

duplication and encouraging the "team approach" to teaching crop science.

Student feedback on the Crops Resource Center was obtained from three different courses. Feedback indicated that students used the resource center mostly to study identification material, and to observe displays (Table 1). Over one-half of the students used it to complete assignments, and to review laboratory material. In two classes surveyed, over one-third of the students used it as a place to study or discuss material with other class members. Generally, students felt that more than one class using the resource center simultaneously either was an advantage or had no effect on the learning that occurred (Table 2). Over one-half of the students examined unassigned material over 50% of the time they visited the resource center. Perhaps of greatest interest is the fact that only 10% of the students felt the resource center did not increase their motivation to learn about agronomic topics.

The resource center is a concept that could be used by many departments and in many different situations. It

may be as elaborate or as simple as the instructors and the administration desire, or as there is room to permit. It is another tool that can be used to increase student learning on all levels, and provide students with the motivation and reason for knowing the material presented to them in other portions of courses. It provides the teacher with another method of challenging the superior student, as well as providing an opportunity for the less prepared student to "catch up."

References

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Competency-Based Curricula: A Means to Effective Teaching

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In a recent article in the *NACTA Journal*, Zurbrick suggested one approach to curriculum development that merits attention involves the identification and utilization of competencies (skills and knowledge) as a means of developing a relevant and articulated instructional program (3, p. 23). Zurbrick then reports in some detail utilization of that approach in developing a set of core competencies for agriculture students at the University of Arizona.

Recently, a modification¹ of this approach was used at the University of Kentucky in developing curricula in Agricultural Economics (1).

While both of these reports focus on the procedures for developing a competency-based curriculum, one aspect which has not been addressed is the impact of such on teaching *per se*. An examination of the positive affects forms the basis for this paper. Specifically stated, the objective is to examine and attempt to evaluate the poten-

tial benefits of a competency-based curriculum as it relates to, or influences, classroom instruction. Any emphasis on procedures will be only in terms of understanding the ultimate influence on teaching.

Why Competency-Based Curriculum?

One of the major decisions faced by the committee charged with curriculum review was the method to use. Several factors weighed heavily in our decision to move in the direction of competency-based curriculum. Basically, a competency-based curriculum attempts to identify desired *outcomes* of an educational process (*vis-a-vis experiences*) and to certify these on the basis of demonstrated behavior(2). Thus, a competency-based curriculum would require an integrated instructional program, and our existing program was weak in this regard.

Second, a competency-based approach was chosen in view of the era of accountability into which higher education seems to be moving. It's likely that funding sources, especially state legislatures, will increasingly look upon the ability of an institution of higher education to produce a product which is employable, socially useful, and productive. In addition, students today appear to be demanding more detailed information on what they can expect "to learn" from a course or program of study or the application which can be made of their training program.

This approach was chosen to assure that greater weight would be given to the student's learning needs and objectives as opposed to faculty teaching interests and objectives. While applying competency-based in-

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¹Most adaptations of competency-based programs in higher education have involved developing self-paced, multi-media courses as substitutes for the formal classroom presentations. As students satisfy the requirements of a given learning level, they move up to the next level of learning activities encompassed in another self-paced course.

While the program being developed at the University of Kentucky is not entirely a competency-based program since it will not be oriented in that learning objectives were developed on a competency basis for formal classroom courses.

structional techniques to academic programs in higher education is not new, in agricultural economics it is unique.

Development and Implementation Phases

Student Learning Needs The most critical and time consuming step in the developmental phase was identifying and preparing a set of learnings (competencies) and skills needed by graduates. Such a step seemed a logical starting point and was designed as the basis for identifying courses needed in the curriculum. This phase involved obtaining information and ideas from several different groups.

Employers were surveyed regarding job titles, descriptions, duties, and overall training needs of B.S. graduates in agricultural economics whom they hire. Guidance was sought in determining those areas of training in which graduates are adequately prepared and those found to be lacking. Recent graduates of the department were also surveyed regarding their job titles, descriptions, duties, and overall types of training needed to perform their jobs. Based upon their job experiences, they were asked to help identify areas of training which should have been provided in their B.S. programs but which were not adequately treated.

Involvement of employers and former students provided a most useful information source and one which the department hopes to continue relying upon.

Although developing the list of learnings needed by students was time consuming in itself, it did facilitate identifying training areas to be provided and structuring courses with a minimum of repetition or overlap.

Course Proposals and Program Options Following the development of learning and training needs, these were assessed to determine whether they could be provided within the department or would require courses in other departments. Attention was also given to the level of learning needed in each topical area. For those learnings which fell within the department's teaching responsibility, potential courses were identified and topical outlines and broad course objectives were prepared. Where learnings were to be provided through courses in other departments, their offerings were assessed to determine the extent to which desired learnings could be provided by existing courses. When necessary, new course proposals were discussed or developed in cooperation with relevant departments. Identification of potential program options was strongly influenced by the surveys and discussions with employers.

Implementation Several steps are envisioned for implementing the revised curriculum. The initial step was organizing a faculty workshop on writing and using competency-based learning objectives for departmental courses. An external resource person conducted this workshop which served as the basis for developing specific learning objectives and content of courses. Committees of two to three persons have been assigned to develop each course. Starting with the broad course objectives and topical outlines developed for each proposed course,

major subject areas or learning units within the topical outline are identified. Within each unit, statements of competency-based learning objectives are being developed along with an estimated amount of time to be spent on the unit, prerequisite material necessary for that unit, and identification and preliminary development of instructional and learning activities including assigned reading, field trips, audio visual soft ware, papers, reports, and exercises. This is turning out to be the most intensive and critical phase in curriculum revision, for it is the implementing link between the desired and the realized curriculum.

