UW Academic Challenge and Engagement Study (UW ACES)

Cathy Beyer and Angela Davis-Unger
Office of Educational Assessment

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Executive Summary

Rationale for the Study

At every stage of their college experience, students have reported that they want to be challenged, that they perform better in courses that are challenging, and that they value classes that stretch their thinking more than courses that ask little of them. Therefore, challenge in the classroom is linked closely with engagement. Furthermore, academic experiences that students feel are challenging are often linked with the development of critical thinking skills. Because of the importance of academic challenge to students' intellectual growth in college, understanding where and when students experience challenge in their undergraduate programs should be part of any university's assessment program.

Purpose and Method

Using a "citizen science" model, researchers in the Office of Educational Assessment (OEA) asked departmental advisers if they would volunteer to interview a sample of seniors in their departments about the challenge those students experienced in the major. Advisers are knowledgeable about their academic programs, understand disciplinary practices in their departments, and are trusted by students in the major, so they have a good chance of gathering reliable information from seniors about their academic experiences.

Sixty-six academic advisers from 33 UW departments—about half of the undergraduate degree-granting programs on campus—volunteered to participate. OEA researchers provided interview training for advisers and created online interview forms for each department, so advisers could record students' responses as they were taken. By the end of the academic year, the 66 advisers had gathered information on learning challenges from 1,275 UW seniors, about 17% of the 2012-13 graduating class. OEA researchers analyzed each department's set of interviews and reported results to the department.

The purpose of this current report is to summarize what UW undergraduates, in general, found the most challenging about their learning experiences at UW, using the 33 departments participating in the UW ACES as case studies.

Results and Conclusions

Results from the UW ACES allow us to draw the following conclusions about challenge and engagement in undergraduate programs at the UW:

- Students in every major reported experiencing activities and courses that stretched their thinking and that called on them to learn new skills and content in order to complete those challenges. Only two (0.2%) of the 1,275 interviewees said that they had experienced no academic challenges. Therefore, we can say with confidence that UW undergraduates are academically challenged in their majors.

- Challenges—including what makes a challenging course, paper, project, exam, or other activity—were powerfully shaped by the academic disciplines in which they occurred. This result confirms earlier UW and national research on the disciplinary nature of learning in college.
- Students in each of the 33 majors identified a variety of courses that they found challenging or that were the sites of challenging activities. This result suggests that challenging work is spread across the majors in most departments, particularly throughout the 300- and 400-level courses.
- The three aspects of their academic work that students found the most challenging were 1) a whole course or course sequence, 2) a paper or writing in the major, and 3) a project, including an art project, a performance, a project for a capstone. Students found the following aspects of these activities the most challenging:
  - Learning something completely new
  - Thinking critically and analytically in new ways and at deeper levels
  - Coming up with their own ideas and following through
  - Writing effectively in the discipline
  - Understanding and applying theories/concepts to cases
  - Spending a greater amount of time and/or doing more work than they had done for other courses
  - Conducting research
  - Dealing with unclear or poor instruction, no feedback, difficult class structure, or large class size
  - Seeing ideas, issues, events from multiple and/or new perspectives
  - Understanding, analyzing, and using the reading in the discipline
  - Working in a group
  - Learning something about themselves (such as how much they did not know); thinking about own values, ideas, identity, and beliefs

  This list of challenging aspects of courses and activities suggests approaches for faculty members who are exploring ways to integrate more challenge into their courses.
- When asked what help them meet those challenges, their most-frequently given response was that their own efforts had helped them. In fact, students described themselves doubling up their own efforts in order to meet the challenges they had described. They reported increasing the amount of time they spent studying and reading, conducting independent research in order to better understand course material, practicing solving problems or learning concepts multiple times, seeking out peers to form study groups, or writing several drafts of papers—for example. This result suggests that intellectual challenge has broad as well as specific learning consequences. It motivates students to work hard and develop new approaches to their own learning. Therefore, the more challenges undergraduates experience, the better they will become at studying, focusing, and learning.
- Students also felt that they had received a great deal of help from working formally and informally with peers. The strength of students' responses about the help they received from peers suggests that some interaction with peers should be part of every challenging assignment

or course. Furthermore, the strength of this response also suggests that including work with peers is already part of the regular practice of most departments.

- In addition to their own efforts and work with peers, students reported receiving help with challenges from faculty and TAs. They often expressed surprise at how willing instructors were to help them move through new challenges. This result confirms the importance of faculty and TAs encouraging students to come to them for help.

- Students reported learning many lessons from their challenging work, including content knowledge, critical thinking skills, more about themselves and their learning processes, and new and better ways to study. In addition, as a result of completing the challenging work they described, students learned broad academic skills, such as how to conduct research, how to write for the discipline, and how to work with others. These are skills that most departments want their majors to develop; challenging courses and activities help departments meet these goals.

- Students enjoyed doing challenging work. When they completed difficult tasks, they felt they had accomplished something important. Therefore, assigning challenging work—and providing students with support for completing it—is not only good academic practice but it will be well-received by most students.

- Advisers found interviewing seniors in their departments valuable for their own work; 95% of them reported that they would be willing to engage in further research of this kind.

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UW Academic Challenge and Engagement Study (UW ACES)

INTRODUCTION

"The improvement I have made is amazing to me. I'm more open to making mistakes and learning from them, more open to taking on new challenges."   Art major

Researchers have long been aware of the important role that intellectual challenge plays in students' learning, and students also understand that role. At every stage of their college experience, students have reported that they want to be challenged, that they perform better in courses that are challenging, and that they value classes that stretch their thinking more than courses that ask little of them (Light, 2000; Beyer et al., 2007). Therefore, challenge is linked closely with engagement. Furthermore, academic experiences that students feel are challenging are often linked with the development of critical thinking skills. Because of the importance of academic challenge to students' intellectual growth in college, understanding where and when students experience challenge in their undergraduate programs should be part of any university's assessment program. Therefore, we designed the UW Academic Challenge and Engagement Study (UW ACES) to gather information on the kinds of learning experiences that undergraduates found most challenging as they moved through their majors.

The research on learning in college, as well as our own ongoing assessment work in the UW's Office of Educational Assessment (OEA), has made it clear that student learning in college is profoundly shaped by the goals, practices, cultures, and values of the academic disciplines, particularly the disciplinary practices in students' majors (Beecher & Trowler, 2001; Bransford et al., 2000; Beyer et al., 2007; Beyer et al., 2013; Donald, 2002; Pace & Middendorf, 2004; Wineburg, 2001, 1991; Neumann et al., 2002; Shulman,1988; Biglan,1973). Thus, it seemed obvious that if we hoped to understand the kinds of experiences that students found intellectually rigorous and, thus, engaging, we would need to examine challenge in individual majors.

However, understanding the challenges that students describe in their majors requires some knowledge about how those majors operate. Although many of us doing research on college learning have deep knowledge of the values and practices of our own academic fields, few scholars understand the practices and values of disciplines beyond our own. The Office of Educational Assessment designed the UW ACES to address this problem.

Using a "citizen science" model, we asked all departmental advisers if they would be willing to volunteer to interview a sample of seniors in their departments when they came to apply for graduation in the 2012-13 academic year. Advisers are knowledgeable about their academic programs, understand disciplinary practices in their departments, and are trusted by students in the major. We felt that these advisers would have the best chance of gathering good information from seniors about their academic experiences. Because departmental advisers are so busy, we thought we would be lucky if even just a few of them agreed to join the project, but very quickly 66 advisers from 33 UW departments—about half of the undergraduate degree-granting programs on campus—agreed to participate. By the end of

the academic year, these advisers had gathered information on learning challenges from 1,275 UW seniors, about 17%[1] of the 2012-13 graduating class.

It took three years for researchers in OEA to analyze interviews and report results to all 33 departments. Each departmental report included information on where students' most challenging experiences had occurred, what interviewees had found the most challenging in their academic programs, what had made those experiences challenging, what had helped them meet those challenges, and what they had learned by meeting them. In addition, we were able to identify differences in the experiences of students in different areas of focus in large departments, distinguishing, for example, between the challenges that Biology majors in the General Biology track experienced and the challenges of those concentrating in Physiology.

Departmental results were often revealing, capturing the unique practices of various departments. For example, seniors in the Aquatic and Fishery Sciences majors spoke eloquently of the challenges posed by having to design, conduct, and report their own research projects, while Political Science majors discussed the challenges involved in writing a paper that met disciplinary standards. English majors talked of the challenge in understanding and using theory to interpret texts, and Asian Language and Literature majors spoke of the difficulty of learning complex language structures. Social Welfare majors spoke of the challenges involved in self-reflection and exploring their own identities, and Art majors described the challenges in having to create artistic pieces without being given any boundaries beyond those posed by the materials they were working with. Although responses also crossed disciplines, many were specific to the students' majors and, thus, illuminated learning in those majors.

This report uses those 33 departmental reports as cases to identify what UW undergraduates, in general, found the most challenging about their learning experiences at UW. Full reports for those departments can be found on the OEA website.

This report includes the following sections:

- Methods
- Results (by interview question)
- Effects of participation on advisers
- Conclusions

We have used student quotations throughout the report to illustrate findings.

METHODS

"In CSE 332 last spring, we were introduced to parallelism and concurrency, and one of our projects had to do with that. I found it really cool because you had to program with a different mentality with multiple threads." Computer Science and Engineering major

Qualitative methods are recommended when researchers are seeking to understand the complex learning experiences of students, as well as the meaning students ascribe to those experiences (Merriam, 2001). Therefore, we designed the UW ACES to be primarily an interview study. One participating department (Chemical Engineering) asked students to respond to the open-ended

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[1] Information on graduation rates found at: https://uwprofiles.uw.edu/

questions in writing, rather than during interviews. Their written responses seemed no different from the oral responses of students in the other participating departments.

Sample

Sixty-six advisers from 33 undergraduate programs participated in the study. As Table 1 shows, the range of disciplinary areas in the university was well-represented. Twelve of the departments were social sciences; nine were sciences; four were humanities; four were engineering; two were multi-disciplinary programs; one was in the arts; and one was in business.

When it was easy for them to do so, advisers asked students who came to advising to complete graduation applications if they would be willing to participate in the interviews. By the end of the academic year, departmental advisers had interviewed 1,275 students, about 17% of the total 2012-13 UW graduating class. As Table 1 shows, the percentage of graduating seniors in the major who were interviewed varied by major.

Advisers did not ask students for any identifying information, such as their ID numbers, ethnicities, genders, GPAs, or other personal data in order to ensure anonymity.

Training Advisers

Participating advisers completed two-hour training sessions led by OEA researchers. Training sessions included general information on conducting successful interviews and entering interview responses during the interview. The sessions also included practice and reflection time.

We had access to the interview databases for all 33 departments, and we monitored the interviews that advisers were entering into their survey databases after the first week of interviewing and at several additional points throughout the year. When we saw problems in the interviews—for example, too much summarizing of students' responses rather than recording what students said in their own words—we spoke with the advisers about the problem. We also identified strengths in the interviews and encouraged advisers to continue those practices.

In addition, we hosted two lunches for the participating advisers. These lunches served as venues for small- and large-group conversations about problems or concerns the advisers had and what they felt they were learning from the interviews. At the second luncheon, we asked advisers to complete a survey about their experience, which we collected and tallied by hand. We reported results of the survey to advisers the following week (Appendix A).

The Interviews

During the 2012-13 academic year, the volunteer advisers asked students if they would be willing to participate in brief (5-10 minute) interviews about challenge in the major. Advisers did not ask all students to participate, but they let their own schedules and time demands determine when they conducted the interviews. If the students said they would prefer not to participate, advisers recorded that. If students agreed, as the vast majority did, advisers asked them to respond to four open-ended questions.

