

What does this look like in practice?

6th Grade

Take 5 minutes to read these texts considering the information that was just shared with you about passage selection.

- ✓ Are different genres and styles represented?
- ✓ Are the passages fair, interesting, and accessible to a wide variety of students?
- ✓ Can they be used to assess several learning standards?

View the Text Complexity Metrics for the passages. This will allow you to see and compare the range of text complexity represented on the whole assessment.

Take a minute to discuss with your colleagues how your classroom practice may change as a result of today's presentation.



New York State
EDUCATION DEPARTMENT
Knowledge > Skill > Opportunity



Directions

Read this article. Then answer questions 36 through 42.

Weed Wars

by Roberta Kwok

Weeds are plants that people don't want. When weeds grow on a farm, they hog light, water and nutrients. Then crops don't grow as well.

5 Farmers used to get rid of weeds by pulling them or digging them out with a hoe. (In poorer countries, many farmers still do this.) Sometimes farmers would cover the soil to block weeds from getting sunlight or throw salt on the weeds to kill them.

Then scientists found chemicals called herbicides that kill weeds. The best herbicide was glyphosate. But farmers had to be careful because glyphosate could also kill crops. Farmers could spray fields with glyphosate only before planting crops. Otherwise, they had to use special equipment that would ensure glyphosate was applied to weeds only.

10 In the 1990s, something big happened: Scientists made crops that couldn't be killed by glyphosate. They changed the plants' DNA, the genetic instructions that tell cells which molecules to make. If farmers planted these glyphosate-resistant crops, they could spray the herbicide all over the field anytime and kill weeds without harming crops.

15 "It became very simple," says Steve Duke, a plant scientist at the U.S. Department of Agriculture in Oxford, Miss. "Just spray once or twice, kill everything [but your crops]."

Farmers loved those glyphosate-resistant crops. They started planting more and more of them and using more and more glyphosate.

Winning the lottery

Some people thought glyphosate would work forever. But the weeds were evolving. That means their DNA was changing.

20 Once in a while, changes to a weed's DNA would allow that weed to survive the glyphosate. The chances of changes like this were very, very small. But when farmers used glyphosate year after year on millions of hectares¹ of crops, "what seems almost impossibly improbable becomes more probable," Duke says.

25 Mike Owen, a weed scientist at Iowa State University in Ames, compares the process to a lottery. If one person buys a lottery ticket, his or her chances of winning are tiny. But when millions of people play, chances are good that at least one person will pick the

¹ 1 hectare equals 2.47105 acres

GO ON

winning combination of numbers. As weeds were sprayed with glyphosate every year, it was like billions of plants were buying lottery tickets over and over, trying to “win” resistance to glyphosate. Eventually, some weeds were going to hit the jackpot. It didn’t
30 take long for that to happen. In 1996, Australian scientists found a weed called rigid ryegrass that couldn’t be killed with normal levels of glyphosate. In 2001, a researcher in the United States reported another resistant weed, called horseweed. Now at least 21 weed species have evolved glyphosate resistance.

Copy that

One of these weeds is called palmer pigweed. It’s a leafy plant that can grow two or
35 three inches per day and reach 10 feet tall. “You can sit there and put it on your desk and you can watch it grow,” Culpepper² says.

These weeds are especially good at becoming resistant to glyphosate. They pass pieces of DNA to each other through their pollen, tiny particles that fertilize plants. So if one palmer pigweed plant figures out how to fight glyphosate, it can give the information to
40 another palmer pigweed. Each fertilized weed can make about half a million seeds. A lot of those seeds can grow into new resistant weeds.

But how are these weeds changing their DNA to resist glyphosate? Todd Gaines, a weed scientist at the University of Western Australia in Crawley, wanted to find out.

Glyphosate normally kills weeds by attaching to a molecule in plant cells called an
45 enzyme. The enzyme helps the cells make other molecules called amino acids, which the plants need to survive. (Amino acids are the building blocks of proteins, which play a role in everything from building tissues to relaying signals about health and a plant’s environment.) But when glyphosate sticks to the enzyme, the enzyme no longer works.

