Marshall Memo 971

A Weekly Round-up of Important Ideas and Research in K-12 Education
January 30, 2023

In This Issue:

Quotes of the Week

"In my classroom, we are all about becoming better thinkers, readers, writers, speakers, and people."

Dave Stuart Jr. (see item #4)

"Each time I embark on a new writing project, I find that I've forgotten how to write. I type and delete sentence fragments. I list claims in a random order – then decide that most of them are indefensible. It feels awful. I feel stupid. But from long experience, I know these feelings will eventually subside."

Christopher Grobe (see item #5)

"Every mathematics teacher deserves a coach to question, support, uplift, and empower them. Regardless of your surveys, or test scores, or reputation, there is incredible excitement in learning new strategies and watching them unfold in a room full of students."

Jordan Benedict in "Teaching Is a Journey: Coaching As a Springboard" in *Mathematics Teacher: Learning & Teaching PK-12*, January 2023 (Vol. 116, #1, pp. 62-64)

"In your class, who's doing the math?"

A question posed to a Jordan Benedict by his math coach (quoted in *ibid*.)

"… I have zero training – and less interest – in hunting down or trying to defeat academic dishonesty. I will help you encounter interesting, challenging, sometimes difficult ideas, and I will help you ponder them rigorously with your classmates. It will expand and strengthen your mind, and thereby enlarge your potential as a human being. In the process you will earn my respect and – what is more important – you will respect yourself. Or, you can choose to cheat to get a grade you did not earn. That door is open for you, if that's the person you want to be. It's your education, paid for with your, or someone else's, money. Ultimately, the person you will have cheated is yourself."

Robert Miller, professor of philosophy and religious studies at Juniata College, in a

letter to *The New York Times* quoting what he writes to his students, January 29, 2023

"We should expect high levels of competence from our public leaders, not the ability to walk on water. And we should expect citizens to participate fully in public affairs, not expect to be saved."

Jerome Murphy, former Harvard Graduate School of Education professor and dean, in a letter to *The New York Times* on New Zealand prime minister Jacinda Ardern's unexpected resignation, January 26, 2023

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1. Deliberate Practice and Beliefs About Intelligence

In their 2016 book *Peak: Secrets from the New Science of Expertise*, Anders Ericsson and Robert Pool say that *deliberate practice* is the key to expert performance. This kind of practice is well understood as the pathway to success in areas like chess, violin, dance, gymnastics, and figure skating, where there are clear criteria for expert performance. Ericsson and Pool describe the key characteristics of deliberate practice:

• It is designed and overseen by a teacher or coach who is familiar with what expert performers do and how those abilities can best be developed.

• Students are pushed outside their comfort zone, constantly challenged to try things just beyond their current level of performance. "Thus," say Ericsson and Pool, "it demands maximal effort, which is generally not enjoyable."

• Deliberate practice requires setting specific goals and focusing on improving performance toward those targets in small, specific ways that are visible to the student – who can see the benefits of practice.

• It is *deliberate* – that is, it involves the student's full attention, not just following the teacher's or coach's directions but focusing on the goal and increasingly taking ownership for improvement.

• Deliberate practice includes feedback and continuous modification in response to the feedback, with the student increasingly self-monitoring, spotting mistakes, and making adjustments.

• It depends on clear "mental representations" of what expert performance looks like. These "make it possible to monitor how one is doing, both in practice and in actual performance," say Ericsson and Pool. "They show the right way to do something and allow one to notice when doing something wrong and to correct it."

• Deliberate practice involves building on or modifying previously acquired skills in specific ways. That means teachers need to know where students are on a skill continuum and make sure the correct fundamental skills are in place.

What about the "ten thousand hours" rule proposed by Malcolm Gladwell in his book *Outliers*? Is that the amount of practice required to reach very high levels of performance? Only partly true, say Ericsson and Pool. Simply putting in the hours is not enough, and there's nothing magical about ten thousand hours. But they believe it does take "a tremendous amount of effort exerted over many years" to reach expert status – and it has to be *deliberate* practice, with all the characteristics listed above, for those hours to pay off.

Ericsson and Pool go on to discuss three prevailing myths about improving performance that get in the way of success:

First is the belief that abilities and potential are limited by one's genes. This crops up in statements like, "I'm no good with numbers" and "I'm just not creative." With deliberate practice, say the authors, pretty much anyone can improve in pretty much any area they choose to focus on: "We can shape our own potential." When one corporate leader hears an "I can't…" statement in a meeting, he throws a red NFL penalty flag on the table, dramatically telling the person who expressed negative thoughts to stop and revise them.