Table 1. UW ACES participants

Department[2]	Disciplinary area	# of interviews	% of graduating seniors	# of courses in major noted as sites of challenge
American Indian Studies	Soc Sci	8	89	8
Anthropology	SocSci	21	10	18
Aquatic and Fishery Sciences	Sci	9	28	10
Art	Arts	99	39	62
Asian Languages and Literature	Hum	40	61	25
Astronomy	Sci	5	26	7
Biology	Sci	69	11	47
Business	Bus	10	2	9
Chemical Engineering	Engin	21	38	9
Computer Science & Engineering	Engin	40	21	17
Earth and Space Sciences	Sci	35	69	14
Economics	Soc Sci	178	52	29
English	Hum	61	21	35
Environmental and Forest Sciences	Sci	64	76	46
Environmental Studies (Program on the Environment)	Soc Sci	42	58	19
Evening Degree Program (Multidisciplinary Humanities and Social Sciences majors)	Hum/Soc Sci	23	16	18
French and Italian Studies	Hum	28	79	18
Gender, Women, and Sexuality Studies	Soc Sci	3	16	3
Geography	Soc Sci	53	52	21
History	Soc Sci	28	16	14
Industrial and Systems Engineering	Engin	19	38	16
Informatics	Soc Sci/Design	22	21	13
Law, Societies, and Justice	Soc Sci	15	18	10
Linguistics	Soc Sci	35	65	15
Materials Science & Engineering	Engin	20	38	12
Math	Sci	5	2	6
Neurobiology	Sci	15	30	3
Political Science	Soc Sci	117	28	50
Psychology	Sci	79	18	34
Public Health	Sci	27	60	22
Slavic Studies	Hum	9	90	6
Social Welfare	Soc Sci	42	98	11
Sociology	Soc Sci	33	10	17
Total		1275	17% of 2012-13 graduates	644

Advisers entered students' responses to those questions directly into a web-based survey form that OEA researchers had designed for that purpose. A print form of that survey can be found in Appendix B. The main questions were as follows:

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[2] Links in this table connect to departmental reports.

1. What do you consider to be the most challenging work that you had to complete in this major? And by "challenging" I mean doing the work that stretched your thinking the most. This can be anything—a project, a paper, an exam question, homework, something else you did related to the major.

2. What made the project/class/activity challenging?

3. What did you do or learn that enabled you to meet those challenges?

4. What do you think you learned by completing this project/class/activity?

In addition, advisers asked students in what course the challenging work took place and how many quarters they had until they graduated.

Occasionally departments had other questions for students. Several large departments, for example, wanted to know if there were differences in students' experiences based on their areas of concentration or on the type of degree (BS or BA) they were earning in the department. One department wanted to know which faculty members students felt had challenged them the most. We were able to adjust the online form to accommodate departments' extra questions, such as these. Also, when departments asked students to identify their areas of concentration or degree options, we were able to compare the responses of those groups, as well as to provide an overview for the major.

Interview Analysis

We analyzed students' interview responses to each question by department and used a constant comparison method, an inductive process designed to let themes emerge rather than imposing assumed categories on students' comments (Merriam, 2001). We sent each department a report of their students' responses, using quotations from the interview responses to illustrate frequently-given themes. Those reports are included on the OEA website.

Once we had completed the departmental reports, we transferred the data from the 33 reports to a spreadsheet, including all the themes that two students or more in each department had identified in response to each question and the number of students in each department who identified each theme. Because individual students giving idiosyncratic responses were not counted, we were sometimes unable to identify thematic responses in the two participating departments with very few interviewees—Gender, Women, and Sexuality Studies and Math, and we note that when it happens in this report.

In the other departments, students often mentioned similar themes in different words, so we next analyzed the themes, merging those that appeared to be similar in the cognitive work they were asking students to do. For example, students in Art noted that coming up with their own art projects based on their own ideas rather than in an assignment and then making that project was challenging. Students in Aquatic and Fishery Sciences noted the challenge of coming up with their own ideas for experiments, and then designing and conducting them. Because the cognitive work they described was similar, we merged the Art and Aquatic and Fishery Sciences responses (along with others that were similar to them) into one category—"Creating something original from one's own ideas"—for purposes of this

report. Once we had merged similar themes, we recalculated the number of students identifying each theme.[3]

Next we wanted to know how strong the themes were for departments. We ranked departments by frequency of theme choices based on the percentage of interviewees who responded by identifying that theme.

Study Limitations

If we interviewed students post-graduation, they would be likely to identify their capstone courses or their advanced senior-level courses as the ones asking for their most challenging work. However, because we wanted to attach the interview to a time when students would normally see their academic advisers, we interviewed students when they came into the advising office to apply for graduation, which often meant that they were two or three quarters away from graduation. Although interviewing students as they applied for graduation meant that we might not gather information about late-senior year courses, we felt that it would be interesting to departments to learn the kinds of challenges that lead to and prepare students for those more advanced experiences.

UW ACES INTERVIEW RESULTS

"[I learned to] use a reverse process to look back and see how changes could alter a graph
with alterations in a variable. I have applied this to other classes. This knowledge allowed
for a deeper understanding of how to understand, rather than just memorize." Biology major

Quarters to Graduation

The majority of students interviewed had two or three quarters to complete before graduating. About 43% had two quarters to complete, and 38% had three quarters to finish. Seventeen percent interviewed during the quarter in which they graduated, and 2% of those interviewed had four quarters to complete before graduation.

Where Students Experienced Challenge

The 1,275 interviewees identified a total of 644 courses that had presented them with their most challenging experiences, with most of those courses falling at the 300- and 400-levels. Although students often listed the same courses as especially challenging in many departments, they also listed many others, making it apparent that challenge was distributed across the curricula of their majors, particularly in courses typically taken in students' junior and senior years.

In addition to single courses as the sites of their greatest challenges, students mentioned course sequences, types of courses, study abroad experiences, internships, and "the major as a whole" as sites of significant challenges.

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[3] It should be noted here that this blending process sometimes changed the percentages of student responses reported in the departmental reports because we were sometimes blending responses within departments as well as across them.

Question 1: What Do You Consider to Be the Most Challenging Work That You Had to Complete in This Major?

Students were asked: "*What do you consider to be the most challenging work that you had to complete in this major? And by "challenging" I mean doing the work that stretched your thinking the most. This can be anything—a project, a paper, an exam question, homework, something else you did related to the major.*" Students often gave more than one response to this question, and, as Figure 1 shows, the greater the number of students interviewed, the greater the number of themes that emerged from their responses.

Table 2 shows the 17 themes[4] that emerged from students' responses to the question concerning their most challenging work in the major, the number of students giving each response, and the percentage of the 33 departments in which the response emerged as a theme. A table showing the departments in which these 17 themes did and did not emerge can be found in Appendix C (Table C1).
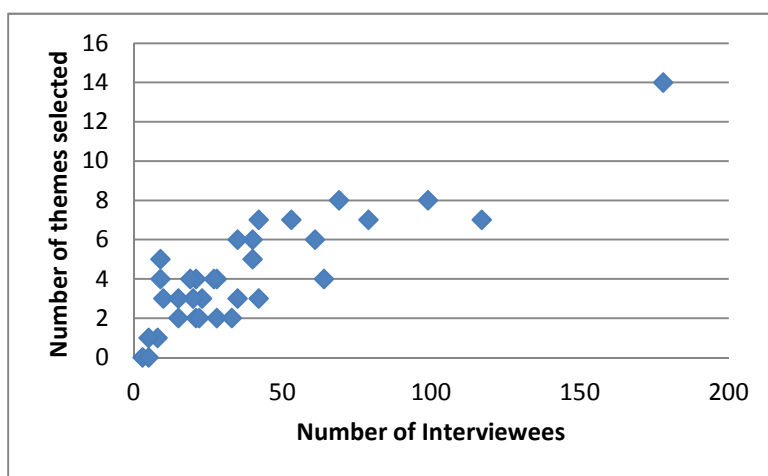

Figure 1. Effect of number of interviewees on number of themes identified

Interestingly, as Table 2 shows, only two (0.02%) of the 1,275 interviewees said that they had experienced no academic challenge in their majors. Both of these students were Economics majors, a department that included 178 interviewees. Therefore, these two students' responses were unusual in their department—representing about 1% of those interviewed—as well as in the larger group of all UW seniors interviewed.

This finding is important because it allows UW faculty and administrators to say with confidence that students who graduate from the UW have completed academic work in their majors that has stretched their thinking, regardless of their majors.

Some of the themes that emerged in response to Question 1 and that are included in Table 2, reappear as answers to our second interview question, which focuses on the aspects of the course or activity the student described that made it challenging. For example, when asked what her greatest academic challenge was as an undergraduate, a student might respond, "My Political Science 311 class." Then, when asked what it was about that class that made it challenging, she might respond, "The writing was very demanding, different from anything I had seen before."

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[4]   Gender, Women, and Sexuality Studies and Math had so few interviewees that no departmental themes for this question emerged.

In this section, we provide more details about the six most-frequently given challenges that students described, and we will also briefly discuss some of the less-frequently mentioned responses.

Table 2. Students' greatest challenges in their majors

What do you consider to be the most challenging* work that you had to complete in this major?	# students	# of depts (% of 33)
The whole course(s) or major aspects of the course	756	29 (88%)
A paper or writing in the major (e.g., writing scientific papers, writing for Political Science)	242	22 (67)
A project (e.g., an art project, a performance, a project for the capstone)	160	16 (48)
Exams	45	7 (21)
Understanding and using the reading in the discipline	43	11 (33)
Creating something original from one's own ideas (e.g., designing and conducting own experiments, creating art objects from ideas and expression)	41	6 (18)
Field work, internship, and study abroad	36	11 (33)
Specific aspects of the whole program (e.g., intense personal reflection, learning interview skills, linguistic aspects of the program, the quantitative aspects of the courses)	28	4 (12)
Group projects/working on a team/group discussion	27	7 (21)
The way of thinking or critical thinking in the discipline	27	6 (18)
Homework	26	5 (15)
Learning to code/program and programming aspects of the class	19	4 (12)
Service learning or the community-based component of a project	17	4 (12)
Talk or presentation	13	3 (9)
Personal challenges (e.g., figuring out what to major in in the discipline, time management, English language challenges)	10	3 (9)
Unclear or poor instruction	4	1 (3)
Nothing	2	1 (3)

* Challenging" was defined as work in the major that stretched their thinking the most.

Courses. When we originally posed Question 1, we assumed that students would identify a single piece of work—a paper, a project, an exam—that they felt had most stretched their thinking. However, as Table 2 shows, about three out of every five students—students in 88% of the participating departments—identified whole courses, course sequences, or major aspects of courses as their most challenging experiences.

In noting these challenges posed by specific courses, students sometimes spoke of learning unfamiliar theories and concepts; new research methods, such as ethnography; new tools, such as new media in art or new software in other fields; and subjects that were completely outside their prior experience. The following quotations illustrate this category of response:

- *Senior seminar, Art 494. That would be because you're no longer applying your interest to a theme or trying to adapt your style to what the teacher expects. Now you're having to do some soul searching for the most important thing that you've always gone back to. What do you see in the world that you've always gone back to? It's unsettling because you do not know where you're going to go, and you have to be comfortable with the unsettled-ness of that. Art major*

- *Biology 350. [The professor's] application of the subject matter made it more useful, and it stays within the memory well past the end of the class. It was a different way of thinking, the use of logic. Biology major*

- *This operating systems class [CSE 451] is blowing my mind. So much information and things going on that you have to keep track of. Really eye-opening to see what all is going on to make a computer work. Computer Science and Engineering major*

- *I took English 350 which was African American literature mostly. That was the first time I had looked at the modern era of literature through eyes other than Fitzgerald's or Hemingway's. English major*

- *Psych 317 and 318. I guess the fact that you have to apply equations to real life situations, and I wasn't good at thinking abstractly. I also liked this about these courses. Psychology major*

Writing in the discipline. As Table 2 shows, about one in every five students mentioned a specific paper or writing for the major in general as a significant challenge. This was the second most-frequently given response.

However, students in some departments mentioned writing more frequently than did students in others. For example, all the interviewees in American Indian Studies identified a paper or the writing in the major as their most challenging experience. In addition many interviewees in Aquatic and Fishery Sciences, History, Law, Societies, & Justice, Neurobiology, Political Science, Slavic Studies, and Sociology identified papers or writing in the discipline as their greatest challenges in the major. In contrast, none of the interviewees from the four engineering departments participating in the study mentioned writing as their most significant challenge in the major. (See Appendix C, Table C1 for the complete list.)

The following are examples of responses focused on writing from students in five majors*:*

- *I think the most challenging was in the class on the UN Declaration on Indigenous Women's Rights, [focusing] on Indigenous peoples worldwide that you don't even think about. That 12-page paper really stretched my thinking, and it really frustrated me quite a bit to have to keep rewriting the same paper over and over again. American Indian Studies major*

- *Writing papers, I suppose…ones you have to design experiments for and format in a scientific way. It's a different sort of [writing]. [You have to] be wary of what you say—language, references. Switching from regular writing to scientific writing (prose to technical) was challenging. Also reading and being able to extract scientific literature is a huge transition, especially specific to this kind of major. [It was like moving from] prose to technical report writing. [The] same [was true for moving from reading] a novel to reading journal articles. It was a skill that I had to work on. Aquatic and Fishery Sciences major*

- *The paper I had to write for Business Economics 420. I spent a whole week doing research for it. He asked a question that had to relate to the banking industry with the Federal Reserve and how everything linked with the interest rate. He didn't really go over it in class. He mentioned it but never gives any answers, so you have to think outside of what you learned in class. You have to talk to people, do research and readings online, and come up with the best answer. Business major*

- *I guess what stretched my thinking the most was doing research papers, especially the one I'm doing now on the colonization of Puerto Rico and the Philippines. Thinking what has not been done in relation to what has been done [is challenging]. Also questions of historiography [are challenging], such as is history meant for the community or just for academia. History major*

- *[The most challenging were the] lab reports including intensive writing, time, thought and planning, and organization. [They were challenging because of my] lack of experience writing scientific papers, not knowing how to organize writing, and the format. Neurobiology major*

A project. One hundred and sixty of the interviewees mentioned projects as their most challenging work in the major. These projects ranged from major art pieces created to express an individual's unique ideas to group projects completed for engineering classes.

