



Half the Mystery: Student Evaluations Differ By Major

Introduction

Although there is considerable debate about their value in evaluating performance of an instructor, student rating of instruction (SROI) numbers are commonly used as a quantitative measure of teaching performance as an input into tenure and promotion considerations and for merit-based evaluations (McPherson and Jewell, 2007; Sheehan and Duprey, 1999; Wright, 2006). Perhaps because of their importance in evaluating faculty and because evolving assessment expectations require measurement of student learning, but no doubt also because the data is readily available and “owned” by academic institutions, there exists a plethora of literature which has investigated the relationship between SROI's and the quality of a course and teaching by the instructor (e.g., see Aigner and Thum, 1986; Boex, 2000; McPherson, 2006). The Idea Center estimates there to be 2,000 such studies. Although findings are somewhat inconclusive and at times contradictory, evidence suggests various factors that may affect student rating scores including factors associated with students (e.g., gender), their grade expectations, whether the course is required, and student prior-interest in the subject matter; factors associated with instructors (gender, race, teaching experience, whether they are tenured), and the course offering (class size, length of class, course level) (Cashin, 1995; Sheehan and Duprey, 1999). There is some evidence that supports the existence of variation in SROI's for individual instructors (e.g., see Marsh, 1982), but a majority of the literature concludes that it is the instructor, rather than the course (s)he is teaching that is most important in SROI ratings.

In spite of the multitude of studies, little attention has been paid to considering evaluations of an individual instructor which differ across student groups within an individual class. Student characteristics are often not included as a variable in studies considering an individual instructor and class because SROI's are generally completed anonymously. However, as noted, student characteristics and attitudes may affect student satisfaction. For example, measures of student motivation (e.g., prior interest in the subject matter, whether the course is required) have been shown to affect SROI's with more motivated students giving higher ratings (Cashin, 1995). Thus, students may express differing levels of satisfaction with a given course.

Terminology adopted by some academic institutions that refers to students as “customers” begs the question why techniques commonly employed in business to better adapt offerings to customers are not more often adopted in academia. For example, no basic marketing course would be complete without at least mention of market segments. Although students in our own college in particular are relatively homogeneous except for gender, including a high majority that come from a farm background, perhaps they differ in their preferred learning style, interests, motivation, or in other not well measured characteristics. This was empirically tested in an introductory course in commodity marketing that suffered from long-term unexplained lower-than-average SROI ratings.

I have been teaching for 15 years. As judged by student evaluations of teaching, students have been satisfied with my courses and with my performance as a teacher in my undergraduate micro- and macro economics, agricultural sales, agricultural policy, and product marketing courses, and a team-taught graduate course in agribusiness strategy. My introductory course in commodity marketing, which I began teaching in the spring of 2003, has been less well received. Because I initially only grudgingly adopted the course when the long-time instructor moved to an extension position and the subject matter did not fit well within my area of expertise, those I consulted after my initial offering of the course hypothesized that the low SROI ratings were because the students could tell that I was not enthusiastic, and not confident, about the course.

Going into the second offering, however, my confidence had improved considerably and the strong relevance of the subject matter to a majority of the students' home farm operation motivated my instruction. The course covers a lot of ground, including introducing a range of available marketing tools, the mechanisms of futures and options, seasonality and cycles, and technical analysis. During the spring of 2004, to make the class more interactive, two experiential learning exercises were introduced and a commodity trading game was adopted. The personal response system, which allows students to “vote” in class and gives instantaneous feedback to provide ongoing information about students' level of understanding, was also adopted. Given these efforts, it was very surprising that, not only had average student evaluations not improved, they had worsened. In 2005, continued efforts were made to incorporate additional activities and make the course “more relevant” by talking about prices in current local

markets and what is influencing them. The student evaluations “bounced back” but did not otherwise show significant improvement.

The low SROI scores continued to baffle the department. In addition to strong student ratings in my other courses, current students in and alumni of this class within our department indicated they were satisfied and, during the spring of 2006 a peer review of the course was very positive. The peer reviewer had included informal interviews with students, presumably his advisees in crop and weed sciences, who indicated they were very satisfied.

