Institute for the Study of College Teaching

Newsletter
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Report from the Director ...>>>

RSC Student Characteristics:

The 2001 National Survey of Student Engagement. (NSSE)

Sonia Gonsalves

This week I received a copy of the 2001 NSSE report. The NSSE is an online or paper questionnaire given to undergraduate freshmen and senior students to determine the quality of their experiences in 4-year colleges and universities. The project is supported by a grant from the Pew Charitable Trust. In 2001, 470 institutions participated, compared with 276 in the first year. The report gives colleges descriptive data for each survey question and gives national and state comparisons for participating institutions.

Approximately 300 Stockton students participated: 157 seniors and 146 freshmen. Nationally more than 55,300 students were surveyed. It is not possible to describe the report in detail here, but I will highlight some significant findings that interested me.

Stockton seniors reported better "*quality of relationships*" with other students, faculty members, and with administrators than students from other participating NJ colleges. The higher rating of *"quality of relationship with faculty members*" was strongly significant at the national level. Freshmen **and** seniors at RSC rated the *"quality of academic advising"* higher than did comparable students at other NJ colleges. Seniors at RSC gave us higher ratings than did other NJ students on "*providing the support you need to help you succeed academically*."

Statewide our senior students use more "*electronic media*" and spend more "*time preparing for class.*" While at the state level our freshmen show no significant difference from their peers, in national comparisons RSC freshmen spend less time preparing for classes. In the category of academic, intellectual, and social experiences, our freshmen report lower incidences of "*asking questions in class or contributing to class discussions,*" "*preparing 2 or more drafts of a paper or assignment before turning it in,*" and "*participating in a community-based project as part of coursework*" than did the other NJ students. More RSC freshmen say they are memorizing facts in their courses than in the other NJ schools, and fewer are writing papers or reports of 20 pages or more. Fewer of our freshmen were in e-mail communication with faculty than the national norms.

You can get a hard copy of the 2001 NSSE report from the ISCT office. Let's talk about it.

REPORT FROM THE FELLOWS ...>>>

The NSF Graduate Research Fellowship, Who Gets It?

Monir Sharobeam

A few weeks ago, I had the opportunity to serve as a panelist for the 2002 NSF Graduate Research Fellowship Program. There were 6,622 applications this year in different disciplines such as chemistry, computer science, engineering, geosciences, life sciences, mathematics, physics, psychology and social sciences. These fellowships are three-year awards with an amount of $25,000 per year and intended for students interested in graduate study leading to research-based master's or doctoral degrees. Typical applicants are students in their senior year of college or first year of graduate study. There were 19 panels evaluating these applications. I was serving in the panel for applications in the areas of civil, materials and environmental engineering. The evaluation process took three days. In the first day, each application was read by two different panelists and rated according to certain merit criteria. A third reading by another panelist was done in the second day for applications with a score in the top 64th percentile. Then applications with wide difference in ratings between the panelists were revaluated and discussed by them to remove any discrepancies in the ratings. Applications were then ranked according to their scores. In the third day, the panelists had the difficult job of placing the applications in four different quality groups with the understanding that only those in the first quality group and 55% of those in the second receive fellowships.

Only 900 from the 6,622 applicants will be awarded these prestigious fellowships or, in other words, only one every seven applicants will receive a fellowship. The main question, then, is "who gets it?". To answer this question, we need to look at the criteria used to rate these applications. The panelists rate the applications based on two merit criteria; an intellectual merit criterion and a broader impact criterion. The intellectual merit criterion includes aspects such as the strength of the academic record, previous research experience, the proposed plan of research, references' recommendations and Graduate Record Examinations scores, when available. The broader impact criterion considers the applicant's potential to contribute to diversity and community and also to foster integration of research and education. There is no order or ranking for these criteria and issues involved. It is the panelist's duty to balance all of these while evaluating any application. It was clear during the evaluation process that GPA and GRE scores are not the decisive factors in awarding a fellowship. Many panelists gave higher rating for applicants with diverse undergraduate research experience than those with no or limited experience even if they have a higher GPA. A publication that is co-authored by the applicant impressed many panelists and improved the score of the application. Recommendation letters that presented the applicant's ability to be a leader, work as a team player and be independent in research carried more value than those discussing only excellence in a course or a lab. The applicant's contribution to the community as an individual or through a group, in or outside campus, influenced the rating of the application. Activities such as volunteering to work with a non-profit organization a week in a summer, introducing science to high school students a few times a year and/or developing an educational newsletter provided an evidence of the applicant potential to contribute to the community. Another factor that influenced the rating is the potential of the applicant to contribute to diversity. The applicant does not have to be a woman or a minority to contribute to diversity. There were many applicants, minorities as well as non-minorities who provided strong evidence of their potential to contribute to diversity by, for examples, volunteering to mentor and tutor minority freshmen or organizing study groups for women in their institutions and/or reaching out to near-by high schools to serve as models, leaders and mentors for women and minority students in these schools.

