Marshall Memo 761

A Weekly Round-up of Important Ideas and Research in K-12 Education
November 12, 2018

In This Issue:

Quotes of the Week

"If we want our students to actually learn the facts and concepts and ideas we're trying to teach them, they have to experience those things in some way that rises above abstract words on paper. They have to process them. Manipulate them. To really learn in a way that will stick, they have to DO something… When we do little more than have students copy down information or fill out worksheets, we are making school an awful place to be."

Jennifer Gonzalez (see item #2)

"Engaging students in mathematical writing both extends students' communication skills and leverages the power of writing to enhance learning within the discipline of mathematics."

Madelyn Colonnese, Christina Amspaugh, Steven LeMay, Kyle Evans, and Kathryn Field (see item #6)

"Interestingly, giving advice rather than asking for it may be an even more effective way to overcome motivational deficits, because it boosts confidence and thereby spurs action."

Ayelet Fishbach (see item #1)

"Longhand notes appear to require the learner to process the information, making decisions about what information is most important, synthesizing, and putting concepts into their own words. All of these are critical thinking skills that are indicators of learning."

Douglas Fisher and Nancy Frey (see item #4)

"I now believe that failure to effectively weed our [library] collections is nothing less than a form of censorship. If we don't weed effectively, either our students need a machete to bushwhack their way to engaging, relevant, and accurate materials we have or they simply don't attempt to explore the shelves because what they want is buried in the mess of weeds."

Alaska school library supervisor Ann Morgester in "Transforming My Perspective" in *Knowledge Quest*, November/December 2018 (Vol. 47, #2, p. 22-27), no e-link; Morgester can be reached at Morgester_ann@asdk12.org.

1. How to Handle the Parts of Your Job You Don't Enjoy

In this *Harvard Business Review* article, Ayelet Fishbach (University of Chicago) says that effective self-motivation "is one of the main things that distinguishes high-achieving professionals from everyone else." But sometimes, in the words of Baron Munchausen, motivating yourself can feel like pulling yourself out of a swamp by your own hair. Individuals differ on what works for them, but after twenty years of research on motivation, Fishbach and her colleagues suggest four strategies that are effective for almost everyone:

• *Focus on details*. General goals – "doing my best" – or goals with extrinsic rewards or consequences, are much less effective than a goal that is measurable and contains its own reward – attending a yoga class or a phone-free Saturday. When immersed in a challenging activity, think about elements that you do find enjoyable, or think expansively about how finishing it will show colleagues your skills and grit. Finally, advises Fishbach, "offset drudgery with activities that you find rewarding – for instance, listen to music while tackling that big backlog of e-mail in your in-box, or do boring chores with friends, family, or your favorite colleague."

• *Identify effective rewards*. It's nice to treat yourself to something after completing a difficult task, but this can undermine performance if the treat is poorly chosen – for example, indulging in pizza after losing weight. Negative "rewards" can work: studies have found that a consequence for *not* accomplishing a goal – for example, having to pay $1.40 for each day you don't walk 10,000 steps – is more effective than receiving $1.40 a day for doing it.

• *Deal with the pesky slump*. There's a tendency to slack off or cut corners in the middle of an extended task. To counteract this, Fishbach suggests creating "short middles" – breaking the goal into smaller subgoals so there's less chance of losing energy and momentum. Another idea is taking stock of what's been accomplished up to the midpoint of the project and then focusing on what remains to be done.

• *Harness the influence of others*. It's helpful to talk with high-performing colleagues about their specific strategies (versus passively observing them, which can be demotivating). "Interestingly," adds Fishbach, "giving advice rather than asking for it may be an even more effective way to overcome motivational deficits, because it boosts confidence and thereby spurs action." A final strategy when slogging through a challenging period is thinking about those whose approval you most cherish: close friends, family, mentors. "Thinking of those people and our desire to succeed on their behalf," says Fishbach, "can help provide the powerful intrinsic incentives we need to reach our goals."

