

# Ask the Cognitive Scientist

## The Privileged Status of Story

*How does the mind work—and especially how does it learn? Teachers' instructional decisions are based on a mix of theories from teacher education, trial and error, craft knowledge, and gut instinct. Such gut knowledge often serves us well, but is there anything sturdier to rely on?*

*Cognitive science is an interdisciplinary field of researchers from psychology, neuroscience, linguistics, philosophy, computer science, and anthropology who seek to understand the mind. In this regular American Educator column, we consider findings from this field that are strong and clear enough to merit classroom application.*

By Daniel T. Willingham

**Question:** I have read that the mind treats stories differently than other types of information. It seems obvious that people like listening to stories, but it's not obvious how to use that in the classroom. Is it really true that stories are somehow "special" and, if so, how can teachers capitalize on that fact?

**Answer:** Research from the last 30 years shows that stories are indeed special. Stories are easy to comprehend and easy to remember, and that's true not just because people pay close attention to stories; there is something inherent in the story format that makes them easy to understand and remember. Teachers can consider using the basic elements of story structure to organize lessons and introduce complicated material, even if they don't plan to tell a story in class.

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Everybody loves a good story. Even small children who have difficulty focusing in class will sit with rapt attention in the presence of a good storyteller. But stories are not just fun. There are important cognitive consequences of the story format. Psychologists have therefore referred to stories as "psychologically privileged," meaning that our minds treat stories differently than other types of material. People find stories interesting, easy to understand, and easy to remember. To understand

why these benefits accrue, it is necessary to understand the underlying format of stories.

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Definitions of *story* vary, but a useful starting point is to consider how professional storytellers—that is, playwrights, screenwriters, and novelists—define *story*. There is relative agreement on some basic features, sometimes called "The Four Cs."<sup>1</sup> The first C is **Causality**. Events in stories are related because one event causes or initiates another. For example, "The King died and then the Queen died" presents two events chronologically, but "The King died and the Queen died of grief" links the events with causal information. The second C is **Conflict**. In every story, a central character has a goal and obstacles that prevent the goal from being met. "Scarlett O'Hara loved Ashley Wilkes, so she married him" has causality, but it's not much of a story (and would make a five-minute movie). A story moves forward as the character takes action to remove the obstacle. In *Gone With the Wind*, the first obstacle Scarlett faces is that Ashley doesn't love her. The third C is **Complications**. If a story were just a series of episodes in which the character hammers away at her goal, it would be dull. Rather, the character's efforts to remove the obstacle typically create complications—new problems that she must try to solve. When Scarlett learns that Ashley doesn't love her, she tries to make him jealous by agreeing to marry Charles Hamilton, an action that, indeed, poses new complications for her. The fourth C is **Character**. Strong, interesting characters are essential to good stories, and screenwriters agree that the key to creating interesting characters is to allow the audience to observe them in action. F. Scott Fitzgerald went so far as to write, "Action is character."<sup>2</sup> Rather than tell us that Scarlett O'Hara is popular and a coquette, the first time we meet her we observe two men fawning over her.

## Stories Are More Interesting

We might guess that stories are interesting because they often touch on themes that people find intrinsically interesting: romance, sex, death, and the like—all found in *Gone With the Wind*. That's true enough, but there's more to it. People find material presented in a story format more engaging than if it is presented in expository text no matter what the topic. In one study (Britton et al., 1983), the experimenters asked subjects to read passages. As they read, they were to listen for a tone that sounded unpredictably and only occasionally. Upon hearing it, they were to press a button as quickly as possible. The idea was that if subjects were more absorbed in what they were reading, they would be slower to press the button. The results showed that subjects responded more slowly to the tones when reading stories than when reading expository passages. This result was replicated across many different passages using different tasks (other than the button press) to probe attention.

The reason that stories are engaging may be inherent in their structure. Story structure naturally leads the listener (or reader) to make inferences that are neither terribly easy, nor impossibly difficult. New information that is a little bit puzzling, but

which we can understand, is deemed more interesting than new information that is either very easy or very difficult to understand. For example, people enjoy working crossword puzzles, anagrams, and the like, but only if they are moderately difficult. They are tedious if too easy, and frustrating if too hard.

Sung-il Kim (1999) tested the idea that a story's interest is derived from readers' need to make medium-level inferences. Kim had subjects read short passages and then rate them for interest. In some passages the penultimate sentence provided a reason for the final action taken, but other passages omitted the reason. For example, one passage (below) described a woman preparing soup and then serving it to her husband.

