

Transmitting Instructional Development to University Faculty: Two Approaches

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It can be said without much risk of contradiction that the rapid changes in teaching methodologies and needs have placed particular burdens upon instructional development personnel working within the university structure. For instance, the limited time available to work with all of the demands placed upon the modern professional has reduced the number of contacts with faculty thus reducing the total services that can be offered. Additionally, the cost of exposing faculty to teaching innovation on a one-to-one basis may be suspect in terms of its overall cost-effectiveness to the university (Witt, 1971). With the increase in demands and often the cut-back in assistance to the instructional developer, the instructional development consultant must be prepared to consider alternative methods of training faculty in instructional development procedures in addition to maintaining the individual consultant-client approach of working with faculty.

As an approach for resolving this dilemma, Oregon State University has designed two different projects to transmit instructional development to a larger set of faculty. They are the College and University Teaching (CAUT) Project and the Fund for the Improvement of Post-Secondary Education (FIPSE) Project on Professional Development. Both projects share a common objective—that of training university faculty to use instructional development procedures in preparing for instruction. It might be noted that the CAUT Project is approaching its sixth year of operation and the FIPSE Project on Professional Development had just begun in

the fall of 1978. The CAUT Project, described first, is designed to meet the needs of faculty with specific applications for instruction; the second project outlines an attempt to train a relatively few faculty to take on a role of “change agent” or opinion leaders within a College of Liberal Arts. These individuals, as described in the literature (Rogers, 1962), are identified as professional persons trying to influence the directions that individuals will take. Specific case studies and organizational procedures are provided for the reader to generalize the effectiveness of both projects.

Description of the CAUT Project

The CAUT Project at Oregon State University (OSU) was created in 1974, to meet the increased need for instructional development on the university campus. The CAUT Project is organized to provide services that will motivate and enable faculty members to design and implement an improved instructional process. These activities require training 30 selected OSU faculty members (from various schools and colleges). The main subject matter is instructional development and curriculum design with stress upon instructional design, learning processes, and alternative instructional forms allowing for increased instructor-student involvement.

The CAUT Project encompasses, for the chosen set of faculty members, a full year with four distinct phases of instructional activities. The instructional activities themselves are designed to demonstrate by example the validity of the design techniques for improving instruction. The emphasis on using interpersonal communication methods is vital in training faculty about instructional innovations and technology. Outside instructional consultants are selected on the basis of their ability to work effectively with faculty. This process is emphasized throughout the four phases of the program.

The Four CAUT Project Phases

Phase I. Phase I (workshop session) consists of three weeks of daily sessions directed by several, nationally known instructional consultants plus the CAUT staff. Participants are exposed to several different teaching/learning approaches, and the CAUT Project staff helps participants evaluate and select the methods that most enhance the instructor's performance. The instructional consultants selected come primarily from other universities. These consultants are skilled in current educational innovations. During the workshop period, participants are expected to develop instructional development plans for their courses. This phase takes place in early summer.

Phase II. Phase II (a two-month planning period) is used by the faculty member to design a comprehensive plan of instruction with the assistance of the CAUT Project personnel and campus resource departments. The instructional planning as developed in Phase I is refined into a more complete and well defined instructional design during Phase II. The emphasis is on organizing and designing specific objectives, teaching strategies, and evaluation procedures—rather than on materials development. The outside consultants do not participate after Phase I, but supportive help is provided by CAUT Project staff at OSU. This phase proceeds at the individual faculty member's own pace. It fills the period between the end of the workshop and the beginning of fall term.

Phase III. Phase III (materials and teaching strategies development period) provides each participant with consultation and aid in developing instructional Phases I and II. Again, this phase proceeds at the individual faculty member's own pace. In general the faculty member is putting together an instructional system for a particular course, and the first teaching of that course during the next school year provides the necessary deadline.