Departments where students most-frequently mentioned projects included Aquatic and Fishery Sciences, Art, Business, Computer Science and Engineering, Economics, Geography, Industrial and Systems Engineering, and Linguistics. Projects were not mentioned as students' most challenging work in several departments, such as American Indian Studies, Anthropology, Asian Languages and Literature, Evening Degree Program, French and Italian Studies, Neurobiology, and Sociology. The following examples illustrate this category of responses:

- *A project in Economics 482, estimating if a program is effective for reducing the juvenile criminal rate. It was a program that other people did, and we had to find out if it was effective. We used real data and had to figure it out. The data was raw data, and everything was messy, and we had to clean it up from the first step until the end. Economics major*
- *It was in my geography of housing, 445. It was challenging because usually you have specific assignments with particular guidelines, but for the final assignment, it was up to us to think of basically a question that had to do with the spatial housing market of the Seattle area, and, basically on our own, make our analysis, write a report, and present to the class. At first thought, I had freedom. But it's challenging to make a thorough project using GIS when you have that freedom. It was by far the most challenging thing. Geography major*
- *In my last year in the program I completed a project with Seattle Children's Hospital. That was the most challenging engineering experience. Working with others and sharing your ideas among other engineers proves to be more difficult than it sounds. Working through that experience was the most memorable and greatest learning experience in my college career. Industrial and Systems Engineering major*
- *I would say some of the end-of-the-year projects that we've done, both in Syntax I and Sociolinguistics [were the most challenging—those are the two I've done so far—because both of those encourage, or actually require, independent research in the field. Linguistics major*
- *I would have to say it was the project for INFO 463 because we had to come up with our own idea and make it work– well, not a fully working one but we had to show it to industry people. [The instructor] brought in people from Microsoft Research and other industry people from a bunch of different fields. Informatics major*

Exams. As Table 2 shows, 45 interviewees identified exams as their greatest challenges in the major. These students were concentrated in a few majors, including Biology, Neurobiology, Industrial and Systems Engineering, and Economics. Exams were not considered students' most significant academic challenges in close to 80% of the departments that participated in UW ACES. The following are examples of students who found exams challenging:

- *In Biology 350, the general outlook was not on recalling but on synthesis. This was not expected. On a test, we had to figure out something new, rather than regurgitate [course material]. The*

process of learning [was important], especially by the end of the class on the final. This was applicable to other classes. Biology major

- *Exams in physics class were challenging. There was no clear outline of what would be on the test, conceptual or computational items, so it was hard to prepare. Also, the curves were so low! I never felt confident with the material. Industrial and Systems Engineering*

- *In game theory (Economics 485), the final exam. You had to break down the problems into games, which was not your normal thinking. Economics major*

Understanding and using the reading in the discipline. About 43 students from a third of the participating departments spoke of the challenge of understanding and using the reading in the discipline. Students in French and Italian Studies, Slavic Studies, Public Health, and others spoke of the difficulty of understanding the reading that was assigned well enough to use it in the work they were doing in their programs. For example:

- *Biology 350 was the first class that exposed us to reading scientific works, reading and interpreting graphs in a paper. I had no experience with that and was unsure about the standards and expectations. Biology major*

- *Readings for many courses. Political Science major*

- *For me specifically, I want to go to med school and reading those books showed me a side of health care I hadn't really thought about before. Especially <u>The Spirit Catches You and You Fall Down</u>. Public Health major*

- *Overall, the sheer amount of reading sometimes. [Also] contradictory things, where you had one article that says one thing about the same event and then one that says something completely different. Slavic Studies major*

Creating something original from one's own ideas.   In many senior level courses, particularly capstone courses, students are asked to come up with their own original paper or project idea. This original piece might be a research project that begins with students' own scholarly questions, a paper that presents their own original arguments about an idea or event, or an artistic project where students are asked create art objects or performances from their own ideas, materials, and expression. For many students the "coming up with something on their own" aspect of this kind of work was the most challenging work they encountered in their majors.

Students in Aquatic & Fishery Sciences, Art, and Materials Science & Engineering reported that creating something original from their own ideas was their greatest challenge in the major. Students in Chemical Engineering, Economics, Environmental & Forest Sciences, and Political Science—to give just a few examples—did not identify this theme as their greatest challenges—at least not in response to this first question.

The following are examples of students' responses in this area:

- *In my internship at Friday Harbor Labs, working with sematic indices and sea urchins. [It required] a lot of learning about test animals, a lot of independent research. [It was challenging] to do it on your own. [I had to do] self-guided research—getting to know the test organism, the behavioral characteristics of species, where to find them, interpretation of mashed up facts, looking at papers that said one thing or another and what that might mean in the field. The*

professors were available and accessible, but I was pushed to do work on my own. Aquatic and Fishery Sciences major

- *The first time that our professors didn't give us any boundaries. They gave us no outlines for our projects. They said. "Make work, make a lot of work, and we'll discuss it." Working outside of boundaries is outside of how we're taught to think in a learning environment. Going out into the real world, I'm now going to be more confident. There's this dependence on yourself that's new. Art major*
- *Psych 209, coming up with our own research proposal. Psychology major*

Other responses. The less-frequently given challenges were interesting, in that they often spanned a wide range of disciplines (see Table C1, Appendix C), except for "Specific aspects of the whole program," which was mentioned only by students in the social sciences (Slavic Studies, Social Welfare, Geography, Economics).

Question 2: What Made Those Activities or Classes Challenging?

Twenty-five[5] separate themes—or reasons for challenge—emerged from the 1,275 students' responses to the question concerning what had made the activity or course they had just described challenging. Again, many students gave more than one response to this question and, as mentioned previously, the themes that emerged from students' responses to Question 2 often repeated their responses to Question 1. Table 3 shows the reasons why students felt the activities they had described were challenging, the number of students who gave each reason, and the number and percentage of departments from which that theme emerged. Table C2 in Appendix C includes the departments in which these themes did and did not emerge. This section will provide a brief discussion of the eight most-frequently mentioned themes and quotations from students that illustrate those themes.

Learning something completely new. The most-frequently given response to the question of what made a course or activity challenging was that students were learning something completely new. In this answer, students often were referring to an unfamiliar body of knowledge, a method of inquiry they had never used or read about, or processes that they had no knowledge of. Students in close to two-thirds of the participating departments gave this response. The following quotations illustrate this theme:

- *The class as a whole [was what made it challenging]. The wallowing in the uncomfortableness of the new.*
- *Art major*
- *The group project [had] a biomaterials focus and students did not have background in that area. Materials Science and Engineering major*

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[5] Gender, Women, and Sexuality Studies and Math had so few interviewees that no departmental themes for this question emerged.

Table 3. Reasons those activities/classes were challenging

What made that activity/class challenging?	# students	# of depts (% of 33)
Learning something completely new	218	21 (64)
Thinking critically and analytically in new ways and at deeper levels	214	18 (55)
Coming up with my own ideas and following through	166	19 (58)
Writing effectively in the discipline	126	18 (55)
Understanding and applying theories/concepts to cases	104	12 (36)
Spending a greater amount of time and/or doing more work than I had done for other courses	102	15 (45)
Conducting research	100	10 (30)
Dealing with unclear or poor instruction, no feedback, difficult class structure, or large class size	71	12 (36)
Seeing ideas, issues, events from multiple and/or new perspectives	61	5 (15)
Understanding, analyzing, and using the reading in the discipline	59	9 (27)
Working in a group	42	10 (30)
Learning something about myself (such as how much I did not know); thinking about own values, ideas, identity, and beliefs	40	7 (21)
Speaking in public	36	6 (18)
Working with the mathematical or statistical part of the course/assignments	33	7 (21)
Reading, translating, speaking, and listening in a foreign language or in an earlier version of one's own language (e.g., reading Chaucer)	32	3 (9)
Using and extending knowledge from previous classes	19	4 (12)
Dealing with English language issues	18	2 (6)
Interacting with the public	16	3 (9)
Figuring out and integrating new technology into projects and assignments (e.g., programming in C for CSE; working with GIS in Geography)	15	5 (15)
Handling the broad scope of the project/classes; the breadth of material	14	3 (9)
Translating learning into an object or experience; learning to trust the creative process (only Art)	11	1 (3)
Keeping up with the fast pace of the class	11	2 (6)
Having no interest in the subject or area (e.g., hardware vs. software)	9	3 (9)
Meeting very high standards or a demanding work environment	7	3 (9)
Working in a competitive or hostile environment of peers	2	1 (3)

- *It was a topic I had never thought about and it brought up and made feel really ignorant about people with disabilities and the way I perceive them. Anthropology major*

- *[The class] used all of the linguistics terminology, and I had no idea what those terms or their notations meant. I remember that my final paper was comparing Bulgarian, Polish, and Russian to determine how they originated in old Slavonic. I think I looked at a single term, like milk or something. And that was difficult because I didn't have a good grasp of Russian yet. Slavic Studies major*

- *It was just something I had never done before. It was really outside-the-box thinking. A whole other way of using the internet in ways you don't even see. We were learning about lining data across websites and name spaces. It was about how to programmatically get information from the internet not using an interface. Informatics major*

- *This was just something I never considered before. If you think about the construction of the legal state [and how] that can define identities, then you can see these riots as riots or as an*

insurrection against white hegemony. The racial power relationships created by the state is something I've never considered before. Political Science major

- *The lab procedures [were challenging]. Adapting while in the midst of a given project or activity [made it challenging]. It was completely new and on living systems. Neurobiology major*

Thinking critically and analytically in new ways and at deeper levels. As Table 3 shows, students in more than half of the participating departments said that what made the courses and activities they had described especially challenging was the level and kind of analytical and critical thinking those activities and courses demanded.

More than half the interviewees majoring in Law, Societies, & Justice, Neurobiology, and English identified critical and analytical thinking as particularly challenging. The following examples illustrate this category of response:

- *It involved a lot of primary course readings. We needed to connect basically newspaper articles to the material studied in class. It required a lot of work on our part to basically connect the general material to specific commodities. There was a volume of research. There was the length of the paper, and its particular structure, and analyzing a real world problem and looking at existing situations and how explanations may fall short. I thought that was challenging. It involved a lot of critical thinking. Law, Societies, & Justice major*

- *The paper was challenging. It was tough because it had to be so much more comprehensive. I had to dig deeper and really think about it. Other papers felt easier. You had to know the general concept and convey ideas well. But this one, I really had to dig deep and flesh out concepts. I knew she would read our papers critically. English major*

- *I worked with [a program that provides] skill training for migrant families, generally helping migrants get used to school, work, etc. The paper didn't have to be a critique in the sense of being critical, but it had to be a critical evaluation of how they were meeting their mission and who was working there. It was hard to get under the surface because I already knew the coordinator there and had to question what she was doing—the actual care work they did. It wasn't anything I'd ever thought about before. Most organizations you don't really question what they're doing. Geography major*

- *I had to change the way I was thinking, the way it's always been. It's hard to break out of the mold and look at it in a different perspective. Evening Degree Program major*

Coming up with my own ideas and following through. Interviewees in close to three out of every five participating departments (58%) noted the challenge of coming up with their own ideas for projects or papers and then following through on those ideas. Obviously, this challenge is closely linked with the two previously mentioned themes. Most of the students in the Aquatic and Fishery Sciences major pointed to this challenge as the aspect of the project they had described that made it the most challenging, and many students majoring in Business and History did as well. For example:

- *The first project that forced independence. I had a broad idea for a project but having to choose on my own what to focus on and what questions to ask [was challenging]. I got really cool results that contradicted the only paper ever written on subject, [so I] was happy with that. Aquatic and Fishery Sciences major*

- *There was no strict rubric of what we needed to present. It was a challenge, but it made it more fun and exciting. We got to decide the scope, the research question, and how to streamline all research into that question. Business major*

- *My final research paper for my Senior Seminar. It was the longest paper I have ever written and required the most in-depth research, where I had to think about my original ideas and take a new approach to a topic in history. History major*

- *The self-directed nature of this. It's all self-managed. I get minimal oversight from my site supervisor. Creating the project itself, coming up with the kernel of an idea, and scoping the project was challenging. Program on the Environment major*

- *I think the transition from the intro courses where you are given a rigid specification and then now a high level design spec. Having the liberty to make real nitty-gritty design decisions is nice, but you are working with a team and need to spend a long time deciding what to do and revising. There are a lot of design meetings. Computer Science and Engineering major*

- *Coming up with your own projects/things. Being an artist versus being an art student. Something that I didn't have training in. Suddenly when I was given a studio, I wasn't ready, and I wanted them to give me assignments. Maybe I would push myself to make something bigger or I would just use clay. I didn't think about it. It was a weird feeling, like a lack of guidance. Suddenly, I didn't have anyone telling me what to do, which I didn't experience anywhere else in the university. Art major*

Writing effectively in the discipline. Writing in the discipline was one of the most-frequently given responses to Question 1. As Table 3 shows, interviewees from 55% of the participating departments said that writing effectively in their majors was what made the courses or activities they had described particularly challenging. More than two-thirds of the History majors interviewed gave this response. Indeed, History majors noted the following challenges in writing effectively in their majors:

- Conducting the research required to do the writing

- Independently coming up with their own historical arguments.

