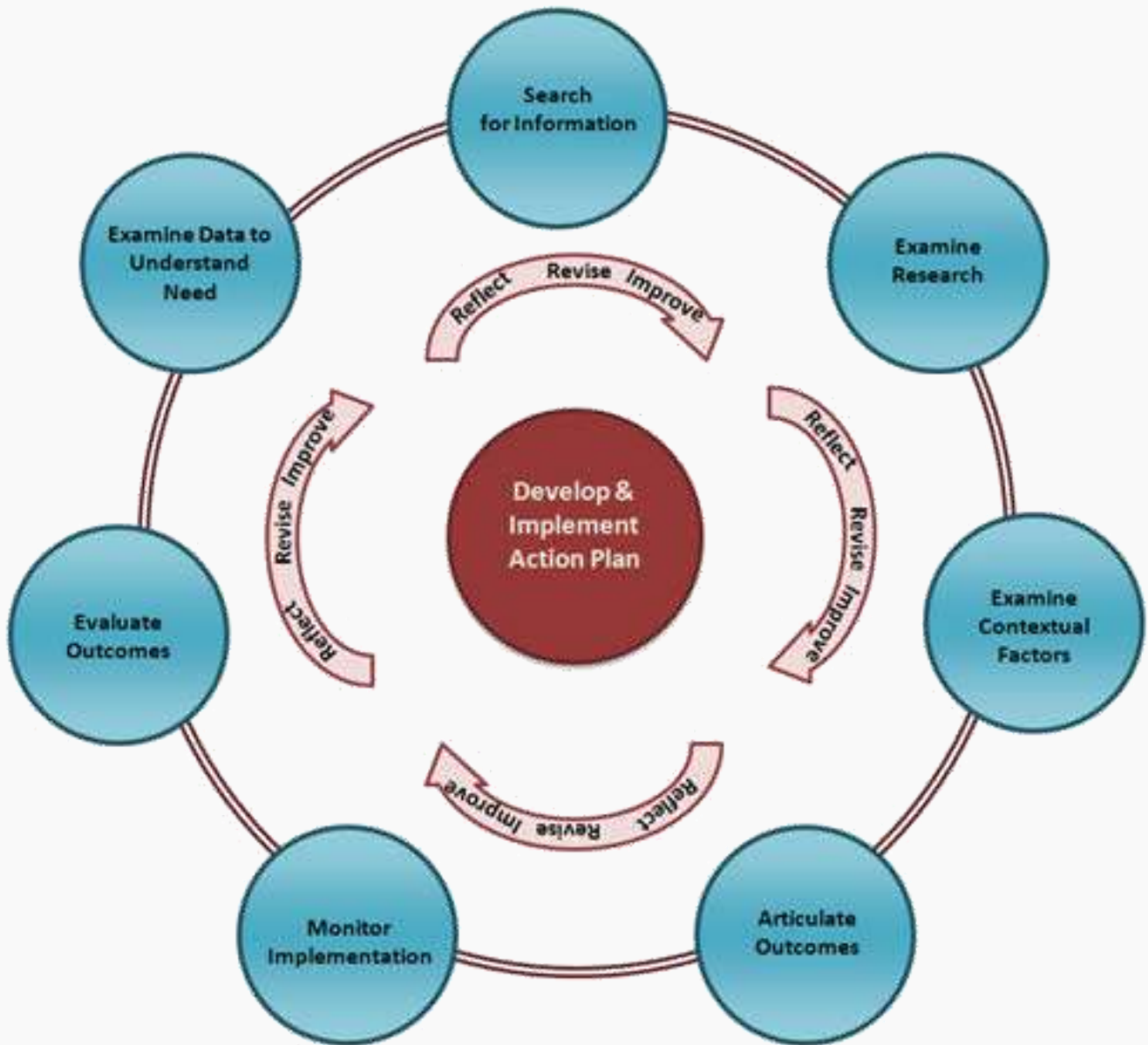
“Imagine that reading program A has been shown in several well designed studies to be somewhat more effective than reading program B. However, the cost of adopting and supporting A are higher than those for B. With both costs and effectiveness in mind, a district chooses B rather than A as its new reading program. That is a respectable evidence based [rational] decision.”

