Life Sciences Learning: An Approach That Promotes Progress and Respects Life

Lara Marie Rasmussen

Published online: 04 Jun 2010.


To link to this article: http://dx.doi.org/10.1207/S15327604JAWS0402_5
Life Sciences Learning: An Approach That Promotes Progress and Respects Life

Lara Marie Rasmussen

College of Veterinary Medicine
Western University of Health Sciences

This question of whether to use an “alternative” (as defined by Jonathan Balcombe) often is inserted into the discussion of learning methods as an afterthought; the term encourages this as we are discussing an alternative to the methods currently being employed. For the sake of doing this the right way, I argue that the discussion should begin with, “What do we wish for students to learn, and how is this best achieved?” From there, we can choose methods for learning anatomy, physiology, human medical skills, and veterinary medical skills that accomplish the goals both of learning and of doing no harm. Three things must happen proactively for this to occur: Educators must (a) identify learning goals (tangible and intangible), as this is where much of the progressive thinking must occur; (b) choose learning methods that likely will accomplish these learning goals; and (c) decide that to do no harm is a worthy pursuit.

The challenge for educators is to ensure that their students learn. As this rarely happens spontaneously in the general direction we desire, educators must purposefully plan a course of action—that is, what we hope students will learn. If prepared properly, students will wind up learning more than we ever planned, but we must start them on that road. Careful and realistic selection of learning goals should precede selection of learning tools; do not think of the means to the end while choosing the end. That approach will necessarily limit one’s creativity and expectations.

Learning goals should be relatively specific. “Learn anatomy” is far too broad. Anatomy of what species? In what detail? For what purpose? And, we must not ig-
nore less tangible learning goals. Scholars in the life sciences must recognize (and appreciate the need to recognize) detail; they must be dexterous with careful hand–eye coordination. These examples merely touch the surface of the pool of learning potential we as educators must quantify and put to paper as we plan for our students in the life sciences.

With our learning goals in hand, we turn to perhaps the most challenging task—finding learning methods to accomplish our lofty objectives. This area is where the potential for debate on the detrimental use of nonhuman animals arises. Almost all challenges, such as managing costs and accommodating class schedules and available facilities, arise in this area. We need the most creativity in this area. As educators, we must create the demand for the development of learning methods that fulfill our needs, not only fun and engaging methods but ones that allow repetition, minimal failure consequences, and gradual advancement—various methods that accommodate different student learning styles, and promote and encourage respect and compassion. So much potential is out there.

Do animals fit into this picture of life science learning? Most certainly they do. Animals, as living beings or those who have died or been euthanized due to natural causes, can be used as subjects in the learning arena. Their use should be appropriate to the age, skill, and educational level of the students involved. Their use should not be to anyone’s detriment; often the student (and later society) suffers when animals are used in harmful ways. The learning potential inherent in “service learning,” providing a benefit or service to an individual while accomplishing a learning objective (Giles & Eyler, 1994), suggests this method should be applied more vigorously in the life sciences. Examples might include the following: kindergarten to 12th-grade students cleaning up a local seashore or riverbed as a component of learning the life cycle of local marine or amphibious fauna, or high school students volunteering at first-aid and nutrition stations during a local fund-raising marathon event as a component of learning human cardiovascular and respiratory physiology.

The third component necessary for successful learning without harming others is that concept of choosing to do no harm. As stated, this concept is an all-or-nothing proposition. Actually, it is more of a balancing act between minimizing our negative impact on others and maintaining our own health and well-being—an ongoing risk to benefit analysis. Can we learn as effectively without hurting or killing another being? If so, why do we not try? Many of the studies Balcombe cites have supported sufficiently the adequacy and, often, superiority of learning methods that do not harm animals or students. And, we have only just begun to develop, apply, and analyze these methods. The first of the aforementioned questions is being answered; we can learn effectively with these nondetrimental methods. Those who seek to educate must seize the second question because they see, in the big picture, the benefit for themselves, their students, their society, and other sentient beings.
Even if I am to forego this last component, I still argue that we could go a long way toward reducing the harmful use of animals in education, even if we choose not to believe this to be meritorious. The body is a complicated thing. To use it for introductory learning endeavors, often as a primary learning tool, is contrary to many learning theories that suggest a simple-to-complex sequence of instruction (Berryman, 1994; Gagne, 1985; Landa, 1974; Reigeluth & Stein, 1983; Scandura, 1976).

Others have demonstrated in veterinary medical skills learning that the concept of basic learning methods for basic concepts and complex methods for complex concepts is more favorable (Bauer, Glickman, Glickman, Toombs, & Bill, 1992; DeYoung & Richardson, 1987; Greenfield, Johnson, Schaeffer, & Hungerford, 1995; Holmberg, Cockshutt, & Basher, 1993; Johnson & Farmer, 1989; Olsen, Bauer, Seim, & Salman, 1996; Pavletic, Schwartz, Berg, & Knapp, 1994; Smeak, Hill, Beck, Shaffer, & Birchard, 1994; Van Camp, Hunt, & Whitacre, 1988). Properly employed anatomic dissection of a cadaver, for example, should allow students to learn much more than just anatomy (and anatomy is complex in and of itself). If they are emphasized, fine motor skills, instrument handling, detailed anatomy, spatial relations, communication, and cooperative effort can be learned during dissection exercises. To choose this learning tool without the need or the intent to capitalize on all of its benefits is a waste of the learning tool. And, to employ learning tools with complex learning goals frustrates a naive student.

Often, those so used to doing things traditionally do not appreciate the educational potential and place of these alternative methods. When something has become rote, imagination, innovation, creativity, and progress are left by the wayside. These “other” methods are not substitutes for an historical gold standard; they are not just another way to learn the same things and should not be applied as such. The advancements civilization has made in the last decades allow us to look at learning in a new way; we are allowed to strive toward different and more plentiful goals. We have a smorgasbord of learning methods from which to choose, and we may drive the development of learning methods to fulfill our educational needs.

In some circumstances, limiting a learning experience to a few episodes of harmful animal laboratory exercises is indeed just that, a limited learning experience. As educators, we must broaden our perception of student learning potential and identify or devise learning methods that effectively service these goals based on emerging and well-supported learning theory, individual student learning abilities, and, I hope, a respect for all life on this planet.

REFERENCES


