From Summiting Bloom's to Promoting Lifelong Learning

BLOOM'S TAXONOMY has long been regarded as the holy grail in leading students through a process of content mastery. The traditional journey begins with imparting information to learners and finds its apex in enabling learners to evaluate and assess knowledge claims. In theory, each step of the journey to mastery builds on prior steps.

Bloom's model is dominant in education circles. Adherence to its features often goes unquestioned during the process of course design. The model also dates back to 1956, a time when information itself was not (literally) at the fingertips of every student. Decades later, in the age of the Internet, the meanings of the terms "information" and "knowledge" have changed dramatically. Students are drowning in information and learn early to evaluate and assess information sources. The Internet has ushered in an age of constant and reflexive information assessment. We live in a new age of sophistry . . . and cynicism.

It makes sense, then, to consider other, more recently developed, models for course design.

In 2005, Spencer Kagan questioned the legitimacy of the Bloom model and suggested a different system, one that aligns with neuroscience. Kagan offers instead a system of distinctions between three types of thought: *understanding*, *transforming*, and *generating*. Each of these three types is divided into several subtypes. Generally speaking, the category of *understanding* encompasses comprehension skills, *transforming* involves inductive and deductive logic skills, and *generating* involves research skills. Like Bloom's taxonomy, it is a progressive system: students build on a foundation of understanding. At the same time, it offers a distinct alternative model for course design.

Workforce training can also provide interesting course design models for educators. Typically, employee "training" and higher education are viewed as divergent activities, but what Will Thalheimer calls "Training Maximizers" hold value for faculty in higher education. He offers a multi-step proposal for employee training programs that aims at "maximizing results". Admittedly, "maximizing" is much more the language of business than of higher education. But beyond the lingo, his recommended system begins with credible content and engaging learning events. It continues with support for understanding, competent decision making, long-term remembering, and application. And it closes with support for perseverance in learning.

As a college educator, there is something undeniably attractive about Thalheimer's model. As a more recent development, it's built on the assumption that students arrive in the classroom pre-programmed with some evaluative skills, as the first step depends on content being "credible".

More importantly, Thalheimer's model places a clear emphasis on an important goal for modern educators: inspiring continuous learning. The speed of technological and scientific developments is accelerating, and the veracity of the content that college students learn in classrooms can be expected to change. Developing in students a lifelong love of learning is perhaps the most valuable contribution an educator can make.

Of course, there is still plenty of room for Bloom. And there's room for faculty members to engage in lifelong learning, too.

For further reading:

Kagan, S. (2005) "Rethinking Thinking – Does Bloom's Taxonomy Align with Brain Science?" *Kagan Online*. Retrieved from https://www.kaganonline.com/free_articles/dr_spencer_kagan/289/Rethinking-Thinking-Does-Bloom-s-Taxonomy-Align-with-Brain-Science

Thalheimer, W. (2015). "Training Maximizers" *Work-Learning* Research. Retrieved from https://www.worklearning.com/2015/04/08/training-maximizers/

Miriam Bowers-Abbott is the academic department leader for the Humanities at Mount Carmel College of Nursing. Her instructional duties have ranged from critical thinking, to composition, to ethics, in formats that include face-to-face, online, and everything in between. She's a former TEDx speaker, a life-long learner, and a professional writer who used to hate everything about writing.

Miriam Bowers-Abbott; From Summiting Bloom's to Promoting Lifelong Learning; Faculty Focus; February 22, 2019; [https://www.facultyfocus.com/articles/course-design-ideas/from-summiting-blooms-to-promoting-lifelong-learning/] February 28, 2019.

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The "Big Bang" of Motivation: Questions That Evoke Wonder in Our Students

MANY COLLEGE and university professors name student motivation and engagement as their top challenge. It's a common belief that motivation is a character trait that is either present or missing in each student. However, if we look back upon our personal histories as learners, we can all think of times when we participated half-heartedly. Many of us can also recall teachers who kindled in us a deep connection to the topics in their courses despite an absence of such interest when we first entered their classrooms. We became highly motivated to participate in the learning process, perhaps even developing a lifelong interest in the field.

How did these teachers ignite this interest in us? While the topic of human motivation still contains many mysteries, researchers have discovered fascinating clues about what sparks a desire to learn. Amidst all of the factors that influence human motivation to learn, wonder might be seen as the "big bang" because it is such an essential starting point in any passionate path of inquiry.