– Grover Whitehurst (2004)

Evidence-Based Decision-Making (EBDM) Cycle

One way of thinking about evidence-based decision-making is to visualize it as a cycle. The cycle helps in thinking about how decisions can be strengthened at every step in an improvement cycle. Each circle (stage in the cycle) can be considered separately, with revisions and improvements within that circle taking place continually. Although the circles show a progression in decision making reflecting the typical phases in planning, implementing, and evaluating an initiative, they can also provide a means for reflecting on which areas need more attention after improvement initiatives are underway. For example, oftentimes in the course of implementing a new initiative, the articulation of outcomes becomes clearer over time and the logic model developed at the beginning of the planning phase needs to be revised as implementation gets underway.

Evidence-Based Decision-Making (EBDM) Cycle



Use Data to Understand Need

Entering into the cycle of evidence-based decision-making, educators use data to better understand the need or issue. In many cases, these data are student achievement data. For example, educators may examine math test scores and notice that students are performing particularly poorly on graphing and problem-solving skills. In other cases, educators may look at data that alert them to problems such as dropout rates, suspension rates, or problems with attendance. To supplement achievement data, decision makers are increasingly interested in measures of students' emotional, behavioral, and cognitive engagement with their schools. Some states make data from teacher working conditions surveys available to all schools so that they can take teachers' perceptions into account in their improvement planning.

Search for Information

The next stage of the EBDM Cycle involves searching for information about experiences of others related to the problem and what interventions address the problem. Searches might include: 1) a search for interventions related to the issue and 2) a search of the published literature on the issue.

If a particular set of studies is identified that might be relevant to decision making about an intervention or program of interest, it can be useful to establish a protocol for how the team might review and discuss the information identified. As potential interventions or strategies that might address the needs within the context of the district or school are identified, it will be important to also examine the quality of the research for the interventions/strategies. There are several resources that provide such information for educators (see What Works Clearinghouse web site).

Examine Research

One kind of research that educators need to inform their thinking about the potential effectiveness of various programs, strategies, and interventions is Scientifically Based Research (SBR). The most rigorous studies of program effectiveness will use random assignment which compares an intervention's impact on students or teachers to that of a control group that didn't get the intervention. Such experimental studies of the effectiveness of interventions (with random assignment to the treatment and control groups) are costly and difficult to do, and often take several years to complete. Thus, not many of the programs or strategies considered will have this level of evidence.

Consider Contextual Factors

As educators examine studies, they may find some interventions that have been found to be effective in settings different from theirs. Alternately, they may find that there are no high quality studies on a specific topic. As a result, they have to consider the results they find from research and literature in light of their professional wisdom. Educators may ask themselves questions such as:

- Based on my experience, will this intervention work with my students or my teachers?
- Is this intervention supported by what my experience tells me?
- When I have implemented similar interventions in the past, what has happened?

Incorporating professional wisdom into the EBDM Cycle recognizes and values the experiences that individuals have.

An evidence-based decision is the best possible choice within the constraints of the real world.

After investigating the research and informing the research with professional wisdom, educators must work within the reality of their setting. Questions that educators should consider as part of this process might be:

- What resources, particularly in terms of money and time, do I have?
- How will the staff/other individuals involved feel about this?
- What political constraints (school board, parents, and community) might affect the decision?

Articulate Outcomes

Being able to articulate the change that is desired as a result of implementing an intervention or strategy is a crucial early step in being able to assess later on whether the intervention has been successful. Teams that are able to articulate the desired outcomes will then have a better understanding of what will be required to implement an intervention effectively.

