stony brook review

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## Economic Impact Of University Estimated in Millions

Nobody keeps records of such things so it is difficult to measure. In many ways it is subtle. But it's undeniably massive.

Stony Brook's economic impact on the Suffolk County area surrounding the campus is already a major factor in the area's economic well-being and is destined to become increasingly important in the years ahead.

Even rough, conservative estimates indicate that the University's monetary impact alone will amount to something like $22 million in the Suffolk County area during the current fiscal year. Economic "multiplier effects" could make the true impact something like ten times that amount.

University officials can—with some difficulty—estimate monetary impact. There are some basic figures to begin with: the University's $24,755,000 state-appropriated budget for the current year; $57 million in construction contracts authorized for the year; $3.3 million in federal research grants; $470,000 in the Faculty-Student Association budget; and about $300,000 in the Student Polity budget.

This $85.8 million, of course, does not go directly into the area economy. But it does indicate the kind of monetary impact being generated by the University.

The considerable portion of University and University-related expenditures that does have direct local effects begins with the $18 million in the current fiscal year's operating budget for salaries and wages. Stony Brook is Suffolk County's second largest employer. Money paid to area residents, even after deducting state and federal taxes, totals about $11.5 million. State and federal taxes, of course, are returned to the area economy to some extent through such expenditures as those for highway projects.

The University budget also includes $7 million for supplies, general expenses and equipment. At the very minimum, about $2.3 million of that will be spent locally. Included here is a $900,000 slice of the University's current $1.5 million food service contract which will go into the area economy for salaries and wages and purchases of food supplies.

General supply and service expenditures, representing $1.4 million of the $2.3 million, provide a rather fascinating story. Electric and telephone bills at the University this year will each exceed $100,000. (The telephone company treats Stony Brook virtually as a small community with a telephone crew stationed permanently on campus.) Garbage removal this year will cost more than $30,000. Just small equipment and supply orders placed with local merchants keep some staff members in the University purchasing office on the telephone constantly.

Of the $3.3 million in research funds, about $2 million will be spent locally for salaries, wages and equipment.

Very little of the $57 million in construction authorized this year will actually be spent during the fiscal year period, perhaps no more than $1 million since actual costs are low during initial construction phases. Probably another $13.5 million will be spent on continuing construction projects authorized previously. Of this $14.5 million total, it seems likely that a minimum of $3.6 million will be spent locally.

The FSA's $470,000 budget includes more than $400,000 in anticipated local expenditures for salaries and wages, supplies and equipment for its operations, such as the campus bookstore and the campus center snack bar.

An estimated $75,000 of the $300,000 budgeted by Student Polity this year will be spent locally. This includes a twice-weekly printing contract for the campus-wide student newspaper, the *Statesman*.

Such budgeted expenditures are swelled considerably by a variety of University-related expenditures in the area. Stony Brook's financial aid office, for example, estimates that the average student spends $450 annually for personal expenses and transportation. (There are presently about 2500 student cars registered on campus, each requiring gasoline, oil and repairs.) It is likely that 75% of these student expenditures are made locally. At that rate, more than $2.2 million will be injected into the local economy this year by Stony Brook students.

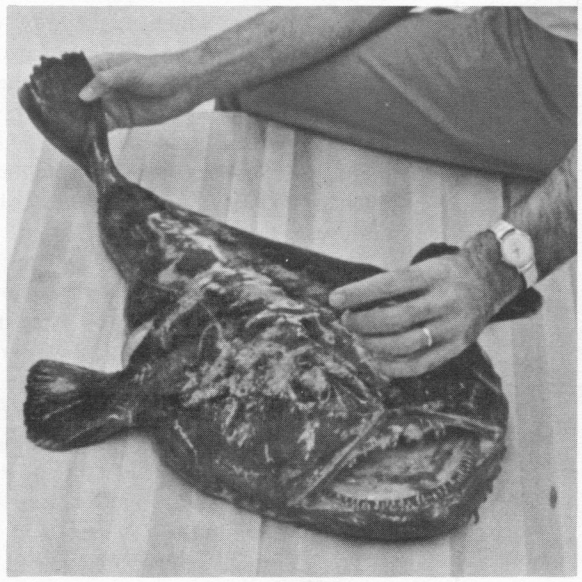
In many such auxiliary areas, total monetary impact can be anyone's guess. University purchasing agent Charles P. Gullo and his staff estimate, for example, that at least 2000 out-of-town salesmen will visit their offices during the year, many of them presumably spending money locally in the process. It also can be assumed that at least half of the nearly 14,000 parents of Stony Brook students visit the campus one or more times a year, with many of them spending money in the community as a result.