On the other hand, there was some direct, but mostly indirect (i.e., through other students) feedback that a group of students was very unhappy with the course and particularly my instruction. The students seemed to be those in Animal and Range Sciences (ARS). This contradicted my expectation because my undergraduate degree is in animal science and all of my graduate work, and a significant portion of my work in recent years, has been with animal scientists working on livestock issues. And, the course has a designed relatively even focus on crops and livestock (particularly beef calf marketing), because both are important to our students.

Serving on the University Program Review Committee during the academic year I often heard departments argue that low average evaluations were because their instructors had to serve both majors and non-majors. Our committee usually recommends that departments substantiate that satisfaction differed by student-major before they approached “what to do about it”, if anything. That is, we ask them to identify consistency among student responses to a single instrument within a class taught in the same semester by one instructor. A study of SROIs in the commodity marketing class was undertaken using this approach.

Methods

Student evaluations were completed during the last week of class and students were asked to deposit their completed evaluation into the envelope specifying their major. There were enough students in each major so as to decrease student anxiety about placing their evaluation in a specific envelope. SROIs were compared by major and the identified “market segments” were further explored by comparing their attendance, performance, number of exams missed, and self-reported interest in and knowledge about commodity marketing.

Results and Discussion

Overall, SROI scores for 2006 showed only slight improvement, but were still low. The results were quite conclusive in that ARS students were, on average, not satisfied with the course and the instruction, although there was considerably variation in satisfaction among this group as compared to the other majors (Table 1). Student ratings for the other majors were much higher. Written comments supported the difference found in numeric ratings. Seven ARS students provided (very) negative comments; six provided positive comments. Two of the latter indicated that they knew some students were less than pleased with the course and myself as an instructor, but that they themselves appreciated the course. Contrarily, of the twenty majors within our home department, ten provided positive comments, and only one provided negative comments. Five of the seven responding students with a major in crop and weed sciences provided positive comments and none provided negative comments.

Table 1. Student Rating of Instructor and Course by Major

	Animal and Range Sciences	Agribusiness and Applied Economics	Crop and Weed Sciences	Ag and Biosystems Engineering	Total
Number responding	23	20	7	10	60
The instructor as a teacher (mean, SD)	2.96 (1.22)	4.35 (0.67)	4.43 (0.53)	4.00 (0.87)	3.77
The quality of this course (mean, SD)	3.39 (1.20)	4.15 (0.67)	4.57 (0.53)	4.00 (0.50)	3.88

For course and instructor rating 1 = poor and 5 = very good.

Thus, two “market segments” were identified within the class (students with a major in ARS, and others). To investigate why ARS students were less satisfied, they were compared with others using available information representing factors the literature indicates may affect SROI ratings. The data failed to explain the difference in satisfaction level. Students' initial self-reported interest in, and knowledge about, commodity marketing did not differ between the groups. An equal percentage of students in both groups missed one exam. Students were allowed to drop their lowest-score of three hourly exams, but were not allowed to make up missed exams, even if the exam was missed because of student participation in a university-sponsored event. It was thought possible that students who were required to drop a score for an exam they missed rather than their lowest exam score may harbor ill-will towards the instructor or consider grading less fair. Although that may be the case, the fact that an equal percentage in each group dropped an exam negates the explanatory power of this hypothesis. Finally, ARS students attended a slightly higher percentage of classes and received a higher average overall grade than other students. This was surprising given the results of Sheehan and Duprey (1999) who identified a moderate relationship between student achievement and student rating of the effectiveness of the teacher and Weinberg, et al.

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(2007) who found that student ratings were positively correlated with current grades.

Although student comments were not specific enough to be particularly useful in explaining why this particular group of students was not satisfied and information collected did not identify ARS students as different than those from other majors, simply knowing ARS students are not satisfied will support future hypotheses that can be empirically tested. To test these hypotheses, additional information will be collected from students in coming years in an effort to explain differences in student learning preferences between animal and range science majors and others.