- The amount of time and/or work required to complete the writing.

- Thinking in new ways.

- The level of reading required to do the writing

- Planning the paper ahead of time; doing it in stages

- Understanding and using multiple perspectives in writing

- Wanting their writing to reflect their learning in the major

The following are quotations from students in other majors who mentioned writing in the discipline as the aspect of the activity or course they had described that made it their most challenging academic experience:

- *In high school, I had to write and I thought I knew how to write. In high school, I earned 5's on all my AP exams. When I got to college, I learned I don't know how to write. It's different to write for a major. Political Science major*

- *I just had to think about the paper all quarter. It was due at the end, so I had to think about it and compile things throughout the whole quarter and remember and figure out how to put it all together. Sociology major*

- *Formulating the essay and presenting evidence from the papers read. It was very theoretical and some of the papers were really long and detailed, and [I needed] to be able to rephrase them in my own mind. Public Health major*

- *[The course] challenged me to make my writing concise and focus on one specific topic. It forced me to look at my grammar and writing as a whole. It helped me to change the style of my writing. [There was] no room for fluff because it was only 4-6 pages, no filler, no BS. English major*

- *Trying to say exactly what you want but in a whole different writing style than what you are used to and in another language. It's just tough, especially when you've had some time off from the language you get out of practice. French and Italian Studies major*

- *Exposure to lab write ups and the expectations that went along with them [was my most challenging experience in the major because of the] time crunch [and my] lack of experience prior to the course. Neurobiology major*

Understanding and applying theories/concepts to cases. Students in more than a third of the participating departments said that they found applying theories to new cases the most challenging aspects of the activities and courses they described. In the words of four of these students:

- *We had to talk about tribal sovereignty and how it related to other nations, and, not knowing anything about Australia and New Zealand, that was hard for me. American Indian Studies major*

- *Just the fact that I never thought about how theoretical approaches to literature changed your view of it; I never thought about the way that I read before; I just ingested without thinking about it. English major*

- *I had to apply the concepts I learned from textbooks to real life problems. Business major*

- *I had a project in one of the econometrics classes. I found it challenging to apply what I researched in class to the real world. I had a lot of calculations, based on theory. The process of researching data thru the internet and other resources was a challenge as well. Economics major*

Spending a greater amount of time and/or doing more work than I had done for other courses. Students in 45% of the participating departments said that they had worked harder and/or longer for their challenging activities or courses than they had for other work they had done in college. A third or more of the Chemical Engineering and Computer Science and Engineering interviewees gave this response. Some examples:

- *It was a challenge to put in the time required to do a good job. Putting in 25+ hours a week into this class alone was a very common work schedule. Chemical Engineering major*

- *The deadlines and the amount of work that needed to be completed [made it challenging]. The quantity of work and wanting to be a perfectionist made it tough to make deadlines. Earth and Space Sciences major*

- *[I spent] lots of time in the library, online, reading parts of books, juggling this with three other classes. I wanted to focus on the one thing! History major*

- *The class was a lot of work. There were readings, homework every night, a project [where we had] to collect data and interview. We had to go to the Japanese class, set up for recording two students, record them and whole class, transcribe the recording in detail, and analyze the data to write a paper. There were three projects in total. Asian Languages and Literature major*

- *It took 30 hours outside class to study a week. I wanted to do well for one of the best archeologists in the world. Anthropology major*

Conducting research. Students in about 30% of the participating departments mentioned the challenge of conducting research as the aspect of the activity or course they had mentioned that made it especially challenging. Many of these students spoke of research related to writing and other projects, but some students spoke of conducting unassigned research to help them better understand course content and texts. About two-thirds of the students in Geography and History mentioned the challenge of conducting research, and one third of the students in American Indian Studies and Slavic Studies did as well. The following examples illustrate this category of response:

- *The research proposal [was the most challenging]. I hadn't done it before. It was difficult because I had to figure out the research methods—the question, where and how to gather data, would the data be applicable and acceptable, whether to use a survey or statistical method or whatever, what we'd be looking at and why. Geography major*

- *It was challenging because I'd never done that [kind of research project] before. I just figured out again how to break it down into tasks, a bunch of small chunks and then look at how much time I had to do them. This one will be twenty minutes, tomorrow I have two hours. When you break anything into small chunks, it magically gets done. I used the UW library JSTOR and I found several articles. I gave myself time to read them, to think about them, and then I just started typing for a certain amount of time. The requirements were to analyze linguistic discourse. In that particular topic it was difficult to find first-hand sources. Slavic studies*

- *A lab project at the Woodland Park Zoo observing two captive-born warthogs and comparing their activity levels to wild-born warthogs. I did 30 hours of observations to make suggestions for environmental enrichment. This was presented in a research paper and a poster presentation. It took a lot of time to design the experiment. The zoo keepers suggested the project, but it was up to me to design it and to do everything. Psychology major*

- *It was hard to get the data—like how much money men earn, etc. It was age dependent and quite hard to get the right data. Economics major*

Dealing with unclear or poor instruction, no feedback, difficult class structure, or large class size.
Seventy-one of the 1,275 interviewees from more than a third (36%) of the participating departments spoke of challenges that were barriers rather than course or activity requirements. These students spoke of challenges inherent in poor instruction, little or no feedback, ineffective course structure, or class size. In their words:

- *Labs were difficult and no instruction was provided. Chemical Engineering major*

- *I felt like what she talked about in class was really hard to follow. There was no direct link of what she was lecturing about to homework or test material. You had to infer everything. Business major*

- *Format of the test and size of the class for BioChem. The constant switching of teachers here was also hard. Biology major*

- *Mostly the structure of the way the class was designed. If we had just broken down the readings and talked about them ahead of time but I had to do it myself and then write the paper and you don't know if you're doing it right. I understand that you read prior to classes, but to write prior to class, that's hard. Sociology major*

- *Size of the class [and the] online component. [It's a] tough subject ,and a more intimate environment would have been better with TAs and teachers. Program on the Environment major speaking of a Chemistry course*

Other responses. Although we focus on the most-frequently mentioned themes, as we noted previously, often the less-frequently mentioned themes provided interesting information about disciplinary areas. For example, the theme "Seeing ideas, issues, events from multiple and/or new perspectives" was mentioned by students in only five departments, but four of those were social sciences (Sociology, Political Science, Anthropology, Social Welfare), suggesting the importance of teaching students to be aware of and use multiple perspectives in social science disciplines.

Similarly, students in five of the seven departments who identified "Working with the mathematical or statistical part of the course/assignments" as major challenges were speaking of challenges in STEM fields (Psychology, Computer Science & Engineering, Earth & Space Sciences, Environmental & Forest Sciences, and Biology), and the other two departments were social sciences that have strong quantitative subfields (Geography and Economics).

In contrast to these two examples, students who said that what made their activities and classes challenging was "Learning something about myself (such as how much I did not know); thinking about own values, ideas, identity, and beliefs" were from seven very different departments (Social Welfare, American Indian Studies, Law, Societies, & Justice, English, Public Health, Psychology, and Art). However, although these students came from a range of disciplinary areas—the social sciences, the sciences, and the humanities—none of them were in engineering majors.

Therefore, although we only discuss the eight most-frequently mentioned responses in this section, those we do not discuss offer interesting information on the disciplinary nature of challenge, as well as those challenges that appear to cross disciplines.

Question 3: What Enabled Students to Meet Those Challenges?

Fourteen[6] themes (Table 4) emerged from students' responses to the question about help in meeting their academic challenges. A table showing the departments in which these 14 themes did and did not emerge can be found in Appendix C (Table C3).

As Table 4 shows, students were in wide agreement about what helped them meet the challenges they had described; there was much more agreement on Question 3 than on any other question.

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[6] Gender, Women, and Sexuality Studies had so few interviewees that no departmental themes for this question emerged.

Table 4. Help in meeting the challenges

What enabled you to meet the challenges in the major?	# students	# of depts (% of 33)
Own efforts (e.g., putting in extra time, devising new ways to study, better time management)	617	30 (91%)
Faculty/TAs	353	23 (70)
Peers (e.g., via class discussion, group work, study groups, or informally)	333	29 (88)
Aspects of the class itself (e.g., reading, content, lab work)	93	15 (45)
Learning to conduct independent research	71	12 (36)
Looking at ideas, events, opinions from different perspectives/thinking critically	63	9 (27)
Content from previous courses	51	11 (33)
Learning to read critically and analytically for the discipline	30	4 (12)
Self- awareness/changes in self	29	5 (15)
Learning to apply perspective/theory	11	2 (6)
Tutoring (e.g., CLUE, departmental learning centers, writing centers)	12	3 (9)
Experts and others outside of the classroom (e.g., family, community members)	9	4 (12)
I did not meet the challenges in the major (e.g., dropped, retook class)	6	2 (6)
Hands-on experience (e.g., labs, field trips)	5	2 (6)

To a great extent, students gave three main answers to this question:

• Students in 91% of the participating departments said that their own efforts had helped them meet those challenges.

• Students in 88% of the participating departments said that their peers had helped them complete the challenging work they had described.

• Students in 70% of the departments said that their faculty and TAs had helped them meet challenges.

This section addresses those three most-frequently given responses.

Own efforts. As Table 4 shows, nearly 50% of the seniors who were interviewed said that their own efforts had helped them complete challenging work. This group included 90% of the Business students interviewed, 80% of the Materials Science and Engineering majors interviewed, and about 75% of the interviewees majoring in Computer Science and Engineering, French and Italian Studies, Linguistics, and the Evening Degree Program. Students giving this response described a wide range of efforts, including simply being diligent about keeping up with coursework, devising new ways to think about and study course material, conducting extensive research on their own in certain areas of the course, and teaching themselves how to use new software or other tools.

