

Quality Affairs, with a Coordinator, was established within the College to accomplish these aims. To advise and assist the coordinator, several task groups were organized primarily on subject matter basis. The task group members, however, were assigned from various departments and thus could work as a problem oriented group rather than along department lines.

One of the first duties of the various task groups was to do a thorough evaluation of the research and educational programs now being conducted within the college. All projects which were reasonably related to environment, or resource management, were included in the study. The task groups are also given the responsibility of reviewing both new and on-going projects to assess their relative merit and to determine how or if changes in one project can gain information, useable and valuable to others. With time, we should be able to modify and direct our research in a way that will bring about more integrated studies and at the same time derive answers to problems which more restricted or isolated research is not providing. This is the overall objective of attempting to eventually develop inter-departmental and interdisciplinary projects and programs.

One of the task groups is assigned the responsibility of continuous evaluation of course materials and need for changes in the resident instruction. Sometimes it is difficult to make changes in either course content or in structures as quickly as we would want. Winter courses, or short courses can also be used to incorporate new materials and concepts and to expedite training of certain groups.

#### Training Program Initiated

Since additional demands are being made on our staff, especially county personnel, special efforts are being made to assist those people in providing educational assistance and leadership within their communities. A long-range training program has been initiated for both male and female county agents and specialists. The program is designed to give the staff member a broad understanding of environmental and ecological concepts rather than to train him as a specialist in one of the sub-

ject matter areas. The goal is to provide him with background information and fundamental training from which he can provide leadership and guidance to community leaders in their efforts to understand needs of their localities. This staff member can serve as a contact person not only within his own county, but across county lines as he will be able to provide guidance to various groups, both local and regional.

The training was started in November of 1972 and is scheduled to continue for a period of two years. Week long sessions are scheduled at about 5-month intervals and each session will place emphasis on a different subject matter area. For example, the first session was centered around Waste Management Problems. The second session was concerned primarily with pesticides, but included many other interests, such as food additives, food toxicants, organic gardening, and other subjects. The training periods are scheduled long enough apart so that the individual has time to digest the material presented, but not such a long time that he will have forgotten important segments of the training. The individuals are chosen carefully and the same persons are carrying through the entire two years of training. This provides opportunity for persons who have been out of school for a period of time to gain new materials and to be brought up to date on fresh concepts and developments in the various environmental areas.

The adult training is conducted for either in-service training for the individual or he can apply for academic credit of two hours for each week of training. The offering of college credit for courses of this type is quite popular with our county staff, as it gives them an opportunity to obtain additional credits without taking leaves of absence. Since the training is for only one week duration for any one period, the staff member is not required to take leave and his expenses are paid by the University.

#### Possibilities for Systems Approach

In most of our institutions of higher learning today, both teaching and research are conducted within departmental framework. This tends to promote narrow thinking in terms of single aspect solution to

problems rather than to attempt to gain information on the broad concerns. At the present time there is no meaningful way to assemble the pieces or fragmented research into meaningful resource management programs. Perhaps this is where the "systems" approach can be effectively tested or used in problem solution. Rational direction of governmental or civic groups is not readily available because our research programs are not geared to obtain this type of information. Perhaps this is one of the reasons for the extent of conflicting opinions and diverse attitudes toward present resource management problems.

There is a tendency toward broad training for more students as compared to technical training in a specific subject matter area. Many instructors and students agree that today's technical training does not provide wide enough understanding to enable the student to understand or evaluate ecological problems. On the other hand, there is a fear that the training will be diluted to the point that the student does not have adequate background in any area to be useful in problem solving. If the student is given only a general training in any number of fields, perhaps only the most gifted will really become useful in environmental work. Perhaps those less able to use or adapt their basic skills in the various area of work will be unable to find employment or will be only followers in programs and their development. Many will agree that it is highly desirable for the student to have sound training in a discipline of his choice. Then, ideally, beyond this, he should have adequate broadening courses which would enable him to both appreciate and understand the interrelationship of his discipline to various others and would enable him to visualize how his expertise can be incorporated into and utilized by other disciplines. Incorporation of techniques or technologies into an interdisciplinary program will provide the key to environmental understanding.

