

Tell Me a Story: The Use of Narrative as a Tool for Instruction

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Introduction

As librarians who teach, we are always looking for ways to enhance student learning and engagement. Narrative is a useful approach towards achieving this.¹ The power of narrative for teaching stems from the fact that narrative employs many of the strategies the brain already uses to learn. For example, the brain can grasp information fractally: It can perceive both the detail and the big picture at the same time, unconsciously.² A narrative creates the scope for embedding details while simultaneously serving as the vehicle for establishing the large-scale guiding structure. Thus, working through a narrative allows the students to have both elements present in their learning and for later recall. When they are ready and able, students can see both the entire pie and the pieces that compose it. Similarly, a narrative activates the affective motivation important to learning.³⁻⁵ Using stories, one may layer and activate patterns and set up an affectively charged structure to which students will instinctively respond and with which they will interact.⁶ Thus, from the point of view of the learning brain, a narrative is a versatile and powerful learning activation tool. This paper highlights examples from the authors' professional experience of teaching with narrative within the context of theories from education, psychology, literature, and cognitive science that help support and explain why narrative is a powerful teaching tool.

Narrative versus Story

Many of us think of stories when we think of narra-

tive. Narrative and story are, in fact, different, yet related. Their definitions, both literary and derived from their use in the social sciences, allow us to understand how these two terms can be adapted for use in teaching and learning. Abbott's *Cambridge Introduction to Narrative* defines both narrative and story clearly and intuitively enough so that one can achieve a multi-disciplinary understanding of these terms.⁷ The starting point for Abbott is the story. A story is a chronological sequence of events. Without events—things that happen in time—there is no story. A description may be very detailed, but if it does not include chronologically unfolding events, it cannot be a story. Every story is limited by its linear nature and must always flow in one direction only, from the beginning to the end, faithfully passing through its sequence of events.

While a story is always linear, it can be told and re-told—or narrated—in many different ways. According to Abbott, “A narrative is the representation of an event or a series of events.”⁸ For example, a story can be told as a narrative of flashbacks from the final event to the initial one, or as a random series of events presented as chronologically jumbled letters or journal entries. Both of them still tell the same story, but their different arrangement of events creates a very different experience for the audience. A story is composed of basic facts, relationships and events that need to be communicated through a narrative, whether we use the story in teaching or in writing. Different narratives that can be built around a single story rely on the device of emplotment to position the events with

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respect to one another in such a way that their relationships can be understood even if the events are not presented in a chronological manner.⁹

A good starting point towards working with narrative is the social science perspective of Polkinghorne.¹⁰ Polkinghorne's definition of narrative emphasizes the importance of the plot. A plot is a conceptual schema through which individual events are related to each other and acquire meaning within a common context. As the events of a story are temporally and thematically organized by means of a plot, they become an emplotted narrative.¹¹ "Stories are concerned with human attempts to progress to a solution, clarification or unraveling of an incomplete situation,"¹² Polkinghorne states. "Narrative descriptions exhibit human activity as purposeful engagement with the world."¹³ In essence, stories set out a set of problems, the steps (actions) needed to make sense of them or solve them, some potential solutions, and their aftermaths. Narratives set up a purposeful—contextualized—path from problem through solution to critical engagement with the solution. Narratives provide exemplars of entities engaging with their realities within a plot that takes the audience through a set of events, all the way to the resolution of the situation.

Polkinghorne approached narrative as a tool for people to make sense of their world. If this sounds like a constructivist strategy of sense-making, it is. Polkinghorne based his views of human problem-solving and engagement with reality on the work of Jerome Bruner.¹⁴ Bruner, one of the originators of evidence-based psychological constructivist approaches to human learning, pioneered research into observing and quantifying the processes through which humans engage with the world.¹⁵ Bruner's work spans decades, from the late 1960s all the way through seminal papers in the 1980s, and insightful books written for a non-specialist academic audience in the 1990s. Polkinghorne cites a signal passage from Bruner's *Acts of Meaning* to illustrate just how human sense-making, on its way to groping for a solution, progresses through the elements of a big picture narrative: "People do not deal with the world event by event or with text sentence by sentence. They frame events and sentences in larger structures."^{16,17} Progressing through the events of a story by the means of a narrative path that contextualizes these events and creates scope for embedding details within a guiding structure is the way in which people deal with life. It is so, perhaps, because this is how they learn.