A newlywed bride had made clam chowder soup for dinner and was waiting for her husband to come home. Although she was not an experienced cook she had put everything into making the soup. Finally, her husband came home, sat down to dinner, and tried some of the soup. (He was totally unappreciative of her efforts and even lost his temper about how bad it tasted.) The poor woman swore she would never cook for her husband again.

Example of materials from Kim (1999).

The penultimate sentence is in parenthesis to indicate that some saw the sentence and some didn't. Subjects found the passage more interesting if the reason for the ending was not explicitly in the passage. Similar effects have been reported for more educational materials (e.g., historical passages, see Frick, 1992).

## Stories Are Easier to Comprehend

Stories are also easier to comprehend than other forms of text. In one study (Graesser et al, 1994), the experimenters had their subjects read several different types of texts. Texts varied in the familiarity of their content and in their format; some were stories (e.g., one that is very familiar, Princess and the Pea, and one that is not, Bodisat) and some were expository texts (e.g., concerning earthquakes or harvester ants). Each text was read on a computer screen, one sentence at a time; subjects pressed the space bar when they were ready to read the next sentence, so the experimenters were able to measure reading time. The experimenters had analyzed each sentence on a number of dimensions including number of words, grammatical complexity, number of propositions (a linguistic measure of ideas), position in the text, topic familiarity, and narrativity. The experimenters then calculated which of these text characteristics were associated with fast reading times, and which with slow. They found that most of these dimensions had some impact on reading time (e.g., subjects were somewhat slower to read sentences that had more words), but narrativity\* had the largest effect by far. Stories were read much faster than expository texts. The researchers take the faster reading speed to indicate greater ease of comprehension.

One key reason that stories are easy to comprehend is because we know the format, and that gives us a reasonable idea of what to expect. When an event is described in a story, we expect that the event will be causally related to a prior event in the story. The listener uses his or her knowledge of story structure to relate the present event to what has already happened. For example, Scarlett agreeing to marry Charles initially seems senseless, as it has been established that she thinks he's a fool. But the viewer knows that there must be a causal link to prior events, and knows that the link is likely related to the main character's goal. Indeed, Scarlett's acceptance of Charles's proposal makes sense given her goal of marrying Ashley and his rejection of her.

## Stories Are Easier to Remember

The structure of stories also contributes to the ease of remembering them, and many studies show that stories are indeed easy to remember. In one study (Graesser et al., 1994), subjects listened to the same set of stories and expository texts used in the study described above. Their memory was later tested. Again, familiarity had some impact on memory, but the main effect was for the narrativity of the passages. Subjects remember about 50 percent more from the stories than from the expository passages.

Most researchers believe that it is the causal connections that make stories easy to remember (e.g., Meyers & Duffy, 1990). Janice Keenan and her associates had subjects read different versions of a brief paragraph. The last sentence was always the same, but the penultimate sentence varied so that its causal relationship to the final sentence was more or less obvious. The sample below shows how the penultimate sentence varied in one of the passages.

<b>Level of Causal Relationship</b>	<b>Sentence</b>	<b>Percent Recalled</b>
1 (strongest causal relationship)	Joey's big brother punched him again and again. The next day his body was covered with bruises.	69
2	Racing down the hill, Joey fell off his bike. The next day his body was covered with bruises.	83
3	Joey's crazy mother became furiously angry with him. The next day his body was covered with bruises.	75
4 (weakest causal relationship)	Joey went to a neighbor's house to play. The next day his body was covered with bruises.	50

*Sample materials from Keenan et al. (1987). Level is a ranking of the relatedness of the cause described in the first sentence and the*

*effect described in the second sentence. The rankings were based on subject ratings.*

Memory was tested about 35 minutes after reading. Recall was poor if the sentences were very closely related or very unrelated. Memory was best if the subject had to make an inference to connect the sentences, provided it was not too difficult to find the connection.

Part of this memory effect likely occurs as subjects are reading or hearing the story; when the second sentence is moderately related, they think more carefully about how the sentences are connected. As discussed in a previous column (see "Students Remember ... What They Think About," in the [Summer 2003](http://www.aft.org/newspubs/periodicals/ae/summer2003/index.cfm) issue of *American Educator*), thinking about meaning is helpful to memory. Indeed, if subjects are asked to elaborate on the sentences and find a connection between them, the memory advantage for the moderately related sentences disappears (Duffy, Shinjo, & Myers, 1990). Thus, it appears that the moderate connection encourages subjects to think about the sentences, whereas the very strong or very weak connection does not.

