

or Highway 47.

LIBRARY of the University of Illinois contains more books and materials than that of any other state university, is third among all American universities (exceeded by Harvard and Yale), and fifth among all American libraries. Collections, June 30, 1969, total 6,752,677 items. Included are 4,743,205 volumes, also pamphlets, prints, films, micro-texts, manuscripts, music scores, maps, aerial photographs, broadslides and sound recordings. In main and departmental libraries at Chicago Circle, 557,515 items; Medical Center, Chicago, 188,662; Urbana-Champaign, 6,006,500. Dean of library administration is Robert B. Downs. Director at Chicago Circle is William B. Ernst, Jr. Director at Medical Center is Miss Wilma Troxel.

MUSEUMS AND EXHIBITS OPEN TO THE PUBLIC INCLUDE: Classical and European Culture Museum, 484 Lincoln Hall, U., is open during the academic year Monday through Friday, 9 A.M.-Noon, 1-5 P.M.; Saturday, 9 A.M.-Noon; Sunday, 2-5 P.M. Summer Session hours are Monday through Friday, 10 A.M.-Noon, 1-3:30 P.M. Escorted tours are available by advance appointment. Director is Oscar H. Dodson.

Illini Union has a formal art gallery on the first floor and a corridor exhibit near the cafeteria. Open daily, 7 A.M.-Midnight.

Krannert Art Museum provides galleries for the University's

permanent art collections and for presentation of special exhibitions. The building was financed by gifts from alumni, principally Mr. Herman C. Krannert and Mrs. Krannert, Indianapolis, the Merle J. Trees family, Chicago, and the Class of 1908. Open Monday through Saturday, 9 A.M.-5 P.M.; Sunday, 2-5 P.M. Closed on national holidays. Director is Allen S. Weller.

Library corridors present exhibits in literature and fine arts. Open Monday through Saturday, 8 A.M.-10 P.M.; Sunday, 2-11 P.M.

Natural History Museum, third and fourth floors and corridor exhibits in the Natural History Building, U. Open Monday through Saturday, 8 A.M.-5 P.M. Conducted tours available. Director is D. F. Hoffmeister.

ILLINI TRADITIONS include the University motto, "Learning and Labor," school colors, which are orange and blue, and its symbol, the Indian, representing the original inhabitants of Illinois who gave the state its name. From the Illini Indians (pronounced ill-eye-nye) come references to the University's football team as the "Fighting Illini" and many other references involving the name Illini, as well as Indian-named honorary organizations and Illiniwek, chief of the Illini, symbolized by an authentically Indian-garbed student appearing with the football band and on other occasions.

The UNIVEX Net as an Instructional System for Extramural Courses and In-Service Training in Agriculture

JACK C. EVERLY
University of Illinois

Dr. Everly is coordinator of Instructional Resources, Office of Agricultural Communications, College of Agriculture, University of Illinois. The UNIVEX Net will be used during the Thursday morning presentation at the 1970 NACTA Convention in Champaign-Urbana.

Although the chance visitor to the campus may perceive it as a conventional classroom, it is in reality a classroom devoid of the conventional four walls. The instruction that takes place here is conveyed to several community colleges and educational centers throughout the state of Illinois. Thus, the state truly becomes the campus. How this takes place is the story of the UNIVEX Net as an instructional system for extramural courses and in-service training in agriculture in Illinois.

Based on the assumption that knowledge is not passed from teacher to learner as are bricks, the devices used in this system are designed to facilitate the flow of knowledge without the physical travel on the part of either the instructor or the learner.

Developed by the University of Illinois Division of University Extension, the UNIVEX Net is an instructional system that provides extramural courses by telephone to educational centers throughout Illinois. Each center instantaneously receives both written and voice communication from the instructor. In addition, each student in the off-campus class has the ability to write and speak to the instructor or his classmates at different locations. Thus, all elements of a normal classroom are present except the physical presence of the instructor.

Using this system, 22 faculty members of the College of Agriculture have taught courses on the Net since the effort was started in the fall of 1968.

