

non-land grant institutions. These reductions in minimum requirements of agriculture courses are somewhat surprising in view of the fact that the agriculture background of students has been weakening.

Within the animal science requirements, the particular courses and number of hours of each changed very little. Non-land grant institutions seem to require more hours in production-oriented courses than do the land grant colleges, as was the situation in 1968. Curricula compare favorably with the minimum requirements recommended by the committee on Undergraduate Education in Animal Sciences in 1967³. The committee recommended that a core curriculum in animal science include an introductory course of three hours, six hours of nutrition, five hours of genetics and evaluation, three hours of physiology, two hours of products, and six hours of production and management courses.

The most surprising change that appears to have occurred in the past ten years is an eight-hour reduction in the hours of natural sciences and mathematics required. This represents a reduction of about 27 percent for land grant colleges and a 23 percent reduction for non-land grant institutions. A reduction was noticed in each of the areas of the natural sciences. In view of the more technical and scientific changes that have occurred in the agricultural industry recently, this reduction in science requirements is difficult to understand.

No changes in the general education requirements at non-land grant universities have occurred in the past ten years. However, a small decrease in the number of hours of social sciences, humanities and physical education required does appear to have occurred at land grant universities.

Due to the decreases in specific requirements in the major, in the sciences, and in general education as listed in the university bulletins, the number of elective hours has increased by about 50 percent. At Southwest Missouri State University we have observed that students choose courses in agriculture to fulfill many of their elective options. This may well be the situation at other universities. If students at the various universities choose electives in agriculture and the natural sciences, they may be prepared for today's agriculture better than what is suggested by this report.

Literature Cited

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PCQs – Feedback For Instructional Improvement

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Abstract

The use of Post-Class Questionnaires (PCQs) enlists the students' help in the process of instructional improvement. A PCQ is an informal, easy to develop tool instructors can use to obtain immediate feedback from students. The PCQ can speed up the iterative process of instructional improvement by timely and direct communication.

Introduction

Improvement of instruction through development of new materials, use of different presentation techniques, and other mechanisms is often characterized as an iterative process. The instructor tries the new method or materials, evaluates their effectiveness, and makes modifications for improvement. This article deals with a tool which the author has found effective in obtaining feedback from students and which can be used in the maintenance and improvement of high-quality instruction. This simple tool, proposed by Davis et al., 1974, is called a Post-Class Questionnaire (PCQ).

Frequently feedback from the instructor to students regarding their performance is used to improve student learning. However, feedback from the student to the instructor is often given only at the end of the term, if at all. End of term evaluations can improve instruction, but this objective may be masked by comparison between instructors or courses. Key student comments on instructional efforts early in the course may be too late. Motivation for students to make constructive comments may be low since improvements will most likely not affect them, and the instructor's sincerity in accepting comments may be questioned.

Less formal questionnaires which have the specific objective of instructional improvement (PCQs), used on a regular basis throughout the term, can be much more productive.

What Is A PCQ?

A Post-Class Questionnaire is an informal questionnaire designed specifically to give the instructor immediate feedback from the student. It is not intended to evaluate the student's learning but rather to give the student the opportunity to assist in the improvement of instruction. Oftentimes the feedback can be used to make

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immediate changes, thereby showing the student that he or she can be an effective part of the instructional improvement process.

PCQs tend to be most effective if done anonymously. This eliminates motivation for students to "butter up" the instructor. Questions asked on the PCQ can vary from specific to open-ended questions. They should ask for both positive and negative comments. Open-ended questions or requests for comments the student may like to make allow the student to insert his or her candid opinions or observations. Two sample questionnaires which have been used by the author are included as Examples 1 and 2.

Example 1.

AgEn 5072 F.E.M. - Finite Element Method
Post Class Questionnaire - Class 1

I, the instructor, ask you, the learner, for the following information. This information is intended for improvement of instruction. This questionnaire is *not* intended to evaluate your learning. Please do *not* sign this questionnaire.

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Did the first lecture satisfactorily answer the following questions for you:

	Yes	Undecided	No
a. What is content of course	_____	_____	_____
b. How the material will be presented	_____	_____	_____
c. Methods of learner evaluation	_____	_____	_____
d. Methods of course evaluation	_____	_____	_____
e. What is expected of you, the learner	_____	_____	_____
f. What can be expected of the instructor	_____	_____	_____

Do you have any other questions which were not satisfactorily answered? If so, please state.

Please comment or make any suggestions on items which may have bothered you during this class meeting or items which you feel were positive in this first class meeting.

Example 2.

AgEn 3610 Electricity for Agriculture
Post Class Questionnaire

I, the instructor, ask you, the learner, for the following information. This information is intended for improvement of instruction. This questionnaire is *not* intended to evaluate your learning. Please do *not* sign this questionnaire.

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Homework	Yes	Undecided	No
1. Have the non-turn-in type problems been helpful?	_____	_____	_____
2. Are homework non-turn-in problems too easy?	_____	_____	_____
3. Can you follow the lectures?	_____	_____	_____
4. Are overheads and board work readable?	_____	_____	_____

Please make any additional comments on class procedures, lectures, homework you feel are important.

Since the questionnaire does not need to go beyond the instructor, the questions can be informal: scientific screening for clarity or objectiveness is *not* necessary. The overriding objective is to give the student a mechanism by which to communicate with the instructor. This communication should take place in such a manner that the student does not feel threatened by instructor reprimands and the instructor does not feel threatened by misinterpretation of questions or responses by his superiors.

When To Use PCQs

Using PCQs on a regular, preannounced schedule assures the students will have ample opportunity to comment. The first lecture is always a good time to start the process, as this lets the student know what to expect. It is also effective for reminding the instructor of those things he or she "always says during the first lecture" that can be so easily forgotten during the first class rush. Do not be disappointed if the student responses to the first questionnaires are not as candid as you might like. It takes time for students to accept that the instructor is sincere in asking for their input. Announcing the results of questionnaires, both positive and negative, and the actions to be taken is a positive first step, but the instructor must be willing to listen fully and follow through. If PCQs are used on a regular basis, students take an increasingly active interest in effectively evaluating and making helpful comments.

Inexperienced instructors can find PCQs particularly effective. It is better to find out that students cannot hear you, or read your board writing, during the first week rather than at the end of the term. New instructors might want to pay particular attention to questions dealing with classroom techniques.

When new sections or new topics are added to an existing course, specially-oriented PCQs can be used. This type of questionnaire would likely contain specific questions dealing with the changes or new material.

What To Expect From PCQs

The PCQ is obviously only one of a number of inputs an instructor will use in evaluating effectiveness and improving instruction, but it can be a very useful tool. Use of the PCQ can help develop a class atmosphere that promotes good interchange and communication between instructor and students and a positive student attitude toward the course material. PCQs can give the instructor comments from "You're talking too fast again" to imaginative new ideas as to how to present a topic. PCQs can bring glowing compliments to raise egos or sharp and painful darts. The PCQ is a simple, easy-to-use tool for instructional improvement.

Reference

Davis, R. H., L. T. Alexander, S. L. Yelon. 1974. *Learning Systems Design*. McGraw-Hill Book Company, New York.