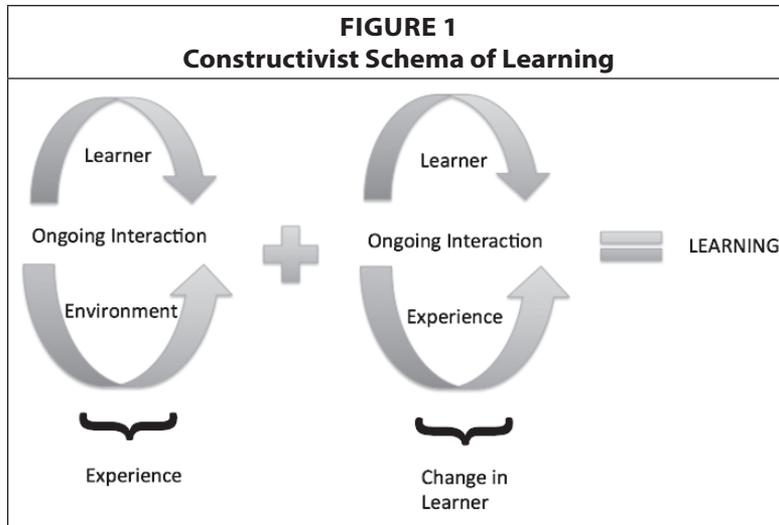
Perspectives on Learning

Our hypothesis, at this point, is that people deal with the world, from simple sense-making to solving complex problems, by constructing schemas—or narratives—into which the details—or events of the story—fit along the narrative arc. What we will want to show in this section, once we define learning, is that people do so naturally because their brains are wired in exactly this way. Thus, by progressing through an outline of constructivist theories of learning towards the new research insights from mind-brain-education science (MBE), we will present what brains appear to be doing when they are learning, and how this fits with the elements of narrative as we have defined it.

Until Bruner and his colleagues started looking at the neuropsychology of meaning-making and learning, most theories of learning, even the early constructivist approaches, were not based on neurological observations of the brain at work; real-time MRI scans and mapping of active areas of the brain mid-task were not technologically possible. Since the early 1900s and the work of Piaget and others, theories of learning postulated that learning happened through an interaction between the person and the environment in a process of ongoing meaning construction.^{18,19} The "construct" in constructivism describes that cumulative, experience-based building up and refinement of a person's understanding of the world.²⁰ By necessity, this understanding of the world is extremely individualized.²¹ Whereas Piaget's approaches focused on learning by children, others soon extended the basic mechanism of meaning construction through an interaction with the world to all learning by all individuals, without limits by age or experience.^{22,23}

At its simplest, a constructivist definition of learning boils down to three elements: interaction, an ongoing (recursive) process, and change. Learning is a dynamic process built on human interaction with the world, as shown in Figure 1, where that interaction translates into experience leading to a lasting change of behaviour.²⁴ Constructivist theories emphasize learning as a process of meaning construction and worldview synthesis through ongoing interaction with the world.²⁵

While it took the work of MBE scientists to connect the observable behavioral change from learning to a lasting change in the neurophysiological make-up—a change in the architecture of the brain—the hope of



early constructivism was that the two were not only correlated but strongly causally connected. Now we know that this is the case.^{26,27} Decades after researchers started the inquiry into the neurophysiological basis of learning, a group of scholars have begun to focus on studying the activities of the human brain for the express purpose of understanding how learning—and teaching—changes its architecture and behavior.^{28,29}