"How to Keep Working When You're Just Not Feeling It" by Ayelet Fishbach in *Harvard Business Review*, November-December 2018 (Vol. 96, #6, p. 138-141), https://bit.ly/2SsXUsM; Fishbach can be reached at ayelet.fishbach@ChicagoBooth.edu.
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2. Jennifer Gonzalez on Low-Level Seatwork and Passive Learning

In this *Cult of Pedagogy* article, Jennifer Gonzalez describes how she and her husband tried to help one of their elementary-school children do a confusing homework assignment and get ready for a test on weather systems. They asked whether the teacher had drawn a diagram on the board to clarify how high- and low-pressure systems work. "No," said their daughter. Did the teacher get one group of students to act like a cold front and another like a warm front to dramatize the way the weather forces interacted? The girl looked at them like they were crazy and said, "No." So how was the concept presented? "Well, we just read the book," she said. "We just opened it up to page 36, and then she would read a little bit to us, and then explain something, and then we would read a little bit more, and then she would say something else, and that was it." Was this the way the teacher always explains things? "Basically," shrugged their daughter.

"This is not good," says Gonzalez, who sees and hears about this kind of coverage-oriented, low-level instruction in all too many U.S. classrooms. "If we want our students to actually learn the facts and concepts and ideas we're trying to teach them," she says, "they have to experience those things in some way that rises above abstract words on paper. They have to process them. Manipulate them. To really learn in a way that will stick, they have to DO something." And if students are paying attention in class and still failing tests, the problem is not them, says Gonzalez; it's the method of teaching.

The problem, she believes, is due to weak elements in some lesson plans. The traditional format calls for:

- Anticipatory set to capture students' attention and clarify objectives;
- Direct instruction via PowerPoint slides, lecture, reading, video, or some other way of presenting key information;
- Guided practice and application, with students applying what they've just been taught, with the teacher's support;
- Independent practice and application;
- Assessment to check for understanding.

Gonzalez believes the third step – guided practice – is in many cases not robust enough; students skip straight to independent practice, which might just be repetitions of what they were told; they're not actually processing or applying the material in a meaningful way. And when students take notes from PowerPoint slides, their notes are often incomplete and (to students studying for a test or parents trying to help) incomprehensible.

Then there's the problem of class content and homework that aren't aligned with state standards. Gonzalez asks whether social studies standards, for example, "say that kids need to be able to identify names of significant people in historical periods, or be able to regurgitate facts about certain cultures or regions. No. They want students to be able to understand the

relationships between social movements and changes and other influences. They want students to be able to explain and analyze things." She pulled up Wisconsin's middle-school history standards and declared them "gorgeous":

- Use historical evidence for determining cause and effect.
- Analyze, recognize, and evaluate patterns of continuity and change over time and contextualization of historical events.
- Connect past events, people, and ideas to the present, use different perspectives to draw conclusions, and suggest current implications.
- Evaluate a variety of primary and secondary sources to interpret the historical context, intended audience, purpose, and/or author's point of view.

"If students are actually doing these things in Wisconsin middle schools, that would be amazing," says Gonzalez. "But if Wisconsin is like a lot of other places, my guess is that students are sitting through PowerPoint lectures, copying notes from the PowerPoints, and transferring that information to worksheets and tests."

"The other problem with this kind of teaching is that it makes kids hate school," she continues. "When we do little more than have students copy down information or fill out worksheets, we are making school an awful place to be… My own kids hate school more and more the older they get. And they rarely bring home anything lower than an A."

Why is this happening? Gonzalez believes that high-stakes testing has driven some teachers to believe that bad teaching is the way to raise test scores. There's also pressure to produce detailed lesson plans and document everything. And there are gaps in teacher preparation, not imparting all-important strategies for getting students engaged.