Developing a logic model is an effective process teams can use to help articulate outcomes of an intervention, as well as, for identifying strategies and resources (or inputs) that need to be put into place to achieve the stated outcomes. When developed by a team, a logic model can improve coherence around implementation and can be used as a tool to communicate with stakeholders to obtain buy-in.

Monitor Implementation

Evidence-based decision-making is more than just looking for experimental research conducted on interventions. The absence of definitive findings from research and the limited number of studies conducted means that educators also need to use data and evaluations to help them understand what is working, or not working, as interventions are implemented in their states, districts, and schools. As a result, no matter what program, intervention or action is selected, the leader should adopt an experimental attitude and “evaluate” how well the action taken was implemented. It could be that the program was proven to work in a particular research setting but when teachers don’t have the level of support provided (as in the research study), it won’t work as well in a particular school. Any new program, policy, strategy, etc. that requires a significant investment of time, or resources, or that has potential impact on students should probably be piloted before it is used on a large scale. Evaluation is the collection of data that informs a decision-maker’s next steps in the particular local context. Evaluation is key to any planning process. This applies even at the level of the classroom in that a teacher’s lesson plans should have an “evaluation” component to them (e.g., at the end of the lesson, what is the current status of student learning and what needs to happen the next day as a result).

Evaluate Outcomes

Monitoring the implementation of a program provides key information about how the intervention needs to be adapted in a specific educational environment. The final question, however, is: “Did we get the impact we wanted?” As a result, the EBDM Cycle requires considering the outcomes of the decision. What actually happened as a result of implementing this program or policy? Did student achievement increase as expected? Has teacher attendance improved? Did the dropout rates decline? Are parents spending more time volunteering at school? Whatever the desired outcomes are, educators need to examine the results of their decision.

Because this is a cycle, evidence-based decision-making does not end with evaluating outcomes. Instead, it recognizes that evaluating outcomes gives data needed to make the next decision. If the intervention worked, do we have the outcomes we want now? How we may modify the program to increase its impact? If the program did not work, do we need to work on implementation, revise the program, or toss it and start anew? The EBDM Cycle never ends; it continues in a spiral-like way, providing educators with more and more information and increasing the quality of the decision-making over time.

Ongoing Reflection

Included throughout the EBDM Cycle is the need for ongoing reflection. This reflection allows educators to evaluate the process itself and determine how the process is meeting their needs or how it needs to be modified to better meet their needs.

Appendix A

Further Reading on Evidence-Based Education

Definitions and Descriptions

Canadian Health Services Research Foundation. (March 11, 2004). *What counts? Interpreting evidence-based decision-making for management and policy*. Report of the 6th CHSRF Annual Invitational Workshop in Vancouver, British Columbia. Available from: http://www.chsrf.ca/migrated/pdf/event_reports/2004_workshop_report_e.pdf Defines “evidence” and “evidence-based decision-making” (EBDM), acknowledging that the definition of the former can be interpreted differently among various stakeholders; emphasizes that connecting the cultures of researchers and decision makers is perhaps the most critical element of the process, which, therefore, has a critical social element and requires constant dialogue; identifies and describes the four key characteristics of EBDM as transparency, reliability, inclusiveness, and explicitness.

Comings, J. P., Beder, H., Bingham, B., Reder, S., & Smith, C. (September 2003). *Establishing an evidence-based adult education system*. An “Occasional Paper” of the National Center for the Study of Adult Learning and Literacy, Harvard Graduate School of Education. Available from: http://www.ncsall.net/fileadmin/resources/research/op_comings3.pdf Describes the components of an evidence-based adult-education system; includes specific hypothetical examples to show how each of the five research methods—experimental, quasi-experimental, correlational with statistical controls, correlational without statistical controls, and case study—might answer a research question; describes and emphasizes the necessary collaborative relationship between researchers and practitioners.