Mind, brain and education science, or MBE science, formally took off in 2008 when neuroscience, psychology and education experts decided to shape a new field for the neurologically-based study of teaching and learning.³⁰ Education research into pedagogy (the teaching and learning element), psychology research (the mind perspective), and clinical neuroscience (the brain view) contribute equally to the field of MBE science.³¹ MBE scientists do not want to know only how students learn. They are interested in how neural processes in the brain translate into behaviors that may, in turn, lead to learning, and how one should teach to stimulate rich learning experiences.³²

One of the fundamental concepts in MBE science is that skills that lie at the core of academic activity, such as reading, writing, making sense of numbers and graphical data representations, are complex processes within the mind / brain.³³ There is no single right way to teach everyone these complex skills, so using diverse tools may create better outcomes. The MBE definition of learning shows how this complexity arises physically:

Learning can be said to take place in the mind in the psychological sense and in the brain, in a

neurological sense. Learning is instantiated in the brain and is prompted by internal thought processes, sensory input, motor training, or simulated perceptual input in the mind resulting in a physiological and measurable change in the neural networks, as well as changes in the muscles and other parts of the body.³⁴

Learning involves emotion, cognition and perception, but at the core of it there are neural processes that result in lasting changes in the brain.^{35,36} If this sounds familiar, it should. MBE experts state that learning is a constructivist process.³⁷ Since brains develop through one's

life and retain a high degree of plasticity, interaction with new things, like technology, causes people of all ages to undergo new experiences and experience lasting neural change.³⁸

Now that we have a physically based understanding of learning as a brain process, let us examine what is known about the details of that process. What we are looking for are parallels between brain operation and the narrative process. Following in Polkinghorne's footsteps, but armed with MBE science insights, we wish to show how the tools of narrative fit in with the way brains already process new learning experiences.

Let us start with engagement and seeking meaning. People seek meaning innately.³⁹ Since emotions are the underlying driver of brain activity, emotional engagement drives the need to seek meaning, and ultimately affects much of the learning process.^{40,41} Learning cannot be isolated from social contexts, as social support and feedback affect learning at every stage.^{42,43} Brains learn best when facts are embedded, and new skills are grounded in natural contexts with clear, practical examples.⁴⁴

More than anything else, these MBE science observations truly support the use of narrative in teaching and learning. Let's recall that a narrative contextualizes the events of a story and creates the scope for embedding details. A narrative, thus, provides the social context and the scaffolding—or matrix—for the integration of new experiences as the learner progresses through the task of working through the new problem. In fact, a narrative can guide learners through the events of problem statement, solution

generation, scenario generation and problem resolution in a relevant and fully contextualized way. A narrative contains all the elements necessary for a learner to stay emotionally engaged with a problem, and it allows the learner to embed every part of the problem in a useful context, including the integration of the new and the unfamiliar alongside that which has been previously incorporated.

Returning to MBE insights into neuropsychological mechanisms of learning, we find that learning involves both conscious and unconscious processes, and it depends both on the ability to direct attention and to harness different levels of memory.^{45,46} Moreover, learning involves both peripheral perception, whereby details and processes may not emerge directly into consciousness, and focused attention, which brings facts and issues sharply into awareness.⁴⁷ The brain achieves a simultaneous micro- and macro-, in-focus and out-of-focus consolidation of experience and information. One way of visualizing this consolidation is by seeing the brain as a fractal, and these simultaneous complex processes as building both the large-scale structure of the fractal, and the underlying fine detail, at the same time, with emotionally charged connections between them. These connections can become reinforced through further experience and resultant learning. Subsequently engaging either one or the other can bring back the entire experience, with the facts and the context emerging either inductively or deductively, through examining the detail or by appealing to the overall big picture theme and its resonant patterns.

