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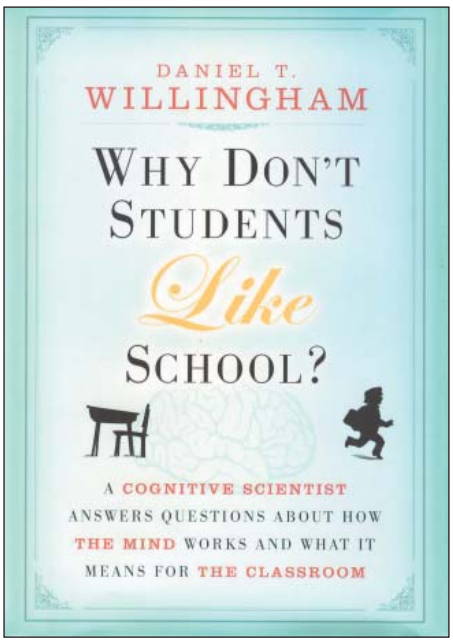
Why Don't Students Like School?

by Susan Meyer Goldstein, University of Minnesota



Why Don't Students Like School?
by Daniel T. Willingham, University of Virginia
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Perhaps it is true that you cannot judge a book by its cover, but with the title *Why Don't Students Like School?*, this book by Daniel Willingham is likely to pique the curiosity of teachers at every level. The book's subtitle, *A Cognitive Scientist Answers Questions about How the Mind Works and What It Means for the Classroom* reflects Willingham's goal of linking basic cognitive research with how we should teach students. Note that as Willingham wrote this book for educators at all levels, I refer to faculty as "teachers." Willingham's treatise on how the mind works and how this should influence the way we educate students is based on his work as a cognitive scientist. His goal in the book is to use the cumulative knowledge of cognitive science to help teachers develop better methods both for classroom teaching and, more broadly, educating students. Rather than reviewing this book to promote it being read (or not read), I provide some of the key insights from the book. For readers seeking more depth, the book provides an extensive discussion of issues, brief discussion of evidentiary research, and specific examples from a variety of fields of study. Much of this information is directed at K-12 education.

Willingham writes like the quintessential researcher because he does not supply easy solutions or encompassing suggestions. Rather, he describes what researchers know about how the human mind learns and then remembers, and employs this understanding to define the challenge of creating student learning. The challenge involves first enabling student acquisition of new knowledge and then facilitating the shift of knowledge to long-term memory. He presents a variety of suggestions for developing educational approaches that address these challenges and encourage student learning and memory. But he does not provide tight answers or easy solutions, and he offers only a few directly applicable techniques. However, his suggestions cover how teachers in any field of study and with students of any age might develop their own teaching to have the best impact.

So, Why Don't Students Like School?

The simple answer to the question presented in the book's title is that school is usually either too easy or too difficult. Cognitive scientists know that students find pleasure in successful thinking (i.e., solving problems). However, neuroscientists are still studying why this is true. They believe that dopamine, a brain chemical associated with pleasure, probably plays an important role in

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learning by acting as the brain's natural reward system for solving problems. For students to learn, the problems teachers present them must be difficult enough to engage them (so their brains seek the pleasure reward) but not so challenging that the problems are unsolvable. The latter includes problems without known solutions or problems that individual students do not have the knowledge to solve, thus causing them to abandon their efforts. A case in point is that most students like solving problems but few like to work on problems with no known solutions. Solving problems helps students build and solidify memories for solving similar problems (on a future exam, for example). Working on unsolvable problems, however, can be exhausting once the initial burst of energy due to curiosity has passed. I pause here to recognize that many *faculty* do enjoy working on unsolvable problems, a reminder that we are often UN-like our students in this regard!

The author stresses that humans almost always learn by weaving new knowledge into existing mind maps (existing memories of previously acquired knowledge). He gives the example that driving to a new location is easier for a seasoned, experienced driver than for a newly licensed driver. If driving to the new location truly required new learning then the task should be similarly difficult for both drivers. But since most of the requirements for the trip can be tapped from memory, except perhaps locating the particular address, the experienced driver has an advantage over the new driver. One can see that if we give the same instructions to both the experienced driver and the new driver, the information is likely to be too much for the former and not enough for the latter. So it is for our students, some of who need only limited instruction to "get" a new concept while others have virtually no mind map on the topic and thus require extensive learning.

