

Motivation Research - or, How to Avoid the Sea of Blank Stares

Amy Southon and Doug Duncan
AAS Education Office

You may love your subject, but it is how the student perceives the relevance of the subject which will impact his/her motivation to learn. Students early in their careers often have difficulty understanding why a particular subject is necessary or beneficial. In most subjects, there is a lot of factual basic level knowledge to cover, in order to progress to the more creative and stimulating level of constructing knowledge on a conceptual level. It can be very frustrating for students who take entry-level science to understand why they must memorize facts and formulas when they're really interested in why black holes occur, or how the Universe started, or whether there could be life elsewhere in the Universe.

Maryellen Weimer, a researcher in education, suggests that part of the problem first or second-year students have is that their teachers are so familiar with the content that they understand the need for the basics and how all of the basics are entwined into a beautiful contextual whole, yet forget to impart that sense of context to students.

Take the time often to set things in a “bigger picture.” Tell the students why they are about to learn something. Give interesting applications, and, whenever possible, applications students might see in everyday life. (The Doppler effect which shows the expansion of the universe is the same effect which allows the police to use a radar gun to give you a speeding ticket....) This helps motivate students to do the more basic work required for understanding.

Admitting that the basics are not only necessary, but required, how do you avoid blank stares? Occasionally, try and put yourself in the students place. **Students learn best in a great variety of ways** (not just the way you do). Many students may be of the mindset that they need to know about the whole context up front in order to fit the pieces in place, while others may feel that such initial context setting is wasting time. You will need to vary your approach. Every student has a particular “learning style.” This is simply a preferred method for learning. Educational Psychologist David Kolb in 1981 identified four major learning styles. Convergents work best when there is a correct answer to a problem. Divergers are most successful when they can generate multiple ideas and solutions to a problem. Assimilators are conceptual thinkers who like to integrate diverse ideas into a solution, and Accommodators learn from experience and hands-on approaches.

To apply this education psychology jargon to real life, think of how you handled your first computer. Did you read the manual and follow the directions? You used a converging style. Did you try out a few things, and then resort to the manual when necessary? You're probably a diverger. Did you plug everything in and work at what you needed, ignoring all the bells and whistles until a project called for them? You're probably an assimilator. Did you try everything out until you had pushed every button and tried every piece of software? You're probably an accommodator. Which ever way you handled that new computer, you probably initially used your preferred learning style.

In real life, few people fit only one learning style. Most have a preferred method of attack to problems, but use different approaches when they deem it necessary. There are also other theories of learning. One such theory is Harvard educational researcher Howard Gardner's theory of multiple intelligences. He proposes that people can achieve mastery in different ways, and that intelligence can be manifest in 7 different styles of learning. The important point is that people learn in different ways, and if you teach in a variety of ways you will reach more students.

Basic Human Reactions to Classroom Situation

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There are some basic human needs that you will need to fulfill for your students to be motivated, at the most basic level, to learn.

The five broad human needs that psychologists have identified as intrinsic to learning readiness are put together in a theory called **Maslow's Hierarchy of Needs**. This theory lists the needs from most basic, physiological, on through safety, love and belonging, esteem, and finally, self-actualization.

Physiological - Classroom settings with no windows, low light, and row seating can encourage a low-level of arousal and attention. If you have an attention-killing classroom assigned to you, change the activity patterns of your session to encourage activity.

Safety - Student feelings of security can be affected by not knowing what the professors/TAs expectations are. First-year students are particularly fearful of the “weed out” classes, where students are told or tell one another that the dumb students will be “weeded out” in the first term of a subject. Every person can achieve a new level of science literacy, and it will be up to you to encourage this sense of capability.

Social need - fulfilling the basic social contact role. Are students called by name, and encouraged to work with one another to find joint solutions to problems?

Esteem - feeling a positive self-image, due to status and respect from peers. Have you heard “That professor was tough, but he/she was really good”? This translates roughly to I knew what was expected and it was challenging and exciting.

Self-actualization - feeling growth of the individual. The basic need to achieve. Can students reach a new level of scientific thought and understanding from your teaching and enthusiasm?