

Preparing Sophomores for Independent Learning Experiences with a Pre-Capstone Seminar



Michel A. Wattiaux¹
Department of Dairy Science
University of Wisconsin-Madison
Madison, WI 53706

Abstract

This three-year classroom research project determined students' response to a one-credit elective pre-capstone seminar intended to help sophomores prepare for independent learning experiences as required by internships and capstone courses. Weekly guest speakers included primarily juniors and seniors. Student speakers welcomed the opportunity to share their experiences with sophomores whose interest in the course was associated with having juniors or seniors as speakers. Self-assessed learning outcomes included increased ability to select an internship and knowing how to engage in independent work. Sophomores did not perceive a need to learn how to work and learn in a team. In addition, they were divided in regards to the benefit of having to write a weekly report. Although some students perceived such assignments as a positive aspect of the class that contributed to gains in written communication skills without demanding more work than anticipated, others felt the opposite. The level of interest in the course was correlated with self-assessed amount of learning. The pre-capstone seminar increases student-student interactions and student-instructor interactions in an academic setting and may enhance the cohesiveness of an undergraduate curriculum because it creates the opportunity for students to make explicit connections with the required capstone courses in their major.

Introduction

Knowledge in a discipline is only one of many desired outcomes of an undergraduate curriculum. To equip students for a productive career in the global marketplace of the 21st century, higher education curricula should be designed also to provide opportunities for students to advance their communication, critical thinking, problem-solving, and decision-making skills and the ability to work in teams (Diamond 1998, Kauffman, 1992). Independent studies, internships, capstone courses and study abroad programs are examples of credit-earning classes or requirements in which students are expected to exercise a significant degree of independence in their own learning. Typically, students are required to write a report or make an oral presentation as evidence of the knowledge and skills acquired through these independent learning experiences.

These expectations contrast drastically from those of a typical disciplinary, lecture-type course in which grades are assigned based on quizzes, homework, and exams. Helping students transition from a passive and dependent learning attitude to becoming active and independent learners is key to a successful educational program. Thus, we assumed that a pre-capstone seminar targeted at the sophomore level would be a useful component of the curriculum. Sophomores would benefit from greater awareness of educational opportunities outside of the traditional classroom and would appreciate the changes in expectations when engaged in an independent learning environment. To reach these objectives, we designed the pre-capstone seminar based on the Kolb's model of experiential learning (Kolb, 1984), as modified for classroom activities by Svinicki and Dixon (1987). Our premise was that the sharing of concrete experiences gained by juniors and seniors who completed independent learning experiences would benefit sophomores in the conceptualization and planning of their own future independent learning experiences.

This report was developed as a classroom research project in the context of scholarship of teaching and learning (Paulsen, 2001). The aim was to help students maximize benefits derived from being well-prepared for independent learning opportunities and to improve the quality of the pre-capstone seminar as a component of the curriculum over time. The main objective of this study was to evaluate students' perception of the pre-capstone seminar based on three-years of data collection (2001, 2002 and 2003) from sophomores enrolled in the class and a survey of juniors, seniors who participated in the seminar as speakers. A secondary objective was to determine sophomores' awareness of skills needed to succeed in most independent learning situations including writing skills and team skills (balancing individual contribution in the context of a team effort).

Materials and Methods

Seminar Description and Organization

The sophomore pre-capstone seminar is a ten-week, 75-minutes, one-credit elective class that has been offered since the Fall of 2000 to Dairy Science majors at the University of Wisconsin-Madison. As

¹Assistant Professor; Email: wattiaux@wisc.edu

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indicated in the syllabus, the ultimate goal was to help sophomores identify and pursue their own interest for out-of-classroom experiences and thus become better independent learners. In addition to increase awareness of the wide array of opportunities for independent or experiential learning, the syllabus indicated also that the pre-capstone was designed to help sophomores understand the steps involved in preparing for such experiences and to practice some of the skills needed to succeed in active learning situations (e.g., writing skills and team work). A typical seminar schedule was as follows. Week-one seminar focused on evaluating and writing resumes with a guest instructor from the College career service. From the second to the seventh week, the seminars focused on internships (which has been a requirement for dairy science majors since academic year 2000). Typically, two juniors or seniors are invited every week as guest speakers to share their internship experiences with the class using 20-25 minute presentations.