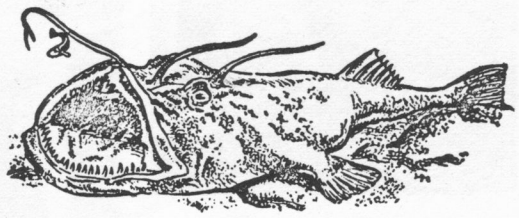
These indicators point to an over-all University monetary impact in the area this year of at least $22 million, even without considering many of the auxiliary impact areas which would swell the total. This $22 million, of course, generates a large-scale multiplier effect, the term economists use to denote the fact that money spent on goods and services generates a need for more employment, hence providing new money in salaries and wages which is spent for still more goods and services, with the cycle continuing onward. The multiplier effect on Stony Brook's $22 million may well be a factor of ten, based on the national average for propensity of consumption.

Consequently, even on the basis of the limited and deliberately conservative estimates used here, Stony Brook's area monetary impact could exceed $200 million this year.

So, in addition to its over-all educational and cultural impact on the state and nation, Stony Brook obviously is making a significant monetary contribution to the Suffolk area economy.

When all of Long Island is considered, the University's impact is increased by at least a third. President Toll noted this in an address on "The Economic Impact on Long Island of the State University of New York at Stony Brook" delivered this month at





*from Encyclopedia Americana*

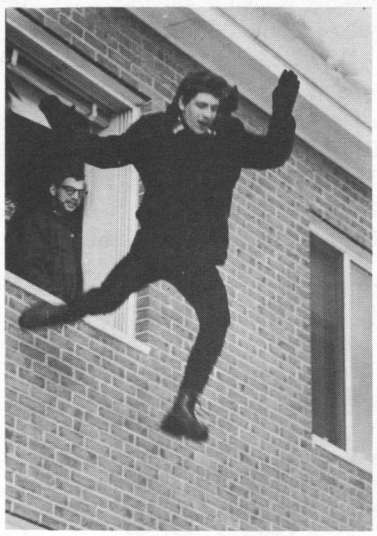
*A VICIOUS FISH was one of the first phenomena reported to the new Marine Alert operated by the Marine Sciences Research Center on the Stony Brook campus. The angler fish, which may grow as long as four feet and as heavy as 70 pounds, has a slender "fishing rod" on the top of its head to lure prey into its well-toothed mouth. So enormous is its mouth and so elastic is its stomach that it is capable of engulfing fish almost as large as itself. The Marine Alert encourages the public to phone 246-7777 between 7 a.m. and 6 p.m. to report any interesting or dangerous conditions along the Long Island coastline. Operators will relay information about fish kills, large oil slicks, recent severe erosion, large patches of discolored water and rare sea animals to appropriate authorities and report back to callers on what action is taken as a result of their calls.*

the Long Island Association Executives Breakfast.

Such contributions are buoyed considerably by intangible effects which are virtually impossible to translate into dollar terms with any accuracy. These include special University programs and institutes which offer area businessmen assistance that can make their operations more productive. The Economic Research Bureau, Office of Technical Assistance, Computing Center and the Center for Continuing Education are prime examples of this.

Likewise, the impact of community programs carried out by University units such as the Health Sciences and Marine Sciences centers, both of which will be expanding their efforts considerably in the near future, is impossible to assess. The important, intangible impact represented by the University's potential to attract knowledge-oriented industry to the area cannot be overlooked.