Potential Impact on Teaching

The department has concluded that a competency-based approach to curriculum review has a great deal to offer. First it focuses on those things which a student should be able "to do" upon graduation rather than upon what a student should "understand."

In addition, there are some intermediate pay-offs which bear significantly on courses and the teaching of those courses. Crucial to effective teaching is the type of program into which individual courses are cast. Generally, there is the feeling that perhaps the greatest benefits are yet to come in terms of the positive effects on classroom instruction. The following aspects of the program and/or review provide the basis for that conclusion.

Master Plan First, the department now has a master or long-run plan for its undergraduate program. While various facets will be implemented in phases, a specific direction has been taken and a commitment has been made. The importance of a strong undergraduate program in the department is being reemphasized. This approach forces one into an overall master plan for implementing current and anticipated changes.

Change in Thrust Second, the revised curriculum represents a reorientation in thrust in some learning areas. In particular, greater emphasis will be given to economic principles, methodologies, and their application (linear programming, computer science applications, etc.). Increased emphasis will also be devoted to oral and written communications. On the other hand, emphasis will be redirected in some areas, such as marketing agricultural commodities, to provide greater flexibility for more emphasis in particular areas depending on student interests. An appropriate sequencing of the entire undergraduate offerings has been developed along with identification and enforcement of prerequisites for each course.

Variable Course Credits Third, developing the set of learnings, and the grouping of related learnings into courses, resulted in several courses which were shorter than the common three-credit course. This has led to identification, in several areas, of basic prerequisite material to be covered in a three-credit course, with an option for an application course in a variety of one-credit modules. These one-credit modules are being taught for one-third of the semester. In a given semester, a student can choose from among a number of modules to be taken at various times throughout the semester. One-credit modules are being

offered in marketing agricultural commodities, farm and agribusiness management topics, data processing, linear programming, and agricultural credit institutions.

Service Role Fourth, the department has developed improved communications with other departments in the college and university and hence improved understanding applied economic content to program in other departments. The review had made us more aware of others' needs and the unique position for providing a service. These needs are now being viewed in a broader context than just at the college level. We are now aware of the service needs of the nonagricultural student as well. A minor in agricultural economics is one attempt to expand our service role.

Impact on Instruction Fifth, as indicated earlier, perhaps the most significant impact of our overall review is yet to come, i.e. the impact on teaching *per se*. The basis for this conclusion is that we are still developing detailed course outlines. These individual courses are built around a group of learnings which logically comprise a common set to be provided within a given course. The learnings represent a concise statement of needs within a particular area. The development of specific competency-based learning objectives for a course represents the implementing link between the desired and the realized curriculum. This represents an exercise in "honing-in" on course coverage and relevancy.

In addition to the benefits derived through individual course development, the intergrating and sequencing of courses into options provides a concise and relevant package focusing on student needs. This benefits the student.

All of these observations are meant to emphasize that this type of exercise (review) must have some positive influence on classroom instruction. Course conciseness, development of behavioral learning objectives, properly sequenced materials, and an awareness of where one's individual course fits into the student's total educational experience should lead to more effective teaching by individual instructors. If so, this alone would represent a substantial pay-off even for the amount of faculty time we have invested. From the standpoint of the student, the benefits are immeasurable in terms of a more meaningful educational experience.

Concluding Comment

When all is said and done, what really matters is how well the educational program is equipping graduates for on-the-job performance and assuring a personally satisfying and productive role in society. Our disciplines will be evaluated on how near we come to accomplishing this goal. We as teachers are very much involved in meeting that objective. If our own program revision, and the approach it took, provides a means to that end, then we will have been well rewarded for our efforts. We're confident that it was a step in that direction and are optimistic about the benefits yet to accrue in terms of making our program more attractive and our teaching more effective.

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³Philip Zurbrick, "An approach to Curriculum Development," *NAC-TA Journal*, Vol. XX, No. 4, Dec. 1976.

Discipline Reports

Business, Economics, Marketing Workshop

Chairman: Lee W. Doyen - Cloud Community College, Kansas

Recorder: Robert L. Beck - University of Kentucky

Fifteen participants took part in the business, economics and marketing workshop. The session provided a useful forum for the sharing of methods and techniques used in teaching economics and business. Discussion centered around: 1) techniques used in teaching agricultural finance, 2) equipment and visuals, 3) travel liability and 4) associate degrees and transfer credits.

1. **Teaching Techniques:** A one-day internship designed to provide students with some practical experience in agricultural credit was discussed. Sometime during the last one-third of the agricultural finance course, students spend one day in the field with a representative from an agricultural financial institution such as a PCA fieldman. Participants are students at the junior or senior level and will have completed a course in farm management and accounting principles. The number of students assigned to any fieldman at one time is limited to two. Others mentioned longer-term (6 month) internships and term projects as a means of injecting some practical experience into a student's program.
2. **Equipment and Visuals:** Films and cassette tapes are available from agribusiness industries. However, there is lack of information as to availability. The suggestion was made that a list of such materials be made available to **Journal** readers. Other things mentioned included the potential for a) telelectures, b) audio-visuals, c) farm management tours via slides and telelecture, d) computer games and e) recording phone conversations for use in the classroom.
3. **Travel Liability:** Policies regarding travel and the attendant liability have curtailed the use of field trips at many institutions. In recent years, some institutions have become involved in litigation arising from accidents involving students on field trips.
In addition, the scheduling of field trips has become more difficult because students and instructors