Gaines’ team found that resistant palmer pigweed plants contain extra copies of a
50 segment of DNA. Called a gene, this DNA piece contains instructions for making the enzyme targeted by glyphosate. Cells of the resistant plant made a lot more of that enzyme —so many that glyphosate couldn’t block all of them. These plants were able to keep growing normally.

Outsmarting the weeds

Getting rid of resistant weeds won’t be easy. But farmers have their own tricks.

55 They can use a mixture of herbicides. If a weed is resistant to one herbicide, maybe a different herbicide will kill it. Some weeds, however, are already resistant to several herbicides. For example, Tranel’s³ team found weeds in Illinois that resist four different types of weed-killing chemicals.

² **Stanley Culpepper:** weed scientist at the University of Georgia in Tifton

³ **Patrick Tranel:** weed scientist at the University of Illinois at Urbana

So farmers will have to use more than one strategy to fight weeds.

60 Some might plant crops such as rye and then flatten them. The flattened rye will block sunlight from reaching the soil and keep weed seeds from sprouting. Some weed seeds need to be close to the soil's surface to sprout, so farmers could use a plow to bury the seeds deeper underground.

65 Scientists at the University of Western Australia are also working on a contraption called a seed destructor. When farmers use machines to harvest their crops, the machines pick up weed seeds and spit them back onto the field. The seed destructor will capture the seeds and grind them up.

70 But no solution will protect all crops, scientists realize. This means many solutions must be developed to manage the many types of weeds that bully the many types of crops in farms across the world.

GO ON

Directions
Read this story. Then answer questions 43 and 44.

Katerina and her family came to America from Europe with a dream of owning a farm. Katerina, or Trina as she is called by her family, is looking back over the past year.

Excerpt from *Katerina's Wish*

by Jeannie Mobley

5 My Papa's dream brought us to America. Momma said only a fool believed in dreams, but she knew Papa, so she packed our trunks. And whether she believed or not, that dream swept us out of Bohemia¹ and across the ocean. We'd arrived, in the autumn of 1900 in "a new land for the new century," as Papa put it. By May of 1901, neither the dream nor the country felt new. They both felt old and worn out. As I stood behind our house, staring at a dozen bundles of filthy laundry, I couldn't help but think Momma had been right.

10 Papa had dreamed of a thriving farm where we would live well. He had imagined acres of green fields, not the dry, barren hills of southern Colorado. He had imagined fresh air and sunshine, the bounty of the fertile land filling our larder and our pockets. Instead, he spent long days underground, toiling in the unwholesome air of a coal mine. And even with all this laundry Momma took on, our pockets stayed empty and our larder was never full. Now that my sisters and I were out of school for the summer, Momma had determined to take on as much washing as we could from the bachelors in town. But it
15 still wasn't likely to mean much money.

"This is too much wash to do in the kitchen," Momma observed from the back door.

"It's too much to do at all," I grumbled.

"If you want to be going back to school in the fall, you'll be needing a new dress," she said. "And the money's got to come from somewhere."

20 The new term would not start until October, when the schoolmaster returned from one of the other coal camps in the area. But saving money wasn't easy. When we left Bohemia, Papa had thought a year in the coal mines would earn us enough for a farm. We had been here nine months already and had saved almost nothing.

25 "At least Trina will get a new dress," Aneshka said. She was sitting on the back step, kicking at the dust. "I'll just get her old dress cut down to my size, and Holena will get mine that used to be hers."

¹Bohemia: a district within the Czech Republic

“I don’t mind,” Holena said quietly from her seat beside Aneshka. She would be starting school for the first time in the fall.

30 “Mind or not, it can’t be helped,” Momma said, her mouth setting into a thin, tight line. It was almost the only expression she had worn since coming to America. “And you do have to go to school.” School was important. Momma had had few chances to learn English. She relied on my sisters and me to translate for her.

35 Momma sighed, looking again at the big piles of coal-blackened laundry. “We’ll take this load down by the creek. That way we don’t have to haul water. Trina, you carry it there, and we’ll all join you when chores here are done.”

