

# ***Content-Area Writing: Any Content, ANY TIME!***

**Keynote—September 22, 2018—Nancy Steineke**

- Creating a Supportive Environment for Learning, Writing, and Sharing**
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- Writing-to-Learn versus Public Writing**
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- Integrating Reading, Writing, and Talking into a Unit of Study**
- What Makes Content-Area Writing Easier?**

# Double-Entry Journal

Viewing: See/Notice	Reflection: Think, Connect, Wonder

# The Future of Work Is Uncertain

*Automation and artificial intelligence are disrupting the labor market. What do K-12 educators and policymakers need to know?*



By [Benjamin Herold](#), September 26, 2017, Education Week (abridged)

Today's 6th graders will hit their prime working years in 2030. By that time, the "robot apocalypse" could be fully upon us. Automation and artificial intelligence could have eliminated half the jobs in the United States economy.

Or, plenty of jobs might still exist, but today's students could be locked in a fierce competition for a few richly rewarded positions requiring advanced technical and interpersonal skills. Robots and algorithms would take care of what used to be solid working- and middle-class jobs. And the kids who didn't get that cutting-edge computer science course or life-changing middle school project? They'd be relegated to a series of dead-end positions, serving the elites who did.

Alternatively, maybe Bill Gates and Elon Musk and the other big names ringing the alarm are wrong. A decade from now, perhaps companies will still complain they can't find employees who can read an instruction manual and pass a drug test. Maybe workers will still be able to hold on to the American Dream, so long as they can adjust to incremental technological shifts in the workplace.

Which vision will prove correct?

When it comes to predicting the future of work, top economists and technologists are all over the map. Inside schools, the result is tremendous uncertainty. What skills will today's students need? Will the jobs available now still be around in 2030? Should every kid learn to code? What about apprenticeships, career-and-technical education, and "lifelong learning?"

Robots and AI-powered digital agents already rival humans at translating languages, playing strategy games, and flipping hamburgers. They've started driving cars and diagnosing cancer. Increasingly, they're able to learn by observing humans, rather than being programmed by us.

That all means big problems, says futurist Martin Ford. The labor market is a pyramid, Ford wrote in his 2015 book [Rise of the Robots](#). Automation has already begun devouring the pyramid's base, replacing assembly-line workers, warehouse stockers, and cashiers.

Paralegals, radiologists, line cooks, truck drivers, insurance underwriters, travel agents, lab technicians, tax preparers, and office assistants could all be next. And with artificial-intelligence systems starting to write their own code, it's entirely possible that many of the six-figure computer-science jobs currently available could eventually be lost to technology, too. In such a scenario, how many jobs would be left at the top of the labor-market pyramid?

In 2014, for example, the Pew Research Center surveyed 1,896 experts. Nearly half said they "envision a future in which robots and digital agents have displaced significant numbers of both blue- and white-collar workers." Many are worried that the trend "will lead to vast increases in income inequality, masses of people who are effectively unemployable, and breakdowns in the social order."



What would such a future mean for today's schools?

Even skeptics recognize that industrial robots and artificial-intelligence-powered digital agents have already made significant inroads into fields as diverse as manufacturing, health care, logistics, and customer service.

And it's clear that winners and losers are already emerging. Wages for highly educated people have gone up, because information technologies complement the creative, problem-solving, and managerial work they tend to do. But at the same time, technology has helped push many less-educated workers into the service sector, where they receive lower pay and less job security.

An analysis this year by the McKinsey Global Institute estimates that existing technologies could be used to automate roughly half of all the activities that workers are currently paid to do. In the crosshairs: anything that involves routine physical motions, operating machinery in predictable environments, or collecting and processing data.

"I don't think there's any way we can accurately say what skills and competencies students will need 15 years from now," said Michael Chui, a partner at the McKinsey Global Institute. "That's why it's incumbent that we prepare young people for a world of constant uncertainty."