A System Defined

One point needs to be clarified. Most systems acquire the name of the media or hardware of the system. Media are not instructional systems but the tools by which the instructor and his institution can facilitate the greatest of all acts of communication . . . that of an instructor with his student and between the student and his instructor. It is this act of communication that we should attempt to research, not the hardware. However, we must recognize that the hardware facilitates the development of complex instructional systems which heightens the impact of the instructor in controlling the instructional system of which he is a part.



Multi-media are available at the educational centers on the UNIVEX NET like this one at Kishwaukee College, Malta, Ill. In PORK PRODUCTION 303, Don Higgs, left, head of agricultural instruction at the college, demonstrates the audio capability while vo-ag instructors enrolled in the course, at the right, demonstrate the use of the auto-tutorial carrel, which enables the student to teach himself, and the VERB unit, which enables the student to write back to the instructor. In the center is the projection system which throws the written images from VERB onto a classroom screen for the students to study.

If "instructional" can be defined as those elements which promote learning and "system" defined as the many components unified as an entity to make possible a process, then an instructional system can be defined as that entity which makes possible the process of education for any given subject matter.

A basic assumption can be made that there is nothing in an instructional system, of and by itself, which produces improved learning by the participant. If poor instruction is fed into the system, it is still poor instruction when it reaches the student. If the learner is not capable of learning, the system can do nothing about his capabilities.

How Systems Can Be Studied

It is difficult to divide an on-going instructional system into meaningful variables. If this is attempted in a typical

RANK ACCORDING TO CEQ SUB SCORES



Professor Bud Harmon in the UNIVEX NET location at Urbana communicates with students in six locations via the NET during his course on pork production. His VERB unit for writing is built into a desk top. The small microphone is the same one used by the astronauts.

Agricultural law professor H. W. Hannah, and former associate dean of instruction, found no difference between student performance on the NET and his campus students. He believes it is an excellent tool for in-service training in agriculture.

experimental design, the system itself is destroyed and the sum of the parts are much different than the whole. Another limiting factor is that learners and teachers will not be manipulated like varieties of corn, pigs or cattle in order to create the proper experimental design to measure the contribution of such variables as the hardware, software and the learning environment.

Thus, the researchable questions must deal with a system at work. Research tools must be limited to those useful in conducting field research and case study research. Conclusions from such investigations must be limited to a specific system, perhaps to a particular kind of classroom and to a particular kind of student, for a particular mode of instruction and for a specific instructor. Thus, the results are not expected to be generalizable to other instructional systems. However, they may be useful as guidelines in evaluating the performance of other systems.

It is not necessary to develop a new test instrument for the study of each new system. Since teacher evaluation instruments have been validated across a large population of students these same instruments can be used as a starting point to collect data about the system. Others support this rationale. Tyler² indicates:

Students can report on their interest in the course, on their understanding of what is expected of them, on their satisfaction with achievement in the field, on the amount and extent of their study, and the like. There are, of course, other important aspects of teaching which the students are not in good position to judge, such as the soundness of the objectives, the validity of the reference material provided, the relevance of the approach. On the whole, however, it has been found that the summation of student judgements obtained from a questionnaire is positively correlated with other evidences of effectiveness of teaching . . .

It is in Wientge's⁴ documentation of "Adult Teacher Self-Improvement Through Evaluation of Students" that the research value of rating scales can be seen. His use of such rating scales in an instructor rating form lead to the conclusion that the Illinois Course Evaluation Questionnaire developed by Richard Spencer and Lawrence Aleamoni¹ would be a logical research instrument. Wecke³ reports the successful use of the CEQ with extramural courses, also.

