



Understanding Research: Practical Questions for Educators

Don't believe everything you read about education research.

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by Donald Behrens

In an era in which the results of educational research are often used to sell a product or prove a point, having a healthy level of skepticism can help us avoid being taken in by poor research or extravagant claims. Here are a few basic questions principals should ask when reading about research.

Who Wrote This Research and for What Purpose?

Our belief in the value of research should never be so strong that we accept the value of everything that includes statistical data. Before even attempting to determine the quality of the data, it is worthwhile to question the author's intent in sharing the information. For example, when the results of company-sponsored research support a company product, the research should not be treated as unbiased fact. That is not to say that the research may not have been carefully conducted and free of bias, only that the company's financial interest in a positive outcome makes the data worthy of a higher level of scrutiny.

Research reported in a newspaper or popular journal often is intended to get the reader's attention by sharing an interesting idea or by providing a limited overview. When reading such articles, we must remember that the authors typically are neither researchers nor educators. They are therefore unable to evaluate either the quality of the data they are reporting or its usefulness in the classroom.

A lower level of skepticism may be appropriate for research associated with colleges, universities, or organizations whose primary purpose is reporting on educational research. Still, even these sources should not be beyond suspicion. For example, research cited or performed by someone whose views on a topic are already well known should be viewed with some concern. It is also appropriate to question the possible bias of authors whose funding sources or political connections make us uncomfortable.

What Does This Research Prove?

The results of most educational research cannot, for a variety of reasons, approach the level of certainty that is regularly obtained in other sciences. Educational research often attempts to gauge the effectiveness of strategies by comparing results between children who have had a particular intervention and those who have not.

For example, a strong correlation between use of an intervention and higher test scores might suggest that the intervention was successful. It is important to note, though, that it is a basic premise of research that correlation never equals causation. For this reason, good researchers generally qualify their results by saying that they are (or are not) *suggestive* of a link between an intervention and higher or lower scores.

The results of quantitative research should always be studied to make certain they are statistically significant and that the results are unlikely to have occurred due to chance. A study so small or informal that the results were not measured for statistical significance may be interesting but never, by itself, convincing. The opinions of authors who claim to see trends in data that do not meet the level of certainty required for statistical significance should always be taken with a grain of salt.

Would This Research Work for Us?

The value of research is further limited by the extent to which results may be generalized. A strategy or intervention that appears useful with young children may not be helpful for older students. An idea that proves valuable in an urban setting might be inappropriate for a suburban or rural school. A useful tool for slow learners might be counterproductive with gifted students.

It is not unusual for researchers, or readers of their work, to generalize the results beyond what is reasonable—to other ages, subjects, or school settings not represented in the studies. It is up to the consumer of the research to determine if the ideas presented might apply to his or her school or classroom. Even when the results of research appear to closely parallel the situation in which we work, we must consider the intervention from the standpoint of individual children.

In a more scholarly view of the ways in which research can be misused, Alfie Kohn (2006) notes: “Even studies with reasonable criteria for evaluating the success of an intervention should be applied with caution because on-average findings, however reliable and valid, may not apply to every student.” The fact that a particular strategy may be valuable for many children does not mean it will be useful for a particular child.

How Strong Is Their Case?

Newspapers, radio, and television will often report what they see as an exciting new idea based on a single research report involving a handful of subjects. To change practice or implement programs based on so little evidence would be foolish.

A single educational study may be interesting but can never be conclusive. Only the replication of studies and the addition of studies with similar results can help make connections reasonably certain. Many of education’s most thoroughly researched topics have produced at least some variation in results. In any case, even with a preponderance of evidence in support of an educational strategy, its claims of effectiveness should never be thought of as ironclad.

Just as a single study has limited usefulness in suggesting conclusions, so do studies involving a limited number of subjects. When reviewing information about a single study or small number of studies in support of an idea, one of the first questions to ask is: How many subjects were involved? In general, one can assume that the larger the number of participants the smaller the likelihood that the results could have been determined by chance. But because the number of subjects is part of the calculation used to determine statistical significance, authors occasionally will cite a larger number of participants than is appropriate, and use that information to bolster their claims, even when statistical significance is not present.

What Is the End Result?

Attempts to sell educators on products and ideas often use the words research-based. However, a review of the research behind these claims often demonstrates only a tenuous link with the claims being made. Sometimes the results are accurate but insufficient in other ways.

In an excellent, easy-to-read book on research by Ellis and Fouts (1993), they describe varying levels of research. Level 1 research is conducted in a lab setting under highly controlled circumstances. An example might be a study in which rats are monitored for the direction of head movement. The movement of an experimental group, given food each time they turned to the right, and a control group could be observed over a period of several minutes. The probable results of such a study—that the experimental group would be more likely to turn their heads from left to right—would be highly reliable, but the usefulness of this information in determining best practices for instruction would be limited at best.

Using the left-to-right and top-to-bottom movement of a computer-generated blip in an attempt to improve a child’s tracking of text on a page might serve as an example of Level 2 research. Should a group aided by this intervention prove more adept in tracking text than children in a control group, we can be reasonably confident that the results are reliable. Still, while we know that the proper tracking of text is a prerequisite to reading, we cannot know from this study that this particular intervention will actually have a positive impact on a child’s ability to decode and comprehend text.

Level 3 research looks at interventions in terms of a desired final classroom or school-level outcome. This sort of research, often messier and less reliable, attempts to make a direct connection between an intervention and the desired result. The example of Level 2 research would become Level 3 if the actual reading ability of children with similar backgrounds were compared with and without the computer-aided intervention.

Too often, products, procedures, and ideas being sold to educators or the public as research-based never get to the Level 3 stage. Sometimes a study showing that children who perform poorly at some complex task lack a prerequisite skill, and a study showing that a particular intervention improves that prerequisite skill are cited together in an inappropriate attempt to claim that the intervention improves performance on the complex task. In order to claim that an intervention improves reading, children's ability to decode and comprehend text should be compared between similar groups—one that has not participated in the intervention and one that has.

All of the skepticism implied by these questions should not lead educators to dismiss the value of education research. At the same time that some research is being misused to sell products and promote political agendas, our best researchers are helping us to a level of understanding about best practices that would have been impossible in the past. By questioning the purpose and quality of the research we read about, by studying new ideas through multiple sources, and by making certain that the results apply to our situation or students, we can make better choices about which new ideas to try.

References

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Donald Behrens is principal of Marcy School in Menomonee Falls, Wisconsin. His e-mail address is behrdo@hamiltondist.k12.wi.us.