Willingham says that the brain's overwhelming preference for working from memory and existing mind maps seems to be at odds with our quest to teach students critical thinking skills, which do not primarily engage memory and existing mind maps. It also raises the challenge of how to teach in a way that engages both the knowledgeable and the less knowledgeable students in the same classroom. He offers several suggestions. First, be sure there are reasonably solvable problems and questions to work through in class. This may include a numerical problem or a question such as how can lean production principles be used to help firms address environmental concerns? Given the set of students in any particular course, the teacher must consider what represents a reasonable set of questions or problems that lead to the right set of answers. The answers are the course content you want the students to remember. Second, recognize that not all students have adequate or the same working memory to understand certain concepts. One example is operations-and-decision-science-related knowledge. Many students have never seen the inside of a factory or understand what a decision support system is, and thus they lack the corresponding mental maps. Willingham also advocates that we accept that not all students should do exactly the same work. Some course work needs to be simple enough for the less knowledgeable student to accomplish because if they cannot solve some problems they will effectively walk away from the course. Other work needs to challenge the brightest, most knowledgeable students. It is the challenge that creates the curiosity to get the brain to engage in real thinking, rather than working from memory.

Why Can Students Quote Entire Movie Scenes but Forget Everything I Say (except my jokes)?

My husband, also a business school professor, once ran into a student several years after having him in class. The student relayed the obligatory statement about how much he had enjoyed the class and learned, then enthusiastically repeated a funny (but unrelated to class) story my husband had told in class. The story was the student's strongest specific memory from the course. How can we get students to remember course content with such specificity and enthusiasm? Willingham cites cognitive science research related to learning and memory to show teachers what we are up against. If students pay attention when we present new material this obviously helps, but is not sufficient for creating memories. Even a true desire to learn often does not result in creating memories of the material. Further, evidence shows that students pay more attention to emotional events, but these events, insufficient for ensuring memory and emotion, are certainly not required for learning. (Can we get emotional about the economic order quantity!) He also reports that making material relevant to students' interests does not work. Each of these tactics—student attention, desire, emotion, and relevance—can potentially result in student learning, but not always and not consistently. Case in point, how much do you remember about the content of presentations you attended at a recent research conference, assuming you were interested at the outset!

The bottom line is that there is no formula for learning and memory. Teachers can be funny, motherly, showman-like, or storytellers. Students cite these personal characteristics as the reason for enhanced learning in a particular course. Extensive research, however, shows that they do not impact student learning. Rather, there are just two basic characteristics that have been shown to enhance student learning. The first is the organization of the teacher in presenting course material, and the second is whether an emotional bond has been established between the teacher and student. There is nothing new or insightful here except that by focusing on these two characteristics, teachers may free themselves from the need for other, perhaps less attainable, characteristics such as showmanship.

Once a teacher has acquired the two basic characteristics, content and flow of class time become the key to tapping cognitive sciences wisdom for enabling student memory and learning during class. Researchers have studied numerous methods for creating memories and find that students tend to remember stories better than other forms of infor-

mation. What Willingham refers to as a story is not what we might think of, such as a book with an introduction, plot, and conclusion. Rather, it is setting up a question and creating interest so that students want to know the answer. "Stories," as Willingham defines them, contain four elements: causality (relationships between events), conflict (struggle to meet a goal), complications (issues blocking the easy path to the goal), and characters (interesting people whose characteristics are relevant to the story). Stories increase student retention for several reasons. They are generally easy to comprehend because students understand the general structure of a story and each component is relevant (or should be). Stories are also interesting. Research shows that in terms of written materials, students find stories more interesting than other types of materials, although the preference wanes if the stories contain too much irrelevant information. Finally, stories are easy to remember. This likely explains why students remember entire movie scenes (and your jokes!).

Creating stories does not require a change in teaching style or method but a shift in the organization and sequencing of course content. It is not giving answers to students, but rather, asking questions. The answers to the questions are what you want students to remember. They will remember course content better if the story is crafted to set up the questions because the answers (i.e., the content) may not be particularly interesting by themselves. Class time devoted to the formulation of the story or questions will be time well invested in helping students remember the eventual answer.

In summary, teachers must remember that getting students to remember is not about entertaining them, although engaging them in some way can be helpful. Students may only remember the entertainment rather than the underlying content. Rather, the use of stories or scenarios to set up questions will cause students to seek answers, making them more likely to remember the whole story, including the answers you wanted them to learn.