Types of internships presented and discussed included extension youth programs, sales and marketing (breed associations, genetics companies, milk processing cooperatives, nutrition and management consulting, etc.), agricultural communication (publishing), summer research internships (on-campus and industry-based opportunities), and on-farm internships. In the subsequent two weeks, students who excelled as independent learners in the dairy farm management practicum (Dy Sci 535) and the senior seminar (Dy Sci 690) are the invited speakers. In the former course, which is a required capstone course in most options in the major, students work with a consultant and a dairy producer throughout the semester (Combs et al., 2001). In the latter course, which is a required capstone course of all options in the major, students summarize the primary literature on a dairy-related issue and present their findings to the class with an oral presentation. In addition to student speakers, instructors for both Dy Sci 535 and Dy Sci 690 were invited in the pre-capstone to explain objectives, discuss expectations and respond to sophomores' questions. Finally, the last seminar of the semester includes one or more students who completed an international experience (study tour or semester abroad) and a program coordinator involved in internationalization of the curriculum.

All student speakers were provided with the same set of guidelines to develop their presentation. These guidelines suggested a three-part presentation. The first part was to describe the independent learning experience (what, where, when, with whom?; what were the goals, the activities, the findings, and the products of the independent learning experience?). The second part was to focus on a reflective analysis of both the logistics of how to get engaged (For example: How did you find out about it? What was the process involved in applying and interviewing?) and

the learning experience per se (For example: What skills have you learned? What have you learned about yourself, the people and the organization you worked with? Did the experience help you make career choices?). The third part was to summarize and conclude the presentation with highlights of the experience including personal or programmatic aspects that would improve the learning experience (For example: What would you do differently? How would you change the program to make it a better learning experience?).

Sophomores enrolled in the class were expected to participate actively by taking notes and (or) asking questions during the seminar and submitting a written report of each presentation (weekly), a draft resumé (week four) and a final resumé (week 8). Weekly reports were submitted by email (2001 and 2002) or in an electronic drop box on the course website (2003). Starting in 2002, students were provided with a Microsoft Word template that included a set of rubrics used to grade the report. The grading system was based on weekly reports, draft resumé, final resumé, and class participation. Grade for class participation was based on either asking questions to the speakers during the seminar or providing evidence of hand-written notes taken during the presentations as a way to prepare the weekly report. The weight of each graded class component varied somewhat from year to year. Starting in 2003, the class included a teaching assistant responsible for syllabus development (recruitment of speakers), weekly seminar organization and grading of the weekly reports according to pre-defined rubrics.

Sophomores' Perception of Various Aspects of the Seminar

The Student Assessment of Learning Gains (SALG; Seymour, 1997) was modified to explore sophomores' perception of the learning environment, grouped in the following five dimensions (Abrami and d'Appollonia, 1990): the overall level of interest and perception of the class, the extent with which various aspects of the class facilitated learning, the grading system, the extent of learning gains as a results of class activities, and perceived educational needs. For each of these aspects, a set of three to seven items was formulated resulting in a total of 25 items in the instrument (Table 1). Scores for each item were collected on a Likert-type scale of 1 to 5 with the following descriptors: 1 = Not at all, 2 = A little, 3 = Somewhat, 4 = A lot and 5 = A great deal. The cover page of the instrument included a short overview of the project. In addition, a consent form was prepared to provide details about the project and a student's right to be excluded from the study. Prior to initiating the study, both the instrument and the consent form were approved by the UW-Madison Institutional Review Board (IRB) for research with human subjects.

Data Collection and Analysis

The instructor distributed the instrument the last day of class along with the departmental course evaluation to be completed anonymously by each student. Students were provided with ample time to complete the instrument, to add optional written comments to explain a score and to describe aspects of the course that made it a good learning experience as well as changes that would improve the learning experience. At the end of the class, a student volunteer returned all completed material to the departmental office.

Although the level of agreement with an item is typically measured by the mean item-score, a measure of data dispersion around the mean can be used to determine the degree of consensus for an item (Clason and Dormody, 1994; Kreber, 2003). To inspect the variation due to yearly student cohort, the level of agreement and degree of consensus for each item were assessed in each year separately using mean item-score and standard deviation, respectively (Table 1). Analysis of the yearly data was limited because of the low number of students per class. However, overall students' perception of various aspects of the course was determined for the combined three-year data set (Table 2). Items were sorted in descending order of mean score and those in the top 20% (n = 5) and the bottom 20% were identified as aspects of the course that students agreed with the most and agreed with the least, respectively. Then, items were sorted by ascending order of standard deviation and those in the top 20% (i.e., the 5 items with the lowest standard deviation) were identified as aspects of the course for which students showed the highest degree of consensus (i.e., least disagreement). In contrast, items in the bottom 20% (i.e., the 5 items with the highest standard deviation) were identified as aspects of the course for which students disagreed with each other the most.

