

## How Lecture Can Undermine the Motivation of Our Students

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There is a fundamental difference between theories of learning and teaching. Theories of learning deal with the way in which an organism learns; theories of teaching deal with the ways in which we can influence how the organism learns. We distinguish between the two for an important reason (1):

*Teaching and learning are not synonymous; we can teach—and teach well—without having the students learn.*

The process of teaching is a two-way street. It is most successful when a dedicated instructor works with an interested student. Some have gone so far as to phrase this notion in terms of a general rule (2):

*People who don't want to learn usually don't; those who do want to learn may.*

The problem we face is simple: the students in our classes do not all have the motivation to do as well as we would like them to do. This raises two important questions: "Why not?," and "What can we do about it?"

There is no doubt that motivation to learn is an important factor controlling the success of learning because of another general rule (2):

*When placed in a stimulating environment, with enthusiastic people, some who think they don't want to learn change their minds.*

This paper therefore summarizes some of the research that has been done on student motivation, which is based on four major theories of motivation.

1. **Drive Theory** assumes that motivation can be tied to an internal source of energy that drives the organism to do something (3). Many of these drives are based on biological needs for survival, such as the need to eat and drink, but the theory can be expanded to include psychological needs.
2. **Field Theory** argues that motivation is determined by the external field that exists at a particular moment in time (4). An individual's behavior can therefore be understood by examining the specifics of the situation in which the individuals find themselves.
3. **Achievement Theory** explains students' motivation by assuming that they put a value on the goal of an achievement situation and are therefore guided by the possibility of a positive outcome (5). This theory assumes that motivation is based on a balance between the possibility that the outcome of an achievement situation will be positive and the possibility that the individual will fail.
4. **Attribution Theory** assumes we are motivated by a desire to understand the world around us, and thereby control the factors that affect our lives (6, 7). When something happens to us, we try to attribute the result to a particular cause and thereby understand what affected the outcome of the event. Inevitably, these attributions alter our actions the next time the event occurs.

Further information on these theories of motivation can be obtained from the reviews by Atkinson and Birch (5) and Weiner (8).

### Theory of Motivational Orientations

These theories of motivation provided the basis for the development of a theory of motivational orientations (9–12). By definition, a motivational orientation describes the forces that drive a student in a particular achievement situation. Despite differences in terminology among various motivation researchers, there is general agreement on what is meant when a particular individual is described as either *task-* or *ego-oriented*.

A student who is task-oriented is interested in learning a subject for its own sake. These students tend to evaluate their performance on an internal basis (11, 13, 14). In a given situation, they tend to ask whether their performance measures up to what they want it to be, or what they expected it to be. They tend not to make comparisons to an external norm of performance provided by a peer group. Students who are predominantly ego-oriented are only interested in how their performance looks in the eyes of others (11, 13, 14). All comparisons are therefore made to an external peer group.

Given the definitions of task and ego orientation, most of us would prefer to have students with a task orientation. Unfortunately, we found that only 1% of the students in the first semester of a general chemistry course for science and engineering students at a major university were task-oriented (15). (The other 99% brought an ego orientation to the study of chemistry.) This raises an obvious question: "Where did these ego-oriented students come from?"

Anyone who has watched young children explore an ever-expanding world, with an inborn desire to learn and understand, should accept the notion that we start life task-oriented. As a person matures, however, a gradual change occurs from task orientation to that of ego orientation (16). Somewhere along the line, most people lose the desire to learn at any cost. Nicholls (14) argues that the educational system unknowingly fosters an ego orientation by assigning grades on a normative basis.

This change in the motivational orientation of students has an effect on our classrooms. Students who are task-oriented are more likely to be satisfied with both school and learning than ego-oriented students (11, 15, 17). Task-oriented students have been found to use both surface-level and deep-learning strategies, whereas ego-oriented students use only surface-level strategies (18). (Surface-level strategies usually involve simple memorization. Deep-level strategies include discriminating important information, making connections, and monitoring comprehension—characteristics that instructors would like to see in their students.) A task orientation has also been shown to be related to the students' tolerance for ambiguity, their open-mindedness, and thoughtfulness; whereas an ego orientation was shown to be negatively correlated with those characteristics (19).

Task-oriented students are also more likely to sustain interest in a topic after their achievement has been measured; for ego-oriented students, interest wanes after they show performance (9). But, perhaps the most important finding is that task-oriented students are more likely to attribute their success or failure to effort. Ego-oriented

students most often attribute their success or failure to ability (9). This has an important negative consequence for ego-oriented students, which has been called *learned helplessness*. "If I fail because I lack ability, why should I continue to try?"

The list of traits that researchers have found for task-oriented students suggest that there are obvious benefits to a task orientation. Whereas an ego orientation may have a negative effect on the student's long-term interest in learning, a task orientation may sustain student involvement in learning and be critical for effective cognitive engagement (9, 20). As a result, research has shown that a task orientation is a better predictor of significant adult accomplishment (19).

### Shifting Students toward Task Orientation

What can we do to help our students shift toward a task orientation? Perhaps the best way to accomplish this would be to significantly decrease competition and social comparison. De-emphasize grades and performance, emphasize learning. As you undoubtedly know, this is easy to say, not as easy to do. When you try to emphasize learning you will inevitably get the question, "Will this be on the exam?" There can be only one answer, "Yes, everything is on the exam." If the answer is no, pencils drop and students turn off.

Three steps can be taken to help your students revert back to a task orientation. First, throw out the normative grading system and grade on an absolute scale. Look at what a curve is saying to your students. "Chemistry is hard, but don't worry you only have to be as good as the person next to you. A portion of what I am doing is not really important, so you don't have to know it." Students need to know how they are doing in a course, but not necessarily how their performance compares with that of other students. Students should never be rewarded because others fail. Nor should they fail because others succeed. It is possible to create an environment where students work together so that everyone who is willing to work can succeed.

Step two is to stress participation, self-improvement. To make this part of your course, base part of the grade on improvement. Students' performance in a course should not reflect when they learn something, but whether or not

it is learned. Why not, therefore, create an environment in which students who complete the course receive a grade that is no lower than their grade on a comprehensive final?

The last step is the most important. Both instruction and testing must go beyond rote memorization. Assessment of student performance should focus on the students' ability to justify and explain what they know. Research has shown that the benefits of a conceptual understanding far outweigh rote memorization (21).

After making these changes, be patient, they won't produce miracle changes. Remember that your students have had at least 12 years of an ego indoctrination. The benefit they will receive, however, in a shift toward a task orientation is a better shot at significant adult accomplishment. In this effort, instructors should remind themselves to be flexible, because it has been shown that teachers who exercise less control over their classrooms tend to have students who are more intrinsically motivated (22). Task-oriented chemistry can work for your students if it is not a forced march. Remember, students who don't want to learn usually won't.

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