Policy decisions are necessary to change some of this, but Gonzalez believes there are immediate fixes at the school level, like adding activities to every lesson plan "that will help students build more pathways in their brains, see patterns, connect to previous knowledge, and experience some novelty so they remember the material better." Some specific steps:

- Sorting – Organizing and labeling material by similarities and differences and getting students to do something that requires them to activate schema and create connections.
- Doing and making – Short role-plays, simulations, and hands-on projects can help students visualize relationships and processes.
- Discussion – Even a few minutes of talk – especially if all students are participating and taking a stance on the content and backing it up with evidence – can bring a class alive and deepen understanding.
- Graphic representations – When students put information into any kind of visual form, it can produce breakthroughs in learning.
- Writing to learn – Stopping instruction periodically and having students write short summaries and give their opinions helps them synthesize information that they passively took in.
- Mini-projects – Major productions aren't always necessary, says Gonzalez. One- or two-day projects can accomplish many of the same goals – for example, students in a

history class rank-ordering leaders in early America and backing up their choices with evidence.

- Anticipation guides – Before a unit, students state their opinions on key issues, priming them for what they're about to learn and letting them check later to see how on-target their opinions were.
- Quality note-taking – "Although students seem to be taking a lot of 'notes' in class," says Gonzalez, "it's not clear that this is being done in a way that results in high-quality learning." Most students need explicit instruction in how to take notes that will be helpful when they study.
- Retrieval practice – For material that must be memorized and concepts that require more complex processing, teachers need to get students to use the proven technique of retrieving key information at strategic intervals.
- Collaboration – With most of these activities, having students work in pairs or small groups is an enhancer, bringing variety, novelty, and more opportunities to process and understand what's being taught at a deeper level. Group work also makes school more fun.

"To Learn, Students Need to DO Something" by Jennifer Gonzalez in *Cult of Pedagogy*, November 4, 2018, https://www.cultofpedagogy.com/do-something/

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3. A Small Rural School Figures Out Professional Learning Communities

In this article in *All Things PLC*, Wyoming principal Breez Longwell Daniels describes how her 220-student middle school worked to implement PLCs. Several factors made this a challenge:

- All 16 teachers in the school were singletons (no same-grade/same subject colleagues), and there was a natural tendency to work in isolation.
- Because there were only two or three teachers in each department, students often saw teachers several times as they moved from fifth to eighth grade.
- In a school this size, says Daniels, "there is truly no place to hide a teacher who gets consistently poor results… Student data are teacher data."
- But when state test-score results were reported each year, the culture of the school was to avoid discussing them "for fear of embarrassing a single teacher in a small town."

How could PLCs function in this environment?

The school started by setting up vertical subject-area teams in math, ELA, science, social studies, and other subjects and having them meet at least weekly. Each team tackled the first two DuFour questions: *What do we want our students to know and be able to do?* and *How will we know when they are successful?* Content teams identified essential learnings for each grade, created a grade 5 to 8 vertical pacing plan, agreed on common vocabulary and procedures, and crafted end-of-grade and interim assessments of student learning.

Then, after each interim assessment, teams began looking at each teacher's data, student by student and skill by skill. The school adopted a football field metaphor for student

progress: “Every student needs to gain yardage, or measurable growth, from fall to spring,” says Daniels. “The overarching goal is 100 percent academic growth.” A SMART goal was established: zero percent of students below the 20th percentile, 80 percent above the 50th percentile, and 40 percent of those students at or above the 80th percentile in reading, math, and science. This focus on the 20th, 50th, and 80th percentiles “allows teachers to monitor student growth from three perspectives,” says Daniels. “By looking at three distinct data points within the content area and grade level, we can clearly see trends and analyze cohort growth as a whole.” Because the school is so small, changes in performance by one or two students can have a major impact on the data – which is a good thing for transparency and follow-up.