Spearman correlations (SAS, 1999) were used to explore the association between students' level of interest in the course and its format (item-1.4) and the various aspects of the class designed originally to help students learn (item-2.1 to item-2.7). In addition, the corrected item-total correlation (CITC) was used to determine the degree with which each of these seven items taken individually was associated with the other items

in the same group. The CITC, which is the correlation between an item score and the total score of the remaining items taken together, is a measure of homogeneity (Brown, 1983). Thus, the CITC allowed for ranking items within a group by the degree with which they were associated with other items taken together as a representation of a particular dimension of the class. Spearman correlation was used also to correlate self-assessed overall learning in the class (item-1.6) with various aspects of learning gains derived from class participation (item-4.1 to item-4.5). The CITC for each of these five items was calculated to explore the interrelationship among items included in the instrument as representative of expected learning gains. Significance was declared for $P \leq 0.05$ and results of correlation analyses are in Table 3.

Speaker Survey

In the Spring of 2004, the perception of student speakers was captured with a series of items that were included in a departmental survey of all juniors and seniors related to internships and independent studies. Descriptive statistics were used to analyze these data. Results are in Table 4.

Results

Enrollment and Average Student Scores

Although little effort was put into recruitment, enrollment in the pre-capstone was 9, 19 and 11, which corresponded to 56, 82 and 61% of the sophomore class in 2001, 2002 and 2003, respectively. The year-to-year variability may have reflected variations in degree of advising and students' expectation of the class, but overall, 66% (41/62) of eligible students elected to enroll in the class. Course evaluations were available for 85% (n = 33) of the students who

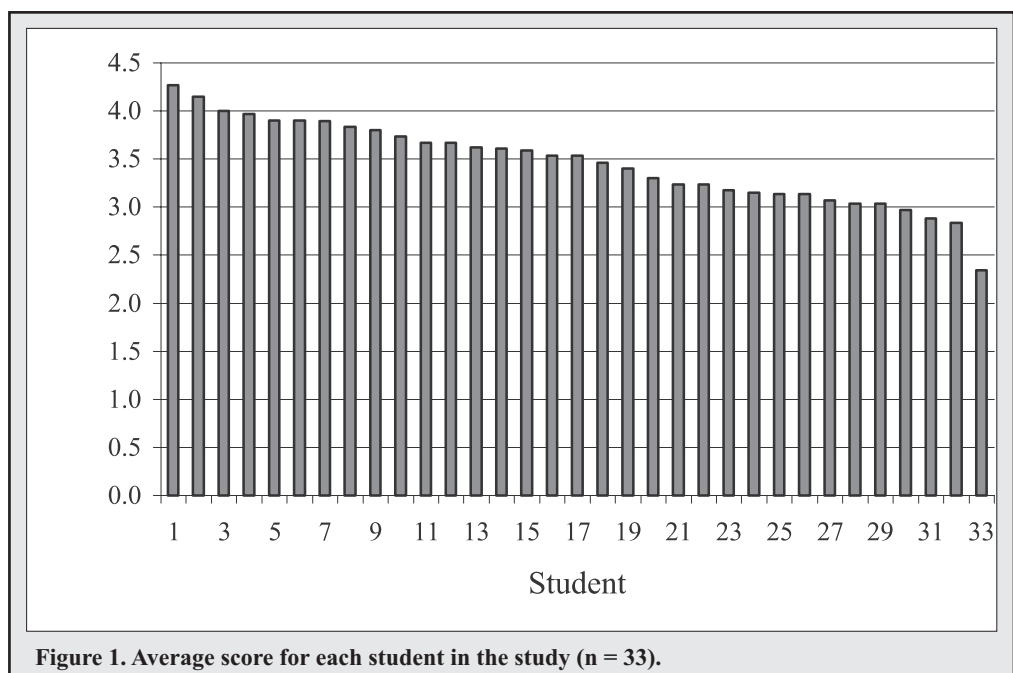


Figure 1. Average score for each student in the study (n = 33).

