



Informational Text Reading



Discovering Cells

A forest is filled with an amazing variety of living things. Some are easy to see, but you have to look closely to find others. If you look carefully at the floor of a forest, you can often find spots of bright color. A beautiful pink coral fungus grows beneath tall trees. Beside the pink fungus, a tiny red newt perches on a fallen leaf.

What do you think a fungus, a tree, and a red newt have in common? They are all living things, or organisms, and, like all organisms, they are made of cells.



McDonald Wildlife Photo, Inc./DRK Photo

FIGURE 1 Newt and Coral Fungus All living things are made of cells, including this pink fungus and the red newt that perches next to it.

Vocabulary

Learn Vocabulary: *Cells and Heredity: 1.1 Discovering Cells*

A microscope uses a combination of lenses to form enlarged images of tiny objects.

~~chemical~~
 enlarged
~~equal~~

enlarged | adjective

definition: expanded in scope

examples: The **enlarged** image allowed scientists to observe new features of the cell.
 With an **enlarged** view of the distant deer, the biologists could observe without being noticed.

Next

Progress:

Student Scoreboard and Summary

Review Scores and Revise Summary

User: sfive Reading: Foundations of Geography: 3.1 Population Text Tools Tries left: 4

Section Coverage	Poor	Fair	Excellent	Length
Population Distribution	[Progress Bar]			178 words [Length Scale: Long to Short]
Population Density	[Progress Bar]			
Birthrates and Death Rates	[Progress Bar]			
The Challenges of Population Growth	[Progress Bar]			

Teacher Comments	Status	Overview
10 minutes ago	New	Now use the Editing Tools to remove repeated and unimportant...
22 minutes ago	Viewed	Your response is too short.

Editing Tools	Status	Comment	Get Definition
Copying	Fair	Some copied parts	
Spelling	Almost	A few misspelled words	
Repeated	Fair	Some repeated content	repeated
Unimportant	Almost	Possibly unimportant content	unimportant

Revise your summary: [Writing a Good Summary](#)

User: sfive Reading: Foundations of Geography: 3.1 Population
 Expected summary length: 150 - 350 words.

Population is the amount of people in a specific area. At different times in history, populations have grown at different rates. The number of people being born and dying affect population. Regions where farming was a big part of the economy have larger populations. These regions don't have as many farmers any more though. Regions with good communities and climate tend to have more people. Population density is the amount of people for every square mile. Areas with higher population density tend to be easier to live in but these areas can be difficult to find jobs. In my city there are crowded places. Population density varies from country to country and from place to place. For example the United States is most likely going to have a higher density than a cold and barren country like Antarctica. In parts of Asia and Africa, the population is growing faster than the food supply and there is not enough money to buy food. Demographers study population density and how the amount of people per square mile affect resources.

[Get Feedback](#) [Save Summary](#) [Check Spelling](#) [Format for Printing](#)
[View Your Summaries](#) [Select New Activity](#) [Log Out](#)

Common Core Essay Prompt

Type or paste your essay into the box below. [Writing a Good Essay](#)
Tries left: 6

User: cj Prompt: **Cameras in the Classroom – Student Safety or Invasion of Privacy?**
A decision has been made to equip each classroom in your school with a camera. The rationale for the placement of cameras throughout the building is student safety. Some argue this is an invasion of privacy. Think about whether you think this is a safety issue or a privacy issue. Write an essay in which you create an argument for one of these positions. Provide clear reasons and relevant evidence to support your argument.
 (Expected essay length: 150 - 650 words.) [Get Word Count](#)

Overview

The Common Core State Standards (CCSS) for literacy are changing what students must learn, how literacy is taught, how students demonstrate literacy skills, and how those skills are assessed. Students will need to master complex textual information faster and at a higher level, one that is commensurate with college and career demands. Here, we explore how Pearson's WriteToLearn can address these needs.

WriteToLearn is a web-based tool designed to instill 21st century literacy skills by focusing on writing for content learning across a variety of academic subjects, including science, social studies, and history. It contains essay prompts similar to those used for state writing assessment and college entrance exams, as well as an ever increasing number of Common Core aligned prompts.

To measure academic text more precisely and across a wider grade range, as required by CCSS, Pearson has developed a new measure of text complexity, known as the Reading Maturity Metric (RMM), which has greater reliability and validity than previous readability methods. All texts within WriteToLearn include an RMM score.

After discussing RMM, we explore how CCSS can be implemented today in WriteToLearn to produce desired literacy performance focused on understanding and reasoning about authentic text.