“This extra push toward academic excellence at the 80th percentile,” says Daniels, “is directly linked to success on the ACT in high school and is a game-changer in a small rural community where students may not be pushed to the highest levels of academic achievement.”

The dynamic in the vertical team meetings was powerful, she says, since teachers “know each others’ students because they either taught them a year or two before or they will be teaching them in the next year or two.” From the start, teachers realized that “all students are our students” and began sharing effective strategies and fixing what wasn’t working. Students realized that their content teachers were talking to each other all the time. They might hear a teacher say, “I know Mrs. Smith showed you how to solve the problem this way” and draw the same illustration on the board that students had seen the year before. Teachers created “memory loops for students through spiraling and scaffolding skills.”

Who would focus on the third and fourth DuFour questions: *What do we do when students struggle with new learning?* and *What do we do when students are ready for a challenge?* This was tackled by horizontal grade-level teams, who often shared the same daily schedule and were in touch with the same corps of parents. “The grade-level content teacher,” says Daniels, “is the core specialist and provides the time, structure, and differentiation necessary to support student learning.” They “build fluid and flexible schedules for students to get the support they need in each content area at that grade level.” Content teachers took full responsibility for their students’ progress, seldom outsourcing responsibility to math or reading specialists outside their classrooms.

“It is imperative that small schools create a culture where data transparency is the norm,” Daniels concludes. “Accountability specific to systems of support for student learning must hinge on teachers consistently being considered the essential factor in student success. In this no-excuses environment, some teachers will choose to walk away, while others will purposefully choose to be part of a winning team.”

How did the school do? Students made dramatic progress and the school won several awards, including being named a Model PLC School by Solution Tree in 2017. And Daniels was named National Distinguished Principal and Wyoming Principal of the Year in 2017.

“Growing a PLC from Rural Roots” by Breez Longwell Daniels in *All Things PLC*, Fall 2018 (p. 10-15), no e-link available

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4. Digital or Print: Which Is Better for Comprehension and Note-Taking?

In this article in *Journal of Adolescent and Adult Literacy*, Douglas Fisher and Nancy Frey (San Diego State University and Health Sciences High and Middle College) summarize three studies comparing digital and hard-copy reading and note-taking.

• Singer and Alexander (2017) – This review of 36 empirical studies compared reading comprehension among both middle-school and college students. One finding was that when the length of a reading passage didn't require scrolling on a digital device, students' reading comprehension was the same. With longer passages, students who read paper texts did better. The study also found that students reading print material did better on questions that asked for more-detailed and nuanced information.

• Mangen, Walgermo, and Bronnick (2013) – The researchers had Norwegian tenth graders read online or hard-copy narratives and informational passages of about 1,500 words and found that students who read in hard copy did better on comprehension. The researchers had two theories. First, they speculated that hard-copy texts provide readers with "unequivocal and fixed spatial cues for text memory and recall… [T]he absence of touch and physical handling of the pages of the digital form of the articles may have 'disrupted the mental maps of the text…'" The authors speculated that students reading online articles were overconfident in predicting their performance, compared to those who read hard copies. Paper texts seemed to involve "more effortful learning" in contrast to the "fast and shallow reading" of digital material.

• Mueller and Oppenheimer (2014) – This study compared laptop to hand-written note-taking in college classes. The researchers found that laptop note-takers got more words down, often verbatim phrases and sentences from the content. By contrast, longhand note-takers wrote fewer words but did more paraphrasing, capturing material at a more conceptual level. Tested 30 minutes afterward, both groups did comparably on factual items, but the longhand note-takers did significantly better on conceptual questions. In a second study with different participants, laptop note-takers were urged to take conceptual versus transcription-type notes, but this made no difference to the kind of notes they took, and they still did less well on conceptual questions than longhand note-takers.

Mueller and Oppenheimer conducted a third experiment (with different participants), this time testing students on factual and conceptual content a week later on the material they'd heard and taken notes on. They divided students into four groups:

- Laptop note-takers not allowed to study their notes before the test;
- Laptop note-takers allowed to look at their notes;
- Longhand note-takers not allowed to study their notes;
- Longhand note-takers allowed to study their notes.