As President Toll said recently, "Monetary impact is by no means the University's major local effect, for that comes from the contributions of its graduates, the research discoveries of its faculty and students and its general service and cultural involvement with its neighborhood." *David Woods* □



*SNOWFALL of about a foot caused cancellation of classes for two days and drifted in places so that a few daredevil students, using the soft snowbanks for cushions, tried free-falling from their windows.*

## Faculty Considers Sweeping Reforms In Curriculum

When critic Alfred Kazin came to Stony Brook early in its still young existence, he explained his move from more prestigious institutions by saying that the new campus hadn't been around long enough to grow any moss. That was over five years ago, long enough for the development of binding tradition and the crystallization of academic and administrative policy. In Mr. Kazin's word, moss.

That Stony Brook has managed to avoid academic arteriosclerosis has been due in part to the persistent challenges of the last two or three years—challenges shared by virtually all colleges and universities, by the way—and in part due to the determination of its faculty and its student body, who in January presented to the Faculty Senate a major plan for curriculum revision which could place the university in the forefront of experimental institutions in the United States.

The new plan makes implementation the word for 1969. Among the plan's provisions are the elimination of university-wide requirements, which force all students to take a uniform core program, in favor of more flexible and individually determined course work; adjustment of the normal work load to lighten course requirements for underclassmen and increase opportunities for individual study in the last two years; abolition of grades in favor of pass-fail evaluation for most courses in order to reduce what the committee calls "unhealthy competition for grades"; an increase in the number of credits awarded per course from three to four; and the establishment of three types of majors to meet differing needs of students.

The newly designated "departmental major" would be designed for the student expecting to enter professional or graduate school in a particular field. In addition to a degree of specialization, it would require approximately one year of study with equal attention given to the arts and humanities, the social sciences, the natural sciences, and mathematics or science and culture seminars to insure a broad rather than an over-specialized program. Its other aspects would closely resemble traditional academic programs.

The "divisional major" would concentrate on one major division but not on one department. Instead of choosing an English, history or sociology major, for instance, the student would select from arts and humanities, social and behavioral sciences, biological sciences, physical sciences and mathematics, or engineering. His course work would have a central focus but would draw from more than one source.

Most flexible of all would be the "general major," essentially an interdisciplinary program, combining courses from all departments and divisions which relate to the student's central concern. Examples could be marine sciences which might draw on chemistry, biology and geology; urban studies which might include architecture, sociology, engineering and art; or Latin American studies which could relate such subjects as history, political science, economics, anthropology, literature, art or sociology.

In each of the latter two majors the student would prepare a four-year program with the assistance of a faculty advisor and the approval of the appropriate curriculum committee established for his field. Maintaining the concept of flexibility, the program could be adjusted, again with the approval of the faculty advisor and the curriculum committee.

The rationale behind the new proposal is that, in the committee's words: "Education in its most profound sense must combine development of knowledge with growth in personality, insight and sensibility. Such education occurs most vitally when people are free to explore disciplines and concerns which they themselves consider meaningful." The student is seen as working for the pleasures of his own discovery, not for gold stars on an academic chart. He also is seen as a responsible adult, capable of defining his own educational goals *and* a plan for achieving them, albeit with the help of a faculty guide.

Significantly, students played a major role in developing the new curriculum proposal. Three of the members of the University Curriculum Committee, chaired by Academic Vice President Bentley Glass, were undergraduates.

The plan is still under active, sometimes vociferous, debate, and it may well be modified in a major or minor way before its adoption. Under any circumstances it could not become effective before the fall of 1969. But what is perhaps even more important than the plan itself, comprehensive though it may be, is the common commitment by all segments of the university community to join together in the search for solutions to educational problems at Stony Brook. Academic evolution is proving to be a viable and satisfying alternative to chaos on the campus.

The work of the curriculum committee has a close relationship to the intensive self-examination of last October's Three Days, for it was then that the questioning began in earnest, not only of the specific annoyances of tripling, required courses and cafeteria food, but also of certain basic assumptions on which educational policy has been based. At Stony Brook the asking and answering of such questions is what keeps away the moss. □