While a story sets up the linear play-by-play “big picture” structure, the emplotted narrative, through contextualizing devices, can zoom into an event to focus on a detail, thus taking a learner in and out of the timeline of the story, and side-stepping the constraints of time and structure. This ability of a skillfully constructed narrative to zoom in and out of the events of the story mirrors the brain’s own uncanny ability to encode new learning in both minute detail and in broad emotional strokes. Moreover, a narrative can use plot devices to move back and forth along the arc of the story as easily as the brain itself can use the electrical signaling between neurons connected as part of the original learning experience. Since the brain works as a fractal, perceiving both the whole and its constituent parts simultaneously, students need different amounts of time to reach an insight.

The “aha moment” of an insight may arrive as the brain self-corrects and searches for a pattern. Metacognition, or knowing about knowing, is part of the brain’s ongoing search for meaning and self-reflection.⁴⁸ The brain is naturally self-reflective and self-correcting, engaged in both pattern-seeking and novelty-seeking. Learning itself involves the interplay between seeking novelty and building up established patterns, and brains are just as good at finding a pattern as they are at identifying outliers.⁴⁹ Narratives support the brain’s pattern-seeking needs by fitting a path to the actions of a story. The devices of the narrative, starting with the standardized tropes of a fairy tale (“long ago, in a land far, far away...”) and ending with the balance between action and description, allow the brain to find the pattern, and the space for metacognitive reflection.

What do brains need in order to learn? MBE science insights suggest that there are just a few key elements of a learning experience that fully engage the brain in learning: Emotional engagement; a practical context and meaningful examples; a pattern to identify, follow, and defy; a structure to build on, with signposts to remember; and enough detail within an overarching structure to zoom in and out of. A well-constructed narrative around a story with strong events and problems contains all the elements to support learning. As Boström, a chemistry instructor and pedagogy researcher, noted regarding her use of a powerful real-life story to contextualize an assignment: “The narrative, connected to a well-known event aroused their interest greatly. Chemistry was set in a useful context and the abstract theories were shown to have great value for human enterprises.”⁵⁰ The narrative employs an ordered pattern on top of a chronologically-based story; it creates the scope for embedding details while establishing a guiding structure; it contextualizes unfamiliar information and it activates affective motivation. A narrative is a great vehicle to activate all the mechanisms of learning the brain already uses when it successfully transforms an ongoing interaction with the environment into a transformative interaction with the event itself.

Narrative as a Vehicle for Learning: Examples of Instruction

Narrative works in the classroom. This is why the cognitive basis of narrative as an instruction strategy is an exciting topic for investigation. Understanding

why and how narrative works, and optimizing its use, can have a significant impact on the effectiveness of classroom instruction.^{51,52} Now that we understand what narrative is and how compatible its structure is with the way the brain learns, we will highlight two examples of our classroom practice in the context of how and why narrative is effective (see Table 1 for a summary of the context for the two examples).

In the first example, Mindy Thuna used a simple story whose central event is finding the right source of information. The search for information was framed for the class as a search for something the students would themselves need, or have needed, to find outside of the library setting. Both shoes and bananas have been used for this purpose. By walking through the process of where to search for a known or common item in everyday places the students are able to follow the pathway without having to learn the details that are unfamiliar, for example the library resources in their discipline. Once the logic of the pathway is clear, the new information can be added in as the students now have a framework to build on to. The narrative transformation of this story that makes it very effective and versatile is its use of a metaphor. The metaphor then contextualizes the unfamiliar—the use of library resources—at every step of the simple search story.

A second example used by Thuna is a collaborative narrative of the research process. At the beginning of the narrative, Thuna outlines the research process from the perspective of sources in the sciences. She defines primary, secondary, and tertiary sources and their use, stemming from an initial idea. The students and the instructor are encouraged to interject

and interact with the narrative by collectively building the various stages in the research process. Throughout the conversation, tips are given to help the students in their own research process: backwards and forwards searching; how to find journal abbreviations; types of review articles.. To enhance the interactive and collaborative flavor of the process, the students are asked questions about how they would approach a particular problem to help highlight the areas they may have trouble with and to ensure these areas are covered. As the narrative continues, the professor and the librarian engage in a conversation with the students about the changing expectations of their research findings as they progress through the undergraduate years to graduate school. The iterative nature of this narrative mimics the iterative nature of research, an area that students often struggle to understand. By creating a skeleton of the process and having the professor, librarian and students flesh it out collectively, the framework and process are more accessible and concrete.