The first three groups all performed poorly on the test. Only the group that took longhand notes and then studied them did well. "Longhand notes," conclude Fisher and Frey, "appear to require the learner to process the information, making decisions about what information is most important, synthesizing, and putting concepts into their own words. All of these are critical thinking skills that are indicators of learning."

"Reading and Writing on Screen and Paper" by Douglas Fisher and Nancy Frey in *Journal of Adolescent and Adult Literacy*, November/December 2018 (Vol. 62, #3, p. 349-351), https://ila.onlinelibrary.wiley.com/doi/pdf/10.1002/jaal.901; the authors can be reached at dfisher@mail.sdsu.edu and nfrey@sdsu.edu.

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5. Understanding and Supporting Transgender Youth

In this article in *Phi Delta Kappan*, Melinda Mangin (Rutgers University) advises K-12 educators on how they can help transgender students feel welcome and safe at school. "Too frequently," she says, "schools promote gendered practices that cause distress for children, often unintentionally." For starters, Mangin clarifies the distinction between *sex, gender,* and *sexuality*:

• *Sex* is a combination of physiological characteristics, including chromosomes, hormones, and anatomy, that makes a person male or female. About 98% of people are born either male or female, but between 1.7% and 2.0% of babies' physical bodies don't conform to the standard definitions of male and female; they are *intersex*.

• *Gender* is a person's internal sense of identity. For about 99.4% of people, this matches their physiological characteristics at birth – male-male, female-female (a new term for them is *cisgender*). For about .6% of adults in the U.S. – roughly 1.4 million people – gender doesn't match physical characteristics; they are *transgender*. (*Gender expansive* is a term for people who challenge cultural expectations regarding gender roles, identities, expressions, or norms; they might describe themselves as non-binary, gender-fluid, or genderqueer.)

• *Sexuality* is sexual orientation, the vector of sexual attraction: straight, gay, lesbian, bisexual, pansexual, etc. Both cisgender and transgender people can be anywhere on the spectrum; 90 to 97% have a heterosexual orientation.

"New terms and concepts can be confusing," says Mangin, "and many people fret about how they can know someone's gender. If you need to address or speak about a person whose gender you're unsure of, it's often easy enough to use their name instead of pronouns. If you say the wrong thing, remember that we all make mistakes – that's how we learn."

Developmental psychologists agree that children's gender identity develops by the age of three, but we don't have good data on percentages of gender identity for young children. In the teen years, recent studies have found that about 0.7 percent of youth 13-17 identify as transgender. That means secondary schools with more than 143 students may have at least one transgender student.

Some of these students may enter school having affirmed their gender identity; others may come to terms with it during their years in school, adopting different hairstyles, clothing, names, and pronouns. The way educators (and parents) respond makes a big difference: "failure to recognize transgender people's identity," says Mangin, "exacerbates gender dysphoria and can lead to feelings of inadequacy, humiliation, self-hatred, depression, and even self-harm." One study found that 54% of transgender students were verbally harassed, 24% were physically attacked, and 13% were sexually assaulted in K-12 schools because of their gender identity (or a perception of what it was).

Some districts wait until there is an incident (or a lawsuit) to clarify transgender policies. Mangin believes it's better to be proactive, enunciating policies to guide educators on a range of issues: privacy and disclosure, student records, names and pronouns, dress codes, access to bathrooms and locker rooms, harassment, and bullying.

The principal's leadership is vital: organizing professional reading, discussions, and presentations that start with the assumption, says Manchin, that staff members lack "information, not compassion." The principals she interviewed described their own learning curve and how they handled the surprisingly small amount of pushback. One principal calmed a parent's concerns, on behalf of her daughter, about a transgender student using the girls' bathroom by offering the daughter the option of using the nurse's bathroom (the girl didn't avail herself of this offer, indicating that it was more the parent's concern than her own).