The strength of this response suggests that when confronted with significant intellectual challenges, students bear down and increase their efforts to complete it. The following examples illustrate this category of response:

• *I probably have never practiced more or been more attentive in class. I just really gave an interest to it. I poured over the textbook, read between the lines, and did a lot of extra work. I was very motivated to follow the textbook with the lectures. Business major*

• *I decided to do some background research. Materials Science & Engineering major*

• *I think that was one of the first classes that brought home the importance of doing the readings and I found that if I did not do them I did not know what was going on or could not participate. It caused me to step up my game. French and Italian Studies major*

- *I learned to ask dumb questions. That is the core. I realized that everyone was there at some point. Eventually it gets beaten into your head. Computer Science & Engineering major*

- *I read the paper like 10 times over. It's like reading a paper like that, every sentence is packed full of information, so when I'd read an entire paragraph I had forgotten what the paragraph was about by the end of it. Linguistics major*

- *I pulled up my boot straps and went for it. I did lots of independent study and making good choices on the weekends (studying instead of hanging out with friends). Evening Degree Program major*

Faculty/TAs. In addition to crediting their own efforts with helping them meet the challenges they had described, about 28% of the interviewees from 70% of the participating departments said that faculty and TAs had helped them meet those challenges. (We included technical staff in Art and graduate lab assistants in Psychology in this category.) Two-thirds of the Slavic Studies interviewees and more than half of the interviewees majoring in English and Psychology credited faculty and TAs with providing them with help. In the words of several of these students:

- *It was the professors who were obviously very passionate about the subject and were knowledgeable and really pushed you to get to know the subject well. Without having such professors I think I would have gotten a lot less from the class than I did. I had to just be really ready for class all the time and get to the homework, do the homework well, do the readings, ask questions. They were very encouraging teachers. Slavic Studies major*

- *I went to his office hours a lot, wrote, rewrote and rewrote again, again. English major*

- *I learned to meet with instructors ahead of time. I didn't realize this freshman year but it's amazing how much professors will tell you when you meet with them. I always go to professors' office hours now. Industrial and Systems Engineering major*

- *I got more involved with the TA. This is the first time I have gone to a TA outside of class. Environmental and Forest Sciences major*

- *I was not afraid to ask questions…teachers were approachable and enthusiastic. Program on the Environment major*

- *[What helped was] meeting with professor about how to approach this way of learning. Biology major*

Peers. Interviewees in 88% of the participating departments reported receiving a great deal of help in meeting the challenges they described from their peers. Students spoke of getting help in classroom discussions, while collaborating with peers on group projects, when working in formal or informal study groups, through seeing what peers were doing, and by having informal conversations with classmates about their academic work.   More than 60% of the Astronomy and Business interviewees said that their peers had helped them meet the challenges they had described. For example:

- *The biggest thing in college for me was finding a group of people to meet with—people in physics and astronomy to talk it through. Finding people to work with and struggling together, and finding someone you can be upset with. A big part of college is finding a group. Just studying on campus you bump into people you click with. Spending more time on campus; a lot of people have an issue that if they don't spend time on campus they don't make those connections. Astronomy major*

- *We set up weekly scrum meetings where we just briefly went over our progress and what our goals were for the week and how we planned to meet them. We also tried to send out many emails to inform each other of our progress throughout the week. By the end of the quarter we learned each other's strengths and weaknesses. Informatics major*

- *The feedback from students allowed me to do more things with my paper. Peer review and small [class] size. History major*

- *Learning effective teamwork helped greatly in meeting those challenges. Chemical Engineering major*

- *I went to class and worked with a group of people. I learned with peers rather than by myself. Lecture was dry, so we had to work it out after class. Economics major*

Other responses. In addition to these most-frequently given responses, interviewees spoke of a number of aspects of their learning that helped them meet the challenges they had described. As Table 4 shows, students in a wide range of majors spoke of the help that came from learning academic skills such as conducting research, using different perspectives and thinking critically, reading analytically for the discipline, and using theory. Interestingly, some of the sources of help that students described were also the very challenges they discussed, suggesting that they were learning to meet the challenges posed in those classes and being asked to demonstrate that learning at the same time.

Question 4: What Did Students Learn by Completing This Course or Activity?

Finally, we asked students what they felt they had learned by meeting the challenges they had described. Table 5 shows the 17 major themes that emerged from students' responses to the question about what their learned. As was true of students' responses to the first three questions, interviewees often described learning more than one thing in response to Question 4. A table showing the departments in which the themes in Table 5 did and did not emerge can be found in Appendix C (Table C4). This section will provide more detail about the four most-frequently given responses to Question 4, those given by students in 60% or more of the participating departments.

Content knowledge. As Table 5 shows, students in nearly three-quarters of the participating departments said that they had learned new content, including 65% of the Computer Science and Engineering interviewees and 63% of the Linguistics majors interviewed. As might be imagined, the content students described having learned presented quite a diversity of information. In the words of some of these students:

- *Learning a lot about hardware and low-level assembly. Computer Science and Engineering major*

- *Well first of all just about vowel-glide interaction in French. I was able to get a better and more complete understanding of the way certain rules interact in the language because it wasn't just a data set of a language that I didn't know. It was a language that I knew and could speak and was doing research on. Formulating rules is kind of mathematical and it's precise and it's a skill of its own learning how to formulate those. Linguistics major*

- *I learned some programming languages, more software I guess. I learned how to do science, like what kind of things I can look forward to in a career. Astronomy major*

- *I learned a lot about the material—the intricacies of the legal system, precedent, decisions that judges use for rulings. Political Science major*
- *I definitely have a lot more knowledge on tribal sovereignty and the UN Declaration. I didn't even know that there was a declaration. I have much more experienced knowledge because I know about our country relating to other countries. American Indian Studies major*
- *I feel like a got a solid grasp of the historical background of human rights. Law, Societies, and Justice major*

Table 5. What students learned by meeting challenges

What did students learn by completing this course or activity?	# students	# of depts (% of 33)
Content knowledge	266	24 (73%)
How to think critically, how to think scientifically, how to consider multiple perspectives	250	24 (73)
More about self (e.g., identity, stronger sense of own abilities) or own learning processes	196	20 (61)
New ways to study a subject/better study habits	149	20 (61)
How to conduct research	102	17 (52)
How to write more effectively	96	17 (52)
How to work with others/teamwork	92	16 (48)
How to apply course content to cases	89	12 (36)
More about future career path/future research interests	56	10 (30)
More about the discipline and how it operates	45	9 (27)
Improved foreign language skills	37	3 (9)
How to use all resources available (e.g., professors, TA's, study centers)	26	7 (21)
Professional skills (e.g., presentation skills, client relations)	19	3 (9)
Technical skills (e.g., coding, statistical packages)	18	2 (6)
Nothing/don't know	9	1 (3)
The importance of community	5	2 (6)
How to choose better courses/instructors	4	1 (3)

How to think critically, how to think scientifically, how to consider multiple perspectives. As Table 5 showed, students in 73% of the participating departments said that they had learned to think critically in meeting the challenges they described. Depending on the discipline, some students described critical thinking as scientific reasoning or as weighing multiple perspectives.

It is not surprising that learning content and learning to think critically have nearly the same level of response in students' answers to Question 4. Indeed, we have evidence that UW faculty consistently weave together the learning of course content with the practice of thinking critically about that content from a 2013 report on a study of change in faculty teaching (Beyer et al. 2013). In that study, researchers found that "faculty descriptions of the knowledge and thinking goals they had for students were so closely intertwined that it was difficult to distinguish one from the other" (p. 60). Furthermore, that study found that faculty used all aspects of their courses to help students put content together with critical thinking, including writing assignments, projects, exams, class discussion—the very activities and parts of their courses that students in the UW ACES described as their most challenging academic work.

Many unique departmental responses were merged into this category of response, reminding us that critical thinking and problem-solving are disciplinary acts. For example, this category of response

includes students speaking of how to read and understand scientific literature (Aquatic and Fishery Sciences), how to evaluate sources (History and Political Science), how to solve creative problems (Art), how to critically evaluate evidence by examining multiple perspectives and arriving at an informed conclusion (Law, Societies, and Justice, Psychology), how to troubleshoot problems in experiments (Biology), how to take cultural differences into account in their reading (French and Italian Studies), and how to be open to others' perspectives (English)—to name just a few of the variations on this theme.

The following quotations illustrate this category of response:

- *I definitely think those classes are life changing. It definitely taught me to be a critical thinker. He was a big proponent of "exoticizing the familiar." So in my every day experiences, it has taught me to have a more critical eye. Sociology major*

- *I learned how to look at primary and secondary sources, to look at historical bias in them and evaluate that. It also reinforced what I learned about citing sources—footnotes, MLA, parenthetical. History major*

- *Being open minded, being a critical thinker are the things I've gotten the most out of the major. I've learned about history and gender which is good but the general thinking will help me more. Gender, Women, and Sexuality Studies major*

- *The class taught how to think as a scientist, hypothesize, and take steps to prove something. Biology major*

- *I learned critical thinking skills, problem solving, and the analytical approach. Industrial and Systems Engineering*

- *I have learned to take others' opinions into consideration and be able to see things from their perspectives and incorporate them into my own thoughts, to either build on their ideas or to challenge my own thinking. Psychology major*

- *Foundational material and advanced study skills, ability to reason out questions when taking exams. Neurobiology major*

- *I think I've learned to think more critically and completely about not only an art object but what that object means, who it was created for, why it was created—that social and historical context. And from there I can understand more about that culture and that time that you can never go back to but all you have are these objects and literature. Critical thinking. I don't really accept things at face value anymore. Art major*

More about self (e.g., identity, stronger sense of own abilities) or their own learning processes. In speaking about what they had learned by meeting the challenges they had described, students from 20 (61%) of the 33 departments spoke of learning more about themselves, their identities, their senses of what they could do and accomplish, or what they would or would not pursue in the future. Moreover, students said they had gained confidence and learned the value of persistence. This category also included students' discoveries about the ways they learned. For example, some noted that they had learned that they could learn from their own mistakes, and others spoke of making progress in being comfortable with the unknown. A few examples from this category of response:

- *I just learned so much more about myself and what my social identity means in terms of what I'm going to be doing with my life and how I interact with people on a daily basis. I think that was huge to learn that in the classroom. I learned how to be a better person—student, friend, and worker and everything that I am—just got a little bit more aware. Social Welfare major*

- *I learned a lot about myself, how to do different tasks and skills. I learned to overcome obstacles and how to persevere. Math major*
- *First of all I learned I could do it. It was one of the experiences that every student needs to have, like every medical student needs to see a cadaver. It was really rewarding. Anthropology major*
- *[I learned] that I'm capable of producing quality pieces through trial and error. I learned as much through mistakes as through success. That's hard in the moment of failure but rewarding in the end. Art major*
- *Don't give up. Computer Science and Engineering major*
- *I learned that I was smart enough to add to the dialogue, which I hadn't known—that we all are. That has been huge. English major*
- *I don't like business economics. I actually knew that before taking the class, but it made it even more clear that I don't want anything to do with Economics. Business major*
- *I learned that in order to fully grasp something you have to work really hard at it. If you're struggling, it doesn't mean you're bad, but you need to keep working on it. If I were to probably go back and take the class now, I think I'd do much better in it. Economics major*

New ways to study a subject/better study habits. Students in three out of five (61%) of the participating departments reported that the challenges they had met had taught them new ways to study, as well as better study habits. In this category of responses, students spoke of learning to work independently, to organize their time, and to manage stress, among other things. More than half of the Biology and Slavic Studies interviewees said that they had learned new ways to study or better study habits by meeting the challenges set for them. In students' own words:

- *I learned that it definitely feels good to start early, and even if you don't finish it, write anyway. There's something about starting it early and then letting your mind work on it for awhile. With math, they use the example that if you take some time, your brain is still working on it, and when you come back to a problem, you can solve it. Slavic Studies*
- *I had to learn to ask for help from classmates and anyone I could find. Biology major*
- *I learned foundational material and advanced study skills, the ability to reason out questions when taking exams. Neurobiology major*
- *I learned that I have different study habits than other people I know, I learned how to manage my time for projects like that one. I learned to work a lot and then take a break—don't tire yourself out right away. I learned how important outlining is. That still helps me. American Indian Studies*
- *I learned to make a plan to get things done, to have better time-management skills. Materials Science and Engineering major*

Other responses. The next four responses to the question about what they had learned by meeting the challenges they described—how to conduct research, how to write more effectively, how to work with others/teamwork, and how to apply course content to cases—are interesting, because they suggest that students felt that they had learned some of the very things they had noted as challenges. Both in speaking about conducting research and writing, students often spoke of learning to do that work according to disciplinary standards. In terms of speaking about working with others, students often

spoke of learning how to communicate better in general (Economics) and the importance of peers and collaboration to their own learning (Political Science).

In addition, some of the students who mentioned these lessons described learning that would take them into careers beyond the major, as this student's comment illustrates:

> *It was challenging to bring courage to the table and share your ideas with a group with the possible chance of rejection. In the real world, you will interact with other intelligent people, whom you must learn to accept and consider their ideas in pursuing a solution because that is the common goal of an organization. Industrial and Systems engineering major*

Enjoying the Challenge

Finally, students' responses to the UW ACES interview questions suggested that students enjoyed the challenges they experienced and felt they were rewarding. Indeed, many students explicitly spoke of how much they valued the professors who challenged their thinking and how much they enjoyed the course or the challenging activity they described. Some students also noted that completing a difficult intellectual task or course made them feel capable.