\*A textual digest of a vivid slide presentation made by Dr. Milford Heddleson, Professor of Agronomy and Coordinator of Environmental Affairs, The Pennsylvania State University, at the 19th NACTA Conference, June 15, 1973.

## USE OF THE COMPUTER FOR INSTRUCTIONAL PURPOSES\*

David L. Armstrong\*\*

Recently Flip Wilson appeared on our campus as a guest lecturer. He stepped to the platform and found himself rather speechless. Finally he said that he knew that he was going to speak to this group nearly a year ago but he didn't prepare a manuscript or bring any notes. His reason was that he thought he was talking with friends and when you were talking with friends you don't need notes. He added — when you have someone to your house you

don't prepare notes, do you? I was rather impressed that perhaps more of us when we speak with our friends at professional meetings should be much more relaxed about the use of notes and manuscripts. Although I have an outline and a manuscript I am going to attempt to speak with conviction about how I feel computers fit into instruction for most colleges of agriculture.

It is easy for anyone to say in this day

and age if there is a big problem and you have a big computer then there ought to be a solution. Questions like — why can't we predict the class enrollments for six years in advance, or why can't we anticipate the job market shifts, or why is it that students and faculty can't be better informed on these complex problems are examples of this phenomenon. Obviously, there is a gap between what the computer can do and what the computer does. In most cases it is

simply not easy to use the computer effectively without a strong commitment of time and dedication.

I must start by indicating that I am very fond of the computer. I have used the computer in various ways in my teaching and research programs. I have adapted it to teaching situations and have found these applications very beneficial. What I have to say today, however, may sound like that has not been the case. It seems to me that the issue of getting the computer in the classroom is somewhat confused. As a matter of fact, I am not even sure that we haven't been misled or led astray by our computer people and even some of our professionals when it comes to using the computer in our teaching. I believe the potential is fantastic. At the same time, I am not quite sure we are expending our efforts in the right place.

Permit me to say a little bit about Michigan State University. Actually, our campus is rather young in the computer business. Much younger than many of the schools that you represent. We have several pieces of fine computer hardware, the CDC 6500 system, CDC 3600 system, and an IBM 370 for administrative purposes. I am not, however, going to evaluate Michigan State's system. Because, if I did, I am sure I could suffer from the phenomenon that "the grass is always greener in someone else's pasture." In addition, I wouldn't be articulating everybody's concern about how our computer center fits the needs of individual faculty members. But needless to say, we are young in the computer business. Many of you, as many of us, were very instrumental in initiating the computer center in your colleges. We worked hard to sell the administration on a centralized computer facility. The Agricultural Experiment Station, Cooperative Extension Service and the teaching forces worked hard to make sure that our college was represented and often led the way in setting computer policy on the individual campuses. On our campus we have a centralized computer center, an academic department of Computer Science and a department of System Science make up the administrative structure surrounding our computer center. However, in the '70s many colleges of agriculture and natural resources have backed off and are not working with the same types of problems or with the policy making forces of the centralized computer facility as they were in the earlier years.

The College of Agriculture and Natural Resources, by my assessment, is actually beginning when it comes to our involvement with computers. For instance, with very few exceptions we are just starting to use the computer for instructional purposes. In public service, which encompasses a large portion of our college budget, the computer is just beginning to take hold. In research we are leader. But more data processing is done than what I call unique computer involvement. We still punch a lot of cards and move a lot of numbers, but the

unique uses of the computer are relatively small in number. In instrumentation we are just bringing the computer into use. As our laboratories become more sophisticated, the use of the computer becomes more demanding. I cannot help but wonder what the fields of graphics will do to our use of computers in teaching and extension work. Graphics look like the computer field of the future and I doubt if anyone here is working on a planned graphic application to their classroom. If you accept my premise that we are just starting and that we are the farthest behind in instruction, now is time for us to begin to think of its applications and the policies that are pertinent for our college.