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enrolled in the class. As it was expected that some students would consistently score high on most items while others would score low, the mean of the 25 items in the study was calculated for each student and plotted in descending order to identify possible "outliers" (i.e., a student who might indiscriminately score high or low). Average score ranged from 4.3 to 2.4 (Figure 1). Although one student appeared to deviate somewhat from a general linear trend, the deviation was not deemed substantial enough to exclude the data from that student from the analysis.

Student Cohort (Yearly Variations)

Each year the class was made up of a new group of students which may have perceived the class and its component differently both as individual and as a response to group dynamic (student cohort). Thus, mean and standard deviation of each item was reported for each year of the study (Table 1). Average item-score for all 25 items in the instrument was relatively constant and was 3.4, 3.6 and 3.4 in 2001, 2002 and 2003, respectively. From year to year, the level of agreement reflected in the mean score remained relatively unchanged for some items (e.g., items-1.2, 1.3 and 2.6), but varied by more than 1 unit for others (e.g., items-3.1, 4.3, 4.5 and 5.2; Table 1). Interestingly, the degree of consensus reflected by the

standard deviation of an item-score declined substantially for some items from year to year. For example, the standard deviation of item-2.4 (... having to write a weekly report) was 1.7, 1.2 and 0.9 in year 2001, 2002 and 2003, respectively. Similarly, an increased degree of consensus was observed for item-3.3 related also to the writing and the grading of a weekly report and for item-2.4 and item-5.1, both related to working on one's resumé. These results are useful in identifying aspects of the course that may need to be changed or clarified. However, these annual variations in level of agreement and degree of consensus should be interpreted carefully because they are the product of complex interactions among a series of possible factors: differences among students in interpretation of an item, the impact of group dynamic within a student cohort, and minor changes made to seminar organization, assignments and grading system from year to year.

Item Analysis: Level of Agreement and Degree of Consensus

Four of the five items students agreed with the most were aspects of the course designed to facilitate student learning (item-2.4, item-2.1, item-2.7 and item-2.6; Table 2). In contrast, most of the items in the bottom 20% for level of agreement (agreement

ranking 21 to 25), were related to students' perception for the need to improve writing skills (item-5.3), note taking skills (item-5.2) and to build one's ability to work and learn in a team (item-5.4). In addition, students essentially disagreed with having to write a weekly report (item-2.3) and reported minimum gains in written communication skills (item-4.5). In regards to the degree of consensus, the top 20% of items with the lowest standard deviation (consensus ranking 1 to 5; Table 2) and thus the highest degree of similarity in students' opinion included having to prepare a resumé (item-2.4), having students as speakers (item-2.1) and having staff and program coordinators as speakers (item-2.3). In addition, students essentially agreed with each other that the seminars were relevant and interesting (item-1.3) and that the course objectives were clear (item-1.2). In contrast, aspects of the class for which students had

Table 1. Classification of the 25 items in the instrument in five dimensions and mean and standard deviation of each items measured on a scale of 1 (not at all) to 5 (a great deal) for student cohorts in 2001 (n = 7), 2002 (n = 19) and 2003 (n = 7)