The Common Core Mandate: Dramatically Improve Literacy Performance

Literacy combines four skills: reading, writing, speaking, and listening. Central to all of these is vocabulary knowledge. Moreover, the vocabulary that is critical for college and career readiness is not typically heard in ordinary conversation, but rather is acquired by reading. To increase their "academic vocabulary," students must read increasingly difficult texts. Regrettably, however, in the last 40 years there has been a precipitous decline in how well American students read (Adams, 2011). For example, the average 10th grader now reads textbooks assigned to 6th graders 40 years ago. Yet, the complexity of higher education textbooks has remained nearly the same, creating a gap between secondary education and college. By way of illustration, *USA Today* (September 25, 2012) reported on studies done by the College Board and ACT showing that over 50% of 2012 US

high school graduates who took the SAT or ACT did not have the skills necessary to succeed in college. Focusing just on the SAT's critical reading and writing components, the college readiness percentages were 49% and 45% respectively. The Common Core State Standards were developed to ameliorate America's declining literacy and to "mind the gap."

To close the gap between secondary and college and career education reading requirements, American students must read ever more complex text as part of their primary and secondary schooling. In the past, text difficulty has been measured by readability formulas that only take into account surface features of text, such as sentence length and word frequency. For the purpose of measuring text from multiple disciplines, such as the sciences and literature, there needs to be a more precise measure that works from primary grades through higher education and incorporates the semantics of a text. To this end, the Gates Foundation initiated a coordinated effort to improve how text is measured.¹

Measuring Text Complexity

Pearson Knowledge Technologies' scientists joined the Gates Foundation effort and invented a superior measure of text complexity—one based on deriving a unique reading maturity curve for each word in the language by applying artificial intelligence techniques (see Kireyev and Landauer, 2011; Landauer et al., 2011; Landauer, 2011). An individual "word maturity curve" calculates how a word changes from its first grade meaning to asymptote at its adult meaning. Clearly, some words, such as "dog" are mastered early, whereas others, such as "phenotype" approach their adult meaning much later. Pearson's Reading Maturity Metric (RMM) includes word maturity combined with several other computational language measures. In the Gates Foundation study, RMM was shown to predict expert ratings of text difficulty over 30% better than standard readability measures.

RMM was also validated by its correlation with assessments that should be measuring nearly the same thing, including (1) human ratings of text, and (2) tests of student vocabulary knowledge, such as the Peabody Picture Vocabulary test (Maddux, 1999), where test takers select the correct picture corresponding to a word or give the right name to a picture. The correlation between the Peabody Picture Vocabulary Text and RMM was 0.74 and was nearly the

¹ A complete report on the Gates funded text complexity work can be found at: http://www.ccsso.org/Documents/2012/Measures%20ofText%20Difficulty_final.2012.pdf

same magnitude for several other standard measures of vocabulary, such as the Kaufmann Assessment Battery for Children's Expressive Vocabulary (Kaufmann & Kaufmann, 1985).

Pearson's Reading Maturity Metric also identifies the most important words in a text; i.e., those words that are key to comprehending a reading. In WriteToLearn these important vocabulary words are taught by exposure to and assessment of the words in self-defining sentence contexts. Target Cloze sentences containing the important word in the best possible sentences for learning are found automatically using large collections of text (e.g., over a billion running words of text) and Artificial Intelligence rules. The example below from WriteToLearn shows an

automatically selected Cloze sentence and distractor words that share important attributes with the target word, such as part-of-speech. Some of the words legitimately fit the sentence, but one is better than the others. Students can hear their choice read in the sentence, which for some students makes the task easier.

The application keeps track of student performance and gives a dictionary definition if the correct word is not selected until the third attempt, as shown below. Also, new Cloze items for words that were missed by the student are presented at spaced practice intervals optimized to consolidate learning.


Learn Vocabulary: *Cells and Heredity: 1.1 Discovering Cells*


A microscope uses a combination of lenses to form enlarged images of tiny objects.

~~chemical~~
enlarged
~~equal~~


 **enlarged** | adjective

definition:  expanded in scope

examples:  *The **enlarged** image allowed scientists to observe new features of the cell.*

 *With an **enlarged** view of the distant deer, the biologists could observe without being noticed.*

Next

Progress: 

Words taught in context are learned better than studying dictionary definitions, which produce little vocabulary growth. Seeing a word in revealing contexts mimics the way language is acquired naturally.

Using Critical Thinking Skills to Improve Writing

The CCSS mandate reading source documents and using student writing to demonstrate the ability to synthesize and summarize informational text, formulate an argument, and respond appropriately to the source documents.

The CCSS stress **close** reading of text and ask students to demonstrate comprehension by writing in response to the text. These new task demands are considerably more challenging than describing an ideal vacation or one's favorite celebrity! The CCSS curriculum changes are being introduced because students have not been paying enough attention to the text, and in fact are not reading enough or reading the right reading genres to prepare them for a career or college.

The CCSS arose against a backdrop of accumulated research summarized in *Reading Next* (2006) and *Writing Next* (2007). These reports provide recommendations for effective literacy program-based practices, shown to be effective across hundreds of controlled classroom studies. The most effective teaching strategies for reading and writing include:

- Teaching students strategies for planning, revising, and editing their compositions (*Writing Next*, effect size 0.82)
- Teaching students how to summarize texts (*Writing Next*, effect size 0.82)
- Direct, explicit comprehension instruction (*Reading Next*)
- Effective instructional principles embedded in content (*Reading Next*)

The most effective instructional practices include content-based activities, which require information comprehension and synthesis and are evident in students' written work.