EBE: Evidence-based Education. Durham, England: Centre for Evaluation and Monitoring, Durham University. Available from: <http://www.cemcentre.org/RenderPage.asp?LinkID=30310000> Offers various links, including “Brief Guide,” a clear, concise definition of “evidence-based education” that also argues the case for its value, and “Research,” which contains resources for teachers and for researchers for conducting and interpreting experimental research.

Hammer, D.P., Sauer, K.A., Fielding, D.W & Skau, K.A. (April 8, 2004). White paper on best evidence pharmacy education (BEPE). *American Journal of Pharmaceutical Education*, 68(1), Article 24. Available from: <http://www.ajpe.org/aj6801/aj680124/aj680124.pdf> Details the process of moving from “evidence” to “knowledge” and argues for the critical need not only to embrace, but also to “demand” the use of evidence in teaching, as well as in practice; uses numerous examples in pharmacy education and notes the similarities between that area and others, such as health care, economics, public policy, and education.

Evidence-based practice. National Early Childhood Technical Assistance Center. Available from: <http://www.nectac.org/topics/evbased/evbased.asp?text=1>

Provides a number of online resources “related to understanding what constitutes ‘evidence’ and how it is created”; gives links to evidence-based practices, all focused on helping build “a strong base of scientific evidence to inform educational policy and practice”; has both topic-specific and more-general resources.

Whitehurst, G.J. (April 26, 2004). *Making education evidence-based: Premises, principles, pragmatics, and politics*. Institute for Policy Research (Northwestern University)

Distinguished Public Policy Lecture Series. Available from:

<http://www.northwestern.edu/ipr/events/lectures/DPPL-Whitehurst.pdf>

From the director of the Institute of Education Sciences, presents the U. S. Department of Education’s position on evidence-based education: definition, premises and principles, value and utility, and challenges to advancing the transformation of the profession to a field defined by “scientific research and evaluation together with systematically collected data on education performance.”

Resources: Using Data for Improvement

Bernhardt, V.L. (2004). *Data analysis for continuous school improvement* (2nd ed.).

Larchmont, NY: Eye on Education, Inc.

Targeted to nonstatisticians, uses clear and concrete examples to show how to gather, analyze, and use data to improve all aspects of school performance; describes how to “replace hunches and hypotheses with facts, identify the root causes of problems, measure progress toward continuous school improvement, and effectively gather and use data to make better decisions”; targeted for K-12 schools and district levels.

Consortium for School Networking (CoSN). Available from:

<http://www.cosn.org/Initiatives/3DDataDrivenDecisionMaking/tabid/4989/Default.aspx>

“Data-driven Decision Making.” Offers a range of information, materials, and tools related to the organization’s 2003 “Data-driven Decision Making Initiative: Vision to Know and Do”; includes suggestions for collecting, understanding, and using data and practical ways for leaders to use data in decision making; provides a “nationally recognized framework for sharing knowledge among educators and transferring knowledge between the educational and vendor communities.”

Data Use. Available from: <http://www.ncrel.org/datause/tools.php>

Provides links to tools and products that can assist in “collecting and analyzing different types of data” that are related to “various areas of need in schools and districts,” including assessment and accountability, professional development, school and district climate, community partnerships, school and district leadership, and teacher quality.

Education for the Future. Available from: http://eff.csuchico.edu/download_center/
Along with links to “Book Downloads,” provides links to a compilation of six articles by Victoria L. Bernhardt; covers a range of topics related to data: an analysis of why state-assessment results alone are insufficient in making effective data-driven decisions; strategies to help schools select an appropriate and effective data system; ways that databases can help with standards implementation; the intersection of multiple data variables to enrich data analyses; a summary of the relationship of data to school improvement; and more-effective methods of gathering, intersecting, and organizing different data categories.