*—Alice Kling*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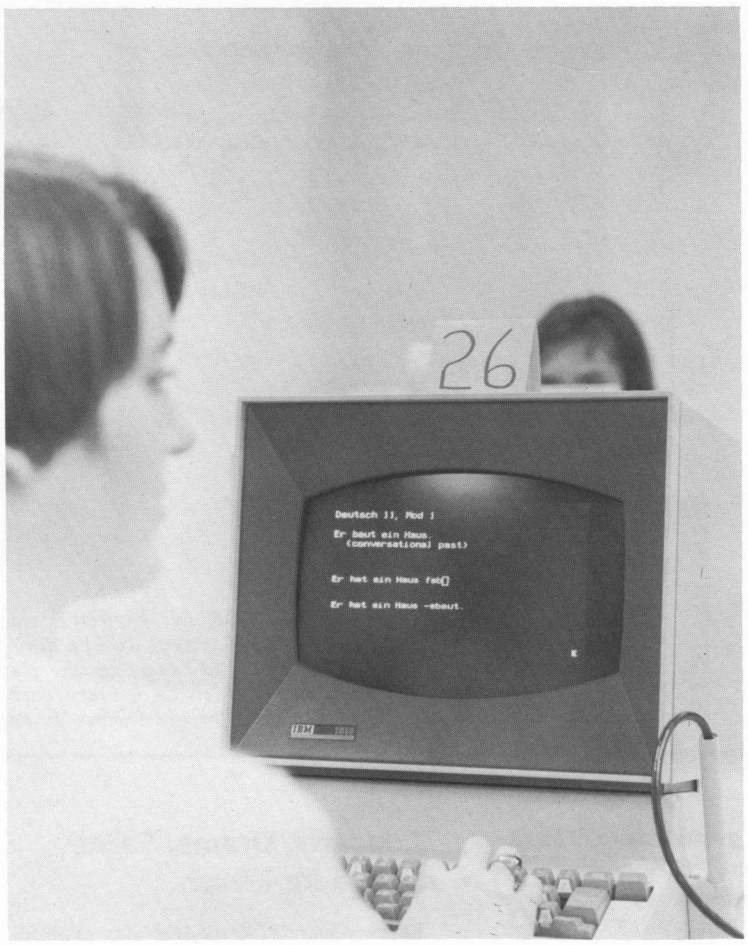
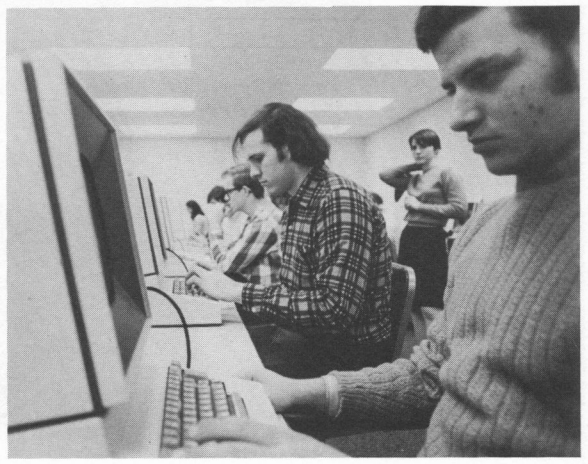
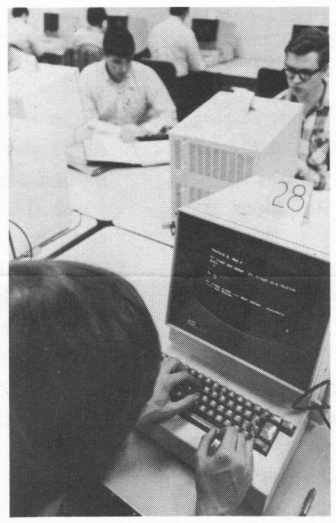
## Students Find Computers Useful as Tutors

**by Naomi K. Epstein**
**Instructional Resources Center**






"It's different from any way I have ever learned."

"It's routine now, but I still look forward to it every week."

"It's nothing special to me, just part of a course."

That's how some students feel about computer-assisted instruction (CAI), a technique that provides individualized instruction for the student with the aid of a computer. It supplements regular classroom work, but does not replace it. CAI has been used at Stony Brook during the past two years for presentations in physics, political science, French and data processing. This year 500 students are scheduled for an hour each week at CAI for courses in elementary German and for statistical methods in psychology.