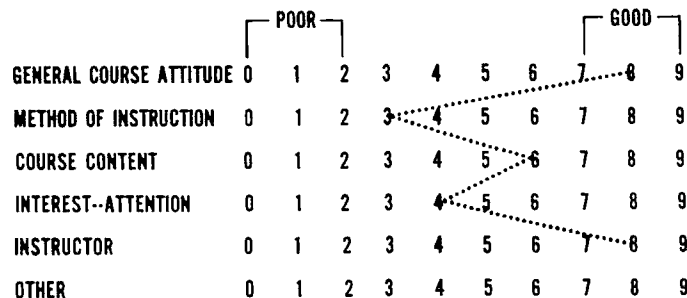
Pioneers in our efforts with the instructional system involving the UNIVEX Net were two instructors in Agronomy during the 1968 fall semester. This gave us a unique opportunity to observe graduate-level student attitudes about this course in four different locations, two of which would be on the UNIVEX Net and one conventional classroom on campus and one extramural classroom located 150 miles from the campus to which the instructor travelled each week to

	IN PERSON		UNIVEX NET	
	MACOMB	CAMPUS	FREEPORT	MALTA
INSTRUCTOR A	1		3	2
INSTRUCTOR B		2	3	1
COMBINED	1	3	4	2

meet the class. Instructor A taught this extramural course in person. According to student attitudes as measured by the Course Evaluation Questionnaire, this was the best rated course, with the UNIVEX Net course at Malta in second position and the UNIVEX Net course at Freeport in third with the on-campus course in last position. Note that for Instructor B, his highest rating came from a UNIVEX Net location. In this assessment from the CEQ results we note a difference in instructors and location. A surprising evaluation of instructor attitude indicates that Instructor B gained a great deal more satisfaction from "face-to-face" teaching than from the impersonal teaching through UNIVEX, yet his best rating came from a UNIVEX location, which was even better than Instructor A. The rating at Freeport was significantly lower than the other three locations. In these ratings we observe the complexities of an instructional system as they are uncovered by the CEQ.

PORK PRODUCTION 303

DECILE PROFILE OF COURSE



Another course, Pork Production 303, was taught during the 1969 spring semester providing the first opportunity to see how auto-tutorial and UNIVEX systems would work together for a graduate-level class.

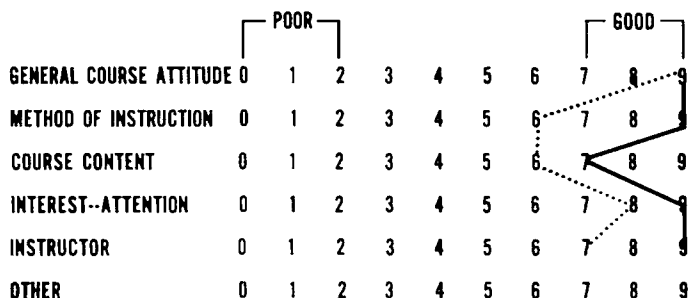
In observing the sub-scores obtained from the Course Evaluation Questionnaire we find the course ranking in the 8th decile in general course attitude which was also the decile score for the instructor. However, the decile for method of instruction was at 3, which was two points below the all-University average. With all measurements considered, this particular course with this particular instructor and system rated better than the all-University average.

The students were taking the course at six educational centers throughout the state. At each center there was an auto-tutorial carrel tied into the instructional system with 10 auto-tutorial units assigned by the instructor. During the course we decided to document the use of these carrels as in a case study approach to see if the students were using the units and if so whether they were encountering any problems, and at the same time to get their evaluation. We noticed a great deal of difference in participation at the various centers. Eight

of the units had been previously assigned by the instructor. One-sixth of the students had not on their own studied the units by that time. At Decatur the AT carrel was located in the Cooperative Extension adviser's office two miles away from the educational center. This definitely hindered the study of the AT units by the student. The students were not motivated to travel this distance. Again, the times that they could get access to the carrel were not appropriate times for them to study. Note that in the other locations half or more of the units had been studied where the auto-tutorial carrel was located at the educational center. This immediately leads us to conclude that the carrel must be located at the educational center for the convenience of the student.

Except for Decatur all locations were favorably inclined toward the need for auto-tutorial units in the course. For two locations, access to the auto-tutorial units was a limiting factor in studying them. Carrel equipment problems did not appear to hinder study except in one location. In regard to the question "I would not hesitate to enroll in another course using the same teaching methods," we found three locations favorably inclined with three locations not favorably inclined. At this time we could perceive the lower rating for the instructional method on the decile score mentioned above.