I do not see many of our students taking advantage of these fellowships. I am aware of only one Stockton student, in the dual-degree engineering program, who applied this year for the NSF fellowship. We should encourage our students who are interested in a research-based graduate study to apply. I noticed that some schools strongly encourage all of their students interested in graduate study to apply for these fellowships and this was obvious in the high number of applications coming from specific schools. Although these fellowships may seem very competitive, many of our students could be selected if we provide them with the appropriate culture and advice that can make them successful applicants. We may need to identify students with potential to be successful applicants early in their career in the college and get them involved in a diverse undergraduate research experience and advise them about the value of participation in activities that promote diversity and contribute to the community. As I mentioned before, all applicants in the first quality group receive fellowships but only 55% of those in the second receive them. The panelists had control over who would be in the second group, but not on who would receive a fellowship from this group. The selection of the awards in this group is based on a formula developed by NSF that takes in consideration, among other factors, the geographic location and applications from predominantly undergraduate institutions. These factors may favor some of our applicants who do not make the first quality group.

Connecting Aquarium/Mariculture Industry With Marine Science Education

Gordan Grguric

Dr. Gordan Grguric recently had a publication in print dealing with chemical processes in a large seawater aquarium. The article appeared in the February issue of the *Journal of Chemical Education*, and it deals with educational value of characterizing and quantifying chemical reactions in closed seawater systems. For example, in such systems most water tanks are subject to regular water changes, in order to prevent the build-up of toxic animal waste products. The extent of these water changes is typically expressed as the fraction of water replaced in a given time period, e.g. 10% a week. An important question in the aquarium/mariculture industry is determining the total fraction of the original water that remains in the tank after a given time period. Developing computational methods to answer this question is an important exercise that advanced Marine Science students should be able to address. Whether they work on such a problem independently (as part of homework) or in groups in the classroom, their answers may be compared in order to discover whether different computational approaches yield the same results. Such a comparison can prompt a more fundamental discussion of mathematical methods implicit in the students' solutions to the problem.

Another important application of computational methods in aquarium/mariculture industry is that in facilities that are located far from the ocean, or where uncontaminated seawater is unavailable locally. In such facilities, artificial seawater sometimes has to be prepared on site. Calculating the artificial seawater formulation (that is, determining what chemicals and how much of each to add to make the artificial seawater) can be a tedious and time consuming process. The reason for this computational difficulty is that seawater must contain a specific concentration of every individual ion, but each ion can be added only in conjunction with its counterpart through a given salt. Therefore, a combination of salts has to be found that will produce a solution containing specific concentrations of every ion. If students are asked to develop such an artificial seawater formulation, they have to choose which salts to use and calculate the amount of every individual salt needed. What makes this process particularly interesting from an educational standpoint is that different combinations of salts and their amounts can lead to the same artificial seawater formulation at the end. The salts used can then be prioritized based on their price so that the least expensive combination is found that will produce the desired ion concentrations in solution.

Quantitative analysis of these topics can be greatly enhanced by the appropriate use of instructional technology. For example, computer spreadsheet programs can be used as a demonstration tool by an instructor when discussing these topics. Alternatively, students can be asked to program their analytical solutions to these questions on a spreadsheet, or using some other computational software. This technique enables students to obtain fast feedback, and thus test whether different approaches to a problem are meaningful or not. Finally, a properly programmed computer model can provide predictions about the behavior of a system well into the future, and thus empower the student to become an independent self-learner and explorer. That is one of the goals that all of us strive to achieve in our students.