Phase IV. Phase IV (the evaluation period) is used as a colloquium to describe and report the participant's output through Phases I, II, and III. Each participant prepares a report of the instructional design, objectives and means of evaluation, the materials developed, and plans for the future innovations. Once the project is completed, the CAUT staff continues to be available for assistance. As a result of the project's input to the instructor, participants are expected to determine changes in students' learning and attitudes.

Faculty Selection

One of the fundamental problems faced by a program designed to transmit instructional development is the voluntary nature of faculty involvement.

Even if a proven resource for instructional development is available, many faculty feel that merely asking for assistance is in itself an admission of inadequacy or incompetency. Presently, the CAUT Project addresses this problem by involving conscientious faculty who have expressed a desire for assistance by applying to and being selected by a departmental curriculum committee and a college dean for participation in the project. Deans nominate faculty members from their departments on the basis of the proposals by faculty members to improve particular courses. These course proposals are evaluated in terms of number of student credit hours affected, type of course, faculty members need for the workshop, etc.

CAUT Budget

The CAUT Project is funded by the university from state funds. The budget for the most recent year was \$101,000. Each of the participants receives a stipend from the CAUT Project funds for \$1,000 to attend the workshop. Participants also receive an additional stipend from their respective departments, which averages \$500 per participant for varied course use. Thus a participant receives approximately \$1,500 for nearly full-time involvement in the 3-week workshop. No funds are provided by the CAUT Project for the additional phases of a faculty member's involvement; however, assistance is provided in obtaining funds and/or grants.

Some 150 faculty members have participated to date in CAUT Project training. As part of the overall instructional

development process, they have been exposed to instruction in self-paced instruction, competency-based testing, audiotutorial coursework, guided design, behavioral objectives, computer assisted instruction, test analysis, learning centers, instructional television, lecture techniques, and the evaluation of teaching.

It is essential that the CAUT Project operates in the broadest possible context by providing informational exchange through (1) participant seminars to assure that the various procedures developed and results obtained by each faculty member contribute to the knowledge of all participants; (2) seminars and presentations conducted on a campus-wide basis to acquaint additional faculty with the CAUT Project and demonstrate the kinds of gains they can expect through participation in it; and (3) a comprehensive annual report distributed campus-wide and submitted for publication in the appropriate professional journals. Also, individual reports written and published by faculty participants promote a wide dissemination of practical information that can be used by other faculty and educational institutions.

As the quality of instruction is improved, it is believed that there will be a commensurate improvement in the efficiency of the learning process and in students' competencies. From the data acquired, CAUT participants have reported that by acquiring instructional development skills their effectiveness has increased. Feedback from students and administrators about the changes in the participants' methods has been supportive.

The following cases illustrate a few examples of four instructors' course work as a result of training in instructional development in the CAUT Project. Further information about the CAUT Project is available (Osterman, 1978).

Case I: Teaching Introductory Data Processing with Competency-Based Testing

This case describes a teaching/learning experience in the School of Business at Oregon State University. The course, "Introduction to Business Data Processing," consists of approximately 40 percent data processing and 60 percent programing in the FORTRAN language.

The investigation was stimulated by the instructor's experience in the CAUT Project in 1974.

The instructor's desire was to develop a competency-based version of the course changing the normal lecture mode of teaching to that of module instruction. This particular case focuses on competency-based testing as an intermediate step.

Competency-based testing requires that the instructor develop examinations that measure the level of competency of a student in each of several modules making up the subject matter of the course. Students in some competency-based testing schemes are allowed to progress from one module to another only after having displayed some minimum level of competency on the examination over the previous module. This means that students are to be provided with a sufficient number of versions of modular examinations to demonstrate their competency. The instructor employed competency-based testing in an introductory business data processing course wherein numerous versions of exams were provided, but one's competency on one module was not prerequisite to work on any of the other modules.

Results. The results gleaned from this "experience" are interesting. Comparisons between the two different administrations of the course (one as competency-based, one not) were made in terms of the proportion of students successfully completing the course, the grades they achieved, the overall level of competence they achieved, and their evaluation of the overall quality of the teaching of the course.

