Nongraded Assessment of Student Expectations and Understanding in Horticulture Classes

John E. Preece

Additional index words. evaluation, learning, teaching, instruction, interaction

Summary. Two nongraded techniques are described that assess student expectations and learning in horticulture classes. These involve anonymous, in-class student responses that can encourage and enhance interaction, communication, and learning without being a burden to the instructor. During the first class meeting, students were given 5 minutes to write their course objectives onto filing cards. By summarizing their objectives, reviewing them with the class at the beginning of the next period, and comparing their objectives with mine, I was able to react to student interests and needs in a constructive manner. About once per week at the end of a lecture, students were given 3 minutes to write the “muddiest point” of that lecture. This enabled me to clarify points orally, in writing, or by specific reading assignments. If the instructor responds in a timely manner, these assessment techniques will be taken seriously by the students. Such techniques can increase interest, understanding, and the perception that students can have a positive influence on the quality of their instruction.

Nongraded assessment can be an opportunity to reevaluate and improve the teaching-learning interaction in the classroom with relatively little additional time commitment by the instructor. Classroom assessment must meet several criteria: It should be meaningful and

Department of Plant and Soil Science, Southern Illinois University, Carbondale, IL 62901.

effective, of benefit to both the student and the teacher, directed by the teacher (Angelo, 1990; Cross and Angelo, 1988), something that the students take seriously, be quick, and be easy to use. Traditional techniques of testing generally do not provide immediate feedback on the students' level of understanding on a daily basis. Additionally, students tend to study only the material that they predict will be on the test (Cross and Angelo, 1988). Nongraded assessment can be used to provide additional and rapid feedback.

Listening to students in the halls, to my peers when I was a student, and to my own comments, it is evident that students would like to have a greater input into their education—especially if it would improve their classes, learning, and quality of instruction. However, will students be serious about a classroom activity if they are not being graded directly? Clearly, they must believe that they are gaining from the activity to take it seriously.

From the 1991 American Assn. for Higher Education Assessment Forum in San Francisco, I learned that, other than testing, there are many different student assessment techniques—many of which could be applied to horticultural science classes. I decided that two would be appropriate for my classes of Plant Growth and Development (graduate level) and Plant Propagation (upper undergraduate/lower graduate level).

Student course objectives. Angelo (1990) cited an example of an aerobics course where the instructor's goal was to get the students into shape; when the students were asked their goals, they said they took the course to enhance their self-esteem and for stress reduction. In this case, the teacher's and the students' goals were incompatible, and student dissatisfaction resulted. Cross and Angelo (1988) have outlined a detailed method for collecting and analyzing student goals for classes. I used a less-complicated and time-consuming approach.

At the first class meeting, before handing out my syllabus and objectives to the class, I gave out small filing cards and asked the students to list four or five objectives that they had for the course. I requested that they not use good grades, requirements of the major, and satisfaction of their academic advisor as objectives. I allotted 5 min of class time and asked them not

to sign the cards. I did not want them to think that this would help or hurt their grade. Following this exercise, I handed out my syllabus and objectives for the course.

After class, I reviewed their objectives, combining those that overlapped. I prepared the list for a transparency and handout to share with the class at the next lecture.

Student objectives were both general and specific, whereas my objectives were of a more general and sweeping nature. Some student objectives, especially the specific objectives, were outside the scope of the course and to cover them would have been redundant with other classes. I discussed this with the class and suggested other courses that might help meet these objectives. Other specific objectives provided a survey of student interest, and I chose examples in horticulture that related to their interests throughout the term. The general objectives of the students were compatible with my objectives.

Student response was generally positive (student quotes are used with their permission): "Writing down what we expected to learn from the class gave us a chance to tell you what we intended to learn from the class and in turn allowed you to incorporate these things into lecture." (Tracy Doubler). Some students were able to see that I did choose examples based on their objectives: "I noticed you made several references to my area or field that you might not have made if I wasn't in the class." (Scott Franklin). Input in the form of listing objectives allowed me to assess the students' interests at the beginning of the term and make appropriate adjustments in the course content.

I was not sufficiently effective in letting the students know that I was incorporating their objectives: "Some of the objectives were passed over a little lighter than I had hoped." (Anonymous). Mentioning that a particular example was based on one of their objectives, rather than assuming that they will know this automatically, should help avoid this criticism. Cross and Angelo (1988) suggested that asking the students to write their goals at midterm is useful. They inferred that soliciting student goals at midterm might be more realistic than at the beginning of the term. I believe that this might be a tool to communicate to

the students that the instructor remains interested in their input for the course.

The muddiest point of the day's lecture. Wilson (1986) described why an excellent physics professor was received so well by his students. The professor credited his "minute papers." These were given at the end of a few classes each term, and students were asked to state the most important thing learned during that lecture, and then write a question that they had about the lecture. He then responded to the papers. Weaver and Cotrell (1985) used a similar technique in which students were asked specific questions and required to write half-sheet responses. They stressed the importance of reading the responses and providing feedback to the class. Mosteller (1989) developed the "muddiest point in the lecture" based on these earlier reports. He asked students to write down the muddiest (most confusing) point of the day's lecture in his statistics class. He prepared handouts to address these muddy points.

