"foundation" – "production" courses is logical in that first a general knowledge of all areas of agriculture is developed, then scientific principles of animal science are studied, and finally, production management systems are related to the previously acquired information. The implementation of such a curriculum would necessitate considerable discussion of course content between junior colleges and senior colleges as well as between the teachers of "foundation" courses and "production" courses. This coordination should be directed toward preventing excessive overlapping of subject matter and encouraging continuity of the educational process. The "production" courses (Beef, Dairy, Pork, etc.) may need to be slightly different from traditional concepts of livestock science, in that they should emphasize management and management decisions. The student will have already acquired the scientific basis for production in the "foundation" courses, leaving the methods of implementation and discussion of systems of production for the "production" courses.

The proportioning among "general education" (40 hours), "preprofessional" (20 hours), "foundation" (15 hours), "production" (15 hours), and "electives" (30 + hours), seems to give an acceptable balance to encourage breadth, depth and flexibility.

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GRADUATE COURSE IMPROVEMENT THROUGH EVALUATION: A CASE STUDY

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INTRODUCTION

"Not to prove but to improve" – is the theme of the Phi Delta Kappa Study Committee Report on Educational Evaluation.[1] This report, along with other literature, provides many reasons for doing course evaluation:

1. To determine if course and students are making desired progress.
2. To provide data on to whom instructors and administrators are accountable.
3. To provide status and reinforcement to curriculum planners and instructors.
4. To enhance the decision-making process on curricular planning.

This fourth reason is correctly identified by the P.D.K. report as the most useful, pragmatic reason for conducting formalized evaluation. This stress on evaluation for improving decisions and thus improving curriculum and courses, implies a strong future orientation. Evaluation is a useful tool only when it is used to improve future efforts.

I agree with the P.D.K. concept. Yet, I am bothered by the lack of real evidence supporting formalized evaluation as a pragmatic, future-oriented concept with the capacity to improve curriculum. Most evaluation reports, for example, are summary in nature, thus providing little encouragement to teachers that evaluation is a useful tool for improving course work. One can easily see why many instructors feel threatened or insecure when peers or administrators suggest they evaluate their courses. These instructors feel the only reason others wish them to evaluate is to see how proficient they are – period!

The seeming void in the literature on the validity of formal, systematic evaluation is my concern. The focus of this article is to help fill this void by providing comparative evidence showing how a course was improved through systematic evaluation. The case study reported here is about a formal evaluation of a graduate college course I teach.

THE SETTING

In 1971 I began teaching the course – "Program Planning in Extension," a key course to graduate students both in and out of the Department of Agricultural and Extension Education, University of Wisconsin. Generally, students of this course are action-oriented, have a technological background as undergraduates, and often from international schools, thus unaccustomed to nonlecture, discussion type learning experiences.

Prior to teaching this course, my experience was limited to informal non-continuous settings with volunteer groups (both youth and adults) as an extension agent. Thus, my lack of experience in teaching a graduate course for students from all over the world provided an opportunity for seeing whether systematic evaluation could be a strategy for course improvement.

PROBLEMS AND DECISIONS

One reason I wished to evaluate the course was to learn how to plan and implement a graduate course practicing the philosophies, and educational theories I had learned.

Second, at the "course level," I had to decide just how "prestructured" or "teacher organized" a course had to be and how unstructured some parts of the course should or could be. I wondered whether I had to set specific objectives for graduate students to achieve.

Third, the work load, the pace of the class, and realistic expectations of students had to be assessed.

Fourth, the appropriateness and exclusiveness of the course content needed evaluation. Was it too much? Enough? Were there other, more important concepts to be taught?

Fifth, I had to decide on appropriate teaching procedures, organization, and methods for each concept to be taught, to build a strong connection between planning ideas and reality (theory and practice).

PROCEDURES

A systematic, formal evaluation is not a research effort. Instead of determining truths to generalize to other situations, as in research, it determines the value of course content and processes as judged against certain criteria.[2]

Systematic, formal evaluation also means that, rather than depending on single measurements, one relies on multiple measurements. Many sources of evidence are important. I used the following sources to discover weak points of the course, to probe unanticipated happenings, and to make the decisions outlined above:

1. Discussions with fellow professors on the feedback they were getting from students and others.
2. Direct student feedback in class and during individual conferences with each student.
3. Observations of class and individual efforts.
4. Student advisory committee discussions.
5. Evidence from extensive surveys at the end of the semester.