A slightly larger proportion of students finished the course under competency-based testing (87 percent vs. 80 percent). The difference in number of students finishing the course is statistically significant at the 5 percent level.

Students in the control group (150 students) achieved an average grade of 66.30 with a standard deviation of 15.52. Students in the competency-based testing group (150 students) achieved an average grade of 73.94 with a standard deviation of 10.80. It would appear that students achieved a higher level of competence in the latter group. The performance of students in the competency-based testing group was better with statistical significance at .05.

Students in the control group rated the instructor at 2.65 (on a scale from 0-4), which put his performance in the fourth quintile as compared with his colleagues. Under competency-based testing, this figure was 3.28, which was in the first quintile.

In general, the results of this teaching approach show:

- The average level of student competency is increased.
- The proportion of students completing the course is increased.
- Student satisfaction is increased.
- The average grade of the course is raised.
- Student evaluation of the teaching effort is higher.

Case II: A PSI Approach to Managerial Accounting

The personalized system of instruction (PSI) is an alternative to the traditional lecture method of pedagogy. This set of techniques was originally presented by Keller, and has since been utilized and investigated at many colleges in a variety of disciplines. The major components of PSI are: modulated course structure, written study materials, student self-pacing, student-peer proctors, competency-based testing and nonrequired lectures (Keller, 1974).

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Description of the Instructional Methodology. During the fall term, 1974, at Oregon State University a variation of the PSI method was used in an introductory managerial accounting class. The instructor was introduced to PSI through the 1974 CAUT Project.

The course material was divided into 10 separate units covering the standard managerial accounting topics. For each unit students were provided with a written study guide. The unit consisted of a set of behavioral learning objectives; a reading assignment; study question for the student to answer while completing the reading assignment; a list of required problems; a list of recommended problems; and any comments, formulas, or examples the instructor desired to add to a particular topic.

Individual students proceeded through the course at their own pace.

The only constraint was that the course grade at the end of the term depended upon the number of points the student had accumulated from module exams. Students were required to achieve a given percentage score (up to 100 percent) on a unit exam before proceeding to the next unit. Course grades were then determined by the number of units completed.

Results. The PSI approach yielded the following results.

- The instructor received three separate course evaluations (on the scale described in Case I) when using a traditional approach to introductory managerial accounting, and three evaluations when using the PSI approach. The author's rating for each PSI section was higher than any of the ratings from the traditional sections.

- Each of the sections rated the relative time and effort required by managerial accounting compared to other courses. The results do not indicate any substantial perceived difference in the course workloads for the different sections.

- Students were asked whether they would recommend the managerial accounting course to a friend and how

strongly they would recommend the course. The unanimous recommendation of the PSI class was very impressive compared to the average percentage of 69 percent positive recommendations obtained from the other sections.

- Testing at the end of the course scored students in the PSI section consistently higher than their counterparts in the non-PSI section.

The instructor found PSI to be a promising and enjoyable teaching method. In addition, a post hoc analysis of student attitudes and performance found that compared to students in lecture sections, students in a PSI section of managerial accounting had more favorable attitudes toward the course, and performed better on common portions of a final examination. These findings are consistent with reported research on PSI in other disciplines.

Case III: The Use of Guided Design in Teaching Management Processes

The *guided design* concept in education was originated by Charles Wales, professor of Engineering and Education at West Virginia University, and his colleagues (Wales and Stager, 1977). Guided design shifts the emphasis of education from transfer of information to the development of the student's skills in decision-making. The instructor was introduced to guided design during the 1975 CAUT Project at OSU.

Under the guided design system, classroom time is used for decision-making exercises by the student. Students are assembled into small groups and are given handouts that provide written instructions to the students who are to make decisions in specific hypothetical situations. When a group completes its discussion and feels reasonably confident that its decisions are appropriate, the group discussion leader goes to the instructor and receives the next handout, which provides feedback or a typical decision made by an average group of students under the same circumstances. The next handout also provides a set of instructions for a discussion based on the feedback given. The instant feedback concept is a unique characteristic of the guided design system. Students are provided with instant written feedback at each stage of their discussion.