Holcomb, E. L. (2004). *Getting excited about data: Combining people, passion, and proof to maximize student achievement* (2nd ed.). Thousand Oaks, CA: Corwin Press, Inc., “Demystifies the process of using data to guide decision making at the school level”; provides step-by-step guidance in gathering, documenting, and using data; includes a knowledge base emphasizing the role of data in effectiveness and successful change, group activities to assist in collaborative efforts, key questions that help identify sources of the proof of success, and information on utilizing data to establish priorities and integrate accountability requirements with data-based goals and school values.

Learning Point Associates. *Guide to using data in school improvement efforts*. Available from: <http://www.learningpt.org/pdfs/datause/guidebook.pdf>
Oriented toward educators “who are beginning to learn how to use data for school improvement”; offers information on “types of data, strategies for analyzing and understanding data, and methods for determining how these efforts can influence goals and planning.”

Mid-continent Research for Education and Learning (McREL). “Assessment/Accountability/Data Use.” Available from: <http://www.mcrel.org/topics/topics.asp?topicsid=1>
Working on the premise that “effective schools learn how to get ‘hooked on data,’” provides links to services and products that can help “schools create a culture of data use through valid, standards-based classroom assessments and data-driven decision making”; includes research reports on, for example, (1) *How are Educators Using Data? A Comparative Analysis of Superintendent, Principal, and Teachers’ Perceptions of Accountability Systems*, (2) *Understanding How Principals Use Data in a New Environment of Accountability*, and (3) *Understanding How Superintendents Use Data in a New Environment of Accountability*; also includes tools and guides to assist in understanding and structuring related evaluation procedures and a standards-based assessment system.

The School Administrator. December 2002. Available from: <http://www.aasa.org/SchoolAdministratorIssue.aspx?id=3982>
Presents a complete issue of this American Association of School Administrator journal with the theme of “Data-driven Districts: Applying Statistical Proof to Multiple Purposes”; has five major articles, including “Knowledge-based Decision Making.”

Resources: Finding and Using High-quality Research

Institute of Education Sciences, U. S. Department of Education. *Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User Friendly Guide*. December 2003. Available from:

<http://www2.ed.gov/rschstat/research/pubs/rigorous/vid/rigorous/vid.pdf>

Describes the characteristics and value of randomized control trials; delineates how to evaluate the rigor of interventions by “evidence of effectiveness” and what factors are important in the implementation of evidence-based interventions (EBI); includes an evaluation checklist and information on where to find EBI.

Lauer, Patricia A. *A Policymaker’s Primer on Education Research: How to Understand, Evaluate, and Use It*. Available from:

<http://www.ecs.org/html/educationIssues/Research/primer/foreword.asp>

Focuses on, for example, the state of research in education, connections between research and policy, and tools that can assist those who wish to incorporate research findings in policy decisions.

Margolin, Jonathan and Beth Buchler. *Critical Issue: Using Scientifically Based Research to Guide Educational Decisions*. Available from:

<http://www.ncrel.org/sdrs/areas/issues/envrnmnt/go/go900.htm>

Serves as a basic primer on scientifically based research: No Child Left Behind (NCLB) definition, importance, relationship with the four NCLB Act titles, six criteria, examples, limitations/”pitfalls,” and links to other resources; focuses on “how educators can use scientifically based research to inform teaching practices, curriculum decisions, and schoolwide programs.”

Stanovich, Paula J. and Keith E. Stanovich. *Using Research and Reason in Education: How Teachers Can Use Scientifically Based Research to Make Curricular and Instructional Decisions*. (May 2003). Available from:

http://lincs.ed.gov/publications/pdf/Stanovich_Color.pdf

Offers “a primer for those skills that will allow teachers to become independent evaluators of educational research”; provides key definitions, concepts, and explanations that can assist in “developing the skills to recognize scientifically based practice and, when the evidence is not available, use some basic research concepts to draw conclusions on their own.”

Trybus, Margaret A. *The Challenge and Hope of Scientifically Based Research*.

