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"Breaking Barriers in Teaching and Learning"- Teaching for Learning in Honors Courses: Identifying and Implementing Effective Educational Practices

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CHAPTER EIGHT

Teaching for Learning in Honors Courses: Identifying and Implementing Effective Educational Practices

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The only true voyage of discovery . . . would be not to visit strange lands but to possess other eyes.
—Marcel Proust, "La Prisonnière" (vol. 5),
À la Recherche du Temps Perdu

INTRODUCTION

Teaching and learning are interesting endeavors. As faculty members, we spend a great deal of time working with students to help them understand a concept, a fact, or a point of view, but we often do not spend equal time better understanding and improving

teaching and learning. Time and again, individual educators note that they were trained in a given discipline, not in the process of teaching. In most states, it takes more credentialing in teaching to become a first-grade instructor in math than it does to teach a graduate seminar in psychology. Because of the assumption that those who are educated at the university level can teach at the university level, we give little thought to the extensive information and training needed to teach well. Many college instructors teach day in and day out without serious consideration of what constitutes an effective classroom. Essentially, a great deal of teaching is like driving a car day after day without learning about the features included with the vehicle or how best to use them.

That we could maximize the effectiveness of our teaching if we were to systematically, even if infrequently, work on the complexities of teaching seems plausible. The same may be said of student learning. Students study and work at learning with too little consideration of the actual process of learning. An interesting exercise would be to think what might be possible if faculty members worked conscientiously to examine and improve their teaching and helped their students to work diligently at learning.

Importantly, we must first note that a lack of focus on one's teaching or students' learning does not equate to educational malpractice. No accusation is being leveled at those who do not purposefully or systematically engage in such work. Rather, our argument is that it is common for the human brain to follow a course of action without ever thinking about how or why that course of action occurs. We may well drive our car without ever thinking about all of the subtle and specific skills required to drive the car. We may forget a critical step when baking a cake without realizing why we dropped the step. Likewise, we may try desperately to recall a phone number that has slipped from our memory, not thinking about why or how the information was lost. As with many human behaviors and cognitions, teaching and learning are not phenomena that we are automatically wired to think about in our daily lives. The question we propose, then, is this: How can we, individually, devote more time to critically studying the process of teaching and the complexities of student learning?

Although many of us are trained in our respective disciplines, not in the practice of teaching, we should not give up on working to improve teaching simply because we were not trained in that endeavor. Many resources exist to support such efforts, both in terms of centers for teaching and learning as well as a plethora of journals and books. The trick is simply to get started and maintain momentum while balancing competing priorities. Once one starts down the path of working on either enhancing teaching or helping students to learn more successfully, the existing resources and opportunities quickly emerge. This chapter is designed primarily to initiate the process of thinking about better teaching and better student learning and to point out some ways of beginning the work.

METACOGNITION

The human brain commonly engages in a course of action without thinking about the processes involved. This automation is valuable, preserving brain power for tasks that require concentration. In some instances, however, we may benefit from being more conscious of our actions through the practice of meta-skills. To better understand teaching, thinking, and learning, we must purposefully examine how we teach, how we think, and how we learn. Such critical reflection is at the heart of metacognition, which involves thinking about thinking or learning about learning (Metcalfe and Shimamura). To become better teachers or better students, we must engage the power of metacognition as an essential element of our work as instructors or learners.

John Dewey suggested long ago that we can learn more from reflecting on our experiences than from the actual experiences themselves. Metacognition is the ability to know when we know something, an essential aspect of understanding how we learn. Interest in metacognition has seen a dramatic increase during the past few years, primarily because it is an absolutely critical aspect of deep learning, the kind of learning we typically associate with honors and other higher-level educational endeavors. Neglect of such metacognitive skills leads to situations where individuals fail to understand the extent to which they know something. This is

of particular concern when an individual does not realize she or he does *not* know something, resulting in the prospect of being incompetent *and* unaware, a dangerous combination (Kruger and Dunning). When a person is unskilled and unaware, processing even basic levels of feedback can be difficult. Metacognition is critical in helping individuals to see both what is happening and what to do or what resources to seek out to do a task better. In other words, metacognitive practices lead to both self-directed and self-regulating learners.