For all the attention to technology, the answer may have more to do with our laws, policies, and values. And it's here that K-12 schools might play their most significant role, many experts believe. Imagine, for example, that millions more people do lose their jobs to automation. Will tomorrow's lawmakers be able to overcome today's partisan divides to craft an effective social safety net?

And consider how deeply robots, algorithms, and digital agents are being woven into important aspects of our lives, from loan applications to dating to criminal sentencing. Will tomorrow's citizens be thoughtful and vigilant in deciding how much control they're willing to give to technology? Will they be able to recognize and challenge automated decision-making systems that replicate existing racial, gender, and other biases?

Public education has always been about creating good citizens, not just good workers. In the age of artificial intelligence, that could be more important than ever. "Preparing students for the future means helping them think critically about the new ways decisions are made," said Osonde Osoba, a RAND Corp. engineer and researcher.

<https://www.edweek.org/ew/articles/2017/09/27/the-future-of-work-is-uncertain-schools.html>

# Arms Control Groups Urge Human Control of Robot Weaponry

By JOHN MARKOFF APRIL 11, 2016, *New York Times*

Two international arms control groups on Monday issued a report that called for maintaining human control over a new generation of weapons that are increasingly capable of targeting and attacking without the involvement of people. The report, which came from Human Rights Watch and the Harvard Law School International Human Rights Clinic at the opening of a weeklong United Nations meeting on autonomous weapons in Geneva, potentially challenges an emerging United States military strategy that will count on technology advantages and increasingly depend on weapons systems that blend humans and machines.

That strategy has been described as the Third Offset strategy and it seeks to exploit technologies to maintain American military superiority. Pentagon officials have recently stated that the new technologies — and particularly artificial intelligence software — will help, rather than replace, human soldiers who must make killing decisions.

While some have argued that in the future, autonomous weapons might be able to better adhere to the laws of war than humans, an international debate is now emerging over whether it is possible to limit the evolution of weapons that make killing decisions without human involvement.

Current United States military guidelines, published in 2012, call for commanders and weapons operators to exercise “appropriate levels of human judgment” over the use of force. The guidelines do not completely prohibit autonomous weapons, but require that high-level Pentagon officials authorize them. They draw a line between semiautonomous weapons, whose targets are chosen by a person, and fully autonomous weapons that can hunt and engage targets without intervention.

New weapons that will enter the United States arsenal as early as 2018 may make the distinction a vital one. One example is a missile, known as the Long Range Anti-Ship Missile, being developed in large part because of concerns that American carriers will be required to operate farther from China because of its growing military power. Yet the missile has raised concerns among critics because it is designed to be launched by a human operator and then fly to a targeted ship out of human contact and make final targeting decisions autonomously.

The ability to recall a weapon may be a crucial point in any ban on autonomous weapons, said Bonnie Docherty, the author of the report and a lecturer on law and senior clinical instructor at the International Human Rights Clinic at Harvard Law School.

The United States is not the only nation pursuing automated weapons. Britain, Israel and Norway have deployed missiles and drones that carry out attacks against enemy radar, or tanks without direct human control.

Some nations are now calling for some kind of international agreement that limits the weapons. “There seems to be a broad consensus that, at some level, humans should be involved in lethal force,” said Paul Scharre, a senior fellow at the Center for New American Security in Washington.

# Artificial Intelligence and Classrooms: Will It Help or Hurt?

By Matthew Lynch on March 28, 2016, [blogs.edweek.org](http://blogs.edweek.org)

Is artificial intelligence the next big wave in ed-tech offerings?

NPR reports that Pearson, the world's largest education company, says artificial intelligence is already showing up in classrooms and could offer plenty in the way of assessment. An example of artificial intelligence at work in classrooms could entail software to provide instant feedback regarding students' knowledge, progress and method of learning. This could potentially lead to the elimination of the need for standardized testing (it's important to note here that Pearson controls up to 60 percent of the U.S. testing market, by some estimates). With more intuitive systems, however, students could feasibly be evaluated as they go -- which leads to the next big question: Will this technology help or hurt students?

