Conventional wisdom states that teachers teach best by reducing any kind of stress on students in order to make them comfortable during learning activities. Often teachers reduce student stress by implementing methods that lower expectations, even though nothing could be farther from the real needs of students or the desires of their teachers. This module outlines a model which educators can use to reflect on the right level of challenge in different learning situations. The model considers the interaction of a learner’s ability, the level of academic challenge, and the level of the learner’s affective skills. It supports the idea that education needs to begin with ambitious learning outcomes and should be executed in a manner that supports students’ strengths, provides opportunities for practice that include assessment feedback, and treats learner skills as abilities that can grow and change over time.

**Role of Challenge and Support in Learning**

Learning outcomes achieved in the classroom are a product of the level of learner challenge and the level of learner support maintained by the educator. The learning experience needs to be knowledge centered as well as student-centered and should be mediated by ongoing assessment (Bransford, Brown, & Cocking, 2000). Typically, students seek a comfort zone in which the challenge they take does not exceed their perceived level of skill or competency. This is often the learning state that exists outside the classroom or in passive learning environments. Educational researchers have concluded that limited learning is likely to occur under these circumstances (Ames & Archer, 1988).

Putting students in an active learning environment places more challenge and stress on students, and the literature demonstrates that this is highly effective in generating mastery and increasing student motivation for attempting tasks that exceed their current abilities (Bandura, 1997). A key element of cooperative learning is managing the stress (affect) of team members. If this stress is properly managed, the team will experience increased creativity and productivity. The increase in higher-level learning by individual members of the team often exceeds the expectations of team members who thought the standard was too high, and sometimes exceeds levels that faculty thought too high (Michaelsen, Knight, & Fink, 2004).

Many authors emphasize the critical role of affect in decision making and performance because of its influence on cognitive processes (Damasio, 2005; Goleman, 1997; Picard, 1997). Mikulincer (1988) found that learners who use an “internal” attribution perspective (an assumption that they are personally invested and that results depend on their efforts) are more strongly affected initially by frustrating feedback, or failure, but will persist if there is only one failure. Learners who attribute their learning to external factors may not take as much responsibility for their own learning and therefore may be less frustrated. Gist, Schwoerer, and Rosen (1989) found that the students who believe they will be able to meet the challenge tend to be more comfortable with the task and, as they predict, perform better. Their study and others combine to form a compelling case for a more active classroom environment in which affect, as well as the cognitive gains of the student, are closely monitored. It is easy to increase challenge in a lecture environment, but without the support system created by active feedback and/or a team environment, students will rapidly move beyond frustration to anger and disengagement.

**Elements of the Model**

The Accelerator Model shown in Figure 1 incorporates three variables that regulate the growth and development of students’ cognitive and affective learning skills. These variables are the cognitive skill set of students, the affective skill set possessed by students, and the degree of challenge initiated by the instructor.

- The x-axis represents the challenge or degree of difficulty associated with a task or activity. Typically, the instructor can control this factor by varying the time allowed and/or varying the quality requirements of the performance/work product.

- The y-axis represents a person’s current level of cognitive ability or the strength of his or her cognitive skills.

- A 45-degree line called the “equal match line” represents situations in which the degree of challenge matches a person’s skill set. This line represents learning situations in which a person feels comfortable but is not challenged to grow his or her cognitive skill set.

- The z-axis represents the current strength of a person’s “affective” skill set, e.g., risk-taking, persisting, handling failures, experiencing successes.
Setting the Level of Challenge

If a facilitator’s main goal is to increase or maximize the learning of content, then the degree of challenge should be set above the equal match line at a maximum cognitive growth line. Figure 2 shows how increasing the learning challenge (x-axis) without a corresponding increase in the cognitive skill set (y-axis) leads to increasing levels of negative affect, which typically follow a pattern of anxiety followed by frustration, anger, and disengagement. The greatest potential for learning occurs at the lower edge of the “happy zone” where the degree of challenge exceeds a person’s cognitive skill set but not enough to cause anxiety or frustration. One implication of Figure 2 is that, if a facilitator already has detailed knowledge of the affective and cognitive skill sets of a learner, it is possible to predict the appropriate level of challenge. Effective use of the Accelerator Model therefore depends on regular and careful monitoring of the affect levels of learners in order to maintain the “best fit” level of challenge. The Accelerator Model provides justification for increasing or backing off the “accelerator” if the level of challenge moves slightly too far in either direction.