Wonder as motivator

The Merriam-Webster dictionary defines wonder as "rapt attention or astonishment at something awesomely mysterious or new to one's experience." Wonder sends us on the quest to understand, create new possibilities, test our understanding with critical analysis, and deepen our inquiries. It's possible that wonder is hard-wired into our evolutionary biology. Every foundational thinker, every inventor, every great artist throughout history has been motivated initially by a sense of wonder.

Our early ancestors looked up with wonder at the stars and imagined stories into their geometry. Wonder led them to use the stars to create and measure time, to navigate the vast oceans, and to explore distant lands. In his 2012 TedX talk, Michael Wesch says of wonder that "Questions are the most amazing things that humans do. First off, they send you on a quest, which is right there in the word 'question.'" Wonder implies investment in a question. Investment in a question can make it burn in our hearts, which in turn can lead us into passionate pursuit of more questions. If we want to motivate our students, finding ways to steep them in wonder would be a clear first step.

A look back at the definition of wonder asks us to consider what aspects of our classroom content might lead students into a sense of wonder. Certainly we can't instill wonder by simply telling students facts or explaining how something works. Wonder must involve mystery and vulnerability in relation to things that are worth wondering about.

How can we offer our students the chance to share in the wonder we experience when working with our content? How can we invite them into new and immersive experiences of confusion, beauty, and awe that might lead them into wonder? The first steps along this path of wonder usually involve asking questions—the truly big, difficult questions that haunt the experts. It takes courage to ask the biggest, most challenging questions because these kinds of questions take us out of the role of "expert" and place us alongside of our students—side by side in the quest, although certainly still in a leadership role. Wonder, as Wesch points out, is "a manifestation of the fact that you're embracing your vulnerability."

Questions that support your own wonder and evoke wonder in your students

As you design learning experiences for your students, consider the following questions. The questions will help you discover, or re-discover, your own sense of awe at the mysteries that drew you deeply into your field of inquiry.

1. What fills you with a sense of wonder? What aspects of the content you teach lead you to a sense of awe at the deeper mysteries beneath the skill sets you teach? Are there ways you can share your passion and your own curiosity with students that might be contagious?
2. What large questions remain unanswered by the great minds of your field? Are there ethical questions that keep the most passionate researchers awake at night? What perennial questions are currently burning in the hearts and minds of these thinkers?
3. What are some of the most "magical" paradoxes or mysteries in your field of knowledge? Perhaps there are case studies that seem to contradict each other or data discrepancies that seem impossible to reconcile given current knowledge.
4. What stories of wonder and passion led foundational thinkers in your field to give so much of their lives to unraveling important mysteries? Can you re-create these conditions for students—perhaps hiding critical pieces to the puzzle—and put them on their own journey of discovery?
5. How can you use analogy and metaphor to spark curiosity about relationships between different fields of knowledge? What are some of the relationships between form and function or parallels between one area of knowledge and another? For example, why do trees look so much like the human lung and also function as a way for trees to breathe?

While you may have your own opinions about the answers to the kinds of questions described above, your answers are less likely to inspire wonder than your sincere companionship with students as they grapple with these questions. As Rachel Carson observed in her book about wonder, "If a child is to keep alive his inborn sense of wonder, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement, and mystery of the world we live in." The same can be said of adults. As professors, we can become that adult who accompanies our students on a journey of discovery, evoking from them the kinds of questions that take us to the edges of mystery and awe.

Experiences that lead to wonder are multi-sensual and disorienting. They can be thought of as pre-cursors to both creative thinking and critical thinking because they are the catalyst that sends us on a learning quest. In the process of grappling with questions that seem worthwhile, students will ask for the factual knowledge, processes and skills that you likely want them to learn as they master your course learning outcomes. In other words, wonder generates a creative process of wanting to construct knowledge and see the whole picture. Wanting to see the big picture, in turn, requires analysis, factual recall, evaluation of arguments, and all the other aspects of critical thinking we want from our students. Wonder is the starting point, followed by passionate learning quests that inspire both creative and critical thinking that will last long past the end of our semester-long courses. By nurturing this "big bang" of motivation in our students, we plant seeds of transformation that can re-shape the world.

Rebecca Zambrano is the director of online faculty development at Edgewood College (Madison, Wis.) and a member of The Teaching Professor editorial board.

Rebecca Zambrano, The "Big Bang" of Motivation: Questions that Evoke Wonder in Our Students; Faculty Focus; February 18, 2019; [https://www.facultyfocus.com/articles/teaching-and-learning/the-big-bang-of-motivation-questions-that-evoke-wonder-in-our-students/] February 28, 2019.