Teachers' actions and words also make a difference. Having had their consciousness raised by inservice discussions and reading, teachers might stop addressing their students as "boys and girls" and refrain from lining up students or otherwise drawing attention to binary gender. Some teachers address the issue directly, explaining the distinction between sex, gender, and sexual orientation and using age-appropriate literature to help students understand what may at first be confusing concepts. "Schools should be inclusive spaces," concludes Mangin, "where all students feel they belong…"

"Supporting Transgender and Gender-Expansive Children in School" by Melinda Mangin in *Phi Delta Kappan*, October 2018 (Vol. 100, #2, p. 16-21), https://bit.ly/2J3fwqX; Mangin can be reached at Melinda.mangin@gse.rutgers.edu.

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6. Getting Elementary Students Writing in Math Classes

In this article in *The Reading Teacher*, Madelyn Colonnese (University of North Carolina/Charlotte), Christina Amspaugh (University of Virginia/Charlottesville), Steven LeMay (Fairfield University), Kyle Evans (Trinity College), and Kathryn Field (University of Connecticut/Storrs) suggest four ways that elementary math classes can use writing to clarify and enhance understanding:

• *Exploratory writing* – To make sense of a problem, situation, or one's own ideas. For example, in a third-grade class learning fractions, students were asked to write in their journals about how fractions are used. One wrote about pizza slices, another about how graham crackers divide up. When they talked, they had insights about how the same fraction can mean different things, given the context: eating half a pizza would fill one's belly, but eating half a graham cracker wouldn't.

• *Informative or explanatory writing* – To describe or explain. Noticing the insight the pizza and graham cracker students had, the teacher asked the whole class to compare the amount of land covered by the playground and the blacktop. The class went outside and used various means to measure both areas, then they returned to the classroom and wrote their theories. As the teacher walked around looking at students' writing, she was able to assess how well they were grasping the idea that the same fraction can represent different-sized quantities

depending on the size of the whole.

• *Argumentative writing* – To construct or critique an argument. The teacher convened students on the rug and asked if a whole was always bigger than a half. Most students said it was, and the teacher then handed out mini chocolate bars to those students and a half of full-size chocolate bars to the few who demurred. She then sent students back to their desks to write to this prompt: "When comparing two different items, the whole of one item is always larger than one-half of another item. Do you agree or disagree, and why?"

• *Mathematically creative writing* – To document original ideas, problems, and/or solutions, elaborate on ideas, and convey fluency and flexibility in thinking. One student in this third-grade classroom had an idea as she did a math worksheet and wrote this question in the margin: "If one-third as a decimal is 0.33333… and two-thirds is 0.6666666…, then why is three thirds equal to one and not 0.99999999…? As in this case, mathematically creative writing is often sparked by a student getting curious and exploring beyond the regular lesson.

"Engaging students in mathematical writing both extends students' communication skills and leverages the power of writing to enhance learning within the discipline of mathematics," conclude the authors. "Writing can be a powerful tool that prompts students to think deeply and illuminates for teachers the depth and quality of thinking happening in a student's mind. The more students and teachers can share and reflect on written ideas, the more deeply students may internalize concepts fundamental to mathematical content."

"Writing in the Disciplines: How Math Fits Into the Equation" by Madelyn Colonnese, Christina Amspaugh, Steven LeMay, Kyle Evans, and Kathryn Field in *The Reading Teacher*, November/December 2018 (Vol. 72, #3, p. 379-387), https://bit.ly/2QAwAaX; Colonnese can be reached at mcolonn1@uncc.edu.

