WEIGHING THE EVIDENCE · AN EVIDENCE-BASED ESSAY FOR PARENTS

Every Program Says It Works. Ask What It Was Compared To.

Montessori, a microschool, your homeschool plan: what each can show, and what it can't

17-minute read Every figure sourced below By George Weber Nothing here is for sale

It is 10:50 at night, the laptop is on the kitchen table, and you have three tabs open.

The first is a Montessori school twenty minutes away. Low shelves, wooden trays, a small child pouring water from a glass pitcher with both hands. The page says children there learn at their own pace and come to love learning.

The second is a microschool that opened two years ago in what used to be a dentist's office. Twelve children, mixed ages, one adult the page calls a guide. Near the top, in large type, a line says its learners grow more than a year in a single school year.

The third tab is yours. It is a spreadsheet you started in August: a boxed curriculum, a co-op on Thursdays, the math program a friend from the soccer sidelines swears by. Color-coded. You were proud of it for about a week.

Every tab has a happy child in it. Every tab has five stars, or the homemade version of five stars. You believe in your own plan, or you would not have built it.

Your partner stops in the doorway on the way to bed. "So which one actually works?"

You open your mouth and close it again. You have read for three weeks. You could describe each of the three in detail. You cannot answer the question.

"They all say they do," you say. Then you close the laptop.

Nobody handed you a yardstick

The question in the doorway was fair. The trouble is what you were given to answer it with.

In some of the big decisions in your life, a claim comes with a check from outside. A car comes with crash-test ratings, and someone other than the carmaker ran the crash.

A school or a program mostly comes with its own description. The page is written by the people offering the seat. The testimonials come from the families who stayed. The numbers, when there are numbers, are counted by the school. None of that is a trick. It is simply who holds the information and who has a reason to publish it.

Testing a school model properly is slow and costly. You need a test the program did not write, careful records, years, and families willing to be studied. Many alternatives are small and new. Of the ones examined here, few have been through anything like that.

Under all of it sits a harder knot. Families who choose a different kind of school are different from families who don’t. They chose. They went looking, they drove the twenty minutes, they read the pages at 10:50 at night. Whatever happens to their children afterward is tangled up with whatever was already true of those families before.

The familiar choice sits in the same spot. The school down the street cannot show you how your child would have done somewhere else. No school can. One child gets one childhood, and walks one path through it.

So if you have closed those tabs feeling gullible, or cynical, or both on alternate nights, that is not a flaw in you. You were handed a stack of claims and no yardstick. The load is real, and it belongs to the way these choices reach you: one page at a time, each page written by its maker.

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The belief that keeps you safe

Here is the rest of what you meant in the doorway:

Every program says it works. There’s no way to tell.

Much of that is right. Most of what you have read in three weeks was written by the people who run the programs. Most of it has never been checked by anyone else. If you have bought a program before that promised a calmer house and a child who loved math, and got neither, this belief is also the scar from that. It keeps you from being sold twice.

There is a twin belief, and on some nights you hold that one instead:

If it's alternative, it must be better.

That one usually comes from watching a child shrink. A boy who used to talk all the way home goes quiet by October. A girl who read under the covers starts calling herself bad at reading. If you have watched the familiar choice dim one child, you have good reason to think almost anything different would do better. That is not naive. It is what you saw.

The two beliefs look like opposites. They are the same move, made in two directions. With no way to check any single claim, you decide about all of them at once: trust none, or trust the ones that look least like what hurt. Both are sensible ways to stop when no one has given you a way to sort.

For now, leave both where they are. Before deciding whether claims can be told apart, it helps to see what a real test looks like, and what it found.

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What "tested" means

Two words do the work from here on.

Told means the program's own account: its page, its survey of its own families, its count of its own children's gains.

Tested is the harder word. Start with the rough version most of us already carry: someone outside the program checked its children's results, on a measure the program did not write. That is most of it, but not all.

Tested does not mean proven. Untested does not mean it doesn't work. An untested program might be wonderful. No one outside it has checked.

The hardest part of testing is that knot from earlier: families who choose are different. For comparing schools that families choose, one of the cleanest ways around it is a lottery. When a popular school has more applicants than seats and picks by lottery, every family in the study chose the school, and chance alone decided who got in. Families who chose are set beside other families who chose, so the choosing itself no longer explains the result. It also means a lottery result speaks most clearly about families who apply, which is the position you are in when you apply for a seat.