At the CAI laboratory in the social sciences building, each student sits at a console which has a TV screen, typewriter keyboard and light-pen, all part of an IBM 1500 computer system. Two ways students currently "converse" with the computer are by typing in answers to questions it presents on their screens and by pointing to an answer choice with the light-sensing pen. The CAI laboratory can accommodate up to 30 students at a time working on different lessons. Yet, the computer deals with each student entry simultaneously and gives each one individualized information, hints or remediation.

An advantage of CAI is that the student receives information from the computer almost as soon as he types in his answers. Equally important, every response considered by the computer is used to determine which material is presented to the student next. In the German course at CAI, for example, the following interaction might take place:

Student: Nenne es die Schweiz! (response to previous question. It means "Call it Switzerland!").

Computer: r (acknowledges correct answer—richtig).

Computer: wer? (student is instructed to transform sentence into a question making "who" the subject).

Student: Nennen wer es die Schweiz?

Computer: —er —enn— es die Schweiz?

Student: Wer nenns es die Schweiz?

Computer: Wer nenn— es die Schweiz?

Student: Wer nennt es die Schweiz?

Computer: r.

Meanwhile, statistics students at CAI type in the answers to their homework problems to see if they have worked them correctly. The computer is programmed to help each of these students find where he made his mistakes, and then it drills him on similar problems. At the end of a CAI session the computer "remembers" where the student leaves off and it starts him at that exact place the next time.

Dr. Edward D. Lambe, director of Stony Brook's Instructional Resources Center (IRC) of which CAI is a part, says, "CAI, like many other technologies, may be used to provide segments of instruction, although it by no means replaces the course, the instructor or the personal contact of the classroom."

Mrs. Betty Weneser, director of CAI, points out that Stony Brook is one of the few universities in the nation which uses computer-assisted instruction to supplement regular credit courses.

In reply to those who feel the computer is impersonal, Mrs. Weneser says, "Most students exposed to CAI seem to realize that by using the computer as a teaching aid they are not losing a teacher, but gaining a tutor."

"CAI is forced, individualized study," says one German course student, "and it is better than doing homework at home."

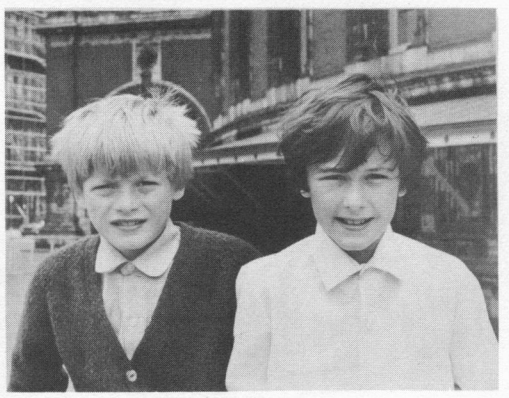
"You go at your own speed and CAI makes you do things over until you get them right," adds a junior taking elementary German.

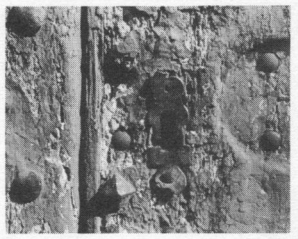
"It reacts like a human," offers another student. "The computer acts like a friend on some occasions and like an enemy when it is too fussy with your work."

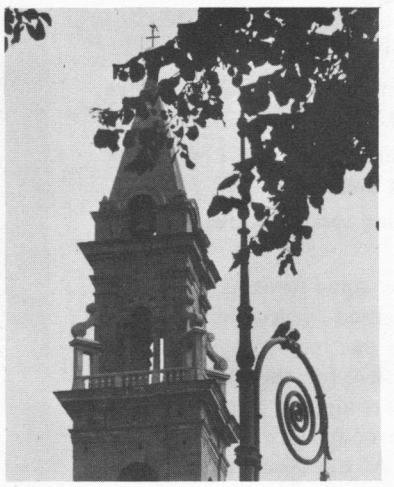
One coed says she hasn't made the jump to mechanized learning and she feels the human element is missing when she doesn't understand the computer's instructions.

"I think too much time elapses between doing problems at home and later presenting them to the computer," says a statistics student. "I would rather use CAI when it is convenient for me and not have a scheduled hour each week."

