

# RESEARCH 101: CREDIBILITY

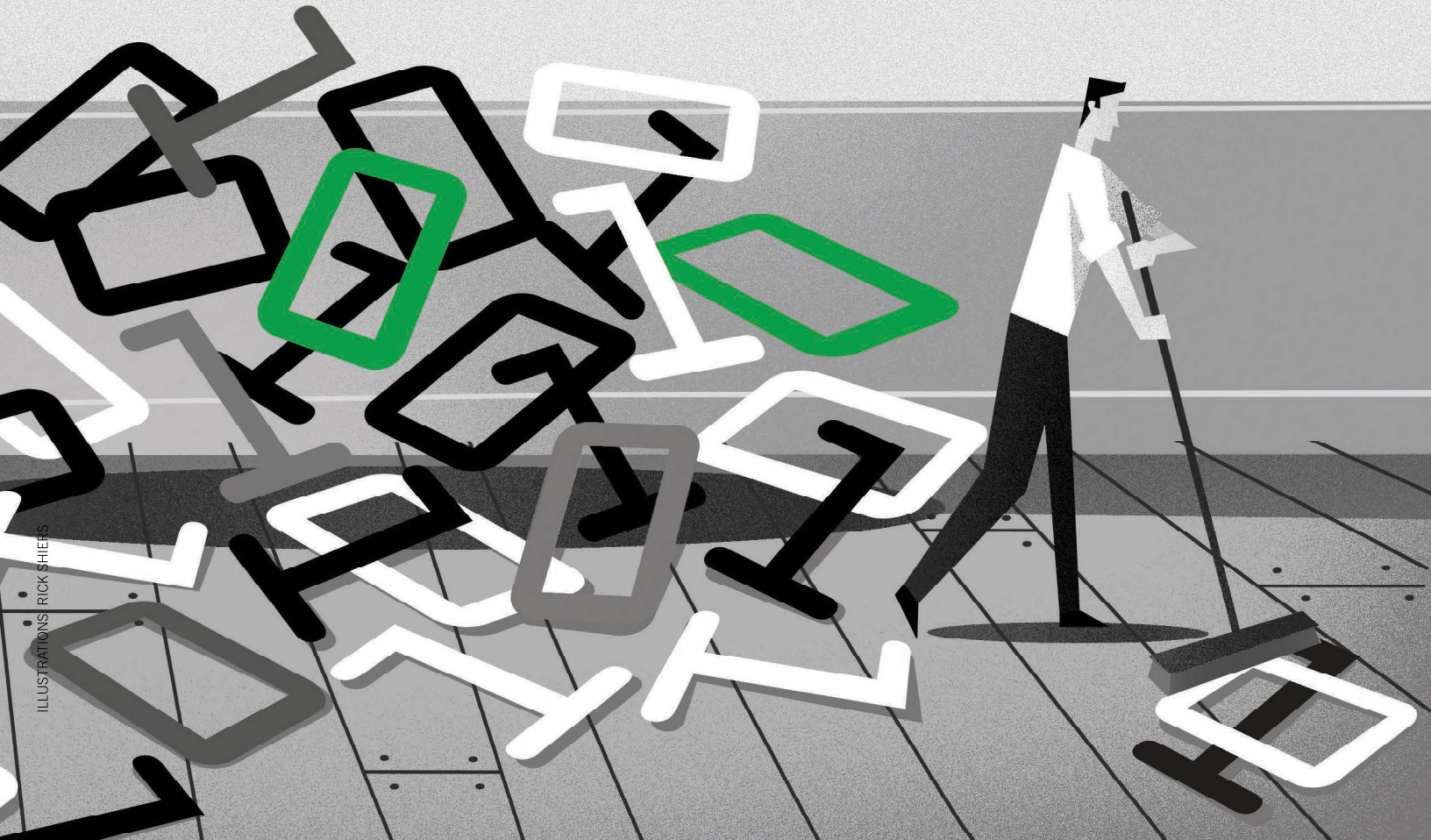
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In 1998, the academic journal the *Lancet* published the results of a research study regarding the correlation between the measles-mumps-rubella (MMR) vaccine and the onset of autism. This study resulted in the decisions of many families to refuse to vaccinate their children; incidence of MMR began to rise, but rates of autism did not decline. Ultimately, many further research studies failed to replicate the same results, refuting the idea that the MMR vaccination caused autism; the study's author, in a clear violation of ethics, was also found to have falsified some of his data. The study was later retracted by the *Lancet*. Had the flaws in the initial study come to light