A lottery does not fix everything. It does not fix who agrees to be studied, who stays, or which schools run lotteries in the first place. And the children who lose scatter to many different schools, so "compared with" can mean compared with a mix.

The first lottery study of Montessori, published in 2006, compared about 110 children in two age groups at a single Milwaukee school, all from families who had applied. Among the twelve-year-olds, the Montessori

students wrote more creative essays. Their standardized reading and math scores were no different.

A 2017 admissions-lottery study compared 141 children who had all applied to two public Montessori magnet schools in one city. The admitted children came to score higher on academic achievement and on some social measures, though not on creativity or social problem-solving. The authors themselves called for a larger study.

Look at the shape of what came back. It is not “children thrive.” It is a list: higher here, no different there, a small sample, one city, please do this bigger. If you have ever wished a program would tell you what it could not do, that list is what it sounds like.

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The most-tested alternative

Of the alternatives examined here, Montessori is the one with the most testing behind it, and the results reward a slow read.

The Campbell Collaboration, a group that publishes systematic reviews of research, pooled 32 Montessori studies published through early 2020. On average, Montessori students did modestly better than children in traditional programs: about a quarter of a standard deviation on academic outcomes. A standard deviation is a yardstick for how spread out children’s scores are. In class-ranking terms (our arithmetic, not the authors’): if the comparison child sat right in the middle, at 50th out of 100, the typical Montessori child would sit near 59th. In everyday terms, that is modest.

For a sense of scale, the education researcher Matthew Kraft gathered 747 randomized trials of school programs. The typical effect on standardized tests was about a tenth of a standard deviation. Kraft also warns that correlational studies tend to produce bigger numbers. So do tests the researchers designed or matched closely to what the program teaches. Most of the Montessori studies were not randomized, so the two numbers come from different kinds of studies and the comparison is loose. The fair word for it is modest, not large.

The shape matters as much as the size. Effects were biggest in preschool and elementary school and smaller in middle and high school. They were smaller in public programs than in private ones.

The studies the review counted as randomized showed larger effects, not smaller. That is less reassuring than it sounds. Those studies likely include the two small lottery studies above, which the review lists as lottery-controlled, and a review of 645 education studies found that small trials tend to show bigger effects than large ones. The large national trial below is the bigger test. One of the review’s authors, Angeline Lillard, also leads most of the Montessori lottery studies, which is worth knowing as you weigh it.

A second review, published the same year, agreed that the effects lean positive. It disagreed sharply on how large they are, and unlike the first, it found no difference by school level. So the size of the benefit is still unsettled.

If the Montessori tab is the one you keep going back to, the next study is the one to hold onto. It is a national lottery study of 24 public Montessori preschools, published in 2025 (†2025). It analyzed about 600 children from age three to the end of kindergarten.

The researchers report no measurable difference at ages three and four. By the end of kindergarten, the children who had won a place scored higher in early reading. They also scored higher in short-term memory and in understanding other people's minds. The summaries we read give sizes we could not check against the paper, so this essay cannot tell you how much higher.

Math, vocabulary and social problem-solving showed no clear difference. The federal reviewers who rate education studies accepted it only "with reservations," because most of the children in the original lotteries are not in the final sample.

Not every comparison favors Montessori, either. One observational study of more than 500 urban US public-school fourth and eighth graders found no achievement advantage for the Montessori students.

If you are touring a Montessori school, here is the fairest one-line summary the evidence allows. Of the models examined here, Montessori is the most-tested alternative, with modest positive effects on average that the Campbell review found clearest in the early years. No one can say how much comes from any single feature, such as the mixed ages or the materials, and nothing here shows sizable benefits for teenagers.

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Mostly told

Now the models that sit closest to learner-driven ideas: microschools, Acton-style programs where children set their own goals and earn freedoms, and unschooling. If these are the tabs that pull at you, you should know where they stand. They are the least tested of the alternatives examined here.

Microschools. In 2025, RAND, an independent research organization, reviewed what is known about them. It found that microschools' effects on academic achievement have not been rigorously evaluated, and that the data needed to evaluate them are often unavailable, inconsistent, or unrepresentative. RAND put the best currently available estimate at between 1 million and 2 million students attending microschools full time (†2025).