Several years ago it was very, very common for every instructor to have a calculator conveniently positioned near his desk whether used or not. The old style calculators spun and vibrated but did provide the faculty member and many students with a feeling of accomplishment in solving assigned problems. It was also common for many departments in colleges of agriculture to have computer laboratories equipped with calculators of various ages and models. Students would use this laboratory to work on assigned problems. Some instructors even insisted during examinations that calculation be an integral part of a student's proof of understanding.

This type of teaching laboratory was very common in the '50s, less common in the '60s and for one reason or another is not very evident in the '70s. One might conclude that the computer took over. I do believe that many faculty members felt that it was unnecessary, very time consuming and costly to maintain this type of facility in the age of computers.

The strange thing is that faculty members are again buying small electronic desk calculators and are even purchasing them for use in their classes. One raises the question — Are we going back to the individual calculator? Did the computer actually take over in the interim? I feel that the computer did not get into the classroom. And today the ease and convenience of introducing a small electronic calculator to solve small problems associated with teaching is much more convenient than using the computer.

I categorize computer users about the same way that you would camera users. There are computer bugs and there are camera bugs. Some people simply love to take pictures and they are not embarrassed by the equipment and the courage that it takes to get to the front of the room to get the best composition. They know everything there is to know, they have somehow convinced themselves what it takes to be a good photographer. However, camera bugs are not all the same. Some are much more technically proficient than others. Some would prefer to put their emphasis on product and not the equipment. The same goes for computer users. If you want to go

through the hassle it takes to make a good computer system work, then you must understand the courage, the time and the extra motivation to make it a good product. Just like camera bugs, some students like to work from the technical side and others are more interested in the product. One must understand faculty before taking this analogy too lightly. Faculty are more likely to get enjoyment out of seeing if a problem can be solved on the computer than in solving it. This attitude alone may say something about why the computer has not made greater strides in its use in teaching.

If you have the right man in your college to work with the computer, you have a very valuable asset. Students can get very excited about involvement with computer application. The instructor is worth a lot. In our College we have such persons and they are very valuable. I am not convinced that I can justify all the cost, but the variety, the added teaching style and the effectiveness of this particular faculty member makes it worthwhile. I can't, however, engage in a total program where the computer reaches many classrooms, or where many faculty members are what I have labeled the "five dollar user." The "five dollar user" simply does not want to devote the time and the energy to do it all. He wants to hitch-hike on what's come before. This is possible if we change our attitude on how the computer can reach the classroom.

Now let me go back to where I think we have been led astray.

Computer people have emphasized the terminal, and I strongly believe that it is the terminal that will reach the classroom. I am sure that several of you are using the "batch process" to provide feedback to students. If you are, you are simply using the computer to crunch the numbers to save the student the time from using the old calculator room. I see very little difference. The terminal, however, gives the student the opportunity to interact with the computer. However, truly computer-assisted-instruction which is self-contained and between the student and the computer, I feel has limited use for our College. Very few students get turned on by this type of learning. It has less excitement than does TV instruction. It may have fascination for a while but its lasting power is not that evident.

Unless fantastic amounts of time are spent in composing very exciting computer games and examining routines, it is very difficult for me to see how students can maintain their interest in computer assisted instruction. Autotutorial seems much more compatible to this type of instruction in most cases. In addition, it is much less costly and more readily accessible for more students. Using the computer to assist with examinations and course administration are valuable computer uses. A second common application of the computer in teaching is to construct a computer labo-

ratory. The College of Agriculture and Natural Resources at Michigan State University can't afford such facilities. The computer laboratory is really a modern version of the old calculator room, a big room with teletypes and associated equipment available to the students. It is very difficult to coordinate and to schedule and to fit into other classes. Its uses get categorized into examples and illustrations and really do not involve the student on how the computer can assist him in learning.