Maximizing Learner Growth

It is important to realize that personal growth in the affective domain occurs only when a learner is below his or her happy zone (Figures 3 and 4). Therefore, a facilitator focusing on affective growth must set the degree of challenge so students experience some degree of uneasiness. A facilitator should be careful to guard against anger and disengagement, and control the amount of time spent in frustration. Ideally, a little time at the anxiety level can be motivating, but when learners move to frustration and beyond, significant disruption of the learning process occurs. It is difficult to discern anxiety, and in a class of any size, some students will be anxious, while others may be bored. To add to the facilitator’s assessment challenge, evidence presented in the research review above indicates that the attribution perspective (internal versus external) of a learner has a subtle but significant impact on the level of challenge that the learner will accept in a given context. Figures 3 and 4 represent how learners with low versus high affective skill sets react to the same learning challenge.

Figure 3 shows that for a given level of cognitive skills, a person with low affective skills has a smaller happy zone and, therefore, can handle lesser degrees of challenge before encountering anxiety, and takes less time to move through the stages from anxiety to frustration to anger and finally disengagement. Figure 4 shows that as a person’s affective skill set increases, he or she is better able to handle increased levels of challenge because the comfort zone itself becomes wider, and the person is better able to perform outside his or her comfort zone, effectively managing anxiety and frustration when it occurs. In general, as the affective skill set improves, the comfort zone widens and the accelerator can be pushed down further before anxiety and frustration are reached. Increasing or decreasing expectations by varying the level of challenge is analogous to variations in pressure on an accelerator. For example, the level of challenge (pushing down on the accelerator) can be achieved by decreasing the amount of time allocated and/or by increasing the criteria for performance.

Managing Frustration

Because the benefits from the Accelerator Model derive from occasionally and intentionally pushing students “over the line,” special attention should be given to assessing and managing the level of student frustration. The following are a number of proven techniques and considerations.

Course Orientation

The beginning of a course is an ideal time to connect course learning outcomes with different skill sets (cognitive, social, and affective) required for successful performance in the modern workforce. In this discussion you may want to introduce rubrics and skill listings from the Classification of Learning Skills (2.3.3), Cognitive Domain (2.3.4), Social Domain (2.3.5), and Affective Domain (2.3.6). Finally, explain how the Accelerator Model supports a productive learning environment and inform students that you will remind them of its use throughout the course.
4.3.4 The Accelerator Model

Diversity in Activities
Mix the types and levels of learning activities used throughout the course so that the strengths of each student are affirmed and challenged. When you structure learning activities, respect different learning styles so that all students have similar opportunities to become engaged in the course.

Reflective Writing Assignments
Use free writing as a means for students to express their emotions and become self-aware of their growth as well as their frustrations. Read what they write and provide observations of your own. The Learning Assessment Journal (Apple, 2000) offers a variety of structured reflections that can stimulate metacognition as well as teacher/student dialogue.

Monitor Classwide Affect
Show your students that you care about their personal and professional development as well as their ideas for teaching improvement by asking for feedback in midterm assessment exercises. Effective inquiry questions are suggested in 3.3.6 Mid-Term Assessment. Take time to process what your students are learning and feeling, publicly report your findings, and adopt some of the corrective actions they suggest.
Do Not Overreact

Faculty often project their own emotions into teaching situations and pull back on the accelerator prematurely. Allow your students to demonstrate their emotions and treat these episodes as opportunities to relieve but not transfer stress. Visit with an angry student after class and affirm his or her anger, but do not take ownership for it. The key to dealing with most affective issues is to understand that the person who is feeling bad is usually responsible for making himself or herself feel bad. At the same time, recognize that your own affect is responsible for how much challenge you are able to place before your students.

Gear Shift

One way to “depress the accelerator” is to increase the challenge by decreasing the time allowed to accomplish a task. Learners benefit from opportunities to control the pacing or speed of their learning. Once your class is comfortable with your use of the Accelerator Model, you might consider giving individuals in your class control of the “gear shift.” This allows them to define their resource needs and negotiate the time needed to meet the performance criteria of a learning activity.

Concluding Thoughts

Adding complexity or restricting time available for a learning activity will increase the demand for affective skills. One of the most important factors in the growth of your students is the development of their affective skill set for managing the anxiety, frustration, and even anger or disengagement which could impede their learning progress. Until students discover “the pleasure of finding things out” and become self-growers, teachers need to manage the affect of their students and help them strengthen their skills in the cognitive, social, and affective domains. To more effectively use the Accelerator Model, you should periodically reflect on the following questions:

- Are my learning outcomes appropriate for the developmental level of my students?
- What are the top three reasons for frustration in my course?
- What situations appear to cause movement from anxiety to frustration, anger, and disengagement?
- What actions can be taken to reduce the current frustration without compromising key course outcomes?

References