The survey form at the end of the course did not replace the need for the other sources of evidence but rather complemented the other sources by:

1. Getting reactions from those who did not speak out.
2. Filling in the gaps on things some students didn't respond on.
3. Probing more deeply certain issues that may have arisen during the course.

The reliability and validity of these approaches was checked in several ways. First, the survey form was reviewed and pretested by fellow departmental professors and the class advisory committee to see that questions would be understood and would actually obtain desired information. Second, the multiple measurement concept had inherent reliability tests built into it. For example, the survey results could be compared with the visual observations and/or the feedback from fellow professors.

COMPARISON OF 1971 AND 1972 COURSES

The following broad learning objective served to guide the planning of the course for 1971.

> Students to develop an indepth knowledge of extension program planning and its concepts and a commitment to study the subject further by actually becoming involved in the planning, learning, and evaluation of the course.

This objective was reaffirmed by evidence gathered at the end of the 1971 course and served to guide the course planning in 1972 also. The evidence at the end of the 1971 course served to change the 1972 format considerably. Following is a brief comparison of the 1971 and 1972 courses.

1971 Course Content and Process

The content to be learned centered around 12 concepts, presented or discussed in the following order: Philosophy of Extension, Extension Program, Social Systems, Change, Situation Analysis, Involvement of Citizens, Decision Making, Needs and Problems, Educational Objectives, Learning Design and Instruction, Administrative Support, and Evaluation of Programs.

Students volunteered or were assigned to develop two short papers related to each of two concepts. These papers were to include both a brief summary of the important research on the concept, followed by their own creative additions on that concept. Students writing on similar concepts organized into task groups to present the key ideas to the class. I met with each group at least once, usually several times to help them plan a presentation of concepts for the class.

The advisory committee elected by the students to help make decisions on procedures and content made an early decision to divide the 41 students into two sections for two days a week (used for student presentations), with the class meeting as a whole the third day (used for instructor input and summaries).

Instead of a final exam, the class members chose to develop a model of program planning using the 13 concepts, discussing their inter-relationships, and showing how the concepts fit into practice. About mid-semester (at the end of the presentation on concepts), I presented my ideas on how the concepts fit together.

The last 3-4 weeks of the semester task groups presented and discussed proposals on approaches they had developed in response to specific programming problems identified during the early part of the semester. (i.e. How to drop unneeded extension programs.)

In summary, the students worked in depth and on their own, at abstract and theoretical levels.

Several key problems with processes used in the 1971 class were identified by the five evaluation procedures:

1. The course was too abstract or conceptual and unrelated to student experiences. More practical application was needed.
2. Problems of communication existed. Many international students found it difficult to present and listen to discussions by other students in the class.
3. The sequence was improper. Some concepts needed to be presented before other concepts could be understood. (i.e. Needs must be presented before situational analysis.)
4. The work load was too great.
5. The readings did not provide enough direction.
6. The class was too large for the format used.
7. The groups needed more training in communications and group dynamics.
8. More interesting and stimulating methods were needed. Not enough variety or creativity existed in course presentation and instructional media.
9. More introductory overview was needed at the beginning of the course to help set direction.
10. More outside resources were needed for variety.
11. More clarity was needed on ideas, concepts, and instructions.
12. Students generally could not establish for themselves meaningful, higher level learning objectives, as expected.

1972 Course Content and Process

As a result of the 1971 evaluation, several changes were made in the 1972 course. First, more specific learning objectives were identified, about which class members were expected to make some commitment. These were previewed at the beginning of the course. The class members were then encouraged to work towards developing more personalized and even more specific objectives during the semester, within the already established framework.

Second, discussions on "concepts" and "communication" were inserted at the beginning of the course to help students understand a concept and communication as a useful planning concept. Experiences related to these two discussions also helped them in class planning situations. In addition, more time was given to the concepts of group dynamics, needs, situational analysis, and decision making. Less time was given to learning and evaluation because many students were taking specific courses on those subjects.