I have adopted Mosteller's (1989) muddiest point technique in my classes with great success. During occasional lectures (I tried for one per week, but sometimes ran out of time), I passed out small filing cards during the last 3 min of a lecture and asked the students to write down the muddiest point of the day's lecture and return it anonymously. As the term progressed, I simply said "muddy points" when I handed out the cards. I spent the beginning of the next class answering or responding to the muddy points. The student response was overwhelmingly positive: "The muddy point idea was good. I even used it in the class (where I was the teaching assistant)." (Scott Franklin).

Students believed that this exercise forced them to review their notes while the information was fresh in their minds: "When students write their muddy points, they also have to force themselves to think over the information in the class and rearrange their thinking." (Anonymous). Additionally, they believed that it was a good way to begin the next lecture.

Some colleagues have been concerned that this might stifle oral questions, and perhaps this is a minor negative point: "One negative drawback of the 'muddy points'" is that I may have become dependent on the opportunity to write down questions rather

than asking questions verbally.” (Anonymous). It has been my experience that lectures that begin with my reviewing muddy points generated more verbal questions than were generated on days that I did not begin with this review. I was not surprised that some people were intimidated to ask questions in front of the class: “The muddy point idea also gave people who were shy or that felt their questions were stupid could ask without feeling embarrassed or intimidated.” (Estella Averswald). I was not aware how helpful foreign students would find this method of assessment: “It’s an excellent method for everybody, especially for foreign students (usually pronunciation and speed to formulate questions are a disadvantage).” (Virginia Freire).

“The muddy points turned in *immediately* at the end of a lecture was not helpful. I usually very clearly understood the points of the lecture. However, when reviewing the notes and lecture tape I would come across questions.” (Richard Ratledge). This seems to be a common comment of students that have written muddy points in class. My response was that I would accept muddy points at any time. I suggested that they place them in my mailbox to maintain their anonymity. This has occurred on rare occasions. I even have received requests from students that they be allowed to pass in muddy points when I have run out of time to request them. This often occurs prior to an exam.

I noticed an increase in the complexity of muddy point questions that students wrote as the term progressed. This is exemplified by the following two muddy points—21 Aug. 1991: “Modifying the receptor site [of plant hormones]; I have no idea what you were talking about.” This is a fairly simple and straight-forward muddy point. Compare it to the following muddy point from 24 Oct. 1991 (same Plant Growth and Development course): “When you talked about the conjugation of ABA—you said conjugation serves to detoxify and for transport. Detoxify—is this the same as homeostasis?” It is not, but it sure shows the instructor that the students were thinking and analyzing the information that was presented.

Conclusions. The classes in which I have used these two assessment techniques were small (fewer than 20 stu-

dents). Apparently, they are effective in larger classes, especially because they can focus questions into one time period. Because there are similarities among muddy points and course objectives of different students, I do not think that a great deal more time would be required for larger classes.

I believe that students desire to have input into their education. Most university professors have had training in research, but do not apply it to the classroom. Asking questions of students is an excellent technique to conduct research on the student response to your lectures rather than relying on “reading” of their faces and body language (Angelo, 1990). However, one of Angelo’s axioms (personal communication) is: “If you do not want to know the answer, do not ask the question.” There is a sense of fear on the part of instructors the first time they ask for muddy points. What will the students say? However, my experience has been overwhelmingly positive: “I believe this is one of the best ideas I’ve ever seen in a course. Students in general are sometimes hesitant to ask questions during class or interrupt a lecture.” (Julie Rowell).

Acknowledgement

I thank Gerald R. Gaffney, Mary Lou Higgerson, and Paul E. Read for critical review of this manuscript.

Literature Cited

- Angelo, T.A. 1990. Classroom assessment: Improving learning quality where it matters most. *New Directions for Teaching and Learning* 42:71-82.
- Cross, K.P. 1990. Teaching to improve learning. *J. Excellence in Coll. Teaching* 1:9-22.
- Cross, K.P. and T.A. Angelo. 1988. Classroom assessment techniques: A handbook for faculty. Natl. Center for Res. on Improvement of Post Secondary Teaching and Learning. Ann Arbor, Mich. Tech. Rpt. 88-A-004.0.
- Mosteller, F. 1989. The “muddiest point in lecture” as a feedback device. On teaching and learning. *J. Harvard Danforth Ctr.* 3:10-21.
- Weaver, R.L., II, and H.W. Cotrell. 1985. Mental aerobics: The half-sheet response. *Innovative Higher Educ.* 10(1):23-31.
- Wilson, R.C. 1986. Improving faculty teaching. Effective use of student evaluations and consultants. *J. Higher Educ.* 57:196-211.