AGRICULTURAL LAW 303 DECILE PROFILE OF COURSE



Also, during the spring semester Agricultural Law was taught. The instructor used the conventional system for 57 students on campus and the UNIVEX system for 31 students. Data from all of the UNIVEX locations were averaged to represent the UNIVEX Net. These included the previously mentioned locations except Decatur. The Decatur location was so noisy and disturbing that the students travelled the extra distance to Urbana after the first week, to attend the course. In this case, the students were with the instructor in the UNIVEX terminal in Urbana. The instructor found this was very helpful to have the students right before him in conducting the class on the UNIVEX Net. Tests to check for significant differences were run between the UNIVEX Net group and the Urbana conventional classroom. The results indicated that the Urbana conventional classroom was rated significantly better than the UNIVEX Net as to (a) method of instruction, (b) student interest and attention and (c) the instructor. The UNIVEX Net was not perceived significantly different from the conventional classroom regarding (a) general course attitude (b) and course content. However, it should be noted that many instructors would be happy with the evaluation received by the UNIVEX system. The rating for the method of instruction and course content was still above the average for all-University courses.

REFERENCES

1. Spencer, Richard E. and Aleamoni, Lawrence M. "The Illinois Course Evaluation Questionnaire: A Description of Its Development and a Report of Some of Its Results" Research Report Number 292 (Urbana: Measurement and Research Division, Office of Instructional Resources, University of Illinois).
2. Tyler, R. W. "The Evaluation of Teaching." *The Two Ends of the Log: Learning and Teaching in Today's College*, ed. R. M. Cooper (Minneapolis: University of Minnesota Press, 1958), pp. 164-176.
3. Wecke, Harold W. "UNIVEX Net Instruction Equal to Conventional Ways, Study Shows." *Statewide Campus* (Urbana: Division of University Extension, January, 1970) p. 2.
4. Wientge, King M. "Adult Teacher Self-Improvement Through Evaluation by Students" *Adult Education*, XVIII (Number 2, 1968).

Economics of an Agricultural Education

WILLIAM E. MARTIN

Professor, Agricultural Economics – University of Arizona

It is a natural tendency for all people within all Colleges within all Universities to see their particular specialty as extremely useful, or even crucial, to the needs of society. This feeling, taken along with the also natural desire of institutional self-perpetuation leads to the desire to increase, or at least maintain, the student enrollment within that College. We, in the Colleges of Agriculture, seem, as a group, to have that same desire. My argument is that by strongly competing for students who might otherwise be attracted to other Colleges within the University, we in Agriculture are performing a disservice to the very students we wish to serve. This argument is based on the very pragmatic view that agricultural students, by coming to college, are attempting to increase their potential earning power. The data do not show that agriculturalists' salaries compare favorably vis-a-vis the salaries of other specialists.

In support of the above contentions, I offer slight (but, I think, typical evidence) toward the desire to overestimate our College's potential service, considerably better evidence on the motivations of students, and hard data on comparative incomes within and without the agricultural professions.

Are Jobs in Excess Supply?

The type of overestimation to which I am referring could be typified by this quote from Carpenter and Ekstrom¹ in this journal.

It is well-known that rural youth are in "surplus" for on-farm work, while the shortage of professionally trained agriculturists is acute. Few youth now living on farms will find an opportunity to farm. In 1964 Venn stated that only one of two youths now living on farms will farm in 1970. Schultz wrote in 1966, "Schools of agriculture are now graduating something over 9,000 trained persons per year, and it is estimated there are about 15,000 jobs available yearly for such persons in agriculture and food." Other regional and national surveys also indicate at least two jobs for each professionally trained agriculturist.

Their article is concluded with a number of recommendations, two of which are quoted below:

1. Since professional agriculturalists are in short supply, efforts must be made to fill the demand.
4. Agricultural teacher educators and other agriculture faculty must search in their teaching, research and extension activities for ways to attract and hold students if agriculturists are to be provided for available positions.

It is well-known that rural youths are in "surplus" for on-farm work. One need only check the continuously declining numbers of farm workers to substantiate this fact. However, it is quite puzzling to me how one could claim that "the shortage of professionally trained agriculturists is acute." To an economist, it seems clear that one could claim that there was an agricultural manpower shortage, only if the demand for