RAND also notes that microschools often decide, one student at a time, how and whether to assess progress. For a family, that can be part of the appeal. For anyone trying to compare schools, it often means there is no common measure to line up. When RAND researchers later tried to compare test-score growth on one national test, NWEA's MAP, the education news site The 74 reported that only 10 of the 271 microschools they identified had both a fall and a spring score: too few to say anything about impact, either way.

The sector does describe itself. In the National Microschooling Center's own 2025 survey, the growth figures come from the schools themselves, and many schools said they do not give a standardized test or do not track growth in a way they could report. Many schools in the same survey said they serve children who were behind or who learn differently. That can be a real gift to those children. It is also one more reason a fair comparison is hard to build.

The line in large type on your second tab, more than a year of growth in a single year, belongs to this part of the record. It may be true of the children that school counted. It was counted by the school, on a measure the school chose. It may still be good news. You cannot tell from the line.

One 2026 study did bring in an outside test. According to The 74, a small study commissioned by a microschool advocacy group found that about half of roughly 400 tested students in US microschools beat expected growth on a national test (†2026). A university researcher ran it for the group, on a test no microschool wrote. Expected growth was set by national norms. If those norms describe what a typical child gains, about half of any group would be expected to beat them; that is our reasoning, not the report's. Nearly half of the tested children had special learning needs, which makes an average like this harder to read. The schools were not randomly chosen.

Acton-style programs. The best-known outcome number for the Acton model, "about 2.5 grade levels in the first ten months," comes from a 2011 blog profile of the first school's first group of students, who were already about a grade ahead when they arrived. The post does not say which test produced the figure. The network's own home page offers a family-satisfaction rating and testimonials; it does not point to an outcome study. We found no independent study of Acton-style programs, or of earned-freedom levels themselves.

Unschooling. The best-known survey of grown unschoolers recruited 75 volunteers, mostly American, through the researcher's own blog, and he says it likely overrepresents those most pleased with how they were raised.

Many of these programs are built from parts that do have research behind them, such as mastery learning, where a child moves on after she shows she has learned a step. The main review of mastery learning found real benefits, larger for weaker students, along with costs: it can take more time, and self-paced versions often lowered completion rates in college courses. An earlier, more critical review of group-based mastery programs found little sign of gains on independent standardized tests, though results were generally positive on tests the researchers wrote. Evidence for one piece does not prove the whole package that contains it. (Mastery pacing has its own essay in the main series.)

Children in some of these rooms may be doing beautifully. No one outside has checked them the way the Montessori studies checked, so the evidence cannot tell you, and neither can the page.

The same questions, closer to home

An audit that only ran on unfamiliar choices would not be fair. So run it on two closer to home.

When economists studied Catholic high schools and corrected for which families choose them, graduation was still higher after the correction, but there was not much evidence of higher test scores. The selection knot is real for long-established schools too. The careful answer was neither *it works* nor *it doesn't*. It was *this part held up, and that part mostly didn't*.

Now the third tab on your screen: the homeschool plan.

One homeschool outcome study looked only at students who reached college. Among them, homeschooled students did no better and no worse than closely matched classmates in first-year grades and in staying enrolled (732 homeschooled students at 140 US colleges). It says nothing about children who never enrolled, and nothing about what homeschooling causes.

Part of the reason there is so little that can be compared fairly is that homeschooling is not one thing. If you already teach at home, you know this from the inside: the plan in September is rarely the plan in March. About 36 percent of U.S. adults who were ever homeschooled did so for only one or two years, according to Johns Hopkins University's Homeschool Hub. A major review of homeschool research, by Robert Kunzman and Milton Gaither, describes families who "move a child or children in and out of school," in "decisions that are reevaluated regularly." Something that changes shape from house to house, and often lasts a year or two, cannot be tested as one treatment.

So your plan sits where the microschool sits. It is told: by you, to yourself. That is not an insult. It is where every plan starts. It does mean the questions you would put to a program belong to your plan as well.

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The line

In the doorway, it felt as if there was no way to tell. Look again at the line in large type on the second tab, though. It was not short of a number. The other two tabs had no number at all, and they were missing the same thing.