Responding to Informational Text

Summarizing informational text, one of the hallmark CCSS and *Writing Next* tasks, has been front-and-center in WriteToLearn since its launch in 2007. Summary writing requires students to understand the meaning of the text and put it in their own words. Summarizing improves retention of the information in the text. It reveals misunderstandings and lack of comprehension. It is also a component skill of many more complex tasks.

WriteToLearn presently contains approximately 1,000 cross-curricular informational texts ranging from grade 3 through 12 for students to read and summarize. Students practice summary writing across diverse academic content areas and receive instant feedback on their understanding of the text. The feedback shows how well the summary covers the content of the major reading sections of the text, thus directing the student back to the text to where comprehension was weak. The student then rereads the content and revises the summary. The read, write, and revise cycle promotes close reading and critical thinking about what has been read. WriteToLearn feedback includes: content coverage by section; intelligent hints to important content that was missed; and feedback on length, potentially irrelevant content, redundant content, and direct copying from the source text.

Translating Essay Writing into the CCSS Framework

The CCSS require students to spend much more time writing. Students should write every day in every class. WriteToLearn gives students that writing practice with immediate feedback, so they can review, revise, and continue to practice their writing, including composing the types of texts required by the CCSS: narrative, informational, and argument.

The new standards change writing in important ways. For a 5th grader, the ability to express an opinion suffices; for a 6th grader, supporting evidence must be in the essay, whereas an 8th grader must be able to analyze a source document and produce claims based on the source document. The tasks focus on evidence-based writing to authentic texts and are designed to evoke critical thinking strategies. Rubrics need to be specific to the text type used as the source reading. For example, is it a narrative reading or an informational reading?

The CCSS replace the 5- or 6-trait rubrics that the American ELA community has embraced for the last several years. The major consortia implement the revamped writing assessments in the 2014 school year. Meanwhile content and assessment experts are creating rubrics and prompts, and will analyze student field test data in 2013.

WriteToLearn supports these changes to the standards by including new types of prompts. While narrative and informational prompts have always been available, argument prompts have been added. As rubrics are created and adopted, WriteToLearn scoring and feedback will be adapted as well.

Some examples of new Common Core-aligned prompts currently in WriteToLearn are shown below:

Type or paste your essay into the box below. [Writing a Good Essay](#)
Tries left: **6**

User: cj Prompt: **Cameras in the Classroom – Student Safety or Invasion of Privacy?**
A decision has been made to equip each classroom in your school with a camera. The rationale for the placement of cameras throughout the building is student safety. Some argue this is an invasion of privacy. Think about whether you think this is a safety issue or a privacy issue. Write an essay in which you create an argument for one of these positions. Provide clear reasons and relevant evidence to support your argument.
(Expected essay length: 150 - 650 words.)

Conclusion

WriteToLearn has shown to dramatically increase student literacy skills because students practice relevant literacy skills—reading, writing, and vocabulary.² And the feedback they receive is immediate and relevant to the task. Immediacy of feedback is a strong motivator to spend additional time improving the final written product. As with computer games, WriteToLearn makes students want to spend more time on literacy tasks and receive immediate gratification for their efforts. Achieving a passing threshold within the application can become a goal in itself. And the student understands that he or she controls the learning outcome.

The CCSS will change the focus of students' efforts and will demand more evidence of conceptual and linguistic competency. The learning target moves from writing something cogent that often fails to tap deep stores of knowledge to new tasks that require students to entertain and actively weigh competing hypotheses based on data.

A nagging concern on the part of educators and the public is that we may be asking too much of our students too quickly. Certainly the first several years of implementation will not be without frustration, pain, and soul searching. But for students to graduate from high school, matriculate at institutions of higher learning, and compete for the desirable jobs in a global economy, a more rigorous educational model is needed.

²For controlled classroom experiments and case studies demonstrating the effectiveness of WriteToLearn see: http://www.writetolearn.net/downloads/WTL_EfficacyReport.pdf

Foltz, P. W., Lochbaum, K. E. & Rosenstein, M. B. (2011). Analysis of student ELA writing performance for a large scale implementation of formative assessment. Talk presented at the Annual Meeting of the National Council for Measurement in Education (NCME). April. <http://www.writetolearn.net/resources.php#Case>

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- To understand Pearson's automated essay grading service see:
- Foltz, P. W., Streeter, L. A., Lochbaum, K. E., & Landauer, T. K. (2013). Implementation and application of the Intelligent Essay Assessor. *Handbook of Automated Essay Evaluation*, M. Shermis & J. Burstein, Eds. Pp. 68-88. Routledge, NY, NY.