The second myth is that if you work at something long enough, you're bound to get better. But doing the same thing over and over in the same ineffective way is "a recipe for stagnation and gradual decline," say Ericsson and Pool.

The third misconception is that all it takes to improve is effort – trying hard is the key. But with any area requiring skilled performance, they say, "unless you are using practice techniques specifically designed to improve those particular skills, trying hard will not get you very far."

"The deliberate practice mindset offers a very different view," continue Ericsson and Pool: "anyone can improve, but it requires the right approach. If you are not improving, it's not because you lack innate talent; it's because you're not practicing the right way. Once you understand this, improvement becomes a matter of figuring out what the 'right way' is… The bottom line is that no one has ever managed to figure out how to identify people with 'innate talent.' No one has ever found a gene variant that predicts superior performance in one area or another, and no one has ever come up with a way to, say, test young children and identify which among them will become the best athletes or the best mathematicians or the best doctors or the best musicians."

How about the role of intelligence in expert performance? Many people believe that IQ is strongly associated with expertise. Ericsson and Pool found that with chess masters, musical virtuosi, and London taxi drivers who pass the extraordinarily difficult Knowledge test, it was only in the very early stages that higher intelligence or talent gave people a slight edge. At the level of chess master, concert violist, and tennis champion, there is no correlation with IQ. True, science professors have higher average IQs than the general population, but looking at scientific productivity and Nobel prizes, there's no correlation with measured intelligence.

These findings drive home an important point for educators: we need to let go of the innate ability paradigm. It's easy to assume that a child entering kindergarten who doesn't know letters and colors is less intelligent, but those deficits are almost certainly a product of the home literacy environment. What's tragic is that a teacher's or coach's unconscious conclusions about a child's intelligence and talent are likely to become self-fulfilling in reading and math classes, the music room, and the playing field.

"If you assume that people who are not innately gifted are never going to be good at something, then the children who don't excel at something right away are encouraged to try something else. The clumsy ones are pushed away from sports, the ones who can't carry a tune right away are told they should try something other than music, and the ones who don't immediately get comfortable with numbers are told they are no good at math. And, no surprise, the predictions come true… On the flip side, of course, the children who get more attention and praise from their teachers and coaches and more support and encouragement from their parents do end up developing their abilities to a much greater degree than the ones who were told never to try – thus convincing everyone that their initial appraisals were correct. Again, self-fulfilling."

It's natural to want to put our resources – time, money, teacher effort, support – where they will be the most productive, say Ericsson and Pool. "There is usually nothing nefarious going on here, but the results can be incredibly damaging," they say. "The best way to avoid this is to recognize the potential in all of us – and work to find ways to develop it."

Peak: Secrets from the New Science of Expertise by Anders Ericsson and Robert Pool, 2016 (Houghton Mifflin/Harcourt)

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2. Fostering Productive Mindsets in Mathematics Classes

In this article in *Mathematics Teacher: Learning & Teaching PK-12*, Sam Rhodes, Alesia Mickle Moldavan, and Montana Smithey (Georgia Southern University) and Allison DePiro (CueThink) say every interaction students experience in math classes "affects the identities that they form about themselves and about the subject… The words we use and the ways in which we shape our instruction create story lines and narratives of how students view themselves as mathematics learners… Some students become confident in their mathematical abilities; other students question whether they belong as learners and doers of mathematics."

Rhodes, Moldavan, Smithey, and DePiro list some teacher statements that might have a negative impact:

- *Don't worry, I'm not a math person either; I got that from my mom.*
- *You're so smart at this!*
- *Before we start, I'm going to show you how to solve the problem so you don't skip any steps.*
- *Always do math in pencil so you can erase your mistakes.*
- *We have to get through this lesson because it is on the test; let's all solve it this way.*

The authors suggest five maxims that do the opposite, growing confident and proficient math learners:

• *Everyone is a math person*. When people are asked what it means to be a "math person," they often use words like *smart, fast at arriving at the correct answer,* and *able to reproduce mathematical procedures with ease*. If teachers praise traits like these, students will adopt a fixed mindset about math ability, with some coming to the conclusion that they're "not a math person." To nurture a growth mindset, teachers need to watch for and call out creativity, flexible thinking, courageous risk-taking, persistence, and hard work. Rather than grouping students by "ability," teachers might group them by the different ways they approach a math problem.