Item	2001		2002		2003	
	Mean	std ^z	Mean	std	Mean	std
1. Your interest and overall perception of the class						
1.1 This class was timely and important for sophomores	4.0	0.8	4.2	0.7	3.7	1.0
1.2 The course objectives were clear to me	4.0	1.0	3.9	0.6	4.1	0.9
1.3 The seminars were relevant and of interest to me	3.9	0.7	4.1	0.7	3.9	0.7
1.4 This course (and its format) stimulated my interest	4.4	0.8	4.1	0.9	3.7	0.8
1.5 This class demanded more work than I anticipated	3.5	1.4	2.6	1.3	3.0	1.7
1.6 I learned a lot in this class	NA	NA	4.2	0.9	3.9	0.9
2. To what extent did the following aspects of the class help your learning?						
2.1 ... Having junior / senior students as speakers	4.0	0.8	4.5	0.6	4.3	0.8
2.2 ... Having staff and program coordinators as speakers	4.0	0.8	4.2	0.8	3.9	0.7
2.3 ... Having to write a weekly report	2.1	1.7	3.1	1.2	2.1	0.9
2.4 ... Having to write / submit a resumé	4.0	1.2	4.7	0.5	4.7	0.5
2.5 The class and assignments encouraged me to think	NA	NA	3.7	0.9	3.0	1.0
2.6 Electronic communication (email) was helpful	4.1	1.2	4.1	0.8	4.0	1.0
2.7 Taking notes helped me write my report	4.0	1.4	4.4	0.6	3.7	1.4
3. The grading system for this class:...						
3.1 ... was fair and reflected class objectives	2.6	1.5	3.7	1.1	3.6	1.0
3.2 ... helped me focus on what I need to learn	2.7	1.6	2.9	1.0	2.7	1.4
3.3 Having to write a graded weekly report is a good idea	3.0	1.6	3.3	1.2	2.6	0.5
4. To what extent did you make gains in any of the following as a result of what you did in this class?						
4.1 Select an internship that is of interest to me	4.1	0.7	4.3	0.7	3.4	1.3
4.2 Understand how to make the most of capstone courses	4.3	0.5	3.9	1.3	3.5	0.6
4.3 Getting into and succeeding in independent work	4.0	0.8	4.0	1.0	2.8	1.0
4.4 Gain confidence in myself as an independent learner	3.1	1.3	3.9	0.9	3.3	1.4
4.5 I gained written communication skills	2.0	1.3	3.1	1.4	2.1	0.9
5. To what extent do you need any of the following?						
5.1 I need to work/improve my resumé	3.6	1.4	3.3	1.1	4.3	0.8
5.2 I need to improve my note taking skills	2.0	0.8	1.9	0.9	3.1	1.2
5.3 I need to improve my writing skills	2.7	1.0	2.5	1.0	3.3	1.1
5.4 I need to build my ability to work and learn in a team	2.7	1.3	2.6	1.1	NA	NA

^z Std = Standard deviation.

divergent opinions (lowest degree of consensus) were identified as the bottom 20% of items with highest standard deviation (consensus ranking 21 to 25; Table 2). These items included two of the three items related to the grading system (item-3.1, the grading system was fair and reflected class objectives and item-3.3, having to write a weekly report is a good idea). Taken together, the other three items in this

Correlation among Aspects of the Course that Stimulated Students' Interest and Learning

Comparing the CITCs of item-2.1 to item-2.7 allowed for the ranking of various aspects of the course that facilitated student learning. Thus, the main aspect of the course that students perceived as the most conducive to their learning was that the class and its assignments encouraged them to think (item-2.5, CITC = 0.66; Table 3). This item exhibited also the highest correlation with students' interest in the course and its format (item-1.4, Spearman correlation = 0.72; Table 3). Interestingly, the CITC indicated that students perceived that staff and program coordinators (item-2.1) contributed more to their learning than juniors or seniors (item-2.1). In contrast, the Spearman correlation for the same two items indicated that juniors and seniors made the class and its format more interesting than the staff and program coordinators (Table 3). Both the CITCs and the Spearman correlations indicated that having to write a weekly report (item-2.3) was associated with level of learning and level of interest in the class; however, this was not the case for having to write and submit a resumé.

Four of the five items listed in the instrument as possible learning gains as a result of class activities (item-4.1 to item-4.5) contributed to the self-assessed level of learning, as indicated by significant CITC (Table 3). However, only two of the five items were significantly correlated with item-1.6 measuring the overall level of learning in the class. Students associated learning in this class primarily with gains in selecting internship of interest to them (item-4.1) and gains in self-confidence as an independent learner (item-4.4). In contrast, understanding how to make the

most of the capstone courses (item-4.2) was not perceived as a learning gain.

Speaker Survey

Student speakers enjoyed the opportunity to share their internship experience with the sopho-

Table 2: Ranking of items by level of agreement (mean score) and by degree of consensus (standard deviation) (n = 33)