When we think about this concept of thinking during acquisition of new information, that is, learning, we all know it is possible to read material and then suddenly realize that for an unknown period of time, no attention has been devoted to the words our eyes are skimming across. (Note: if that is the case at present, STOP, go back, and read this paragraph again.) We also know that sinking feeling of listening to someone explain something and believing that we are getting it, only to be hit with the sudden realization that we do not understand what has just been said.

When facing such scenarios, we assist ourselves and our learners using metacognitive strategies. First, for our learners, we must note that many strategies and techniques to improve long-term learning through metacognitive practice already exist:

- "Teach back": a standard in medical education whereby understanding and learning are checked right after something new is learned;
- "Quiz the learner": ask questions regarding a case to strengthen learning and check for understanding;
- "One-sentence summary": ask learners to describe in only one sentence the essence of what was just learned;
- "Muddiest point": have learners describe the detail that is most uncertain or confusing following a learning episode;
- "Set learning goals": before reading or learning, determine what will be learned or how many times through the flash cards it will take to memorize the concepts.

These are just a few ways to gauge understanding and help learners to think about their learning (Angelo and Cross).

We, too, as educators, can use metacognitive strategies to become even better educators:

- Take fifteen minutes after the end of a class session to jot notes about what worked well for the class session;
- Ask students periodically to write and submit responses to what they felt assisted their learning and what could have been even more beneficial;
- Have a colleague sit in on a class and note what aspects of the class seemed to go well and perhaps which ones need attention.

When using metacognitive strategies, no action is perfect: the goal is to become incrementally better through the process of thinking about learning. Working purposefully to improve at a task results in success. Simply doing something for a long period of time is no guarantee of proficiency. Sadly, doing something poorly for thirty years is certainly a possibility. That said, a total overhaul of one's teaching is also a daunting process. We are better off when we identify one area of teaching to work on and then move purposefully in that direction. This advice is as useful for teachers as it is for learners.

COGNITION AND LEARNING

Changing teaching practice to bring about better student learning, especially the kind of self-directed, reflective learning associated with honors education, can be a daunting, time-consuming endeavor. None of us has extra time to waste, and as a result we need to make sure that time devoted to enhanced learning through better teaching is as effective as possible. The good news is that a vast amount of information pertaining to the topics of effective teaching and learning is readily available. The bad news is a fair amount of junk science and strategies with no evidence to support claims also exists. One way to be efficient with a limited amount of

available time is anchoring pedagogical changes in good evidence as opposed to common myths. Here is a start. Following are three myths or suggested strategies without any empirical support and three strategies with strong empirical support.

MYTHS

Many well-known concepts about teaching and learning lack empirical support. Still, these concepts are taught and passed on to new teachers by well-meaning administrators, experienced teachers, or the Internet. Some of the following examples might seem appealing because we can relate to them and have heard them before. They make sense up to a certain point and might even improve teaching and learning somewhat. But the big drawback remains: little to no evidence supports these concepts, thereby assuring effective and efficient improvement of our students' learning.

The Learning Pyramid

The learning pyramid is an example of over-simplification of a complex situation. Basically, it attributes information retention percentages to learning modes. The claim is that we remember 5% of what we hear, 10% of what we read; 20% of what we see; 30% of what we experience as a demonstration; 50% of what we discuss; 75% of what we practice; and 90% of what we teach others. The pyramid seems appealing because it emphasizes what many teachers think: talking about something is the least effective teaching method, while engaging students will improve their learning. The maxim is as prevalent in honors as it is throughout higher education. Even though the concept is partly true, there are still very good reasons why we should stay away from the learning pyramid if we are serious about the integrity of the scholarship of teaching and learning:

1. No one knows where it really comes from. As trained academics, we should not use theories or models that lack original research but are instead circulated as citations or anecdotes with various origins/sources. Some hints suggest

that the learning pyramid goes back to Edgar Dale's "Cone of Experience" (107); however, it is also often attributed to the National Training Laboratories (NTL), Bethel, Maine. (See Lalley and Miller.)