• *Everyone is on a math journey*. Many educators and parents think of the math curriculum as a linear progression, saying things like, *The students are far behind, You should already know this,* and *This should be easy*. But in any given classroom, students are at different points on the road to math proficiency, say the authors; teachers should acknowledge and encourage different solution strategies, and orchestrate conversations in which students compare and debate how they are solving problems, "resulting in deeper and more powerful learning for all students."

• *Making mistakes is an important part of learning*. Mastering mathematics is like learning to ride a bicycle: making mistakes and taking spills are inevitable. What's different with bike learning is that the adult never doubts that the child will learn how to ride on their own, accepts falls as part of the process, and celebrates incremental gains (*Look how far you rode this time!*). Posing interesting and challenging math problems, expecting and supporting productive struggle, noticing what's right about wrong answers, and fostering a classroom culture in which it's safe to make mistakes – all this is key to effective math instruction.

• *Everyone has rich knowledge and experiences*. "Young children often approach learning with an incredible amount of enthusiasm and curiosity," say the authors. "Asking students *what they notice and wonder* about a problem taps into this innate curiosity and positions students as capable doers of mathematics. Asking what they notice and wonder also creates opportunities for students to draw on their lived experiences and cultural backgrounds, thereby inviting that knowledge into the classroom."

• *Good mathematical thinking is at least as important as getting the correct answer*. A lot of learning happens before *and after* students have arrived at the answer, say the authors. Too much emphasis on right answers can distract from learning opportunities as students wrestle with a problem, debate the most efficient and elegant solution strategies, think about what's wrong with incorrect answers, and consider how an answer might be wrong but reveal a promising approach.

"Five Keys for Growing Confident Math Learners" by Sam Rhodes, Alesia Mickle Moldavan, Montana Smithey, and Allison DePiro in *Mathematics Teacher: Learning & Teaching PK-12*, January 2023 (Vol. 116, #1, pp. 8-15); Rhodes can be reached at srhodes@georgiasouthern.edu.

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3. A Hands-On Math Problem for Third Graders

In this *Mathematics Teacher* article, Connecticut teacher Matthew Kandel says many of the word problems students are asked to solve in math classes use imaginary characters in one-dimensional, make-believe situations. Students read the problem, pick out the numbers, decide what operation to use, and compute. "How can we teach students the possibilities and value of mathematics," asks Kandel, "if they only ever examine hypothetical situations?"

The antidote, he believes, is having students model with complex, authentic, real-world problems where they have to decide what's most important, gather data, do hands-on measurements and calculations, and use their strengths and perspectives to arrive at a solution. Here's what he came up with to teach his third graders the skill of measuring with precision to a quarter inch.

How many times can a pencil be sharpened before it is too small to use?

As groups of students tackled the problem, they had to answer several questions:

- *How long is a new pencil?*
- *What is the shortest pencil length that can still be written with?*
- *How much length does each sharpening remove?*
- *How many cranks of the pencil sharpener should be the standard for one sharpening?*
- *Is the same amount removed every time?*
- *How can the key data points be displayed?*

As students began taking measurements, they discovered that the lengths they needed to measure didn't fall directly on the inch and half-inch markings on their rulers.

"This was a perfect time to introduce the target skill," says Kandel: "measuring to the nearest quarter inch. The attention and motivation exhibited by students is unrivaled by the traditional class in which the skill comes first, the problem second." Students quickly learned how to measure to a quarter inch. One group wasn't satisfied with this level of precision and asked how to measure to the nearest eighth of an inch. Kandel insisted that all students in each group (which were mixed-achievement) do actual measuring.

Over several days, groups made charts on which they recorded the length of a pencil after each sharpening, took turns on the pencil sharpener, made graphs, and debated how short was too short to be usable (answers differed and it became clear how assumptions affect mathematical outcomes). When students had to add scales to the *x* and *y* axes of their graph, the class paused and Kandel taught them about number lines and mixed fractions.

When student groups finally reported their conclusions, there were different answers to Kandel's question. These led to a discussion about accuracy: which was the most accurate? "Students were asked to think deeply about their methods and to defend their results," says Kandel.

"The Life and Times of a Third-Grade Pencil" by Matthew Kandel in *Mathematics Teacher: Learning & Teaching PK-12*, January 2023 (Vol. 116, #1, pp. 25-28); Kandel can be reached at kandell@kelloggschool.org.