For some course content, stories are not effective. Some types of information that must be learned through memorization such as lists or sets of facts are not suitable for weaving into a story. A list of items does not by itself have meaning and it is better remembered using a rote tool than a story. However, mnemonic devices can be used to facilitate memory. The acronym TEAM WIN, for example, can used to remember the seven wastes associated with lean production systems.[1] For a student not previously exposed to them, remembering seven separate wastes might be challenging, but this acronym provides an easy prompt. When I studied medical terminology as an undergraduate, a friend mentioned his trick for remembering that 'nephro' is the root for kidney. He would say, "I nephro eat kidney beans." Twenty-five years later, I still remember his memorable trick! Songs can also be used. For example, the character Coach in the U.S. television show 'Cheers' used a song to remember the underlying characteristics of Albania.[2]

Should I Adjust My Teaching for Different Learner Types?

Much attention has been devoted recently to differences in student learning styles. These present teachers with the challenge of altering and diversifying their teaching styles to accommodate student differences. Coupled with the fact that there are literally dozens of published learning styles, teachers are left with the confusing and challenging task of satisfying a variety of known and unknown student needs. There is some good news here for teachers. The evidence from cognitive science shows that most people learn the same way. Willingham reports that there is no consistent evidence that students learn in different ways. The caveat to this is that students do have varying preferences in teaching styles (note that teaching style $\neq$ learning style). In general, however, teaching style does not impact whether students learn the content that is taught. While a reality, differences in learning style are irrelevant to most types of learning that must occur in business schools. Visual learners with a preference for learning materials by seeing them out-perform non-visual learners if the material being tested is visual in nature. Similarly, auditory learners with a preference for learning by hearing the materials perform better than non-auditory learners when tested on auditory materials. An example is recognizing the origin of accents. Since most of the content in business courses is concerned with facts, meaning, and relationships, these learning style differences would not be expected to contribute to student performance, even if the materials were presented to students in their preferred style. This is not to say that teachers should not use a variety of teaching methods. Any time teachers can 'mass customize' to help students (or a subgroup of students) learn course content we should use those means. But there is just no consistent evidence that a teacher can design the right mix of methods for any particular group of students. Using a variety of methods has the obvious benefit of helping students maintain their attention on what is happening in the classroom. So rather than trying to reach different students by using different methods, we can help all of our students refocus their attention by changing from one teaching method to another.

Willingham covers much more ground in this book than can be ad-

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equately addressed here. However, Table 1 provides a snapshot of some of the topics he discusses as well as his brief descriptions of implications for teachers. In conclusion, the book presents an interesting set of ideas. The most engaging portions are the explanations of how the brain works, how memory is created (or not created), and how the brain generally defaults to memory when presented with new information. There are a variety of suggestions for improving teaching, engaging students, and, in some cases, accepting the way things are. Willingham extensively employs cognitive science research to support his ideas, and his willingness to sometimes say "we just don't know" is refreshing. A metaphor quoted in the book captures his advice to teachers, which in turn serves as advice for our students: "Let me take you on a mental journey. Follow and trust me. The path may sometimes be rocky or steep, but I promise a rewarding adventure."

Cognitive Principle	Classroom Implication
Students are naturally curious, but not naturally good thinkers.	Think of course materials as answers, and put most of your effort into creating the right questions to create student interest in learning the answers.
Factual knowledge must precede skill.	Students cannot think about a topic, i.e., employ critical thinking skills, without a factual knowledge (mind map) base.
Memory is the residue of thought.	For each lesson plan, consider "What will cause my students to think?"
Students understand new things within the context of what they already know.	Start by ensuring that students have the shallow knowledge, and work toward deep knowledge as a goal.
Students are more alike than different in terms of learning.	Let lesson content, not student differences, drive decisions of how to teach.
Intelligence can be changed through hard work.	Recognize or reward both successes and failures in terms of the effort the student has expended; avoid focusing solely on student's ability.
Teaching, like any complex cognitive skill, must be practiced to be improved.	Improvement requires more than experience; it also requires conscious effort and feedback.

Note: Adapted from Willingham (2009 p. 163).

Table 1: Willingham's cognitive principles and classroom implications.

Endnotes

1. **T**ransportation, **E**xcess production, **A**dded processes, **M**otion, **W**aiting, **I**nventory, **N**on-conformance (defects). Thanks to Rachna Shah, my colleague at the University of Minnesota, for this acronym.
2. "Albania, Albania, you border on the Adriatic, your land is mostly mountainous, and your chief export is chrome" sung to the tune of "When the Saints Come Marching In." ■

CLASSROOM, from page 6

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