This response to challenge is consistent with research on student learning, which shows that when an assignment is challenging for students and when instructors help students meet those challenges, students are engaged in their courses and, therefore, learn more than when coursework is easy (Light, 2001; Beyer et al., 2007). The following quotations illustrate this finding:

- *Solutions to problems in operations research classes were not obvious, so I had to spend a lot of time just thinking. However, those were among favorite courses in the department. Industrial and Systems Engineering major*

- *I learned that hard work has its rewards. French and Italian Studies major*

- *It was proof-based, but the proofs were not standard math proofs. They were proofs about models of computation. You really had to learn to do proofs in another way that is applicable to computer science. You had to think about computation in an abstract way. I thought it was cool. Computer Science and Engineering major*

- *The labor market analysis project [was the most challenging for me]. It was a study about how gender affects income—how men make more than women. I had to take what I learned in class and apply it to real issues in society today. It was fun and challenging at the same time. Economics major*

- *There were definitely times that I struggled and lost motivation to work on the project, but it also brought some of my best work in the major and I'm really proud of those moments. Chemical Engineering major*

- *The biggest thing I learned was that doing this is actually really fun. It can help you grow intellectually but also as a person. It's not just an ivory tower experiment. History major*

- *In my semantic theory course, Semantics II, we had a take home midterm and a take home final, and those—I mean the homework assignments too, but mostly those—were the most challenging and funnest at the same time. Linguistics major*

- *I'd have to say my sociological theory class was my greatest challenge. I wrote two papers and it really made me just think more outside the box and really concentrate on my sociology. That was a big challenge, but it was good. Sociology major*

EFFECTS OF PARTICIPATION ON ADVISERS

*"This was really a good reminder of the life-impacting effect of these experiences for students.
It also shows you faculty in a different context—to hear from students the little nuggets that they
pulled away from particular projects, how a professor helped them through a difficult project,
how they learned to navigate a research topic. It's a nice addition to the day, to hear those things.
Advising seems like a unique job in that you kind of get the pulse of the program,
but you don't often get to ask those questions." Art adviser*

OEA researchers asked UW ACES participating advisers to complete a survey about their experience[7] in May 2013 at a luncheon given to thank them for their work. Forty (61%) of the 66 advisers completed the survey. The full survey and its results are found in Appendix A. Overall, the advisers' survey responses suggest that their experience in the UW ACES was positive, as the following results indicate.

Training. About 70% of the advisers found the OEA training and support they received to be very helpful; 18% found it to be moderately helpful, and 12% found it to be a little helpful. None of the advisers felt that the training and support they had received was no help at all.

Impact of UW ACES on their work. Regarding the impact of the UW ACES on the work of advisers, the survey showed that advisers found it very easy (about 48%) or somewhat easy (about 32%) to integrate the interviews into their regular work. Only 20% of the respondents reported that conducting the interviews was "somewhat difficult."

Did advisers learn anything helpful? When asked if they had learned anything by conducting the interviews that they felt might help them with their advising work, close to 88% selected "yes"; four (10%) said they were not sure; and only one said "no."

Enjoyment. Asked how much they enjoyed conducting the interviews, about 95% of the advisers gave positive responses, with 68% responding "a great deal" and 27% saying "a moderate amount." In addition, two of the 40 advisers said "a little bit." None said "not at all." We then asked the advisers, *"If you enjoyed conducting these interviews, what was it you liked about them? If you didn't enjoy them, please tell us why."* Thirty-seven of the 40 advisers responded to this question, and, again, their responses were overwhelmingly positive.

Ten (27%) of them noted that what they enjoyed the most about conducting the interviews was learning about the students' learning experience. Two examples:

- *Learning about what students say they have learned. Surprising answers that have sometimes concerned me but more often confirmed that students are having a rich experience in the major and at the university.*

- *I liked getting a window into the students' undergrad experience that we don't normally get as advisers. A lot of regular work with students is bureaucratic procedural, often tedious. But this*

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[7] In addition to questions about their UW ACES experience, the survey included some questions from the Provost on career advising in departments.

interview experience allowed me to access a piece of student life that we don't always get to hear.

In addition, eight (22%) of the respondents said that they had enjoyed learning about the effects that the departmental curriculum and its faculty had on students. For example:

- *I never knew how deeply our students' lives and histories have been touched and integrated with by our faculty and courses.*
- *I was new to the department so the interviews have given me unique insight into unfamiliar curriculum. I now know what students feel are challenges and strengths of the program.*

Eight (22%) advisers also spoke about enjoying the contributions of the interviews to their advising work, as these two comments illustrate:

- *Most times I meet with students it's about their negative experiences—problematic profs, time/ responsibility issues, etc. This gave me a more balanced experience.*
- *I loved being a part of the process: helped me focus on the grad application step being more of a debrief than an administrative step; helped me remember to use more open-ended questions in my advising.*

Seven (19%) of the advisers commented on enjoying learning about the actual challenges students faced and how they overcame them. In the words of two of these advisers:

- *It is the range of responses that surprised me. Some students were challenged by difficult coursework, but others challenged by group dynamics on team projects, etc.*
- *Students willing to talk about the obstacles they've faced and how they've overcome them.*

Five (14%) advisers said that it was difficult to include the interviews because of the scheduling demands of their work. For example:

- *I really enjoyed the actual interviews, but found them stressful to integrate into appointments— sometimes I was short on time, sometimes the students were short on time.*
- *Difficult to sometimes incorporate into scheduling.*

One adviser noted that she enjoyed participating in the research mission of the university; another said that he enjoyed the fact that what the students said surprised him; and a third noted that the interviews were enjoyable because they were short.

Would you conduct interviews again? When asked if they would consider conducting interviews such as those for the UW ACES again, 95% of the respondents said "yes" and 5% said they were "not sure."

Anything else? Nineteen of the 40 advisers added a comment when asked if they had any additional comments about their experience in the UW ACES. These comments are printed verbatim in Appendix A.

CONCLUSIONS

"I learned that I can really challenge myself and it feels rewarding to have something that you viewed as really difficult and I was able to do it and do well in it." Psychology major

Results from the UW ACES allow us to draw the following conclusions about challenge and engagement in undergraduate programs at the UW:

- Students in every major reported experiencing activities and courses that stretched their thinking and that called on them to learn new skills and content in order to complete those challenges. Only two (0.2%) of the 1,275 interviewees said that they had experienced no academic challenges. Therefore, we can say with confidence that UW undergraduates are academically challenged in their majors.

- Challenges—including what makes a challenging course, paper, project, exam, or other activity—were powerfully shaped by the academic disciplines in which they occur. This result confirms earlier UW and national research on the disciplinary nature of learning in college.

- Students in each of the 33 majors identified a variety of courses that they found challenging or that were the sites of challenging activities; many students noted more than one course. This result suggests that challenging work is spread across the majors in most departments, particularly throughout the 300- and 400-level courses.

- The three aspects of their academic work that students found the most challenging were 1) a whole course or course sequence, 2) a paper or writing in the major, and 3) a project, including an art project, a performance, a project for a capstone. Students found the following aspects of these activities the most challenging:

  o Learning something completely new

  o Thinking critically and analytically in new ways and at deeper levels

  o Coming up with my own ideas and following through

  o Writing effectively in the discipline

  o Understanding and applying theories/concepts to cases

  o Spending a greater amount of time and/or doing more work than I had done for other courses

  o Conducting research

  o Dealing with unclear or poor instruction, no feedback, difficult class structure, or large class size

  o Seeing ideas, issues, events from multiple and/or new perspectives

  o Understanding, analyzing, and using the reading in the discipline

  o Working in a group

  o Learning something about myself (such as how much I did not know); thinking about own values, ideas, identity, and beliefs

  This list of challenging aspects of courses and activities suggests approaches for faculty members who are exploring ways to integrate more challenge into their courses.

- When asked what help them meet those challenges, their most-frequently given response was that their own efforts had helped them. In fact, students described themselves doubling up their own efforts in order to meet the challenges they had described. They reported increasing the amount of time they spent studying and reading, conducting independent research in order to better understand course material, practicing solving problems or learning concepts multiple times, seeking out peers to form study groups, or writing several drafts of papers—for example. This result suggests that intellectual challenge has broad as well as specific learning consequences. It motivates students to work hard and develop new approaches to their own learning. Therefore, the more challenges undergraduates experience, the better they will become at studying, focusing, and learning.

- Students also felt that they had received a great deal of help with their academic challenges from working formally and informally with peers. The strength of students' responses about the help they received from peers suggests that some interaction with peers should be part of every challenging assignment or course. Furthermore, the strength of this response also suggests that including work with peers is already part of the regular practice of most departments.

- In addition to their own efforts and work with peers, students reported receiving help with challenges from faculty and TAs. They often expressed surprise at how willing instructors were to help them move through new challenges. This result confirms the importance of faculty and TAs encouraging students to come to them for help.

- Students reported learning many lessons from their challenging work, including content knowledge, critical thinking skills, more about themselves and their learning processes, and new and better ways to study. In addition, as a result of completing the challenging work they described, students learned broad academic skills, such as how to conduct research, how to write for the discipline, and how to work with others. These are skills that most departments want their majors to develop; challenging courses and activities help departments meet these goals.

- Students enjoyed doing challenging work. When they completed difficult tasks, they felt they had accomplished something important. Therefore, assigning work that is challenging—and providing students with support for completing it—is not only good academic practice but it will be well-received by most students. This result confirms the findings of other research (Beyer et al., 2007) that suggests that students both want and value challenging work.

- Advisers found the interviewing of seniors in their departments valuable for their own work, the work of the department, and for the interviewees; 95% of them reported that they would be willing to engage in further research of this kind. Researchers on student learning should continue to consider ways to integrate advisers—who are knowledgeable about departmental curricula and practices—into their work, while being mindful of the heavy workload this group is already carrying.

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APPENDIX A: UW ACES ADVISER SURVEY - MAY 2013

Forty (61%) of the 66 participating academic advisers responded to the survey we conducted on May 9, 2013 about their experience in the UW ACES.

1. **Does your department know that you've been conducting UW ACES interviews?**
   Yes: 30 (75.0%)
   No: 3   (7.5%)
   Not Sure: 7 (17.5%)

2. How frequently did your students respond in the following ways when being interviewed?	Rarely 0-25%	Sometimes 25-50%	Frequently 50-75%	Usually 75-100%
They seemed to enjoy answering the questions.	0 (0.0%)	4 (10.0%)	15 (37.5%)	21 (52.5%)
They got into it as the interviews went along.	0 (0.0)	2 (5.0)	24 (60.0)	14 (35.0)
They thanked me for the interview.	10 (25.0)	17 (42.5)	13 (32.5)	0 (0.0)
They seemed impatient with the process.	33 (82.5)	7 (17.5)	0 (0.0)	0 (0.0)
They seemed confused by the questions, unsure of what we wanted from them.	24 (60.0)	12 (30.0)	4 (10.0)	0 (0.0)
They seemed matter-of-fact about the interview.	3 (7.5)	25 (62.5)	7 (17.5)	5 (12.5)

Other (please specify): *5 respondents provided additional information with their other response*
- "shy or uncomfortable reflecting (rarely)"
- "the survey led to other conversations about the future"
- "they wanted to give more information thanthe srvey asked/ than I had time for"
- "3 people refused"
- "Interview led to longer discussions"

3. **How difficult/easy was it to integrate the UW ACES interviewing into your own advising work?**
   Very easy: 19 (47.5%)
   Somewhat easy: 13 (32.5%)
   Somewhat difficult: 8 (20.0%)
   Very difficult: 0   (0.0%)

4. **Have you learned anything by conducting the interviews that you feel might help you in your advising work?**
   Yes: 35 (87.5%)
   No: 1   (2.5%)
   Not Sure: 4 (10.0%)

5. **In general, how much have you enjoyed conducting UW ACES interviews?**
   A great deal: 27 (67.5%)
   A moderate amount: 11 (27.5%)
   A little bit: 2   (5.0%)
   Not at all: 0   (0.0%)

6. **If you enjoyed conducting these interviews, what was it you liked about them? If you didn't enjoy them, please tell us why.**
Thirty-seven of the 40 advisers responded to this question. Ten of them noted that what they enjoyed the most about conducting the interviews was learning about the students' learning experience. Two examples:

- "Learning about what students say they have learned. Surprising answers that have sometimes concerned me but more often confirmed that students are having a rich experience in the major and at the university."

- "I liked getting a window into the students' undergrad experience that we don't normally get as advisers. A lot of regular work with students is bureaucratic procedural, often tedious. But this interview experience allowed me to access a piece of student life that we don't always get to hear."

Eight of the advisers said that they had enjoyed learning about the effects that the departmental curriculum and its faculty had on students. For example:

- "I never knew how deeply our students' lives and histories have been touched and integrated with by our faculty and courses."

- "I was new to the dept. so the interviews have given me unique insight into unfamiliar curriculum. I now know what students feel are challenges and strengths of the program."

In addition, eight advisers also spoke about enjoying the contributions of the interviews to their advising work, as these two comments illustrate:

- "Most times I meet with students it's about their negative experiences—problematic profs, time/ responsibility issues, etc. This gave me a more balanced experience."