earlier, many children would have been spared the possibility of contracting measles, mumps, or rubella. Had consumers—that is, average citizens—been more attuned to the concept of “research,” lives might have been saved. The purpose of this article is to describe scholarly research to the degree that when you encounter something labeled “research” in your daily life, you will be equipped to discern its credibility.

## WHAT EXACTLY IS RESEARCH?

As professional educators and engaged parents, we have a common goal of supporting the development of





our children with the best data available. In today's media-rich world, we encounter an enormous amount of information. Every day, television and magazine advertisements, news media, pharmaceutical company advertisements, and other publications present information framed with the phrase "Research says...." We may hear this same phrase in casual conversations with neighbors and friends. A difficult yet critical task is to determine what information is worthy of our attention and what can or should be disregarded.

Research is a process that people undertake when they have questions that need evidence-based answers. For example, when an illness becomes prevalent, researchers set up laboratory trials for new medications to determine if those new drugs are both safe and effective for treatment of that illness. Researchers are problem-solvers who respond to questions by creating careful plans, gathering and analyzing information, and presenting the results. Research allows people to understand how their questions have been answered by others and how those answers might be applied to personal circumstances.

The word *research* has several connotations, and the distinction between scholarly and less formal types of research can be difficult to discern. Commonly, *research* is used to mean the personal delving into a topic of interest using resources at hand, such as the opinions of friends, family, and mass media outlets. If your sister says, "I have researched a movie choice for tonight," she is not likely to have consulted a scientist. Not all informal uses of the word *research* are as clear-cut, however. So how will we know if the information we encounter is actually research?

Research scholars define and quantify the world around us. Scholarly research, also called academic or scientific research, follows a stringent protocol. For example, university researchers must receive authorization prior to ever beginning a new project by submitting an extensive project plan to their university's institutional review board. The project plan clearly explains the selection process for research participants, the safeguards provided to the participants, the validity and reliability of the measures that will be collected, and the researchers' hypotheses and questions. After the study, before a scholarly research article is published, the author submits the

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article for review by other scholars in a process called *peer review*. These practices of obtaining institutional permission and undergoing peer review ensure that as new bits of knowledge are added to the existing body of knowledge, they are based on fact rather than opinion. Within this article, *scholarly research* means scientific research undertaken by professional researchers affiliated with, but not always employed by, institutions of higher education—that is, universities.

### WHAT DISTINGUISHES SCHOLARLY RESEARCH FROM OTHER KINDS OF RESEARCH?

Scholarly research is important because it is the means by which human knowledge is explored and expanded. As noted above, scholarly research occurs within the academic community, usually at universities. It is important to understand that scholarly research embodies more than numerical data alone. Scholarly research can be conducted quantitatively, qualitatively, and via mixed methodology (the latter utilizes both quantitative and qualitative methods). At one end of the continuum are quantitative studies and at the other end are qualitative; in the middle are mixed-method studies with varying degrees of quantitative and qualitative methods.