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4. Keeping Low-Tech Educational Goals in Mind

In this online article, teacher/writer Dave Stuart Jr. sees ChatGPT as the latest in a succession of digital innovations – MOOC courses, individualized learning platforms, YouTube teaching videos, distance learning – all of which, he says, "made my instructional abilities seem like those of a cognitively average cow."

Through all this, he's tried to keep his high-school students focused on one goal. "In my classroom," he says, "we are all about becoming better thinkers, readers, writers, speakers, and people. And so, in a world with ChatGPT cranking out cogent written responses to school prompts, guess what? That old Everest statement is as relevant as it's ever been, thanks completely to the fact that I made it to be plain and timeless."

The bigger problem, says Stuart, is that "most students don't know what school is for." They are not hearing a clear and compelling rationale from most of the adults in their lives. "As a result," he believes, "most students experience school as something done to them rather than a work of love crafted for them."

It's in that context that Stuart believes we should be thinking about ChatGPT. Yes, students can pass off a computer-generated essay as their own and maybe get by on the short run. But if they have the bigger goal in mind, students will understand that "we're doing this work of learning not simply because we'll use it someday – bleck – but because the journey of learning is going to transform us into people we'll never become if we forgot it."

"ChatGPT: No Thing But a Chicken Wing" by Dave Stuart Jr. on his website, January 24, 2023; Stuart can be reached at dave@davestuartjr.com.

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5. ChatGPT, Writing, and Thinking

"The limits of the technology are where real writing begins," says English professor Christopher Grobe (Amherst College) in this article in *The Chronicle of Higher Education*. Yes, there are students who will take advantage of artificial intelligence to cut corners, but Grobe believes they will be missing out on a vital part of intellectual development. He describes his own struggles:

"Each time I embark on a new writing project, I find that I've forgotten how to write. I type and delete sentence fragments. I list claims in a random order – then decide that most of them are indefensible. It feels awful. I feel stupid. But from long experience, I know these feelings will eventually subside. Soon, I'll see the outline of an argument; I'll trace it badly, then better, then well. At some point I'll start imagining an audience whose phantom quibbles and confusions can be addressed by writing better."

Grobe believes the panic about ChatGPT among college and secondary-school educators is mostly about how they will *assess* students' writing – judging and grading five-paragraph essays and responses to writing prompts. But if we think of writing as an opportunity to develop students' thinking skills, he says, artificial intelligence "looks more like

an opportunity than a threat." We can aim to develop students "who understand the difference between human and machine intelligence, and who therefore won't mistake its glibbest outputs from the horizon of all human thought."

Grobe experimented with this in one of his classes. He prompted ChatGPT to write an essay on the history of podcasts, and then had students analyze what the bot produced. They quickly saw the factual errors, words (like *additionally*) that didn't logically connect thoughts, vague and unsupported generalizations (*most, many, some*), and a failure to cite evidence. All this, says Grobe, is because the bot "is not actually dealing with facts about the world, but with the proximity of various clusters of words in a hugely multidimensional language model… Being able to recognize these limitations, we are able to use them but also to think beyond them."

For writers who struggle with getting started on a piece, as he does, ChatGPT can be used to generate a rough first draft, and then the real work begins: revising, creating logical links between claims, citing sources, getting feedback, polishing, and sharing.

"Why I'm Not Scared of ChatGPT" by Christopher Grobe in *The Chronicle of Higher Education*, February 3, 2023 (Vol. 69, #11, pp. 32-33); Grobe can be reached at cgrobe@amherst.edu.

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6. A Daily Huddle for a School Leadership Team

In this *Edutopia* article, Paul Young (Ohio University/Lancaster) says principals who multitask while trying to do everything (phone calls, e-mails, drop-ins, paperwork deadlines, student behavior) are likely to use their time inefficiently, make mistakes, and get exhausted. "If you're switching between activities at a rapid rate," says Young, "chances are your office staff is, too" – and that's especially true for the school secretary.

Young has a suggestion: the principal convenes a short meeting every morning – a huddle – with core team members:

- Secretary
- Assistant principal
- Nurse
- Social worker
- Lead custodian
- Cafeteria manager
- Before- and after-school coordinators
- Anyone else who's involved with daily operations.

The purpose of the meeting is not to plan the week or long-term projects – there are other meetings for that – but to check in with the team on what *today* has in store: goals and priorities, appointments, visitors, challenges, sharing key information.

Young, who has been a teacher, principal, after-school director, principal association president, and mentor to school leaders, has the following suggestions for the huddle:

- Gather at the same time and place each day, ideally before students arrive.