2. It provides an overly simplistic model to represent the complexities of teaching and learning. Obviously, many determining factors affect the learning outcomes of our students. The means by which students are engaged with content is only one of them.
3. Such bogus models have the potential to discredit the scholarship of teaching and learning as well as the professionals working in the area of improving teaching and learning.

Despite such misgivings, the learning pyramid is pervasive in our educational systems. A quick search for the term "learning pyramid myth" in educational databases or the Internet quickly reveals the unfortunate prevalence of this misconception. Before perpetuating long-held theories or trying something new, such as experimenting with the flipped classroom or attending to learning styles, we should research the validity of an idea or the pros and cons of a method to uncover whether evidence supports the concept or practice as an innovation, a benefit, or a waste of time and energy.

Learning Styles

Learning styles propose that each person has a primary method that allows for easier or better learning than the others. Most learning style theories contain a type of assessment for students to evaluate which type of learner they are. The teacher is then supposed to use this knowledge to adjust his or her teaching activities to the preferred learning styles of the students in this classroom. The most popular learning style theory (Frank Coffield et al.) divides the style into visual, verbal, and kinesthetic. A common hypothesis for all learning style theories is that the teaching methods should be consistent with how students learn, a concept known as meshing.

The categorization of people into different learning styles is widespread for a number of reasons. People are curious to find out about themselves; they are interested in learning more about what kind of person they are. The various personality assessments propose, at least in part, to answer this need. A second reason is that learning styles shift the responsibility for learning outcomes away from the student toward the teacher. If the teacher teaches to the wrong style, a student's failure to learn becomes the teacher's fault. A third reason reflects teachers' observations of how individual students benefit from various modes of instruction. One student might understand a concept by looking at a diagram while another student by conducting an experiment, and a third by using equations and mathematical proofs. Hence, those students, we assume, must have different learning styles.

Unfortunately, research does not support the positive effect of teaching to a learning style. In a massive analysis of a variety of learning styles and meshing, Harold Pashler et al. conclude that no viable data suggest that meshing is beneficial. That is, teaching to a given learning style appears to have no benefit for one student over another. This is not to say that using different modalities when teaching is not effective; it can be extremely effective to teach using good visuals, kinesthetic activities, and stories (Nilson; Svinicki and McKeachie). The danger arises when students who claim to be visual learners indicate that they cannot learn from a given faculty member because the faculty member does not use visuals.

Left-Brain/Right-Brain Specialization

Similar to learning styles, this theory suggests that people can be divided into categories. In this case, the categories pertain to which side of the brain neurological processing is more pronounced. Left-brained people are supposed to be strong logical thinkers, whereas right-brainers are the creative artists. Even though our brain is divided into two hemispheres, the functions of the two sides are far more complex. Researchers have long known that language processing does happen more frequently on the left side of the brain and that the right more frequently processes information about the

outside world. But no evidence indicates that one side of the brain works independently of the other side or that individuals tend to have stronger neural networks on one side of the brain relative to the other side (Nielsen et al.).

What is often forgotten when individuals speak of someone being right-brained or left-brained is that significant communication transpires between both sides. The idea that one is more artistic or logical because of the number of neurons on a given side of the brain is a myth. Believing this myth might lead to a fatalistic notion of learning: if people are left-brained, then they cannot learn to be more creative. Just the same with right-brained people: they will never be able to understand math. A more detailed explanation of why such conclusions are dangerous assumptions for learners can be found in the work of Carol S. Dweck on the topic of "fixed" and "growth mindsets," research that has profound applications in honors education, where we often find both teachers and students who categorize intelligence, talent, and capacity to learn in sometimes limiting, preconceived ways.