In quantitative research, the researcher is looking to confirm or disconfirm a specifically identified hypothesis by gathering numerical data to provide a predictable explanation of the relationship between variables. To do this, researchers need to arrange for controls so that the data they collect can be tied to the specific constructs they are examining. They use statistical analysis to establish findings that could be generalizable and applied to all similar populations. Lillard and Heise's "An Intervention Study: Removing Supplemented Materials from Montessori Classrooms Associated with Better Child Outcome" is just one example (*Journal of Montessori Research*, 2016). The study featured an experimental design with two treatment groups and one control group. Non-Montessori supplemental materials were removed from the classrooms of the two experimental groups but not removed from the control group's classroom. Each



group completed assessments at the beginning and end of the 4-month-long study. When compared to the control group, the experimental groups showed significant growth in early reading and executive function and some growth in early math. The researchers concluded that students in classrooms with only Montessori materials scored better on academic tests than students in classrooms with Montessori and supplemental materials.

Qualitative researchers want to explore a phenomenon or to understand their participants' lived experiences. As one can imagine, this type of exploration is very difficult to measure with numbers. Instead, qualitative researchers provide detailed descriptions of a phenomenon or their participants' experiences by soliciting language-rich data. These researchers look for themes and patterns in that data so that they can most accurately provide a trustworthy report. An example is "Montessori Education and a Neighborhood School," published in the *Journal of Montessori Research*, in 2020. In this case study, the researchers described a neighborhood school's transformation of two traditional early childhood classrooms to Montessori learning environments. The study took place in a diverse community where students were traditionally underserved. The study's data revealed complex transformation resulting in improved opportunities for the children in the school.

#### WHAT OTHER KINDS OF SCHOLARLY RESEARCH ARE THERE?

Program evaluations, which help to determine how well particular educational programs are meeting the needs of the students and families that they serve, are some-

times labeled as scholarly research. For example, imagine that a nonprofit organization in a large city operates an after-school program to provide performing arts experiences for elementary students. They partner with a local university to make sure that the experiences that they offer are truly serving their intended audience and that the arts experiences are resulting in the desired outcomes. As with other types of scholarly research, there are established systems and a level of rigor for this type of project.

Scholarly opinion papers are persuasive pieces written by researchers when they have thoughts about a particular topic. A scholarly opinion paper's author likely has selected evidence in the form of articles from research journals that support their viewpoint. The difference between scholarly opinion papers and journalistic opinion columns is the expertise of the author. For example, in 2018, Angeline Lillard published an opinion piece in *Current Directions in Psychological Science* called "Rethinking Education: Montessori's Approach." Dr. Lillard is undeniably an expert on Montessori theory, and in this piece, she supported her thoughts with ample references to academic sources. The weight and veracity of this article contrasts with a newspaper editor's weekly editorial; Lillard has a focused, deep understanding of the topic at hand, and newspaper editors have a broader yet shallower viewpoint. Scholarly opinion papers are useful for providing a window into the thought processes of scientific minds and serving as catalysts for future study.

Action research, also called applied research, is a type of research that entails applying the scientific method and aspects of quantitative or qualitative research to specific problems of practice. It is a means of exploring the value of a particular solution in a local setting to a specific situation. The action researcher, often a teacher, is involved in the scenario, often a classroom that is being explored, and this minimizes both objectivity and generalizability of the results. An action research project is designed to address a particular issue in a specific setting by a person involved with the situation. Action research is useful as a problem-solving tool for the practitioner, and the action research projects of others are helpful reading for inspiration regarding problems of practice. Scholarly research, on the other hand, is designed to answer a research question with the intention of applying the findings to the whole population.

#### HOW CAN THE CREDIBILITY OF RESEARCH BE DETERMINED?

As you look for scholarly research, think critically about what you uncover. If you are a school practitioner, you may be looking further into claims that you've seen in the media. Often, at the end of print or online articles,



you will see references or the credentials of any experts that may have been consulted. Doing a quick search of the experts referenced in the article will help you

determine if claims are valid. If you want to research further, the table below can help you both identify quality research and look out for potential limitations.