Available from: <http://www.ncrel.org/policy/pubs/html/vp11/essay.htm>

Outlines “the place of SBR in the No Child Left Behind Act”; explains the rationale and challenges for using SBR in making education decisions”; provides definitions and “outlines tools for translating research into practice.”

Resources: Evaluating Programs, Policies, and Strategies

“Collaborative Evaluation Led by Local Educators: A Practical, Print- and Web-based Guide.” Available from: <http://www.neirtec.org/evaluation/>
Presents the five evaluation stages with links to agendas, worksheets, and information briefs; also has the link to the complete guide, which “provides a framework and process for local educators to use for continuous data gathering, sharing of findings, and planning for improvement”; for educational-evaluation novices, has guiding questions, task checklists, and other Web-based resources, as well as a planning template and practical step-by-step “how-to’s” for a range of evaluation tasks.

An Educator’s Guide to Evaluating the Use of Technology in Schools and Classrooms. (1998). Available from: <http://www.ed.gov/pubs/EdTechGuide/index.html>
Intended for use at the district or school level, is structured around answering nine basic organizing questions: Why am I evaluating? What is an evaluation? Where do I start? What questions should I ask? What information should I collect? What’s the best way to collect that information? What are my conclusions? How do I communicate my results? and Where do I go from here?; uses a sample school district to illustrate the overall evaluation process.

The Evaluation Exchange. Available from: <http://www.gse.harvard.edu/hfrp/eval.html>
As the quarterly evaluation periodical (free subscription) of the Harvard Family Research Project, “addresses current issues facing program evaluators of all levels . . . [d]esigned as an ongoing discussion among evaluators, program practitioners, funders, and policymakers . . . highlights innovative methods and approaches to evaluation, emerging trends in evaluation practice, and practical applications of evaluation theory.”

Guskey, Thomas R. “The Age of Our Accountability: Evaluation Must Become an Integral Part of Staff Development.” *Journal of Staff Development* (vol.19, no. 4), fall 1998. <http://www.nsd.org/library/publications/jsd/guskey194.cfm?printPage=1&>
Discusses his 5 levels of professional-development evaluation and 12 guidelines designed to improve evaluation quality; notes the planning, formative, and summative purposes of staff-development evaluation, emphasizing the necessity of finding whether development initiatives are of ultimate merit or worth by helping to answer 4 seminal questions: Is this program or activity leading to the intended results? Is it better than what was done previously? Is it better than another, competing activity? Is it worth the costs?

Journal of Staff Development, fall 2003. Available from: <http://www.learningforward.org/news/issueDetails.cfm?issueID=88>
Presents a complete issue of this National Staff Development Council journal with the theme of “evaluation”; topics range from, for example, the process for yielding useful data in focus groups to Joellen Killion’s eight steps in evaluating professional-learning-program quality, the latter drawn from “extensive practice and research in program evaluation.”

“Capacity for Applying Project Evaluation (CAPE)” Available from:

<http://www.serve.org/Evaluation-Capacity-Building.aspx>

CAPE is a suite of resources, tools, and professional development activities designed to assist program and project leaders in collecting and analyzing data they can use in making decisions about the implementation of their projects. CAPE is grounded in the belief that if school systems and individual schools have the capacity to plan and implement good evaluations, they will get the most out of their projects—to the ultimate benefit of students.

Caveats: Limitations and Pitfalls

Hammersley, Martyn. “Some Questions about Evidence-based Practice in Education.” Paper presented at the symposium on “Evidence-based Practice in Education” at the annual Conference of the British Educational Research Association; University of Leeds, England; September 13-15, 2001. Available from:

<http://www.leeds.ac.uk/educol/documents/00001819.htm>

While agreeing that relevant research and evidence can improve professional practice, questions some of the key assumptions about the nature of both research and practice; the level of validity of research findings, especially compared with knowledge from professional experience; the futility of “transparent accountability”; and the “false hope of dramatic improvement in quality”; recommends “caution.”

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