During the discussion, students are exposed to the *values* held by other individuals participating in the group activities. Through an examination of their own values and those of other participants, students develop broader and more mature values. The attainment of factual knowledge is expected to be accomplished by each student outside the classroom. To facilitate this process, students are provided with study guides and other self-paced learning materials. The basic philosophy of the guided design approach is that an individual can achieve self-actualization through experiencing a decision-making process that is based on knowledge *and* value.

The guided design approach was used to teach one section (40 students) of a course entitled "Management Processes" while the traditional lecture approach was used in another section (45 students) of the same course. The results obtained from the experiment indicate:

- More student interest and involvement in the guided design section.

Summary of What the CAUT Project Offers

Phase I

- A 3-week training workshop in instructional development.
- Individual consultation with the selected outside consultants and the CAUT Project staff.
- An exposure to alternative teaching methods.

Phases II & III

- Seminars throughout the academic year.
- Aid in writing funding proposals.
- Assistance in materials development.
- Administrative and resource support.
- Evaluation assistance.

Phase IV

- A closure experience of pulling a year's instructional development work together in the form of teaching strategies and products.
- Credits for teaching improvement to be used in publications, reports, presentations, tenure, and promotion requirements.
- Continued support in developing instructional strategies and materials.

• Student evaluation of teaching ratings was different between the two sections: guided design scored higher.

• Students in the guided design section scored significantly higher on the midterm and final exams at the .05 level of significance.

Case IV: The Use of Computer Simulations to Teach Food Quality

The instructor of a food science course chose to add computer simulations to her course as a means of allowing students to analyze causal relationships of food quality. After attending the 1977 CAUT Project, the instructor designed the computer simulations to students' experience in analysis, synthesis, and evaluation of information. Computer simulations were field-tested, adjusted and revised, and used by 44 students during spring term of 1978. To measure the impact of the simulations, pre- and posttest instruments were developed to evaluate students' attitudes

and achievements as a result of receiving instruction through the 26 simulation models.

Experimental Results. The experiment revealed the following.

- Students held a positive attitude toward computer simulations.
- Computer simulations can be a successful alternative method of teaching foods.
- Students seem to achieve by using rapid feedback, sequential steps, and motivational cues for learning.
- There is a relationship between learning from computer simulations and attitudes.

The achievement of the CAUT Project seems to be noted in the broader exposure of instructional development on the campus, increased motivation of instructors, and their improved teaching performance. Evaluational reports indicate higher student evaluation scores of teachers who have attended the project. Results of nine out of ten former CAUT Project participants reviewed for tenure and promotion for the 1978 year revealed improved scores after the professors attended the project. Campus resource centers indicate an increased use of instructional resources by project professors. In addition, units are experiencing more effective requests for services. Evaluative data collected over 6 years of CAUT Project participants indicate that this approach of training professors in instructional development has a direct effect upon course improvement; increased student attitudes and achievements; and spin-off effects to colleagues, students, and other institutions. The results of the professors' work has motivated peers to consider

using improved teaching/learning ideas. In addition, students have spread the word about these new teaching systems to their traditional professors.

The four case studies in this article reveal the impact of a university's attempt to provide for instructional development. The cases, therefore, speak to the effectiveness of organizing a faculty development project that provides an opportunity for project participants to explore the possibility of using instructional development strategies and procedures to improve their instruction.

Description of the FIPSE Project on Professional Development

Instead of hiring an outside specialist to advise them on instructional development and improving teaching skills, five faculty members of the College of Liberal Arts are involved in a project designed to help themselves and each other using the expertise of campus resources. The Faculty-Centered Professional Development Project is operating on a \$100,000 grant awarded by the Fund for the Improvement of Post-Secondary Education (FIPSE). The dean of the College of Liberal Arts (CLA) is convinced that trained faculty from CLA can do a better job with their own faculty. The dean feels that outside assistance would not work because the CLA faculty would not take advantage of it.