Third, the sequence of concept presentation was changed in several cases. For example, needs followed situation analysis in 1971, but preceded situation analysis in 1972. In programming, needs are identified as a result of analyzing situations and should be taught in that order. However, the 1971 experience showed a student must know what a need is, before discussing situation analysis, if he is to know a need when he finds it, and if he is to know the reason for analyzing a programming situation. The sequence of the concepts in the 1972 course with some changes in labels is compared to the 1971 sequence below:

1971	1972
Philosophy of Extension	Concept Learning
Extension Program	Communication
Social Systems	Groups/Social Systems
Change	Change
Situation Analysis	Extension Education Philosophy
Involvement of Citizens	Program
Decision Making	Needs/Motivation
Needs and Problems	Situation Analysis
Educational Objectives	Involvement of Citizens
Learning Design and Instruction	Decision Making/Planning
Administrative Support	Educational Objectives
Evaluation of Programs	The Learning Experience
	Securing/Organizing Program Support
	Evaluation of Programs

Fourth, I planned and presented the major input on all of the 14 concepts in 1972. Students did not initiate as many of the learning experiences, thus eliminating some language and communication problems, but depriving students of an opportunity to plan and teach.

Fifth, these instructor-initiated experiences were more varied than the learner-initiated experiences of the 1971 course. These experiences included case studies, group discussions, lectures, role playing, open ended exercises, guest speakers, student presented lectures, short writing assignments (which forced students to compare theories), communications exercises, demonstrations of techniques, and more use of flip charts, overhead projection, chalk board, and handouts. Variation was not the only concern here. More serious attempts were made to match appropriate processes to the subject matter being taught. Obviously, this effort implies graduate students are motivated not only by subject matter and their own desires to learn, but also by external classroom stimuli.

Sixth, the students were given extensive reading lists on the concepts, with specific identification of key readings, at the start. These readings were also made more accessible by placing them in two locations.

Seventh, a very key change, the students divided themselves into teams of 3-5 students. Each team was to select one of several possible programming situations and develop a written extension program plan. The teams worked all semester on these plans, incorporating the course concepts into their "real" plans. University of Wisconsin-Extension persons actually doing programming related to family nutrition, disadvantaged youth, community resource development, and growing rice and tobacco were used as resource people for these groups.

Those concepts and processes rated as effective in 1971 were retained for the 1972 class, including each student developing his own conceptual program planning model and self-evaluation.

EVALUATION RESULTS

The extensive survey done at the end of each semester had students rate the degree to which various criteria described the

course.

The criteria represent the key variables used for all measurements. In list form, they represent a tangible comparison of the results due to the changes in the 1972 course based on evaluations of the year before. Though the student feedback was not the sole source of evidence, the comparisons of perceptions do reflect trends exhibited by other sources of information.

All averages, unless otherwise noted, are on a 1-5 scale with five being the highest (nearly always or very much) and one the lowest (nearly never or very little). The 1971 ratings (n=25), which are relatively lower, can be viewed as benchmark data and are actually part of the decision-making data used for making changes in the 1972 course. The 1972 ratings (n=12) can be considered results due to changes.

Perceptions of Content

Table I
Comparison of Mean Perceptions of Course Content

CONCEPT	RELEVANCE/APPLICABILITY[1] 1971[3]	1972	THEORETICAL/LOGICAL[2] 1971	1972
Groups/Social Systems	3.00	4.55	4.25	4.36
Change	4.00	4.44	3.50	4.00
Philosophy of Extension		3.98		4.00
Extension Program		4.40		4.33
Needs and Problems	5.00	4.60	5.00	4.72
Situation Analysis	3.75	4.50	3.75	3.63
Involvement of Citizens	3.00	4.30	3.00	4.36
Decision Making	3.85	4.60	3.68	4.55
Educational Objectives	3.50	4.40	4.00	4.36
Learning Experiences	3.80	4.37	3.80	3.81
Securing/Organizing Support	2.67	3.87	3.00	3.54
Evaluation of Programs	5.00	4.25	4.00	3.63

1. Because of the student's action orientation, it was desirable that the course content be useful in their future and/or present job situations. The ratings compare the degree to which students thought the ideas were relevant and applicable.

2. Because the course was at a graduate level, it was desirable that the content be presented beyond mere rote recall and meaningless facts. The ratings compare the degree to which students thought the ideas were graduate level.

3. Because of the technique used in 1971 to evaluate the concepts, the N is very small in all cased (1-5) and in some cases, concepts were not rated at all.

Table I compares how students perceived the content in the two years. The ratings of all concepts increased in 1972, except for "needs and problems" and "evaluation of programs." The 1972 relevance ratings are all above 4.00 except two: "philosophy" and "securing supports." In 1972 all concepts were perceived to be 4.00 or above from a theoretical standard, except for "evaluation," "securing support," "learning experiences," and "situation analysis."