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Cheryl J. Wachenheim
North Dakota State University

A Simplistic View of Journal Impact Factors: From Science to Teaching

All too often, someone might say to you that you should publish your science data in journals with the highest impact factor possible. What does this mean? A good definition of the means to calculate impact factors is found on the web <http://scientific.thomson.com/free/essays/journalcitationreports/impactfactor/>. Moreover, a solid article discussing both the pro's and con's of impact factors has been recently published (Monastersky, 2005). So, should we all be publishing in high impact journals? According to the 2005 ISI Web of Knowledge's Journal Citation Report® figures for the sciences (the most current edition); in the animal science field the top ten journals are:

- Animal Genetics (2.437)
- Journal of Dairy Science (2.240)
- Animal Reproduction Science (2.136)
- Reproduction of Domestic Animals (1.835)
- Genetics Selection Evolution (1.783)
- Poultry Science (1.747)
- Journal of Dairy Research (1.620)
- Domestic Animal Endocrinology (1.559)
- Applied Animal Behavior Science (1.441)
- Journal of Animal Science (1.360)

Are these journals of sufficiently high impact in order for you to justify publishing your data in one of them, or would you prefer to publish in a journal that has broader appeal, and (perhaps) a higher impact factor?

Another way in which to look at this question might be to ask: does my research fall into the guidelines of one of these journals? In my case, for example, the type of research that I do is cell biology-type research with muscle and fat cells. The two journals that fit my research best, out of the top ten animal science journals, are Domestic Animal Endocrinology and Journal of Animal Science. Of the nearly 100 papers that I have published, only four of these fit within the guidelines of Domestic Animal Endocrinology, with three of these being review-type papers.

Moreover, while I have published a total of five papers in the Journal of Animal Science, all of these are collaborative-type papers. As such, I have been left with either publishing material in lesser impact animal-related journals (of which I have done on a limited level) or in other types of journals.

When fresh out of graduate school, I selected journals with broad appeal (and strong impact factors) with which to publish my research data. Endocrinology, Metabolism, Differentiation, Experimental Cell Research, and numerous other journals were reasonable avenues to publish my papers. However, most of these (and numerous other) journals changed their focus, especially during the mid 1990's, towards the evolving area of molecular

biology. This preference for molecular papers left many of these journals unavailable for a cell biologist to attempt to publish a paper. Furthermore, if one really wanted to publish a paper in one of these journals, there was a good chance that (if accepted) the article would not appear for (in some cases) over a year.

At about this same time (mid 1990's) a new crop of journals were established, some of which possessed guidelines parallel to my research as a cell biologist. I even aided some of these journals to become established, and to obtain their first impact factor value. For example, I helped Basic and Applied Myology become established. This journal originally was intended to "bridge the gap" between very basic cellular/molecular research and applied research in muscle biology. While publishing data papers in this journal, however, I felt that the effort towards continuing to accept the quality of articles lagged behind what it needed in order to become a solid journal, so I eventually parted with their efforts.

Other journals were re-organizing and re-focusing their efforts towards cell biology-type research. I published one paper in many of these in order to try to gain a feel for a "fit" between their focus and impact factor, and my research. A simple (and quick) look at my publication list is all that it might take to realize that not only were the journals evolving, but so was my research efforts--as seen by the types of journals in which I submitted data/articles. When it comes right down to it, I do not try to select journals with high impact factors for a number of reasons (some of which have been voiced already). Rather I look at a "fit" for the data, and the audience. Why should I (for example) publish a sports/exercise paper in something other than a sports/exercise journal? Finally, as I do like to write all types of papers [review papers, data papers, perspectives papers, editorials, teaching papers, etc] I rather enjoy focusing on the needs of a number of "specific" audiences, rather than the impact factors associated (supposedly) only with "fine works".

If I were only concerned with impact factors, I would never (ever) submit a teaching paper. When I began to write teaching papers many years ago, my first thought was the impact factor of the journal. To my surprise, many teaching journals do not have impact factors. Furthermore, I soon learned that publishing in a teaching journal was NOT like publishing in a science journal. In some cases, a teaching article might not be published (for years)-depending on whether sufficient articles were received for filling an issue of the journal. Delay was a "norm" for many journals. NACTA Journal seems to be different, in this regard. This is one journal in which I would support efforts towards obtaining an impact factor. Obtaining an impact factor (even a low one at first) would allow the journal many "perks," including stability, an increasing audience, and respectability....my simplistic view of impact factors.