The purpose of the 3-year project is to pursue an innovative approach to assisting faculty members to improve their effectiveness in instructional development activities such as teaching and scholarship. A basic hypothesis underlying the

Summary of What the FIPSE Project Offers

Five faculty members are trained for part-time service in an instructional development capacity for a 3-year period. Training occupies 2 terms (quarters). The team members receive a one-course-per-term reduction in teaching load for a period of 3 years. One training term is spent in rotating internships with three deans (Deans of Research, Undergraduate Studies, and College of Liberal Arts) and one term focusing on instructional development activities such as: instructional design and evaluation, alternative teaching approaches, cognitive styles and learning, psychology of adult development; and the relationship between governance, reward systems, and instruction. Following this training period, the team will make their skills available to their colleagues on a confidential basis. Confidentiality and project evaluation will be made compatible by the use of anonymous but documented case histories. A second team will begin training in the third year of the program.

proposal to FIPSE is that faculty members from within a complex institution with no special administrative title or responsibilities can be effective in facilitating the improved performance of their colleagues.

The plan is to train five faculty members for a 3-year period, with reduced course instructing. The training period occupies 2 terms, which are followed by 2½ years of advising colleagues. One term is spent working with the dean of research to become aware of the internal sources of support available to faculty for creative scholarly activities at Oregon State University. Methods of operation pertaining to proposals and grants are outlined. The five faculty conclude this term with a "team product" describing their approach at informing CLA faculty about the research grants, funds, and proposal activities.

The following term is spent working with the dean of Undergraduate Studies, Coordinator of the CAUT Project and Instructional Development, and the dean of the College of Liberal Arts. The five faculty are exposed to the following:

- Instructional design.
- Alternative instructional methods.
- Student learning measures.
- Cognitive learning styles.
- Handling the various clients involved in instructional development.
- Case histories in faculty development.
- Adult life cycles and learning.
- Maximizing the learning.

If the first team of faculty is successful, a new team will be trained at the end of this 3-year period. To evaluate the success of the program the five faculty will be making anonymous case studies of those faculty members who come to them for aid concerning problems with instructing a class or other problems. These confidential reports will serve as the main source of evaluating the project.

Tentative Evaluation

The evaluative data collected at this writing have been obtained through several oral interviews with the five faculty. The summarized responses are as follows:

- Released time from one course per term is not sufficient for adequate training time.
- In 2 terms of activity, faculty do

not feel "qualified" to train other faculty in instructional development. They will, however, inform faculty of resources to consult for specific problems.

- Team faculty members are ambivalent about their role: do they apply this 2-term's work immediately to their own course work or suggest it to colleagues? The "dual-role" is confusing.

- All team members desire to attend the CAUT Project for intensive training.

Conclusion

The future of both projects depends not only on success in meeting the established goals and objectives, but also on how successful it appears to the supportive groups sponsoring these two different approaches to training faculty in instructional development. The results of the CAUT Project have been deemed worth the investment; and the data are published in various documents, journals, and publications. It is too early, at this writing, to determine the effectiveness of the FIPSE Project; however, current reports are encouraging.

This paper has dealt with the efforts of one university to stretch the instructional development expertise to as many faculty as possible yet maintaining centralized programs offering coordinated assistance and support. The cost-effectiveness of both approaches are meaningful in terms of the total faculty, students, and innovations served by increasing the campus instructional development knowledge and practices.

The cases described in this paper speak to the effectiveness of four faculty who have prepared instruction as a result of attending one of these two methods of providing for the needs of faculty, students, and the total instructional community.

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For further specific information regarding the case studies, one can write to the author requesting details. Only those requests that enclose a stamped self-addressed envelope will be returned.

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