Perceptions of the Processes Used in the Courses

Similar data were gathered regarding course processes. These data are compared in Table II.

As Table II shows, all processes were perceived as improved in the 1972 course except one. Students rated "freedom and autonomy" lower. The greatest increases in perceptions were in "motivating, stimulating" and "opportunity to apply ideas." As shown, the most highly rated processes in 1972 were "opportunity to participate in learning," "work load," "assignments," and "analytical thinking."

The planning projects used as a specific part of the 1972 course were rated as very relevant, useful, and complementary to class discussion. Students felt they actually experienced the concepts of group dynamics, communications, planning, identifying needs, and making decisions in the group planning projects. (All were rated 4.25 to 4.58)

Table II
Comparison of Mean Perceptions on Course Processes

COURSE PROCESS[1]	MEAN PERCEPTIONS 1971	1972
Overall planning/organizations	3.44	3.91
Opportunity to participate in planning	3.72	4.16
Opportunity to participate in learning	3.78	4.50
Opportunity to participate in evaluation	3.48	4.25
Analytical thinking needed	3.61	4.33
Motivating/stimulating	2.63	4.00
Freedom and autonomy	4.12	3.83
Sufficient guidance	3.33	4.00
Variation in methods	3.12	3.91
Appropriate, satisfying	3.25	3.83
Opportunity to clarify ideas	3.32	4.08
Opportunity to apply ideas	3.20	4.25
Opportunity to set standards	3.48	3.83
Opportunity to make decisions	3.75	4.00
Effectiveness in achieving learning	3.56	4.00
Amount of critique and feedback	3.56	4.00
Flexible, open to change	3.80	4.25
Adequacy of assignments	3.84	4.42
Work load and pace	3.96	4.50

1. Because the course was graduate level, the processes selected to get feedback on included many of the usual criteria (variety of methods, motivation, feedback), but also several more related to graduate work (level of analytical thinking, freedom, opportunity to plan and evaluate.)

Holistic Reactions to Course

Other questions determined student reactions to the total course in several ways. These reactions validated the perceptions of the processes and content presented above.

First, students were asked how well they thought they achieved their own learning objectives. In 1971, the average on a five point scale was 3.92. In 1972, the average was 4.50.

The second general reaction was a rating of the overall quality of the course. In 1971, the average was 3.56. In 1972, the average was 4.41.

Third, students indicated modifications they desired in the course. With number one representing "would not take course

Table III
Mean Perception of Course Contributions to Student Professional and Academic Needs

CONTRIBUTION	MEAN PERCEPTIONS 1971	1972
1. Contributed to overall graduate study	3.84	4.67
2. Contributed to general intellectual improvement	4.08	4.25
3. Contributed to future job performance	3.88	4.50
4. Contributed to motivation to do systematic program planning in future	3.88	4.25
5. Contributed to ability to do systematic program planning in the future	3.80	4.36

again anyway" and number 5 representing "would take course as is" the 1971 average was 3.86, and 1972 was 4.06.

A final series of questions dealt with the degree to which students felt the course contributed to several dimensions of their academic and professional needs. These perceptions are itemized in Table III.

As shown by the four overall types of reactions, the student's 1972 holistic impressions differed greatly from those of 1971. Particularly important are the ratings of achievement of objectives and the student's perceptions of the course contributions. These ratings are important because they are closer to measuring the amount of learning, the ultimate application of ideas, and the eventual impact of the course in the eyes of the students.

DISCUSSIONS AND CONCLUSIONS

Using the students' perceptions as a measure of course effectiveness, the 1972 course was significantly improved over the 1971 course, regardless of criteria. The students ratings were higher the second year. Their higher ratings were on both the parts of the course (each of the concepts and the various processes used) but also on their impressions of the total course as obtained in several ways. My own subjective observations and the feedback from fellow professors substantiated these student reactions.

Question: Did the formalized, systematic evaluation cause the improvements or were other factors more important? Certainly, the experiences I gained the first year were in themselves critical, as were the pressures existing within the University system to improve the course. But experiences in themselves don't improve the next effort. Reflecting on the experiences, placing a value or meaning on them, and eventually using these reflections and evaluations is what brings improvement. The same holds true for University pressures. Only when the instructor internalizes these pressures and evaluates past experiences to improve future efforts do they have any bearing on course improvement. The reflection and evaluation process is the critical thought process, which takes evidence from past efforts, judges the relative worth of these efforts, and uses these judgments to decide on future course improvements.