I feel that the computer laboratory has many of the same disadvantages of the old calculator room. And for whatever reason the calculator room went, I believe it is only a matter of time until the computer laboratory also passes out of the picture as far as instruction goes.

As an instructor, however, I feel that the computer must reach the classroom in yet a different way. Most of the problem settings for students involve strategic decision making. Here we are working primarily with long-range planning problems. In fact

with strategic or planning problems the computer is useful in assisting the student in the big burden of calculation. Students, however, in their professional lifetime will make many more tactical or short-run decisions than they will long-run or strategic decisions. Tactical decisions are not brought into the classroom for several reasons; (1) The problem setting is unique for every situation. (2) many variables therefore, a need for repetitive calculation, and (3) overall problem identification. Characteristics of tactical decisions are reasons that the computer must be brought into the classroom to assist in the student's logic and calculation needs in decision making.

It should be possible to develop a computer terminal that can be housed and movable from classroom to classroom much like audio-visual equipment. I want the computer to assist me in my instruction. To make the instruction more vivid and more meaningful with much less attention on training the student in his manipu-

lating skills of the computer. I want the computer to be an instructional aide to help the instructor in preparing, presenting and illustrating meaningful subject matter.

Several characteristics must exist to have effective computer usage on your campus. (1) A reliable computer system. (2) Alternative or backup system so instruction can proceed even though technical or scheduling difficulties may exist. (3) Low cost terminals. (4) Accessibility to students. (5) Most important — interested faculty members.

The computer will make the classroom for certain instructors and for certain subject matter areas. It is an added and effective method of extending our teaching abilities. There are serious doubts whether it is less costly, more efficient than alternative methods of instruction, but in this day and age some of these disadvantages should not deter its use on every one of our campuses.

\*Presented at NACTA Conference, Cobleskill, N.Y., June 13, 14, 15, 1973.

\*\*Assistant Dean and Director, Resident Instruction, Michigan State University.

## MINUTES

NACTA Executive Committee Meeting  
Cobleskill, New York — June 13, 1973

The meeting of the NACTA Executive Committee was called to order by President Beeks at 9:00 a.m. in Room 120, Bouck Hall, Agricultural and Technical College, Cobleskill, New York 12043.

Executive Committee members present were Beeks, Pasto, Bennett, Brown, Stewart, Rawlings, Thomas, McGuire and Carpenter. Wright and Benton were absent. Also present were Seif and Wingert.

The minutes of the October 2, 1972 Executive Committee meeting were distributed and were approved as corrected. (The Past-President was incorrectly listed as Thomas instead of Bennett in the 6th paragraph). The proposed Constitutional Amendments were read by the Secretary. They were acted upon at the Thursday business session. A copy is attached.

The treasurer's report as presented by Stewart was accepted by the Committee with deep appreciation to Gordon Stewart for his seven years of voluntary service to NACTA, and the best wishes of the Committee to Gordon and his family during their two year assignment in Ethiopia. A copy of the report is attached.

Chairman Beeks appointed an Auditing Committee of Alexander, chairman; Waananen, Coleman and Campbell. The Committee reported at the Thursday business session.

The NACTA Journal Editor's report from Wright was read and accepted. A copy is attached. A question was raised by the Secretary as to who should prepare mailing labels. He indicated that he could work from the IBM membership list to prepare labels as needed. Stewart will confer with Wright to determine what course should be followed.

A committee report from Rydi, Chairman of the Delta Tau Alpha Liaison Committee was read and accepted. A copy is attached.

A brief report of the Teacher Recognition Committee was made by Seif and accepted. The Executive Committee authorized Seif to have appropriate NACTA gold seals designed and prepared for use on various certificates and other awards. Four Teacher Fellow and 5 Honorable Mention awards were to be made at the Thursday banquet. The Executive Committee recommended that information (addresses of local news media) needed in preparing publicity releases on awardees should be requested on application forms used for the Ensminger-Interstate-NACTA Distinguished teacher award. The teacher Recognition Committee received approval from the Executive Committee to consider NACTA and non-NACTA members at institutions with institutional memberships, as well as NACTA members at other institutions eligible for the Teacher Fellow award. Only active or institutionally active NACTA members would be eligible for the national or regional Distinguished Teacher awards.