Rank	Item	Statement	Mean ^z	Standard Deviation	Consensus Rank ^k
1	2.4	... Having to write / submit a resumé	4.58	0.67	1
2	2.1	... Having junior and senior students as speakers	4.33	0.69	2
3	2.7	Taking notes helped me write my report	4.18	1.01	12
4	1.4	This course (and its format) stimulated my interest	4.09	0.84	7
5	2.6	Electronic communication (email) was helpful	4.09	0.91	10
6	2.2	... Having staff and program coordinators as speakers	4.06	0.75	4
7	4.1	Select an internship that is of interest to me	4.06	0.90	9
8	1.1	This class was timely important for sophomores	4.03	0.77	6
9	1.3	The seminars were relevant and of interest to me	4.00	0.71	3
10	1.2	The course objectives were clear to me	4.00	0.75	5
11	1.6	I learned a lot in this class	4.00	0.85	8
12	4.2	Understand how to make the most out of capstone courses	3.93	1.11	17
13	4.3	Getting into and succeeding in independent work	3.78	1.04	13
14	4.4	Gain confidence in myself as an independent learner	3.61	1.12	18
15	5.1	I needed to work/improve my resumé	3.58	1.15	19
16	2.5	The class and its assignments encouraged me to think	3.50	0.99	11
17	3.1	The grading system was fair and reflected class objectives	3.42	1.20	21
18	3.3	Having to write a weekly report is a good idea	3.09	1.23	22
19	1.5	This class demanded more work than I anticipated	2.87	1.38	25
20	3.2	The grading system helped me focus on what I need to learn	2.85	1.18	20
21	5.3	I need to improve my writing skills	2.70	1.05	14
22	2.3	... Having to write a weekly report	2.70	1.33	24
23	5.4	I need to build my ability to work and learn in a team	2.69	1.09	16
24	4.5	I gained written communication skills	2.64	1.32	23
25	5.2	I needed to improve my note taking skills	2.18	1.07	15

^z Overall mean; 1 = Not at all, 2 = A little, 3 = Somewhat, 4 = A lot and 5 = A great deal.

^k Rank of item for degree of consensus was measured by the size of the standard deviation of the score (1= highest degree of consensus to 25 = lowest degree of consensus).

Table 3. Corrected item-total correlations (CITC) and Spearman correlation to identify components of the course associated with level of interest in the course and its format (item-1.4, n = 31) and to identify learning components associated with self-assessed level of learning gains (item-1.6, n = 23) as a result of participating in the seminar

Items	CITC	P value	Spearman correlation	P value
2. Aspects of the course that helped learning with item-1.4 ^{y,z} ...	
2.1: ...Having juniors and senior students as speakers	0.34	0.09	0.35	0.05
2.2: ...Having staff and program coordinators as speakers	0.45	0.02	0.30	0.09
2.3: ...Having to write a weekly report	0.41	0.04	0.45	<0.01
2.4: ...Having to write / submit a resumé	0.08	0.70	-0.00	0.98
2.5: The class and its assignments encouraged me to think	0.66	< 0.01	0.72	<0.01
2.6: Electronic communication (email) was helpful.	0.38	0.06	0.41	0.02
2.7: Taking notes helped me write my report	0.30	0.13	0.28	0.12
4. Learning gains as a result of class activities with item-1.6 ^{x,z} ...	
4.1: Select an internship that is of interest to me	0.67	< 0.01	0.52	<0.01
4.2: Understand how to make the most of the capstones	0.27	0.15	0.29	0.17
4.3: Getting into and succeeding in independent work	0.50	< 0.01	0.39	0.06
4.4: Gain confidence in myself as an independent learner	0.53	< 0.01	0.51	<0.01
4.5: I gained written communication skills	0.57	< 0.01	0.37	0.06

^z Spearman correlation between item-1.4 and item-1.6 was 0.67; P < 0.01.

^y item-1.4 = The course and its format stimulated my interest

^x item-1.6 = I learned a lot in this class.

category indicated that although some students perceived that having to write a weekly report was a positive aspect of the class (item-2.3) and contributed to gains in written communication skills (item-4.5) without demanding more work than anticipated (item-1.5), others felt strongly otherwise.

Table 4. Juniors and seniors evaluation of their experience as guest instructors (n = 14)

Items	Mean ^z	Std ^y
Presenting my internship in the pre-capstone...		
... was an enjoyable experience	4.4	0.6
... was a lot of work	2.7	1.1
... was an opportunity to reflect on what I truly learned	4.2	0.6
... was an opportunity to practice my communication skills	4.1	0.9
Presenting a seminar at the end of an internship...		
... is a good way to "wrap-up" what I have learned	4.2	1.0
... should be recommended as a requirement instead of a written final report	3.5	1.2

^z Overall mean; 1 = Not at all, 2 = A little, 3 = Somewhat, 4 = A lot and 5 = A great deal.