- "I loved being a part of the process: helped me focus on the grad application step being more of a debrief than an administrative step; helped me remember to use more open-ended questions in my advising."

Seven advisers commented on enjoying learning about the actual challenges students faced and how they overcame them. In the words of two of these advisers:

- "It is the range of responses that surprised me. Some students challenged by difficult coursework, but others challenged by group dynamics on team projects, etc."

- "Students willing to talk about the obstacles they've faced and how they've overcome them."

Five advisers said that it was difficult to include the interviews because of the scheduling demands of their work. For example:

- "I really enjoyed the actual interviews, but found them stressful to integrate into appointments— sometimes I was short on time, sometimes the students were short on time.

- "Difficult to sometimes incorporate into scheduling."

Finally, one adviser noted that she enjoyed participating in the research mission of the university; another said that he enjoyed the fact that what the students said surprised him; and a third noted that the interviews were enjoyable because they were short.

7. Would you consider conducting interviews like these again in the future (perhaps on a different topic than academic challenge)?
Yes: 38 (95.0%)
No: 0   (0.0%)
Not Sure: 2   (5.0%)

8. How helpful, if at all, was the interview training and support you received from OEA?

Very helpful: 28 (70.0%)
Moderately helpful: 7 (17.5%)
A little helpful: 5 (12.5%)
Not at all helpful: 0 (0.0%)

9. Is there anything else you'd like to tell us about your experience with the UW ACES?

Nineteen of the 40 advisers responded to this question. Their verbatim responses are provided below.

- "It helped me appreciate the cognitive challenges our students face—how often they have to forge their own path."
- "Question 2 can be awkward because students usually think they answer it in Question 1, but then often are able to add more. A note on selection bias. I didn't ask students already standing to leave or who seemed particularly unreflective or grumpy/unconversational. Sometimes they treat challenge as "hard"—not stretched thinking"
- "UW ACES people rock!"
- "Some of the questions sounded the same to the students, so that was a little confusing—although their answers were different to each, it took some time and rephrasing so they could answer."
- "My department chair was not interested in me doing this but gave in reluctantly."
- "I would love to participate again. I really appreciate the value you put on advisers."
- "Great job. Looking forward to hearing the results!"
- "Thanks for lunch"
- "Thanks!"
- "Thank you."
- "Loved doing it. Thanks!"
- "think these types of interviews are good for both the adviser as well as the student."
- "Would love to be involved in establishing a more permanent "exit interview" process—either for departments on an individual basis or the whole university."
- "It was difficult to type when they talked too fast."
- "Excellent, as expected. I'd do anything (just about) for Cathy and Jon!"
- "In general I enjoyed it"
- "Only wish I would have been more consistent. Time constraints sometimes made it impossible to interview students."
- "I think most of the students appreciated the opportunity to talk about both what they loved and what was hard about their time at the U. They appreciated the opportunity to be heard. I really liked their honesty and how that allowed them to trust me in a different way."
- "Might be better a little into their senior year for better results in our major"

APPENDIX B: PRINT FORM: UW ACES INTERVIEW FORM

Introduction:

Before we finalize your graduation documents, I'd like to take about five minutes to ask you a couple of questions about your experience in the major. Academic advisers are asking students these questions all across campus this year as part of a big study on academic challenge. Your answers won't be linked to your name or other identifying information in any way—they are completely anonymous. The form I'm filling out doesn't even have a space for students' names or IDs. We may use a few quotations when we report results to the department, but we won't be writing a report until next year, and if we use a quotation from your answers, your identity won't be linked to it any way—because we actually won't know who said what.

Are you OK with answering just a few questions about academic challenge in the major?

❍ Yes
❍ No

Thank you for agreeing to help us out. Please take a second to look over your transcript and the courses you took in the major

Q1. What do you consider to be the most challenging work that you had to complete in this major? And by "challenging" I mean the work that stretched your thinking the most. This can be anything—a project, a paper, an exam question, homework, something else you did related to the major."

Q2. What made the project challenging?

Q3. What did you do or learn that enabled you to meet those challenges?

Q4. What do you think you learned by completing this assignment/project?

Q5. In what course did this challenging work take place?
Q6. How many quarters do you have left before you graduate?
       ❍ 1 – Just this quarter
       ❍ 2
       ❍ 3
       ❍ 4
       ❍ 5 or more
Optional questions set by department, such as area of concentration, where students are in the capstone process, etc.

APPENDIX C: INTERVIEW THEMES THAT EMERGED BY PARTICIPATING DEPARTMENT

The following tables, C1-C4, list the departments in which the themes identified in the far left column were mentioned or not mentioned by the interviewees in that department. When two or more students responded with the same idea, we counted that as a theme. Please note that—because of the small sample size from most departments—when a theme does not emerge from students' comments, that does not necessarily indicate the theme was not part of student work in the major.

Table C1. Responses to Q1 by department

What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was NOT a theme (Departments listed alphabetically)
The whole course(s) or major aspects of the course	Linguistics, Evening Degree Program, Informatics, Sociology, Environmental & Forest Sciences, Computer Science & Engineering, English, Program on the Environment, Social Welfare, Chemical Engineering, Asian Languages & Literature, Earth & Space Sciences, Anthropology, Art, Materials Science & Engineering, Public Health, Biology, Psychology, Business, History, Political Science, Economics, French & Italian Studies, Industrial & Systems Engineering, Law, Societies, & Justice, Slavic Studies, Neurobiology, Aquatic & Fishery Sciences, Geography	American Indian Studies, Astronomy
A paper or writing in the major (e.g., writing scientific papers, writing for Political Science)	American Indian Studies, Sociology, Law, Societies, & Justice, Slavic Studies, Political Science, Aquatic & Fishery Sciences, Neurobiology, History, French & Italian Studies, Psychology, Linguistics, Anthropology, English, Evening Degree Program, Business, Social Welfare, Geography, Asian Languages & Literature, Biology, Economics, Public Health, Art	Astronomy, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Industrial & Systems Engineering, Informatics, Materials Science & Engineering, Program on the Environment
A project (e.g., an art project, a performance, a project for the capstone)	Geography, Linguistics, Industrial & Systems Engineering, Computer Science & Engineering, Aquatic & Fishery Sciences, Economics, Art, Business, Chemical Engineering, Program on the Environment, Informatics, Earth & Space Sciences, Political Science, Biology, Psychology, English	American Indian Studies, Anthropology, Asian Languages & Literature, Astronomy, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, History, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Public Health, Slavic Studies, Social Welfare, Sociology
Exams	Biology, Neurobiology, Industrial & Systems Engineering, Economics, Linguistics, Political Science, Psychology	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology
Understanding and using the reading in the discipline	Slavic Studies, French & Italian Studies, Linguistics, Public Health, English, Political Science, Biology, Asian Languages & Literature, Psychology, Geography, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Evening Degree Program, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Program on the Environment, Social Welfare, Sociology

Table C1. Responses to Q1 by department (continued)

What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was NOT a theme (Departments listed alphabetically)
What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Creating something original from one's own ideas (e.g., designing and conducting own experiments, creating art objects from ideas and expression)	Aquatic & Fishery Sciences, Materials Science & Engineering, Art, Psychology, Social Welfare, Biology	American Indian Studies, Anthropology, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Sociology
Field work, internship, and study abroad	Aquatic & Fishery Sciences, French & Italian Studies, Earth & Space Sciences, Social Welfare, Asian Languages & Literature, Environmental & Forest Sciences, Computer Science & Engineering, Program on the Environment, Art, Geography, English	American Indian Studies, Anthropology, Astronomy, Biology, Business, Chemical Engineering, Economics, Evening Degree Program, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Psychology, Public Health, Slavic Studies, Sociology
Specific aspects that spanned the whole program (e.g., intense personal reflection, learning interview skills, linguistic aspects of the program, the quantitative aspects of the courses)	Slavic Studies, Social Welfare, Geography, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Sociology
Group projects/working on a team/group discussion	Materials Science & Engineering, Social Welfare, Evening Degree Program, Political Science, Environmental & Forest Sciences, Art, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Sociology
The way of thinking or critical thinking in the discipline (including 17 students who noted linking theory to real world cases or understanding and using theory)	English, Anthropology, Biology, Economics, Environmental & Forest Sciences, Political Science	American Indian Studies, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology

Table C1. Responses to Q1 by department (continued)

What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was NOT a theme (Departments listed alphabetically)
Homework	Industrial & Systems Engineering, Linguistics, Computer Science & Engineering, Social Welfare, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Sociology
What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Learning to code/program and programming aspects of the class	Astronomy, Economics, Computer Science & Engineering, Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Service learning or the community-based component of a project	Public Health, Anthropology, Social Welfare, Geography	American Indian Studies, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Slavic Studies, Sociology
Talk or presentation	Asian Languages & Literature, Psychology, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology

Table C1. Responses to Q1 by department (continued)

What do you consider to be the most challenging work that you had to complete in this major? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was NOT a theme (Departments listed alphabetically)
Personal challenges (e.g., figuring out what to major in within the discipline, time management, and English language challenges	Computer Science & Engineering, Economics, Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Unclear or poor instruction	Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Nothing	Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology

Table C2. Responses to Q2 by department

What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Learning something completely new	Materials Science & Engineering, Earth & Space Sciences, Linguistics, Anthropology, Slavic Studies, Informatics, Environmental & Forest Sciences, Computer Science & Engineering, Political Science, Art, Neurobiology, Chemical Engineering, Psychology, Biology, Program on the Environment, Evening Degree Program, Economics, Industrial & Systems Engineering, Social Welfare, Sociology, Geography	American Indian Studies, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Business, English, French & Italian Studies, History, Law, Societies, & Justice, Public Health
Thinking critically and analytically in new ways and at deeper levels	Law, Societies, & Justice, Neurobiology, English, Geography, Evening Degree Program, Biology, Economics, Computer Science & Engineering, French & Italian Studies, Asian Languages & Literature, Environmental & Forest Sciences, Psychology, Industrial & Systems Engineering, History, Anthropology, Informatics, Art, Linguistics	American Indian Studies, Aquatic & Fishery Sciences, Astronomy, Business, Chemical Engineering, Earth & Space Sciences, Materials Science & Engineering, Political Science, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology
Coming up with my own ideas and following through	Aquatic & Fishery Sciences, Business, History, Geography, Computer Science & Engineering, Art, Informatics, American Indian Studies, Slavic Studies, Political Science, Industrial & Systems Engineering, Materials Science & Engineering, Economics, Neurobiology, Linguistics, Psychology, English, Public Health, Program on the Environment	Anthropology, Asian Languages & Literature, Astronomy, Biology, Chemical Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Law, Societies, & Justice, Social Welfare, Sociology
Writing effectively in the discipline	History, Neurobiology, English, Political Science, Slavic Studies, Sociology, Public Health, French & Italian Studies, Anthropology, Program on the Environment, Psychology, Evening Degree Program, Economics, Art, Biology, Earth & Space Sciences, Linguistics, Asian Languages & Literature	American Indian Studies, Aquatic & Fishery Sciences, Astronomy, Business, Chemical Engineering, Computer Science & Engineering. Environmental & Forest Sciences, Geography, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Social Welfare
Understanding and applying theories/concepts to cases	Public Health, Informatics, Political Science, American Indian Studies, English, Business, Environmental & Forest Sciences, Social Welfare, Program on the Environment, Linguistics, Psychology, Economics	Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Slavic Studies, Sociology
Spending a greater amount of time and/or doing more work than I had done for other courses	Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, History, Asian Languages & Literature, Anthropology, Biology, Industrial & Systems Engineering, Neurobiology, Environmental & Forest Sciences, Psychology, English, Social Welfare, Art, Economics	American Indian Studies, Aquatic & Fishery Sciences, Astronomy, Business, Evening Degree Program, French & Italian Studies, Geography, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Political Science, Program on the Environment, Public Health, Slavic Studies, Sociology
Conducting research	Geography, History, American Indian Studies, Slavic Studies, Psychology, Evening Degree Program, Art, Computer Science & Engineering, Economics, Asian Languages & Literature	Anthropology, Aquatic & Fishery Sciences, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, French & Italian Studies, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Social Welfare, Sociology

Table C2. Responses to Q2 by department (continued)