40 I began hauling tubs and bundles of filthy clothes across camp and down the steep slope to the little creek to the west. It took me four trips back and forth across the shabby town, and each time I returned to the house it seemed Aneshka was working slower and slower at her easy jobs. Holena, who was too little to help carry anyway, was watching Momma knead the week’s bread dough. I glared at Aneshka as I gathered the bundles, but she ignored me.

45 In the creek bottom, I found a wide, grassy spot and built a fire, then arranged stones to balance a tub over the flames. Then I filled the tub with water from the creek. By the time I was done, my sweat-soaked dress clung to my shoulders. My mother and sisters had still not arrived. I wiped the sweat from my forehead with the corner of my apron. Was this all there was to my father’s dreams—sweat and coal dust and endless hours of work?

50 I stretched and looked around. If I was going to spend the day scrubbing filthy clothes, I wasn’t going to stay here while I waited for the water to boil. I deserved these few minutes to myself. I wandered along the water’s edge, listening to the birds chirp in the low bushes and trying to forget the drudgery of the day ahead.

55 A short distance downstream, the valley narrowed and turned. The slopes of the valley became steeper, blocking the view of anything around the bend. I had never gone there. For months, I had come only to the creek to draw water. My pace quickened as a flutter of adventure stirred in my heart. I glanced back toward the laundry. My mother and sisters still weren’t there. I had time to see what lay beyond the shoulder of land.

Around the bend, I stopped in amazement. The creek spread out into a still pool. At its edge, an ancient cottonwood tree leaned out, its massive branches reaching across until they shaded the creek bottom from slope to slope. For a moment I thought I might be dreaming. I had never seen this tree before.

GO ON

Text Complexity Metrics for 2016 Grade 6 Passages

Passage Title	Word Count	Lexile	Flesch-Kincaid	Reading Maturity Metric*	Degrees of Reading Power*	Qualitative Review
Excerpt from Kathleen: The Celtic Knot	898	1030L	5.3	7.3		Appropriate
Twilight Calm	376	810L	0.8	12.0		Appropriate
Getting Lost in a Good Book Can Help Keep You Healthy	703	1070L	10.4	11.1		Appropriate
Weed Wars	921	1020L	7.2	7.6		Appropriate
Excerpt from Katerina's Wish	866	780L	4.9	6.1		Appropriate
Excerpt from Summer Hawk	978	830L	4.4	6.9		Appropriate
Excerpt from Flipped	714	960L	6.2	6.4		Appropriate
A Universal Language: Futbol 4 Dreams	628	1110L	10.3	10.3		Appropriate
Recycling Electronic Waste	874	1010L	7.8	8.4		Appropriate

* Depending on when the passage was selected, either the Reading Maturity Metric or Degrees of Reading Power was used as the third quantitative metric.

New York State 2016 Quantitative Text Complexity Chart for Assessment and Curriculum

To determine if a text's quantitative complexity is at the appropriate grade level, New York State uses the table below. In cases where a text is excerpted from a large work, only the complexity of the excerpt that students see on the test is measured, not the large work, so it is possible that the complexity of a book might be above or below grade level, but the text used on the assessment is at grade level. Because the measurement of text complexity is inexact, quantitative measures of complexity are defined by grade band rather than by individual grade level and then paired with the qualitative review by an educator.

Grade Band	ATOS	Degrees of Reading Power	Flesch-Kincaid	The Lexile Framework	Reading Maturity	SourceRater
2 nd –3 rd	2.75 – 5.14	42 – 54	1.98 – 5.34	420 – 820	3.53 – 6.13	0.05 – 2.48
4 th –5 th	4.97 – 7.03	52 – 60	4.51 – 7.73	740 – 1010	5.42 – 7.92	0.84 – 5.75
6 th –8 th	7.00 – 9.98	57 – 67	6.51 – 10.34	925 – 1185	7.04 – 9.57	4.11 – 10.66
9 th –10 th	9.67 – 12.01	62 – 72	8.32 – 12.12	1050 – 1335	8.41 – 10.81	9.02 – 13.93
11 th –12 th	11.20 – 14.10	67 – 74	10.34 – 14.20	1185 – 1385	9.57 – 12.00	12.30 – 14.50

Source: Student Achievement Partners