The story format brings a memory benefit not only when you hear it, but also when you later try to remember it. Causal connections provide an effective web of associations. If you remember the goal of the main character, that is an entrée to remembering how the character tried to achieve that goal, which leads to memory for successive events. For example, if you had difficulty remembering what happened to Charles Hamilton, you might use your knowledge of story structure to guess that Scarlett could not have remained married to him, which would prompt you to remember that he died.

## **Our Minds Seek Causal Connections**

The story format has psychological significance—better comprehension and better memory—because we know what to expect in a story. These expectations are driven by a mental representation for story structure. In most (but not all) cultures, stories entail causality and goals, and so that's what listeners expect when they hear a story. This expectation is so strong that the listener will use them when remembering the story, even if the story lacked these elements. Take a moment to read the Native American folktale below. In a landmark study, Frederic Bartlett (1932) asked English schoolboys to read this folktale, in which some events happen with no apparent causal connection to prior events. When subjects were asked to recall the folktales weeks later, they added and dropped elements for which there were no apparent causal connections in an unconscious effort to make the story better fit their idea of a story. In particular, subjects had difficulty understanding why some characters were ghosts and difficulty understanding why the Indian dies at the end, and those two facts were especially subject to change in their memory. For example, some subjects omitted the fact that the warriors were ghosts, and one subject later remembered that

"Ghost" was a clan name for another group of Indians. Many subjects inserted language indicating causality for the death at the end, for example, relating that he had seemed all right, but became ill the next morning and then died.

## **War of the Ghosts**

One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: "Maybe this is a war-party." They escaped to the shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles, and one saw a canoe coming up to them. There were five men in the canoe, and they said:

"What do you think? We wish to take you along. We are going up the river to make war on the people."

One of the young men said, "I have no arrows."

"Arrows are in the canoe," they said.

"I will not go along. I might be killed. My relative do not know where I have gone. But you," he said, turning to the other, "may go with them."

So one of the young men went, but the other returned home.

And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water and they began to fight, and many were killed. But presently the young man heard one of the warriors say, "Quick, let us go home: that Indian has been hit." Now he thought: "Oh, they are ghosts." He did not feel sick, but they said he had been shot.

So the canoes went back to Egulac and the young man went ashore to his house and made a fire. And he told everybody and said: "Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick."

He told it all, and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried.

He was dead.

Causality is so powerful a cue to recall that subjects will use it even in expository prose, if it's available. In one study (Gentner, 1976), subjects who listened to passages from a history textbook later recalled the events described *not* in the order that they heard them, but in the order of causation.

# Stories and Story Structure in the Classroom

Stories are interesting, easy to comprehend, and easy to remember; and even preschoolers have some appreciation of story structure (Wenner, 2004). Exactly what has led our minds to handle stories in such a privileged way is not well understood, but it has been suggested that understanding the actions and characters in a story calls on the same processes we use in trying to understand the actions and intentions of people in the real world (Bower, 1978). We evolved as a social species, and so we may have special cognitive apparatus to deal with social situations that are co-opted in thinking about stories.

How can teachers capitalize on the privileged status of stories? There are two groups of applications. First, obviously enough, one can tell more stories. Second, where stories are inappropriate, it may still be useful to inject *elements* from the story format into lessons. Both approaches are discussed here.

## **Tell more stories in class.**

Since stories are interesting, easy to remember, and easy to understand, they are an ideal introduction to a new unit. The teacher can introduce new material in a way that is both non-threatening and interesting. Further, students may acquire some of the basic vocabulary of the content area and be better prepared to delve more deeply into the subject matter. If you think of stories as a particularly "easy to swallow" way of teaching content, you'll think of a lot of ideal times for using stories: after lunch, at the end of a complex discussion when a simple recap is needed, and during the last few minutes of the school day. A teacher might know of a story that complements the lesson's educational point, but does so in a way that is less taxing, more fun, and more interesting. For one such story, see "Mayday at 41,000 Feet: Watch Those Units!" from the [Winter 2003–2004](#) (<http://www.aft.org/newspubs/periodicals/ae/winter0304/index.cfm>) issue of *American Educator*. Such a story can also make an ideal break on a day when students are frazzled—and is more attractive than other alternatives (such as undemanding busy work).