^y Std = Standard deviation.

mores (Table 4). Their invited presentation was perceived as a good opportunity to reflect on what they learned, to practice their communication skills, and as a good way to “wrap-up” their independent learning experience. Student speakers did not perceive the preparation time as a lot of work, although divergent opinions were reflected in a relatively high standard deviation of the mean (Table 4). In addition, student speakers had divergent opinions also when asked whether substituting a written final report for an oral presentation in the pre-capstone should be recommended.

Discussion

A cohesive curriculum with clearly defined goals and direct connection among courses is essential for successful undergraduate program (Diamond, 1998). The benefits of capstone courses, which are typically offered at the senior level, have been documented (Andreasen and Trede, 2000; Andreasen, 2004). However, this study showed that the pre-capstone seminar contributed to preparing sophomores for future independent and experiential learning experiences. In addition, because of its format, the seminar has provided more student-student interactions and student-faculty interactions in a formal academic setting. Results demonstrated that the pre-capstone course increased sophomores' perceived ability to select internships and provided them with added self-confidence as independent learners, but had limited effectiveness in helping them understand how to make the most of the capstone courses. This latter observation may be due in part to the fact that some students did not have Dy Sci 535 as a required course within their option and thus may never take the Dy Sci 535 class. Although the class provided sophomores with an opportunity to learn how to build a resumé, they apparently did not perceive this aspect of the course as part of the learning, but presumably as a “side-benefit” from enrolling in the class.

Sophomores who perceived the course as interesting and relevant also perceived a greater amount of learning. The level of interest for the class and its format was highly associated with the fact that the class and its assignments encouraged students to think (item-2.5, Table 3). The motivation, interest and self-assessed learning might stem in part from a sense of immediacy, as student are expected to exercise their independence in selecting and complet-

ing at least one-credit of internship before graduation. Interestingly, results indicated that having juniors and seniors as speakers contributed more to making the pre-capstone interesting for sophomores than helping them learn (item-2.1, Table 3). However, the reverse was true for having staff and program coordinators as speakers despite their

generally minimal contribution to the seminars. Thus, sophomores in this study may have associated adult instructors, staff or program coordinators as sources of knowledge, and thus sources of their learning, whereas senior fellow-students may have been perceived as role models providing examples of what was possible to do and achieve. This observation illustrates how difficult it may be for students to feel part of a learning community even as instructors lessen their role from that of authority figures to facilitators whose purpose is to encourage questioning, exploration, and synthesis in their students (Schillo, 1997).

Although the relevancy of the seminars (item-1.3) remained relatively constant throughout the study, sophomores' interest for the course and its format (item-1.4) declined numerically from year to year (Table 1) indicating a change in students' perception of the pre-capstone. This change may reflect a waning of the novelty effect of a new course, but may have been associated also with a change in the type of student enrolling in the class. For some students, the work associated with writing a weekly report may have outweighed the benefit of learning about internships. This contention was supported by the low degree of consensus observed when asked whether the class demanded more work than anticipated (item-1.4; Table 2). Although students who elected not to enroll in the class were not surveyed, it is possible that some of them might have done so on the basis of the amount of writing expected in the class. Writing skills continue to be identified as an area of needed improvement in curricular design (Suvedi and Heyboer, 2004). Writing assignments in content-areas across the curriculum are undeniably the best approach to enhance students' writing skills (Haug, 1996). Well-designed writing assignments are effective teaching tools that contribute to students' learning at higher levels of cognition (Parrish et al., 1985). Although sophomores in this study did not perceive a strong need to improve their writing skills and their ability to work and learn in a team setting, these two attributes are expected educational outcomes of undergraduate education, and thus should be an integral component of as many courses as possible within the curriculum.

Summary

For the most part, sophomores perceived a limited need to improve their written communication skills and their ability to work and learn in a team. However, the pre-capstone seminar contributed to certain aspects of sophomores' preparation for independent learning; specifically, it helped them identify internships and provided them with a sense of self-confidence as independent learners. For the sophomores in this study, the pre-capstone may have been the first exposure to a completely student-centered classroom. As such, the pre-capstone was most likely the first opportunity for them to exercise independent learning. In addition, the pre-capstone seminar allowed for interactions among students of different standings in an academic context and with faculty responsible for the capstone courses. The pre-capstone may contribute to the cohesiveness of an undergraduate curriculum.

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