What none of them had was a group of similar children who did not get the program. Nearly every tested result here had some version of one: children who lost a lottery, which is the cleanest of these; students matched on their records; or children in other schools picked for comparison, which is the roughest, because those children may still differ from the ones whose families chose. That is the piece the rough version of "tested" left out, and it is the one thing you can ask about from outside.

Told is not tested. Ask what it was compared to.

That question takes a minute. You can ask it on a phone call, on a tour, at a co-op meeting, or of a page at 10:50 at night. You do not need a statistics course. You need to listen to what the answer is: similar children who did not get the program, or a national average, or the child's own score last fall, or nothing at all. Each of those is worth knowing. Only the first is a comparison group; a national average was not chosen to resemble anyone.

I can't know in advance whether a program will work for my child. Nobody can. I can know whether anyone has checked, against what, and what they found.

"Alternative" is not a result, then. Neither is "familiar." Each gets the same question.

And the answer is worth hearing in full, even when the test was real. In one careful evaluation of the Reggio approach, a well-known preschool method from Italy, its advantages showed up mainly against children who had no formal childcare, not against children in other programs. Beating children cared for outside any program is a different result from beating children in another program. That is why the question is "compared to what," and not only "compared or not."

The belief you came in with keeps its true part. Most of the claims you read had not been tested. A told claim is not a lie. It is an account from people who care about what they built and watch it every day, and it is worth hearing. It is just a different kind of thing from a test, and now you can tell which one you are holding.

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A Monday at the same table

It is Monday morning at the same table, a week later. Coffee, the light coming in low across the wood, the laptop open to the same three tabs.

Beside it is a page torn from a notebook. At the bottom is last week's question. Above it you have added two plainer ones, so all three sit together in your handwriting:

What happens on an ordinary Tuesday?

How would we know it's working?

Compared to what?

At 9:30 you call the microschool. The director answers the first question easily, walking you through a Tuesday from drop-off to the closing circle. The second takes her longer: a reading assessment in the fall and again in the

spring, portfolios, a conference twice a year. At the third she pauses. Then she says they have no comparison group; they know their own children well, and she would be glad to show you their records. You write that down word for word. It is a good answer, because it is a true one.

You email the Montessori school the same three questions, and one more: is this school like the ones that were tested? Public or private, preschool or older?

On Wednesday the head of school writes back. Most of the email is warm and familiar: how independent the children become, a quote from a parent, an invitation to come and watch a morning. Near the bottom is a link to the review. She does not say whether her school is like the ones that were tested. A week ago you would have read the whole thing as one claim. Now you can see which lines are told and which one points to a test. You write back to thank her, accept the morning visit, and ask if the two of you could talk through that last question while you are there.

Then you turn to the spreadsheet. It is the hardest tab to question, because you wrote it.

What happens on an ordinary Tuesday? You write it out hour by hour and find a gap after lunch that the color-coding had hidden.

How would we know it's working? A reading sample in September and another in March. A math page he could not do in the fall, tried again in the spring.

Compared to what? Here you write the true answer: compared to him, last year. It is not a study. It is the comparison a family can actually make, and you will know that is what it is.

None of this tells you which tab is right. It tells you what each tab knows about itself, and what it does not.

That night your partner stops in the doorway again. "So which one works?"

"I still don't know which one works for him," you say. "But I know which ones have been checked, and I know what to ask the others."

Your partner sits down. You turn the notebook around so it can be read from the other side of the table.

ABOUT THE WRITER

Who wrote this, and why

My name is George Weber. My wife, Jaclyn, and I have five children, all under eleven.

My second son is Jordy. When he was seven, we sat at the kitchen table after dinner, and I asked him to explain why reading and discussion were so hard. This is a boy who will stand at a workbench for hours without looking up. He taught his little brother and sister to ride a bike, and then to use a screw gun. He builds things I could not build. That night he kept his head down. Twice, all he gave me was “I don’t know.” Then he said it:

> “I’m just not good at school.”

He was not describing a difficulty. He was describing himself.

Here is the part I would rather not say. I had seen it coming for a while. That night I was interrogating a seven-year-old for a reason he did not have, when what he was really carrying was shame. And I kept sending him, because I could not see what else to do.

For years, Jaclyn had told me the truth about the other option. She would not become the entire staff of a school with five children in it, and if we did this, I would have to free at least fifteen hours a week. She was right on both counts, and I could not find the hours. So I know the arithmetic in these essays from the inside.