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7. Teaching Prefixes, Suffixes, and Root Words in Grades 3-5

In this article in *The Reading Teacher*, Patrick Manyak (University of Wyoming/Laramie), James Baumann (University of Missouri/Columbia), and Ann-Margaret Manyak (a Colorado third-grade teacher) suggest ways to teach affixes, root words, and base words in a systematic and lively way to upper-elementary students. Since about 60 percent of the words students encounter are made up of root words and affixes, effective instruction in morphological analysis (the umbrella term for all this) gives students an important advantage in figuring out unfamiliar words, understanding the way many words are constructed, spelling correctly, and building their vocabularies.

Based on a synthesis of research and on-the-ground experience, the authors suggest introducing the following affixes and root words in each grade (plural affixes are introduced prior to grade 3):

Grade 3:

Dis- not, opposite (dislike, disobey, disagree)

Un- not, opposite (unhappy, unlock, unafraid)

In- not, opposite (incorrect, invisible, inappropriate)

Pre- before (pretest, preheat, preschool)
Over- more than, too much (overheat, overwork, overpriced)
Mis- bad, wrong (misspell, misunderstand, misbehave)
Re- again, back (rewrite, rebuild, rearrange)
-er more of something (taller, smarter, warmer)
-est most of something (tallest, smartest, warmest)
-er person who (teacher, writer, banker)
-or person who (sailor, actor)
-ful full of (useful, joyful, cheerful)
-ness state or quality of (weakness, illness)
-ly like, full of (clearly, costly, carefully)

Grade 4:

Im- not, opposite (impossible, impolite, impatient)
Non- not, opposite (nonfiction, nonstop, nonliving)
Post- after (postgame, postwar, postseason)
Mid- middle (midnight, midday, midair)
Super- over, high, big, extreme (superheat, superstar, supermarket)
Under- low, too little (undersea, underachiever, undercook)
Uni- one (unicycle, unicolor, unicellular)
Mono- one (monorail, monotone, monoplane)
Bi- two (bicycle, biweekly, biplane)
Tri- three (tricycle, triangle, trimotor)
De- take away, from (deice, debug, defrost)
-ist person who (artist, guitarist, nutritionist)
-ee person who (employee, trainee, attendee)
-y like, full of (lengthy, chilly, wealthy)
-less without (hopeless, worthless, careless)
-able can be, worthy (doable, workable, knowledgeable)

Grade 5:

Il- not, opposite (illegal, illogical, illegible)
Ir- not, opposite (irregular, irresponsible)
Inter- between (intercity, interstate, interact)
Intra- among (intrastate, intracellular)
Fore- before (foresee, foretell, forewarn)
Trans- across (transatlantic, transnational, transplant)
Sub- under, below (subset, subtitle, subcommittee)
Anti- against (antifreeze, antiwar, antidiscrimination)
Counter- against, opposite (counterclockwise, counterargument)
Mal- bad, wrong (malnutrition, maltreat, malformed)
Co- with, together (coauthor, coequal)

Latin and Greek roots for grades 4 and 5:

Scope to look at (telescope, microscope, kaleidoscope)
Vis, vid to see or watch (vision, video, visibility)
Photo light (photograph, photocell, photon)
Dict to speak or say (predict, dictator, dictaphone)
Script, scribe write (scribble, transcribe, manuscript)
Phon/phone sound (telephone, headphone, symphony)
Graph to write or draw (biography, autograph, paragraph)
Aud/audio to hear (audience, audible, auditorium)
Rupt break (eruption, interrupt, bankrupt)
Fract break (fracture, fraction, refract)
Struct build (construct, structure, destruct)
Tract drag, pull (tractor, subtract, distract)
Mot move (motion, remote, demote)
Port carry (export, import, portable)
Bio life (biology, biofuel, symbiotic)
Tele far (telescope, television, telegram)
Geo earth (geology, geography, geode)
Therm heat (thermometer, thermostat, hypothermia)
Micro small, tiny (microscope, microwave, microchip)
Astr star (astronomy, astronaut, astrobiologist)
Path(y) feeling, suffering (sympathy, empathy, telepathy)
Phobia fear (zoophobia, hydrophobia, acrophobia)