More than one student notes that CAI saves trouble for the teacher. "CAI doesn't do anything the teacher can't do," agrees Dr. John R. Russell of the German department, "but it frees him from routine and allows for more creativity in the classroom, especially in areas where the teacher is uniquely valuable, such as getting the students to actually speak in the foreign language."







*THE FLAVOR OF EUROPE was captured by the lens of Stony Brook junior Leonard Rachlin during a visit there last summer. These photographs and others by the New Hyde Park youth were on exhibit in the Melville Library early this month. Rachlin has taken many photos for the* Review *in past months.*

Dr. Marvin Levine of psychology, who is sending his students to CAI for statistics, says, "I am relieved of mechanical presentations and class time is saved. Furthermore, I think the students are more motivated to prepare their problems for CAI than when they study entirely on their own."

Another psychologist who uses CAI is Dr. Joseph L. Young. "I feel less obligated to spend class time on the computational portion of my course and I can concentrate on ideas behind the subject matter," he says.

Almost all the professors using the CAI facilities say it will be ideal, someday, to have several computer programs from which to choose their CAI course supplements. That way, a professor could select the program that best suits his needs, much as he now selects textbooks.

Evaluative studies to measure the effectiveness of CAI for the German course have been conducted by Dr. H. William Morrison of the psychology department and Mrs. Anita Goldfried. Their analysis shows that students with a CAI laboratory performed on standardized tests substantially better in reading and writing German than students taught in the conventional course with a language laboratory.

Moreover, Morrison and Goldfried report that improvement in writing was greatest among students in the lower half of the class. The improved performance by the weaker students may have been caused by the fact that the CAI system makes the student work until he masters the material.

On a recent questionnaire, 221 students were asked, "How much benefit in learning German do you derive from the CAI laboratory?" Their response:

| | |
|---|---|
| Very much benefit | 22.0% |
| Much benefit | 35.0% |
| Moderate benefit | 37.5% |
| Little benefit | 5.0% |
| Very little benefit | .5% |

As evaluations continue, other plans for CAI include a remedial English course, a physics course and development of content-free procedures for testing and measuring performances on any CAI offering. Courses to provide simulated laboratory experiences are being developed and audio equipment will be utilized in the future.

"The computer enables us, for the first time, to do detailed research on instruction," says Dr. Lambe. "By careful analysis of student response patterns, we can develop methods which are demonstrated, rather than guessed, to be effective."

"Another major aim of our research is to create content-free instructional models, designed so that an instructor can easily insert the materials suitable for his specific course," says Mrs. Weneser. She points out that CAI staff is available to work and consult with faculty members.

"And," says Dr. Lambe, "with the evident trend toward larger class size, especially for undergraduate courses, we hope that development of programs such as ours in individualized learning will present new and effective instructional alternatives." □

## Concerts, Drama, Talks Slated for March

Three concerts, a theater arts production, a residential college dedication, a guest lecture by a visiting poet and an address by State University Chancellor Samuel B. Gould are among major events that will be open to the public at Stony Brook during March.

The concerts will feature Matthew Raimondi, violin, and Ralph Froelich, French horn, on March 6; a madrigal singing group directed by Gregg Smith on March 18; and the Princeton Chamber Orchestra on March 27.

The Raimondi-Froelich concert will begin at 8:30 p.m. in the gymnasium. The madrigal and chamber orchestra concerts will be held in the University Theater at the rear of the gymnasium. Tickets for public admission are $2.50 per person and may be reserved by calling 246-5671 between 9 a.m. and 5 p.m., Monday through Friday.

The theater production, "Ivona" by Witold Gombrowicz, will take place the evenings of March 13-16 in the University Theater. Public admission is $1.50 per person and tickets may be reserved by calling 246-5670 between 9 a.m. and 5 p.m., Monday through Friday.

Margaret Sanger College will be the third of Stony Brook's 15 residential colleges to be dedicated. Plans call for a dedication program on March 22.

Poet Galway Kinnell will be on campus March 17-21 and will deliver a public lecture during his visit.

Dr. Gould will address the Stony Brook student body on March 25. □

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