Conclusion

Narrative is a powerful tool for teaching and learning for many reasons. The power of narrative lies in the fact that it harnesses the strategies the brain already uses for learning. The following elements of narrative in teaching are particularly resonant:

- A. Narrative makes something abstract more concrete/immediate.
- B. Narrative contextualizes information by creating the framework for students to place the new knowledge into (and thus improve their retention and understanding).

TABLE 1
Contextual Information for Two Examples of Narrative Use in University Level Instruction.

	Course Name	
	Laboratory in Physiology	Science Education
Number of Students (Year)	51 (2011)	20 (2008)
Interaction Framework	<ul style="list-style-type: none"> • 1-hr lecture • classroom • no hands-on 	<ul style="list-style-type: none"> • 1-hour lecture • computer lab • individual work time
Story	Stages of the research process.	Finding information pertinent to a range of science education topics.
Narrative	Illustrating the iterative nature of the research process through a collaborative dialogue with the students, professor and librarian.	Use of a metaphor of buying a banana and the various locations one could go to purchase the item to illustrate the various sources available to search for information.

- C. Narrative allows students to have more immediate emotional experiences that they can relate to (and therefore remember).

As librarians we are often given the task of presenting information in a short timeframe to a group of students who may not be interested. By engaging the students through the creation of a narrative, we invite the built-in learning heuristics of their brains to extract maximum benefit from the in-class experience. Classroom use of the narrative allows students to play a more active part in their learning without them realizing what has transpired.

Notes

1. Grinnell Smith, "The Way We Educate: Twenty Million Miles for Some, a Twenty-minute Walk for Others," *Schools: Studies in Education* 9, no. 1, (Spring 2012): 63-72.
2. Tracey Tokuhamas-Espinosa, *The New Science of Teaching and Learning: Using the Best of Mind, Brain, and Education Science in the Classroom* (NY: Teachers College Press, 2010).
3. Gerd Gigerenzer, *Gut Feelings: The Intelligence of the Unconscious* (New York: Penguin Books).
4. Reinhard Pekrun, Anne C. Frenzel, Thomas Goetz and Raymond P. Perry, "The Control-Value Theory of Achievement Emotions: An Integrative Approach to Emotions in Education," in *Emotion in Education*, ed. Paul A. Schutz and Reinhard Pekrun (Amsterdam: Elsevier, 2007).
5. Monique Boekaerts, "Understanding Students' Affective Processes in the Classroom," in *Emotion in Education*, ed. Paul A. Schutz and Reinhard Pekrun (Amsterdam: Elsevier, 2007).
6. Smith, "The Way We Educate."
7. H. Porter Abbott, *The Cambridge Introduction to Narrative*, 2nd ed. (Cambridge: Cambridge University Press, 2008).
8. Ibid., 13.
9. Ibid.
10. Donald E. Polkinghorne, "Narrative Configuration in Qualitative Analysis," in *Life History and Narrative*, ed. J. Amos Hatch and Richard Wisniewski (London: Routledge, 1995).
11. Ibid.
12. Ibid., 14.
13. Ibid., 14.
14. Ibid.
15. Howard Gardner, "Jerome S. Bruner 1915—," in *Fifty Modern Thinkers on Education: From Piaget to the Present Day*, ed. Joy Palmer (London, GBR: Routledge, 2001), 90-96.
16. Polkinghorne, "Narrative Configuration in Qualitative Analysis," in *Life History and Narrative*, 14.
17. Jerome Bruner, *Acts of Meaning* (Cambridge: Harvard University Press, 1990).
18. Marcy P. Driscoll, *Psychology of Learning for Instruction*, 3rd ed. (Boston: Pearson, 2005).
19. Carol C. Kuhlthau, Leslie K. Maniotes, and Ann K. Caspari, *Guided Inquiry: Learning in the 21st Century* (Westport, CT: Libraries Unlimited, 2007).
20. Driscoll, *Psychology of Learning for Instruction*.
21. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
22. John D. Bransford, Ann L. Brown and Rodney R. Cocking, *How People Learn: Brain, Mind, Experience, and School*, Expanded ed. (Washington, DC: National Academy Press, 2000).
23. Driscoll, *Psychology of Learning for Instruction*.
24. Ibid.
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26. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
27. Judy Willis, *Research-based Strategies to Ignite Student Learning: Insights from a Neurologist and Classroom Teacher* (Alexandria, VA: ASCD, 2006).
28. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
29. Willis, *Research-based Strategies to Ignite Student Learning*.
30. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
31. Ibid.
32. Ibid.
33. Ibid.
34. Ibid., 17.
35. Willis, *Research-based strategies to ignite student learning: Insights from a neurologist and classroom teacher*.
36. Bransford, Brown, and Cocking, *How People Learn*.
37. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
38. Ibid.
39. Ibid.
40. Ibid.
41. Boekaerts, "Understanding Students' Affective Processes in the Classroom."
42. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
43. Boekaerts, "Understanding Students' Affective Processes in the Classroom."
44. Tokuhamas-Espinosa, *The New Science of Teaching and Learning*.
45. Ibid.