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Making Connections: GIS for Faculty

David Burdick

As you prepare for your Precepting duties, may I remind you that all students must complete at least one GIS course in order to graduate? Integration and synthesis is important for professors, too! In the busy lives of (hopefully) productive faculty, it is imperative to actively work to make connections between our teaching, our research on teaching, our basic scholarship and our service to college and community. By constantly looking for connections, we can often increase our effectiveness and productivity and sometimes experience unexpected synergies. Here's a brief report on my attempts at connections, integration and synthesis over the past several months. My recent scholarly efforts have centered on experiential learning (internships and service learning) and the study of technology and how it impacts older adults. As I'll note below, sometimes I've been able to integrate both interests into single projects.

Recently I co-authored a paper with Professor Lisa Cox of the Social Work Program entitled *"Integrating research projects into fieldwork experiences: Enhanced training for undergraduate geriatric social work students"*. The article appeared in Educational Gerontology (2001), 27(7), p.p. 597-608. In the article, we observed that students often do not *connect* their learning from various types of courses. For example, they often fail to apply the scientific method, other research methods and various modes of systematic inquiry that they presumably learned in their research courses as they encounter complex 'real world' problems in their

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practicum settings. In implementing an alternative to a traditionally organized fieldwork experience, we found that augmentation with a research component helped students to better integrate and synthesize knowledge and skills across domains.

I have utilized intergenerational service learning in some of my courses since receiving a Corporation for National Service grant in 1998 through the Association for Gerontology in Higher Education (AGHE). Students from my GSS "Technology and Aging" class are just beginning their service learning experiences with older adults in a variety of settings. For example, two groups of 4 students each will be teaching computer and internet use to about 40 older adults in Room CC-103 over the next 5 weeks. A research assistant (Leila Chin) and I will collect data on attitude change (i.e. do the attitudes of young towards old and old towards young change as a result of contact through service learning).

My pedagogical interests on the topic of 'technology and aging' have also led me to conduct a preliminary national survey on the 'teaching of technology and aging in higher education' (I used a 900 person e-mail list maintained by AGHE). I believe that there are so many incredible opportunities to utilize technology to improve the lives of older adults that we should be teaching it in a variety of courses where human aging is a main topic. I'll be reporting on my findings at the upcoming day of scholarship and they will also appear in a book entitled "Gerontechnology: A Handbook of Research and Practice in Technology and Aging" that I am co-editing with colleague Sunkyo Kwon of the Technical University of Berlin (Germany). We have contracts in hand from 2 publishers and are in the process of deciding which to accept.

Finally, I've been catching up on the outcomes assessment literature while preparing for a survey of Gerontology graduates for the program's 5-year self-study. On the 'technology in outcomes assessment' front, I was fortunate to be in the right place at the right time when Gloria Edwards (MAIT) was demonstrating Zoomerang to David Carr and the Deans. David invited me to sit in and I'm now about to use Zoomerang for the survey of graduates. I will also use Zoomerang to collect participant evaluations from AGHE's recent Annual Educational Leadership Conference, held in Pittsburgh from February 28 – March 2nd. Zoomerang (described in Gloria's article in the February issue of ISCT News), allows you to construct surveys and collect responses via the Internet. It collects and compiles the data (so there's no monotonous data entry and coding error), provides basic frequency tables and figures, allows for cross-tabs, and allows exporting the data to database programs such as Excel in order to conduct further analysis.

Leila and I would love to collect our attitudes data from students and older adults with Zoomerang; but asking the older adults to use a computer to answer a survey before they receive computer training may not be the best place to use this technology. Sometimes the old 'paper and pencil' work best!

News ...>>> Announcements ...>>>

William Lubenow

The History Faculty will introduce a new sequence of upper level seminars in the Fall of 2002. Hitherto, the advanced seminars in history have been organized in terms of time and space, for example the Directed Readings on Problems in Ancient History. It is not as if time was invented to keep everything from happening at once and space was invented to keep everything from happening in the same place, but almost. The new seminars will be examples of conceptual history. They will examine themes and issues cutting across time and space. They will be the historical study of Power, Nature, Identity, and Belief. The History Faculty has been planning this revision of their curriculum in a series of retreats held four times a year for the past two years. They look forward to the implementing of this plan, which will make the history curriculum at Stockton one of the most distinctive and interesting of all history curriculums in the country.

PLAN TO ATTEND THE ISCT APRIL 5TH CONFERENCE!!

If you are planning to attend the April 5th Conference and have not registered – you still have time. The registration form was placed in all faculty mailboxes, but if yours was misplaced you can still fill one out.

Come to the ISCT office (F-218) to get your registration form. You can view the panel discussions and sessions on our Web site: http://www.stockton.edu/~teaching/conference.htm

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