I strongly believe my systematic, formal evaluation was the key to improving the course. The evaluation in 1971 included gathering extensive evidence on the content and processes of the course in accordance with established criteria, and comparing the ratings of the content and processes to determine the relative course weaknesses.

One might ask whether I could not have reflected on the 1971 course and make changes and improvements without doing an extensive, systematic evaluation using several sources of evidence? The answer is an emphatic no! Only through the systematic approach could I have made such progress in one year. A systematic approach looks at the course in more detail, using the memories and perceptions of more persons than the instructor. An instructor cannot remember all the gaps, strengths, and subtle hints given in a course. By using the memories of the students, we tap the already completed evaluations of students, stored in their memories, including data, criteria and judgments.

I do not doubt the validity of the students' perceptions. Other sources supported them. However, I do wish to raise a separate issue because of these perceptions: What is a good graduate course?

I planned the 1971 course based on current student demands for freedom and independent learning and on my own conviction that mature graduate study is characterized by self-directed, self-motivated, open-ended learning. Yet 1971 students achieved less and were less satisfied than the 1972 group, which had more learning experiences planned for them. One explanation is that the second year experiences were closer to expectations of a good course. Thus, we must raise the question of whether the experiences provided in 1972, even though in accord with student expectations, are the best in the long run? With more class direction will they be able to develop learning and research habits useful for solving future problems when instructors are not available?

Thus, before deciding on the overall strategy for evaluating a graduate course or any other college course we need to first decide on just what is a valuable course? What criteria represents the type of course we desire?

In addition to relying on research on what ought to be and on systematic evaluation efforts, one must be sure of the philosophical assumptions upon which instructional strategies, research, and evaluation criteria are based. This case study doesn't answer what assumptions are valid. Further research is needed on that question. In the meantime, based on the foregoing data and interpretations, I feel each instructor must think through these assumptions for himself before setting up criteria, gathering necessary evidence, and judging the value of a college course.

1. Phi Delta Kappa Study Committee on Education, (Stufflebeam, Daniel C., Walter J. Foley, William S. Gephart, Egon G. Guba, Robert Hammond, Howard D. Merriman, Malcom M. Provus), **Educational Evaluation and Decision Making**, Itasca, Illinois, F. E. Peacock Inc., 1971.
2. Steele, Sara M., "Program Evaluation – A Broader Definition," **Journal of Extension**, Volume VIII, Summer, 1970, pp. 5-17.

NACTA Manuscript No. 1/30/74/22

MINUTES
NACTA Executive Committee Meeting
September 21, 1973

The meeting was called to order by president Pasto at 9:00 a.m. September 21, 1973, in the University of Nebraska Center, Lincoln, Nebraska. Executive committee members present were Pasto, Alexander, Brown, Boyce, Ecker, Coleman, and Sandstedt. Others present were Seif, Treese, Eldridge, Hartung, and Arnold.

The minutes of the June 15, 1973 executive committee meeting were approved as distributed.

The treasurer's report was accepted as distributed. A copy is attached. Executive committee members suggested that the treasurer investigate possibilities of investing NACTA funds where they will draw the maximum interest possible.

The editor's report was accepted as presented by Pasto for Wright. Executive committee members suggested adding to the NACTA **Journal** regular sections on "Digests of Research in Teaching Techniques in Agriculture," "Technical Notes," and/or "This Works for Me."

The following committee reports were presented:

Ad Hoc Committee on Writing Contest: Treese reported that guidelines were being established for a student writing contest and that sources of funding were being investigated. The committee feels confident that they will have the contest details ready for presentation and adoption at the next summer's annual conference. The executive committee members commended the ad hoc committee members for their work.

Membership: The secretary provided regional directors with copies of an updated membership list for their use in membership development. Copies will be sent to the directors and to the Canadian coordinator not present at the meeting by the secretary. The president will send a letter and brochures to each post-secondary institution with a program in agriculture inviting membership in NACTA. The president will write to each active and institutional active member to "each one get a new NACTA member."

Teacher Recognition: The report was made by Seif who asked for clarification of eligibility requirements for the Ens-