Before this work, I made more than $4 million building six personal-training studios. I have stepped away from them. I have given the next twenty years to two things: helping parents make the right choice for their own children, whatever that choice turns out to be, and helping lead what I believe is a coming change in how families educate their children.

I am not an academic. The research in these essays belongs to the people named in the sources. My job was to read it carefully and tell you what it says, and what it does not. That is why every essay ends with what it does not claim.

I wrote them for the parent I was that night at the kitchen table.

George Weber

FATHER OF FIVE

READ NEXT

Learner-Led Doesn’t Mean Left Alone

If the learner-led models are the tabs that pull at you, the next question is what they need to work

WHAT THIS ARTICLE DOES NOT CLAIM

- It does not claim that any alternative examined here works or fails.
- It does not show sizable Montessori benefits for teenagers (in the Campbell review, effects were smaller in middle and high school), or that the 2025 trial's gains last past age six. That trial's executive-function results are left out because its authors and the federal reviewers read them differently.
- It does not show that microschools, Acton-style programs or unschooling work, or that they don't. No study we found had enough data to compare their students with similar children; RAND's attempt, as The 74 reported it, found usable scores in only 10 schools. Neither the Acton blog profile nor the 2026 growth study names a comparison group.
- It does not show that homeschooling causes better or worse outcomes. The college study covers only students who reached college.
- It does not tell you which piece of a program caused a result, or that satisfied families mean children learn more.
- Method note: The Campbell review's average (Hedges' g = 0.24, academic composite) pools mostly non-randomized studies, and its search ended in February 2020. The 59th-percentile figure is our arithmetic and assumes roughly normal scores. The authors found some evidence of fewer small studies favoring traditional schooling than expected, a possible sign of unpublished studies; a further check suggested the Montessori advantage held.
- Method note: Kraft pooled 747 US pre-K–12 randomized trials. He also proposes benchmarks that call 0.20 standard deviations or more "large," but only for causal studies, such as randomized trials, on standardized achievement tests. Montessori's 0.24 is not like for like with them, because most of the pooled studies were not randomized. As a general pattern across the field, Cheung and Slavin's review of 645 studies of preschool, reading, math and science programs found effects roughly twice as large in small trials and on researcher-made measures; that is a pattern across education research, not something measured on the Montessori studies.
- Method note: The 2025 trial was read through the federal What Works Clearinghouse review (which rated it "with reservations" for high attrition), the research institute's summary and the authors' lab page, not the journal article. "About 600" is the number of children analyzed. The lab's summary gives a size for the kindergarten gains, but we could not check it against the paper, so no size is printed.
- Method note: In the 2017 study, 141 of the 174 children admitted to it remained. The control children who left had all moved and had scored lower earlier on. By our reading, not the authors',

that would if anything shrink the measured gap.

- Method note: The Catholic high-school study estimated the schools' effect after correcting statistically for which families choose them. We read only its abstract, which describes that correction, not how the comparison students were drawn.
- "Nearly every" in "The line" leaves room for the 2026 microschool growth study, which used an outside test but measured growth against national norms, not against a group of similar children.
- Method note: The Reggio evaluation was non-experimental: it compared groups of children and adults in three Italian cities, not people assigned by chance.
- Method note: Read at the abstract or summary page only: the RAND report, the second Montessori review, the 500-student comparison, the college study, the Catholic high-school study, the Reggio evaluation, both mastery reviews, and the Cheung and Slavin review.
- Method note: The microschool test-score count and the 2026 growth study are secondary reports by The 74. The 36 percent homeschool figure is Johns Hopkins' own analysis of a 2023 U.S. survey (the Cardus Education Survey), not a study we read.
- Method note: The 2006 Milwaukee study also reported results for its five-year-olds; we did not verify them and leave them out.
- No study we found tested how a family should judge a program or its own plan. "Compared to what?" is reasoning from these studies, not a tested method; the other two questions are ordinary common sense.
- "Most" in the title counts the alternatives examined here, not every alternative: Montessori and Reggio have been tested; microschools, Acton-style programs, unschooling and a family's own plan have not (the one homeschool study covers only students who reached college, not any family's plan).
- The kitchen-table scenes, the phone call and the head of school's email are composites.

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