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# Stories & Learning

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So, this guy was at 33,000 feet or something and he's about to lose both engines because he got fuel without antifreeze in it and his filters are clogging with ice. You *hear* that story and, believe me, that schematic comes to life and sticks with you (Brown, Roediger, & McDaniel, 2014, p. 11).

This passage, coming after a pilot recounts his struggles to remain focused and make sense of a complex diagram during a flight training class, illustrates the significant potential of stories to improve learning. Upon hearing his fellow student's story, the pilot's attention was seized by the harrowing experience, his mind immediately began simulating the events of the story and imagining what he would do in a similar situation, and he was motivated to understand the material because of its newfound importance. This is the essence of engaged and active learning.

There currently exists strong theoretical and moderate empirical support for incorporating stories into instruction. Learning researchers have often cited the use of stories as a promising strategy for designing meaningful and anchored learning experiences for students (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990; Cordova & Lepper, 1996). And many scholars have argued that stories ought to play a more prominent role in the future of education (Dahlstrom, 2014; Klassen, 2010; Reiss, Millar, & Osborne, 1999). Research on the use of stories to improve learning, however, is still preliminary and any conclusions must remain tentative. That being said, available findings provide moderate positive support for the use of stories in instruction. Prior to discussing the research on stories and learning, however, we briefly describe the importance of stories in human thought and offer a provisional definition of a story.

## The why and what of stories

Scholars have long recognized the importance of stories when it comes to the development and maintenance of social relationships (Read & Miller, 1995). Studies on how people process and respond to stories have also revealed that stories enjoy a 'privileged status' in human thinking (Graesser & Ottati, 1995; Willingham, 2009). Stories are claimed to reflect the natural way people understand and remember information, enjoying a close correspondence with the familiar experiences of everyday life (Graesser, Olde, & Klettke, 2002; Schank, 1999). And the centrality of narrative in oral discourse, the primary means of communicating and transmitting human knowledge for millennia, also points to the importance of story in human communication and sense-making (Rubin, 1995). In fact, some researchers have even suggested that stories are the fundamental building blocks of all human memory and knowledge (Schank & Abelson, 1995).

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Yet while the significance of story in human history and thought is undisputed, defining story is no easy task. While many complex theories of story have been proposed, four critical elements are widely acknowledged as essential features of any good story. These elements have been referred to as the four Cs (Willingham, 2009). First, stories involve characters. Good story characters possess interesting traits and have relatable motives. Second, stories have conflict. Characters must have goals and their pursuit of these goals should be hindered by obstacles or crises that

prevent easy attainment. Third, stories introduce complications. Characters' pursuit of their goals will involve unexpected, and often surprising, struggles and dangers that further complicate their efforts to achieve their desired goals. Finally, stories rely on causality. Actions, relationships, and outcomes should be linked by cause and effect rather than random chance. As seen in research findings below, these essential story elements provide important benefits when it comes to human learning and memory.

## Research on stories and learning

Available research has consistently found stories to be an effective approach for facilitating and supporting the cognitive processes involved in learning. In this section we discuss research exploring the ability of stories to enhance learning in three ways: increasing interest in material, aiding comprehension of ideas, and improving recall.

### Interest

Interest and engagement with instructional material is critical for supporting meaningful student learning and is strongly associated with academic achievement (Fredricks, Blumenfeld, & Paris, 2004; Mayer, 2011). Instructors who are able to trigger and sustain learner interest, through activities that employ novelty, challenge, surprise, and relevance, can increase student motivation and improve learning outcomes (Jarvela & Renninger, 2014). Researchers have found stories to be consistently rated as more interesting than expository texts that convey similar content (Britton, Graesser, Glynn, Hamilton, & Penland, 1983). In particular, the use of story techniques such as dramatization, emotionalization, personalization, and fictionalization can significantly increase interest and motivation to understanding learning material (Cordova & Lepper, 1996; Glaser, Garsoffky, & Schwan, 2009).

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Furthermore, stories situate ideas in a meaningful context, increasing learner interest by providing an answer to the question, “Why is this content worth learning?” (Willingham, 2009). Convincing students of the importance of instructional material is critical given that learning is most effective when knowing the material genuinely matters to students (Brown et al., 2014; Zull, 2002).

### Comprehension

In addition to their ability to increase interest, stories also have the potential to significantly improve learner comprehension of material. The underlying causal structure of stories provides a natural organizational scaffold that is familiar to learners and can aid them in understanding the relationships between ideas and events (Willingham, 2009). Unlike traditional expository methods, which are based on a logical hierarchy of discrete ideas, narratives are organized around a pattern of causally related events unfolding according to a familiar story grammar (Glaser et al., 2009). This latent causal structure is frequently cited to explain the consistent finding that stories are read more quickly and understood more accurately when compared with expository texts (Graesser, Hoffman, & Clark, 1980; Tun, 1989; Zabrocky & Moore, 1999). The finding that comprehension—for example, the identification of inconsistencies in text passages—is greater in

stories is particularly surprising given that people tend to read expository material more slowly than narratives and reread challenging passages more frequently (Zabrocky & Ratner, 1992).

### Retrieval

In addition to the benefits of interest and comprehension, researchers have found that information presented in story form is considerably more likely to be recalled than comparable material presented using expository methods (Black & Bern, 1981; Zabrocky & Moore, 1999; Tun, 1989). Furthermore, the memorial advantage gained through the use of narrative is greater than that achieved through either the inclusion of advanced organizers or increased learner familiarity with the material (Graesser, Haut-Smith, Cohen, & Pyles, 1980). Several features of stories have been proposed to explain these findings.

Early experimental research on narrative and stories demonstrated the ability of stories to improve recall of information through the introduction of thematic organization (Bower & Clark, 1969). The causal storyline of stories provides a mental map that can be replayed and used to trigger related ideas and memories. Human memory relies on context and cues for recalling information and thus “retrieves

memorized information not by reading files from a specific sector of the [mental] hard drive but by cobbling together as many clues as possible — and hoping for the best.” (Marcus, 2008, p. 21). The use of narrative thus provides the brain with a deeply connected and vividly detailed contextual landscape aiding learners’ efforts to retrieve information and facilitating the joint recall of related ideas (Black & Bern, 1981).

Stories also appear to improve recall by encouraging greater mental engagement with the information presented. When reading stories people are continuously engaged in the cognitive work of making inferences and anticipating possible outcomes in an effort to make sense of the events described (Graesser, Singer, & Trabasso, 1994).

## Where can I learn more about stories and learning?

Please refer to the companion paper for more information and ideas about incorporating stories into an online instructional setting. For an accessible discussion of the recent interest in using stories to improve teaching and learning, as well as some potential ethical considerations, see the paper by Dahlstrom (2014). Recent scholarly interest in the use of stories for learning has focused primarily on the use of narrative in educational video games, and the books by Gee (2007) and Koster (2004) offer intriguing looks at how game narratives might be used to design more engaging learning experiences. Finally, the papers by Norris (2005) and Adams, Mayer, MacNamara, Koenig, and Wainess (2012) provide insightful commentary on the research gaps and potential pitfalls that come with using stories in instructional settings.

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