- Conduct the meeting standing in a circle.
- Keep it short – 15 minutes or less.
- The principal speaks first, then everyone else speaks, going around the circle.
- Each person briefly (in a minute or two) shares priorities, important status updates, shout-outs and accomplishments, and possible roadblocks.
- Problems are identified but not discussed – that takes place in separate meetings afterward.

Young has found that regular huddles like this have a number of benefits:

• *Smoother office operations* – When the secretary and administrators are aware of priorities and scheduled meetings, they are more likely to know when an interruption by a colleague, student, parent, or visitor can be squeezed in.

• *Setting limits on an open-door policy* – When team members are aware of an important deadline and a block of time when the principal must not be interrupted, they can act as first responders and gatekeepers.

• *Team communication* – "Not only will your team know your priorities for the day," says Young, "but they'll learn about each other's as well. Communication will become free and open."

• *One team, one mission* – At their best, daily huddles strengthen a school's values and sense of direction. "You can't create a culture alone or in isolation," says Young. "Share the responsibility for success."

• *Morale* – Discussing goals and priorities and getting direction from the principal can energize team members, focusing the way they spend their time and empowering them to fend off low-priority distractions and prevent crises. A daily huddle "may be the best meeting you'll ever have," concludes Young.

"How a Morning Huddle Can Organize a Principal's Day" by Paul Young in *Edutopia*, January 26, 2023

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7. Jennifer Gonzalez on the *Street Data* Project

Jennifer Gonzalez was so impressed by the 2021 book *Street Data* by Shane Safir and Jamila Dugan that she spent much of 2022 working with them, via Zoom, implementing their proposed process in two schools – one in San Francisco and one in British Columbia. Gonzalez, Safir, and Dugan have produced nine videos of the interventions, which consist of sitting with the most marginalized and troubled students in the school, listening to their stories, and making changes in classrooms and school policies. The first six of the videos have been released on YouTube and are available on this link, along with an interview with the authors and an introduction by Gonzalez. The remaining videos will be released in the coming weeks.

"Watch Two Schools Experience the Street Data Process" by Jennifer Gonzalez, Shane Safir, and Jamila Dugan, January 29, 2023

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If you have feedback or suggestions,
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About the Marshall Memo

Mission and focus:

This weekly memo is designed to keep principals, teachers, superintendents, and other educators very well-informed on current research and effective practices in K-12 education. Kim Marshall, drawing on 48 years' experience as a teacher, principal, central office administrator, writer, and consultant lightens the load of busy educators by serving as their "designated reader."

To produce the Marshall Memo, Kim subscribes to 60 carefully-chosen publications (see list to the right), sifts through more than a hundred articles each week, and selects 5-10 that have the greatest potential to improve teaching, leadership, and learning. He then writes a brief summary of each article, pulls out several striking quotes, provides e-links to full articles when available, and e-mails the Memo to subscribers every Monday evening (with occasional breaks; there are 50 issues a year). Every week there's a podcast and HTMI version as well.

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Core list of publications covered

Those read this week are underlined.

All Things PLC
American Educational Research Journal
American Educator
American Journal of Education
American School Board Journal
AMLE Magazine
ASCA School Counselor
ASCD SmartBrief
Cult of Pedagogy
District Management Journal
Ed. Magazine
Education Digest
Education Gadfly
Education Next
Education Week
Educational Evaluation and Policy Analysis
Educational Horizons
Educational Leadership
Educational Researcher
Edutopia
Elementary School Journal
English Journal
Exceptional Children
Harvard Business Review
Harvard Educational Review
Independent School
Journal of Adolescent and Adult Literacy
Journal of Education for Students Placed At Risk (JESPAR)
Kappa Delta Pi Record
Kappan (Phi Delta Kappan)
Knowledge Quest
Language Arts
Learning for Justice (formerly Teaching Tolerance)
Literacy Today (formerly Reading Today)
Mathematics Teacher: Learning & Teaching PK-12
Middle School Journal
Peabody Journal of Education
Principal
Principal Leadership
Psychology Today
Reading Research Quarterly
Rethinking Schools
Review of Educational Research
School Administrator
School Library Journal
Social Education
Social Studies and the Young Learner
Teachers College Record
Teaching Exceptional Children
The Atlantic
The Chronicle of Higher Education
The Journal of the Learning Sciences
The Language Educator
The Learning Professional (formerly Journal of Staff Development)
The New York Times
The New Yorker
The Reading Teacher
Theory Into Practice
Time
Urban Education