Current computer systems are able to provide the benefits of one-on-one tutoring and learning modules. This has allowed for customized learning options that were not even an option a decade ago. Additionally, these systems are also able to moderate and facilitate group discussions. These options allow flexibility and also give teachers more of an opportunity to guide advanced and remedial students at their own pace. In most cases, educators have embraced this type of technology because while it does automate some tasks, it benefits all parties.

Will artificial intelligence learning have the same reception though? At Pearson, the suggestion of a "life-long learning companion" is in the works. These companions would escort students throughout their life assessing, encouraging, offering resources and suggestions to difficulties. Your companion would learn what you know and follow you throughout college and beyond. Can a "teacher" that lacks a human element really guide students in the best way, and understand the nuances of each individual learner?

The question of artificial intelligence in education is not really one of "if" but of "when." It is projected by The World Economic Forum that by 2020, at least 5 million jobs worldwide will be automated. With computers taking over more jobs, it is imperative that we become advanced at building and interacting with software tools. To this end, President Obama has made a conscious effort to incorporate computer science courses for all U.S. students. If humans are no longer doing the jobs, perhaps they can invent the technology that does. This tech literacy is vital to the future economy but the implications are a bit overwhelming if you really stop to think.

While most of the education AI software is still in the development stages, advancing technology could drastically alter the landscape of how students learn. Will it end up improving classrooms and teaching methods? Or lower the standard of what is taught to our K-12 students?

## WHAT MAKES WRITING EASIER

### *Classroom Conditions That Nurture Young Writers*

1. Teachers often compose in front of students, explicitly modeling their own writing strategies.
2. Students engage in short, authentic writing tasks every day, in every class.
3. Students write to explore subject-matter content.
4. Writing topics are interesting, intriguing, significant, surprising, and/or discussable.
5. Writing assignments offer students choices in how to respond.
6. Students' writing products are used during class to advance the lesson.
7. Students regularly write for classmates, to get an immediate audience response.
8. Students use writing as a way to build working relationships with others.
9. Teachers withhold the red pen and focus on the writer's ideas.
10. Teachers assess short writings using the Good Faith Effort standard (see page 9).
11. Teachers periodically collect and review pieces to gauge engagement and thinking.
12. Teachers assign much more writing than they will read; they trust in unmonitored practice.
13. Students may write before, during, and after studying a topic.
14. Students write for purposes and audiences beyond the teacher's inbox.
15. Teachers break longer writing assignments into a series of doable steps.
16. Students recognize and emulate the craft techniques found in mentor texts.
17. Students write with an eye toward voice, creativity, originality, and humor.
18. Students use writing to explore and monitor their own thinking processes.
19. Students use writing to connect with peers.
20. Students use writing to take action in their communities—and around the world.

# Strategy Recipe for a Unit of Study

**Form groups, structure icebreaking, and practice discussion skills.**

**Begin topic exploration with admit slip and talk.**

**Dig deeper by reading and annotating from a different POV.**

**Stoke curiosity and scaffold with video and double-entry journal.**

**Coalesce content study with RAFT writing and responding.**

**Conclude content study by recording thinking changes on exit slip.**

# Classroom routines that get kids talking (and writing) about math strategies

**1) Start your math block with a strategizing session instead of a traditional warm-up problem.** Rather than having students solve a math problem on their own, have them jot down notes about how they would solve the problem, then pair up with a neighbor to discuss and compare their strategies. When you're ready to bring the whole class together for a discussion, have a few pairs of students share how they'd solve, and invite students to test out their strategies.

**2) Occasionally ask students to discuss strategies without actually solving the problem.** Present the math problem and ask students to explain (either orally or in writing) what operation they think they should use (and why), what steps they would take to solve the problem, or which tools could be helpful in solving. This shows students that there's more to math than just finding the right answer: understanding HOW to solve and why a strategy works (or doesn't work) is important, too.