46. Willis, *Research-based Strategies to Ignite Student Learning*.
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“Storytelling used as a tool in business and leadership is about building a relationship with your staff. The more they know you, they can care about you, they can trust you and if I made a mistake, they knew I would listen.” Vala Afshar, Chief Digital Evangelist for Salesforce, writes in Huffington Post, “The power of storytelling can make or break the success of your organization. Your story needs a beginning middle and an end. And the conclusion needs to have a moral lesson or a reason for telling it that can be applied directly to your team” whether it is about the product, the service, the process, the system or correcting a mistake. “You have to know how to find the story, how to find the moral and have a message,” Coletta advises. Telling a story Narrative is From story to narrative. Investigating narrative Exploring extracts Zones of proximity “ texts and concepts. Narrative and chronological time Critical extracts Cinderella “ playing with narrative time Unravelling the story “ narrative and chronological time in your text. The shape of your set text Structure on a small scale. Exploring one example “ motifs Reecting on the structure of your set text.

DIALOGUE. A narrative technique (known for literary fictional narratives as a literary technique, literary device, or fictional device) is any of several specific methods the creator of a narrative uses to convey what he or she wants”in other words, a strategy used in the making of a narrative to relay information to the audience and particularly to develop the narrative, usually in order to make it more complete, complex, or interesting. Literary techniques are distinguished from literary elements, which exist... Narrative turns story into information, or better, into knowledge for the recipient (the audience or reader). Each story event is a unit of knowledge the audience requires. A narrative is paradox, because it seeks to convey truth by hiding it. The step outline describes all the events of the story in narrative order, as a sort of shortened meta-version of the story itself. While a logline, a synopsis, a treatment, a step outline, and the finished work may all refer to the same story, only the step outline and the finished work can express the same narrative of that story because they contain the same events without leaving any out. Compose your own narrative now in the Beemgee story development tool, free or premium Grounded within literature pointing to the value of narrative in communicating scientific information, the purpose of this study was to examine the use of stories as a tool for teaching about natural selection in the context of school science. The study utilizes a mixed method, case study approach which focuses on the design, implementation, and evaluation of narrative-based curriculum materials. The data consisted of questionnaires, classroom observations, and interviews with the students and teachers. The analysis of the data showed that most of the students developed adequate scientific understandings about natural selection and they perceived the narrative as easier to comprehend than the textbook.