EVIDENCE-BASED LEARNING PRINCIPLES

In contrast to these three myths, practices backed by empirical research exist on what works in the classroom to foster the deeper learning that is expected in honors and should be expected in all education. Following are just two concepts, each briefly explained and then illustrated with examples to give readers a glimpse of how research on learning can be transferred to teaching practice.

Testing Effect and Discussion-Based Practices

Many in higher education have long held that examinations and quizzes are an important method to determine the extent to which students have learned and can apply new information. Research, such as that by Henry L. Roediger and Jeffrey D. Karpicke, has also consistently demonstrated that testing can actually help students to remember information for longer periods of time, largely because of the repeated act of retrieval in the processes of reading

and studying. Individuals who practice recalling information are significantly more likely to remember the information when tested a week or more after the practice, which is why reading, a form of practice in retrieving knowledge, is significant in preparing for tests and learning. Reading assigned material results in encoding information, and repeated readings may well lead to additional encoding and more retention of knowledge. The trick is to design tests for learning, not just for temporary unloading of memorized facts. Exam questions should encourage learning at higher levels of cognitive development, asking students to demonstrate comprehension, analytical thinking skills, application of theories and concepts, and ability to connect knowledge across different domains of learning. Such testing goes beyond superficial recall and fosters deeper learning.

But practice at retrieval does not need to be in the form of an examination question. We have known for a long time that telling a story helps individuals to remember the story. Stories can change through the years with multiple tellings, but the root of the story is not forgotten. Therefore, having students explain concepts or issues to the class as a whole or to one another, much like telling a story, solidifies the information. Such strategies also suggest, in a larger sense, the value of discussion-based practices in helping students to retain information, in addition to the social benefits that may result (Brookfield and Preskill). Likewise, study groups, flash cards, and questions at the end of a chapter all help to develop long-term memory in learning (Nilson).

Engaged Learning

The argument that engaged or active learning is beneficial is not new (Bonwell and Eison). Nearly twenty years ago, Richard Hake collected data on 6,000 students and demonstrated clearly that interactive teaching for engagement results in better student recall of information as compared to lecturing alone. Over the past two decades, many researchers have repeated Hake's findings (Couch and Mazur; Deslauriers, Schelew, and Weiman). In study after study, researchers have noted that engaging students in the

learning process enhances the learning. In fact, almost by definition, all learning includes some engagement because learning with an absolute absence of engagement is not possible. The real discussion has been the value of the traditional lecture compared to the lecture with some form of student participation.

As noted in the previous section, practice at recall is a critical aspect of learning. Therefore, having students answer questions during a class session or break into small groups will likely have a positive effect on their later recall of information. In addition, knowing that one may be called on at any time increases attention, which is also an important determinant in learning. Overall, having students become more active participants in a class session has shown consistently positive outcomes in research studies (Michael). With the widespread push toward active/engaged learning, some have interpreted the data to suggest that lectures should never occur. In actuality, research, Michael Prince demonstrates, has shown that paying attention to the particular contexts in which we teach and learn, adjusting practice as needed, and using a combination of brief, focused lectures and a variety of active-learning strategies produce more engagement and recall in learning (Prince).

CONCLUSION

Competent, effective teaching requires an individual to routinely monitor and work at the processes of teaching and of understanding student learning. Teachers need to challenge how they teach every student; they must make a dynamic commitment to analyzing the problems they all face in the classroom and to coming up with solutions supported by the abundant research on teaching and learning.

All teachers should be scholarly teachers. Many evidence-based strategies continually emerge in our profession, but unfortunately, we also encounter many strategies without merit that draw considerable attention. We must distinguish one from the other and attain the knowledge of how to successfully implement well-researched, proven findings in our own practice whether we are instructors in honors programs or other contexts. We need to be mindful of how

research informs our instructional methods and work as scholarly teachers to continually improve our teaching and our students' learning. The job we have is too important to do otherwise.

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