## **Have students read stories outside of class.**

Books are available that use a narrative structure to convey complicated content. Most notable are biographies of great figures in science, mathematics, history, and the arts. Biographies make personal the material that teachers want students to master. Biographies of scientists frequently read like detective stories, as they hunt for the solution to a scientific problem. Great scientists and mathematicians also set an excellent example for students through their passion and dedication. Students will gain an important personal perspective when they read an autobiography of an ordinary person who lived through a historical event that they are studying. *Anne Frank: The Diary of a Young Girl* is a classic example, but there are many other fine works in this vein. Other books integrate educational material into the stories

themselves, such as *Flatland* by Edwin Abbott, or *The Man Who Counted* by Malba Tahan.

### **Tell stories to older students.**

Teachers may think that storytelling is inappropriate for older students. Once children get to sixth grade or so, they may think that stories smack of preschool. Of course, older children do enjoy stories; they attend movies, they read books. The problem is that listening to stories read aloud in class sounds like (and indeed is) what young children do. The solution is simple enough. The importance of age-appropriate language is obvious, and teachers might also consider not signaling to students that a story is being told. Such signals might include reading aloud from a book, using a dramatic voice, and insisting that the story be told as a whole, uninterrupted. Rather, the teacher might begin the story without announcing it as a story—tell it in everyday language, work from notes, and allow discussion while the story is being told.

### **When "story" is intrinsic to the subject matter, make use of the story format to structure lessons.**

History is a natural story; it has the four Cs—causality, conflicts, complications, and character—built in. Yet, history textbooks rarely use a narrative structure. For teachers, an important way to make use of story in history is through the generous use of trade books that treat history as biography, historical fiction, or a narrative.

### **Use the four Cs to structure lessons.**

There are ways to use the four Cs as the framework for developing lesson plans. For example, a typical lesson on the Spanish-American War emphasizes President Cleveland's and then President McKinley's reluctance to do anything about the Cuban revolution against the Spanish, despite the considerable economic stake that the U.S. had in the country. Successive events (the publishing of an insulting letter by the Spanish Minister and the sinking of the *Maine*), lead to a U.S. ultimatum that is rejected by the Spanish, whereupon the U.S. declares war. Considering the four Cs might lead to a different framework. The strong *character* in this drama is Spain, because it is Spain's actions that move the story forward. Thus, a teacher might begin with the background of how Spain first came to control Cuba and the failed revolt of 1868–1878. The central *conflict* of the story is how the Spanish should deal with the revolt: put it down or try to accommodate the Cubans. The first *complication* is the increasing involvement of the U.S. in this conflict, which offers a third option—allow the U.S. to mediate. At each step, the teacher would ensure that the *causal* link between one event and the next was clear to students. Story format can inform the structuring of a lesson plan, even if the lesson does not include a story *per se*.

### **Use the most important C—conflict.**



Screenwriters know that the most important of the four Cs is the conflict. If the audience is not compelled by the problem that the main characters face, they will never be interested in the story. Movies seldom begin with the main conflict that will drive the plot. That conflict is typically introduced about 20 minutes into the movie. For example, the main conflict in *Star Wars* is whether Luke will succeed in destroying the death star, but the movie begins with the empire's attack on a rebel ship and the escape of the two droids. All James Bond movies begin with an action sequence, but it is always related to some other case. Agent 007's main mission for the movie is introduced about 20 minutes into the film. Screenwriters use the first 20 minutes—about 20 percent of the running time—to pique the audience's interest in the characters and their situation. Teachers might consider using 10 or 15 minutes of class time to generate interest in a problem (i.e., conflict), the solution of which is the material to be learned.

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Cognitive science research confirms that stories are indeed powerful. This research shows us where this power comes from and suggests how teachers might harness it. Stories have a particular format, and each of us has a representation of that format in memory. Teachers may use this power both by the judicious use of storytelling in the classroom, and by using the structure of stories to organize a lesson.

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\*"Narrativity" was determined by asking readers to rate whether they believed that a given piece of writing seemed like a "story." ([back to article](#))

## Endnotes

1. The definitions vary somewhat, and some contain five or six Cs rather than four, but there is considerable overlap in the definitions (Field, 1994; Hull, 1983; McKee, 1997).
2. *The Notebooks of F. Scott Fitzgerald*, ed. Matthew J. Bruccoli. New York and London: Harcourt Brace Jovanovich/Bruccoli Clark, 1978, p. 332.

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