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Michael V. Dodson
Professor of Animal Science
Washington State University

Online Forms Help Structure Assignments

In a teaching environment it is desirable for assignments to conform to a specific structure or format. Word documents can be used as a template but lack an easy way to provide interactive help. HTML forms allow hyperlinked help and can be easily processed with some simple code to create an interactive experience for the students. Since these tools are web-based they are easily integrated into the learning management systems like WebCT or Blackboard that are now commonly being used to provide course materials to our students.

HTML forms are commonly used on the web to collect data. These forms are simple to make with HTML editors such as FrontPage, Web Expressions, or Dreamweaver. Help files are easily provided using links to additional pages. Help links can be added to any form field that should require it. Help windows can be opened in a different browser window or frame using the target option of the html "A" tag. Using a different window will allow the partially completed form to remain unchanged, but also allows the help to be viewed at the same time as the form. JavaScript in the form can be used to force fields to be completed prior to form submission. Most HTML editors offer validity checking options which will create the script for you.

Processing of the form requires some computer code (scripting) to accept data from the form and either format it for the web (an HTML page) or export it to a Word or Excel document. Scripting languages vary from server to server, but the ability to process a form is common to all. At the very least the script must accept the form data and display it on the web page. Generally data will be placed in HTML tables for formatting.

To create the data in Word or Excel format a "header" is specified for the output page so the browser will send the output to the appropriate application and prompt the user to save the file. To export to Word or Excel requires two simple additions to the HTML header:

```
Content-type: application/msword
Content-Disposition: attachment; filename='myfile.doc'
```

Tables created using HTML will display as tables in Word and as cells in Excel. Note that formulas can

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be entered into table cells and they will be interpreted as formulas in Excel, but as text in HTML.

The techniques described above can be implemented in simple or complex applications depending on the desired outcomes. They are easily mastered by faculty who are comfortable making web pages and scripting support is often available from the campus technical support group if you know what to ask for. Sample applications and code can be found at: <http://www.agedweb.org/forms>

Michael Spiess
College of Agriculture
California State University, Chico
Chico, CA 95929-0310
Telephone: (530) 898-4554
Email: mspiess@csuchico.edu

Diversity in Academia Leads to Academic Progress

Issues of diversity involving major social issues are not the central topic of this article. Everyone knows that in any academic unit, demonstration of ill-will towards others of a different color, religious preference, sexual orientation, physical condition, or political party will find one in serious trouble. Moreover, someone displaying overt animosity towards anyone, in reality, is not going to obtain good (yearly) annual review marks--and may end-up (eventually) without an academic position. A main reason for this is that the college/university setting is about the last place, whereby one may fully express themselves without worry for reprisals. Being "who you are" promotes creativity and allows for viable academic expression--which is, of course, a major reason for the existence of colleges or universities in the first place.

Are there other issues that might fall under the diversity umbrella, which we might think about? A circumstance "falls close to home" with me in this regard. You see, I am a morning person. I am the

freshhest, most productive and I think more clearly in the am, rather than in the pm. As such, I usually am the first to get to work (between 5:00 am to 6:00 am) every morning, work straight through (without leaving the office) until about 2:30 to 3:00 pm, and then leave for the day. By the time I leave, I am completely exhausted, on most days, and am glad to head out the door. Due to a commute of about fifty minutes, by the time I get home I have recharged the batteries, a bit, and (therefore) put-in one or two more hours on the computer before my wife gets home for the evening. My schedule really works for me. I think that I am a relatively productive faculty member, and I feel that my schedule does not inhibit student access to my wisdom/advice. Due to my daily regimen, I try to plan well in advance for meetings, office hours, and research efforts. However, there are times in which my dedication to the job is questioned by others--especially if a hastily put-together meeting or event comes-up after I have left for the day or if someone casually walks by my closed office door. I have gone so far as to explain to each of my department chairs (over the past 22 years) of my daily efforts, and for the most part have NOT been forced into a normal (office-type) routine. Have you?

Should you be a productive, viable faculty member, but find someone suggesting that you are not dedicated to your profession due to your work schedule, you might discuss the issue with your immediate supervisor. Diversity issues of all types are not to be ignored in the academic environment. Certainly, it takes all types of people to make a viable academic department. Celebration of, and working with, the differences of others (even if you are a morning person) leads to academic progress in teaching, research, or advising efforts.

Michael V. Dodson
Professor of Animal Sciences
Washington State University