Wingert gave the report of the new Publicity Committee. The report was accepted with enthusiasm.

The Improvement of Teaching Committee report from Moody was read by the Secretary and accepted by the Executive Committee. A copy of the report is attached.

The report of the International Programs Committee from Ball was read by the Secretary and was accepted.

Western Regional Director Thomas reported that he had enlisted 6 State Coordinators and was working to get more. He represented NACTA at the Western Region meeting of the Directors of Resident Instruction, Land Grant Universities.

Carpenter reported that in the Central Region that he had State Coordinators in all but Iowa and Alaska, and had contacts in those two states. He represented NACTA at the North Central meeting of the Directors of Resident Instruction, L.G.U.

Southern Region Director Rawlins made contacts in the 13 southern states and Puerto Rico, obtaining State Coordinators in 8. He was successful in getting \$300.00 from the Tennessee Farmers Cooperative to be awarded to a Distinguished Teacher from the Southern Region. The award was made Thursday evening at the banquet. The Executive Committee commended Rawlins for his diligent efforts.

McGuire reported that Pasto had represented the Eastern Region at the meeting of Directors of Resident Instruction, L.G.U. He reported that all aspects of the Conference appeared to be in order. The Executive Committee commended him for his fine work.

The Membership Committee report was made by Vice-President Pasto. He indicated the costs of ads in the various scientific journals. He and the rest of the Executive Committee felt that the costs were prohibitive. The report was accepted.

The desirability of encouraging various state agriculture groups with compatible goals to affiliate with NACTA was discussed, then tabled.

The growing role of State Coordinators was discussed. A motion was passed to make the office a constitutionally recognized position.

The Executive Committee requested the Secretary to prepare a Constitutional Amendment for action at the 1974 annual conference carrying out the directives in the above motion. A copy of the proposed amendment is attached.

The meeting was adjourned at 11:55 a.m.

### AMENDMENTS TO THE NACTA CONSTITUTION PROPOSED BY THE EXECUTIVE COMMITTEE October 2, 1972

To Article V. Section 6 of the Constitution

Delete the present Section 6 which reads "the terms of the directors shall be for a period of two years, those from the Central and Eastern Regions shall be elected in even years and those from the Western and Southern regions in odd years."

Replace it with the following:

Section 6. Regional Directors-Elect shall be elected for the Southern and Western Regions in odd years to serve one year and then accede to positions of Regional Directors to serve for a period of two years. Regional Directors-Elect shall be elected similarly for the Eastern and Central Regions in even years.

To Article VI. Section 2 of the Constitution:

Revise by substituting "eleven" for "nine" members of the executive committee and by adding the phrase "two regional directors-elect" between the phrases "the four regional directors, and the immediate past president."

To Article VI. Section 3 of the Constitution:

Revise by substituting "six" for "five" as the number constituting a quorum of the executive committee.

For action at the 1973 Annual Convention.

### NACTA TREASURER'S REPORT June 4, 1973

INCOME	
Balance on Hand June 1, 1972.....	\$ 71.89
Cash Sources	
Individuals.....	825.00
Institutional Active.....	645.00
Institutions.....	1,977.00
Library Subscriptions.....	247.18
1972 NACTA Convention.....	115.95
Tennessee Farmers Cooperative (For Awards Program).....	300.00
	<u>4,182.02</u>
Transfer of Time Deposit.....	1,025.16
Total Cash Income.....	\$5,207.18
EXPENSES	
NACTA JOURNAL	
Printing.....	3,552.34
Postage.....	397.11
John A. Wright, Editor.....	300.00
Other Printing.....	192.29
NACTA Speaker Expense.....	190.00
School and Society Magazine.....	10.00