**3) Bring creativity into problem solving.** Many kids who dislike math are frustrated that there's only one right (and often elusive) answer to a problem, and they don't realize the tremendous amount of freedom and creativity that they have in choosing a problem-solving strategy. When a student explains how s/he arrived at an answer, ask the class, "Does anyone have a different way of solving?" Your enthusiasm for trying out different strategies will lead to students' increased engagement and risk-taking—kids love to hear their teacher say, "Wow, I never thought to solve it that way! Good thinking!"

**4) Have kids use math journals to reflect on their strategies and assess their own learning.** Math journals are one of the most powerful tools for having students put their knowledge into words and to shift kids' focus from computation to problem solving and real-life application. Asking students to write about problem solving strategies on a daily or weekly basis gives you so much insight into their understandings and misconceptions.

**5) Refine student math discussion with explicitly taught skills.** Pick one of the categories below and together create a list of what students would do and say to start and continue the math discussion.

- Preparing to solve problems
- Choosing strategies
- Analyzing strategies
- Getting unstuck
- Building on student responses in group conversations
- Responding supportively to incorrect/incomplete answers
- Pushing student thinking on incorrect/incomplete answers
- Selecting and analyzing answers
- Summing up/reflecting on math work

<http://thecornerstoneforteachers.com/2014/03/10-classroom-routines-get-kids-talking-writing-math-strategies.html>

# Response: 'Writing in Math Class Is a Win-Win for Students & Teachers'

By [Larry Ferlazzo](#) on October 14, 2017 11:09 AM

## Response From ReLeah Cossett Lent

*Our work together led to important understandings for me as well as for teachers willing to take the time to think about how writing and math might be more like bread and butter than oil and water.*

*Writing is thinking—but that thinking doesn't always look the same. In math, students must organize and clarify information while planning for, reflecting on, and revisiting possible solutions to problems. Interestingly, these skills are exactly the ones required in writing. Often, the very process of writing clarifies thinking to such an extent that students experience a mathematical epiphany that brings everything together. Writing can become a critical tool for teachers to use in helping students unlock understandings.*

*One of the best writing activities led to students' increased mathematical reasoning as well as collaborative problem solving. Students were placed in groups of four and every group was given a different, challenging word problem. Each student was provided with a copy of the group's problem and allowed time to read through it. Then, students were instructed to write about how they might begin to solve the problem until the timer went off (about 2 minutes). The teacher then said "pass," and students passed their writing to the student to their right. Students were given time to read and respond to their neighbor's post and continued to be pass and respond until each problem/solution ended up with the original writer. Students then read their original post and the three responses, discussed together how they might solve the problem, and then shared with the class their problem and possible solution.*

*When we looked at the students' papers, we found that almost all of them began with some variation of "I don't really know how to solve this problem" with a few offering tentative suggestions. The final posts showed evolving mathematical reasoning and some had even solved the problem. This single activity demonstrated to all of us the power of writing, especially in math.*

*In what other ways can students use writing as a tool for mathematical reasoning? Take a look at some ideas the teachers in this department are now incorporating writing into their lessons.*

- *Reflections on learning or confusion in learning logs*
- *Interviews where students practice asking others questions to clarify their own understanding*
- *Essays about how to use math in real world situations*
- *Exit slips that ask students to explain, justify, describe, estimate or analyze*
- *Silent, written discussions where students defend their process or answers*
- *Blogs to create interdisciplinary connections*

[http://blogs.edweek.org/teachers/classroom\\_qa\\_with\\_larry\\_ferlazzo/2017/10/response\\_writing\\_in\\_math\\_class\\_is\\_a\\_win-win\\_for\\_students\\_teachers.html](http://blogs.edweek.org/teachers/classroom_qa_with_larry_ferlazzo/2017/10/response_writing_in_math_class_is_a_win-win_for_students_teachers.html)

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**Home Court: It's statistically proven: Why do teams win more games at home than away?**

# Alternative Perspective Writing

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