Working with Ann-Margaret Manyak's third-grade class, the authors developed a process for teaching affixes in a lively and effective way. Each group of affixes took a week, following these four steps:

• *Explicit instruction* – The teacher used PowerPoint slides to present and discuss a group of affixes (for example, dis-, un-, and in-) with meanings and examples; explained how the affixes affected word meanings; had students explain the meanings of a series of words containing the target affixes; gave examples of words that looked like they had an affix but in fact didn't (e.g., uniform); had students practice building words given a collection of affixes and base words; and gave students a fill-in-the-blanks quiz.

• *Collecting affixes* – Students were challenged to find words with the target affixes and add them to a wall chart with a column for each affix (for example, dis-, un-, and in-).

• *Word family grouping* – Each student got a card with a word belonging to one of four base-word families (e.g., happier, unhappy, redo, undo, overuse, reuse, thoughtful, thoughtless) and found the other students with words containing the same base. Each group then deconstructed their words and the class discussed various meanings, with points awarded to groups that successfully deconstructed their words.

• *Affix Jeopardy* – Teams of 4-5 students took turns selecting a column and value on the a Jeopardy table (e.g., Not family prefixes, Place value prefixes, Prefix/Suffix, Other useful

prefixes) and tried to fill in a missing word in a prompt (e.g., Something that can't be replaced is _____), getting points if they answered correctly.

These four steps took relatively little class time each week, say the authors, and student engagement was high over the eight weeks of working through the unit. Most important, conclude Manyak, Baumann, and Manyak, students demonstrated "tremendous growth" on an assessment of their understanding of affixes and base words.

"Morphological Analysis Instruction in the Elementary Grades: Which Morphemes to Teach and How to Teach Them" by Patrick Manyak, James Baumann, and Ann-Margaret Manyak in *The Reading Teacher*, November/December 2018 (Vol. 72, #3, p. 289-300), https://ila.onlinelibrary.wiley.com/doi/abs/10.1002/trtr.1713; the authors can be reached at pmanyak@uwyo.edu, baumannj@missouri.edu, and amanyak@egsd.org.

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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 HTML version as well.

Subscriptions:

Individual subscriptions are $50 for a year. Rates decline steeply for multiple readers within the same organization. See the website for these rates and how to pay by check, credit card, or purchase order.

Website:

If you go to http://www.marshallmemo.com you will find detailed information on:

- How to subscribe or renew
- A detailed rationale for the Marshall Memo
- Publications (with a count of articles from each)
- Article selection criteria
- Topics (with a running count of articles)
- Headlines for all issues
- Reader opinions
- About Kim Marshall (bio, writings, consulting)
- A free sample issue

Subscribers have access to the Members' Area of the website, which has:

- The current issue (in Word and PDF)
- All back issues (Word and PDF) and podcasts
- An easily searchable archive of all articles so far
- The "classic" articles from all 14+ years

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
District Management Journal
Ed. Magazine
Education Digest
Education Next
Education Update
Education Week
Educational Evaluation and Policy Analysis
Educational Horizons
Educational Leadership
Educational Researcher
Edutopia
Elementary School Journal
English Journal
Essential Teacher
Exceptional Children
Go Teach
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
Knowledge Quest
Language Arts
Literacy Today (formerly Reading Today)
Mathematics Teaching in the Middle School
Middle School Journal
Peabody Journal of Education
Phi Delta Kappan
Principal
Principal Leadership
Reading Research Quarterly
Responsive Classroom Newsletter
Rethinking Schools
Review of Educational Research
School Administrator
School Library Journal
Social Education
Social Studies and the Young Learner
Teachers College Record
Teaching Children Mathematics
Teaching Exceptional Children
The Atlantic
The Chronicle of Higher Education
The Education Gadfly
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 Magazine