SCHOLARLY RESEARCH	WHEN?	WHO?	WHERE?	WHY?	LIMITATIONS
Quantitative Qualitative Mixed Method	Research that has been published within the last 10 years is considered current.	Academic researchers	Peer-reviewed academic journals	Academic research is often funded by federal or nonprofit entities to attempt to answer difficult questions with unbiased evidence in order to generalize results for the betterment of humankind. Large studies may be funded by organizations. Be aware of bias in research that is funded by a group that may have an ulterior motive, such as a textbook publishing company that may want to point toward their products as research-based.	For all studies: May contain bias if funded by an organization with ulterior motives
Action Research	Research that has been published within the last 10 years is considered current.	School-based practitioners Academic researchers	Practitioner magazines or peer-reviewed academic journals	Action research is generally designed to problem-solve within the practitioner's or teacher's specific workplace. Most practitioner research is self-funded.	Small sample size (one class or group) Limited generalizability; by design, intended to inform local or immediate situations
Opinion Papers	Opinions that are within the last 10 years are considered current. Sometimes, seminal papers are considered timeless.	Academic researchers	Peer-reviewed academic journals	A researcher may weave together their published findings and experience-based intuition to theorize about causality, applications, or new frontiers.	Not necessarily based on specific evidence; by design, intended as a space for researchers to think creatively about their cumulative work

**WHERE CAN SCHOLARLY RESEARCH BE FOUND?**

These days, it is easy to find media that refers to research studies and results. Publications (like the *New York Times*), news stations, blogs, and even digital information sites like Wikipedia often call out research findings and data to support their claims. However, research relayed through the lens of others has the potential to be misrepresented, skewed by bias, or presented with a one-sided view. That is not to say that all media and news outlets are false or fake. But it is important to examine their claims with a critical eye and recognize that research removed from its original source has the potential to be skewed.

When searching for research to better understand a phenomenon in your school, evolve teaching practices,

educate your community, or publish your own articles, it is important to go straight to the source as often as possible. Peer-reviewed research studies are found in scholarly journals and can be accessed in a variety of ways. The easiest way to find scholarly journals is through a university library system. Universities have access to many research databases that allow access to what feels like an infinite number of scholarly journals and articles. Some universities and public libraries allow limited guest access to databases and may charge a fee per article or journal. However, there are federally funded sources that have a selection of scholarly research available for free, such as the Education Resources Information Center (ERIC) and



the What Works Clearinghouse (WWC). Also, some journals, such as the *Journal of Montessori Research*, are published in an open access forum for no charge. Google Scholar ([scholar.google.com](https://scholar.google.com)) can be used as a library search engine, though it will produce results that may or may not be free to access. Organizational repositories, such as AMS's Research Library, house research that fits a specific genre and can be accessed for free. Other organizations, such as NAEYC, offer similar services. Organizational repositories often offer an increase in access with paid membership.

**DATABASES FOR SCHOLARLY RESEARCH**

American Montessori Society Research Resources  
[amshq.org/Research](https://amshq.org/Research)

Education Resources Information Center  
[eric.ed.gov](https://eric.ed.gov)

What Works Clearinghouse  
[ies.ed.gov/ncee/wwc](https://ies.ed.gov/ncee/wwc)

Sometimes, it can be difficult to access peer-reviewed journals and scholarly research, whereas news media and other free informational sites are readily available. You may read a reference to a study you find important and valuable but are not able to locate the primary source. In that case, look at the reference in the secondary source reference section; if there is not a reference section, that may be a sign of skewed or unreliable research. Does the study referenced come from a peer-reviewed journal? Is the data current—has it been published in recent years? Use the table above to do some initial vetting of your sources as you conduct your search.

**CONCLUSION**

There are varying definitions of the word *research*, and it is important when one hears the words “Research says...” to be able to discern the who, what, when, where, why, and how of that research. This thoughtful consideration will allow each of us to become savvy consumers of research and to understand if and how what we encounter is useful to our practices.

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