What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Dealing with unclear or poor instruction, no feedback, difficult class structure, or large class size	Chemical Engineering, Business, Biology, Sociology, Computer Science & Engineering, Economics, French & Italian Studies, Political Science, Earth & Space Sciences, Program on the Environment, English, Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Environmental & Forest Sciences, Evening Degree Program, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Psychology, Public Health, Slavic Studies, Social Welfare
What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Seeing ideas, issues, events from multiple and/or new perspectives	Program on the Environment, Sociology, Political Science, Anthropology, Social Welfare	American Indian Studies, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Psychology, Public Health, Slavic Studies
Understanding, analyzing, and using the reading in the discipline	Political Science, Slavic Studies, Law, Societies, & Justice, Linguistics, Psychology, History, English, Art, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, Industrial & Systems Engineering, Informatics, Materials Science & Engineering, Neurobiology, Program on the Environment, Public Health, Social Welfare, Sociology
Working in a group	Industrial & Systems Engineering, Informatics, Computer Science & Engineering, Environmental & Forest Sciences, Chemical Engineering, Evening Degree Program, French & Italian Studies, Social Welfare, Art, Political Science	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Earth & Space Sciences, Economics, English, Geography, History, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Sociology
Learning something about myself (such as how much I did not know); thinking about own values, ideas, identity, and beliefs	Social Welfare, American Indian Studies, Law, Societies, & Justice, English, Public Health, Psychology, Art	Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Slavic Studies, Sociology

Table C2. Responses to Q2 by department (continued)

What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Speaking in public	Political Science, History, Linguistics, Public Health, Art, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Slavic Studies, Social Welfare, Sociology
Working with the mathematical or statistical part of the course/assignments	Psychology, Computer Science & Engineering, Earth & Space Sciences, Geography, Environmental & Forest Sciences, Biology, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, English, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology
What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Using and extending knowledge from previous classes	Earth & Space Sciences, Art, Chemical Engineering, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Computer Science & Engineering, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Dealing with English language issues	Economics, Psychology	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology
Interacting with the public	Public Health, Program on the Environment, Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Psychology, Slavic Studies, Social Welfare, Sociology

Table C2. Responses to Q2 by department (continued)

What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Figuring out and integrating new technology into projects and assignments (e.g., programming in C for CSE; working with GIS in Geography)	Astronomy, Materials Science & Engineering, Industrial & Systems Engineering, Computer Science & Engineering, Geography	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Biology, Business, Chemical Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, History, Informatics, Law, Societies, & Justice, Linguistics, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare Sociology
Handling the broad scope of the project/classes; the breadth of material	Sociology, Computer Science & Engineering, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare
What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Translating learning into an object or experience; learning to trust the creative process (only Art))	Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program
Keeping up with the fast pace of the class	Informatics, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Having no interest in the subject or area (e.g., hardware vs software)	Computer Science & Engineering, Linguistics, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology

Table C2. Responses to Q2 by department (continued)

What made that activity/class challenging? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Meeting very high standards or a demanding work environment	Computer Science & Engineering, Program on the Environment, Social Welfare	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Psychology, Public Health, Slavic Studies, Sociology
Working in a competitive or hostile environment of peers	Biology	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology

Table C3. Responses to Q3 by department

What enabled or helped you to meet that challenge? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Own efforts (e.g., putting in extra time, devising new ways to study, better time management)	Business, Materials Science & Engineering, Computer Science & Engineering, French & Italian Studies, Linguistics. Evening Degree Program, Neurobiology, Slavic Studies, Asian Languages & Literature, Chemical Engineering, Political Science, Industrial & Systems Engineering, Aquatic & Fishery Sciences, Biology, Economics, Social Welfare, English, Psychology, Art, Sociology, Astronomy, History, Informatics, Anthropology, Environmental & Forest Sciences, Program on the Environment, American Indian Studies, Geography, Public Health, Earth & Space Sciences	Law, Societies, and Justice
Faculty/TAs	Slavic Studies, English, Psychology, Materials Science & Engineering, Neurobiology, Geography, Industrial & Systems Engineering, Political Science, Economics, Linguistics, Environmental & Forest Sciences, Earth & Space Sciences, Asian Languages & Literature, Sociology, Art, Biology, Aquatic & Fishery Sciences, Computer Science & Engineering, History, Program on the Environment, Social Welfare, Informatics, Chemical Engineering	American Indian Studies, Anthropology, Astronomy, Business, Evening Degree Program, French & Italian Studies, Law, Societies, & Justice, Public Health
Peers (e.g., via class discussion, group work, study groups, or informally)	Astronomy, Business, Asian Languages & Literature, English, Industrial & Systems Engineering, Computer Science & Engineering, Evening Degree Program, Neurobiology, Slavic Studies, Informatics, Economics, Biology, Earth & Space Sciences, Environmental & Forest Sciences, Art, Psychology, Program on the Environment, Social Welfare, Linguistics, Aquatic & Fishery Sciences, Public Health, History, Chemical Engineering, Geography, Political Science, Anthropology, French & Italian Studies, Sociology, Materials Science & Engineering	American Indian Studies, Law, Societies, & Justice
Aspects of the class itself (e.g., reading, content, lab work)	American Indian Studies, Public Health, Aquatic and Fishery Sciences, Anthropology, Slavic Studies, English, Psychology, Political Science, Computer Science & Engineering, Art, Earth & Space Sciences, Environmental & Forest Sciences, Economics, Biology, Geography	Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Social Welfare, Sociology
Learning to conduct independent research	Slavic Studies, Political Science, Aquatic & Fishery Sciences, Law, Societies, & Justice, History, Art, Informatics, Evening Degree Program, Psychology, Environmental & Forest Sciences, Geography, Economics	American Indian Studies, Anthropology, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, French & Italian Studies, s - Industrial & Systems Engineering, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Public Health, Social Welfare, Sociology
Looking at ideas, events, opinions from different perspectives/thinking critically	Law, Societies, & Justice, Informatics, Sociology, Program on the Environment, Art, Political Science, History, Evening Degree Program, Environmental & Forest Sciences	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, French & Italian Studies, Geography, Industrial & Systems Engineering, Linguistics, Materials Science & Engineering, Neurobiology, Psychology, Public Health, Slavic Studies, Social Welfare

Table C3. Responses to Q3 by department (continued)

What enabled or helped you to meet that challenge? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Content from previous courses	Math, Geography, Slavic Studies, Psychology, Computer Science & Engineering,, Public Health, English, Program on the Environment, Art, Economics, Political Science	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Social Welfare, Sociology
Learning to read critically and analytically for the discipline	Aquatic & Fishery Sciences, History, Political Science, Biology	American Indian Studies, Anthropology, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Self-awareness/changes in self	Anthropology, Social Welfare, Art, Environmental & Forest Sciences, Psychology	American Indian Studies, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Sociology
Learning to apply perspective/theory	Anthropology, Political Science	American Indian Studies, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Tutoring (e.g., CLUE, departmental learning centers, writing centers)	Biology, Psychology, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Public Health, Slavic Studies, Social Welfare, Sociology

Table C3. Responses to Q3 by department (continued)

What enabled or helped you to meet that challenge? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Experts and others outside of the classroom (e.g., family, community members)	American Indian Studies, Aquatic & Fishery Sciences, Informatics, Asian Languages & Literature	Anthropology, Art, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
I did not meet the challenges in the major (e.g., dropped, retook class)	Biology, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Hands-on experience (e.g., labs, field trips)	Social Welfare, Environmental & Forest Services	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Evening Degree Program, French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Sociology

Table C4. Responses to Q4 by department

What did students learn by completing this course or activity? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Content knowledge	Computer Science & Engineering, Linguistics, Astronomy, Political Science, American Indian Studies, Materials Science & Engineering, Environmental & Forest Sciences, Asian Languages & Literature, Neurobiology, Psychology, Earth & Space Sciences, Sociology, Anthropology, Program on the Environment, Evening Degree Program, French & Italian Studies, Economics, Law, Societies, & Justice, Industrial & Systems Engineering, Chemical Engineering, English, Biology, Social Welfare, Art	Aquatic & Fishery Sciences, Business, Geography, History, Informatics, Public Health, Slavic Studies
How to think critically, how to think scientifically, how to consider multiple perspectives	Law, Societies, & Justice, Gender, Women, & Sexuality Studies, Political Science, Sociology, English, History, Public Health, French & Italian Studies, Biology, Program on the Environment, Evening Degree Program, Industrial & Systems Engineering, Aquatic & Fishery Sciences, Social Welfare, Informatics, Psychology, Neurobiology, Economics, Art, Materials Science & Engineering, Anthropology, Geography, Environmental & Forest, Sciences, Computer Science & Engineering	American Indian Studies, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Earth & Space Sciences, Linguistics, Slavic Studies
More about self (e.g., identity, stronger sense of own abilities) or own learning processes	Social Welfare, Math, Anthropology, Art, Computer Science & Engineering, Psychology, English, Asian Languages & Literature, Business, French & Italian Studies, History, Earth & Space Sciences, Political Science, Biology, Environmental & Forest Sciences, Industrial & Systems Engineering, Informatics, Evening Degree Program, Economics, Program on the Environment	American Indian Studies, Aquatic & Fishery Sciences, Astronomy, Chemical Engineering, Geography, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Public Health, Slavic Studies, Sociology
New ways to study a subject/better study habits	Slavic Studies, Biology, Neurobiology, Chemical Engineering, American Indian Studies, Psychology, Economics, Materials Science & Engineering, Environmental & Forest Sciences, Sociology, Earth & Space Sciences, Linguistics, Art, History, Program on the Environment, Informatics, Evening Degree Program, Public Health, French & Italian Studies, English	Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Business, Computer Science & Engineering, Geography, Industrial & Systems Engineering, Law, Societies, & Justice, Political Science, Social Welfare
How to conduct research	Slavic Studies, Aquatic & Fishery Sciences, History, Geography, American Indian Studies, Linguistics, Psychology, Materials Science & Engineering, Anthropology, Social Welfare, Political Science, Informatics, Environmental & Forest Sciences, English, Economics, Asian Languages & Literature, Art	Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Evening Degree Program, French & Italian Studies, Industrial & Systems Engineering, Law, Societies, & Justice, Neurobiology, Program on the Environment, Public Health, Sociology
How to write more effectively	History, Neurobiology, American Indian Studies, English, Slavic Studies, Evening Degree Program, Psychology, Sociology, Political Science, Chemical Engineering, Program on the Environment, Geography, Earth & Space Sciences, Linguistics, Economics, Biology, Art	Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Business, Computer Science & Engineering, Environmental & Forest Sciences, French & Italian Studies, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Public Health, Social Welfare
How to work with others/teamwork	Materials Science & Engineering, Industrial & Systems Engineering, Business, Chemical Engineering, Informatics, Environmental & Forest Sciences, English, Public Health, Economics, Computer Science & Engineering, Evening Degree Program, Political Science, Earth & Space Sciences, Asian Languages & Literature, Art, Psychology	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Astronomy, Biology, French & Italian Studies, Geography, History, Law, Societies, & Justice, Linguistics, Neurobiology, Program on the Environment, Slavic Studies, Social Welfare, Sociology

Table C4. Responses to Q4 by department (continued)

What did students learn by completing this course or activity? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
How to apply course content to cases	Earth & Space Sciences, Chemical Engineering, Economics, Business, English, Anthropology, Industrial & Systems Engineering, Political Science, Public Health, Art, Computer Science & Engineering, Psychology	American Indian Studies, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, Geography, History, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Slavic Studies, Social Welfare, Sociology
More about future career path/future research interests	Aquatic & Fishery Sciences, Neurobiology, Computer Science & Engineering, Geography, Art, Psychology, English, Biology, Social Welfare, Economics	American Indian Studies, Anthropology, Asian Languages & Literature, Astronomy, Business, Chemical Engineering, Earth & Space Sciences, Environmental & Forest Sciences, Evening Degree Program, French & Italian Studies, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Political Science, Program on the Environment, Public Health, Slavic Studies, Sociology
More about the discipline and how it operates	Neurobiology, Geography, History, Environmental & Forest Sciences, Informatics, Art, Political Science, Computer Science & Engineering, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Earth & Space Sciences, English, Evening Degree Program, French & Italian Studies, Industrial & Systems Engineering, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Improved foreign language skills	Asian Languages & Literature, French & Italian Studies, Slavic Studies	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Social Welfare, Sociology
How to use all resources available (e.g., professors, TA's, study centers)	Industrial & Systems Engineering, Asian Languages & Literature, Linguistics, Art, Sociology, Political Science, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Informatics, Law, Societies, & Justice, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare

Table C4. Responses to Q4 by department (continued)

What did students learn by completing this course or activity? (Listed in order of most student mentions)	Departments in which this theme was mentioned (Departments listed in order of frequency of mention by interviewees)	Departments in which this was not a theme (Departments listed alphabetically)
Professional skills (e.g., presentation skills, client relations)	Public Health, Political Science, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Program on the Environment, Psychology, Slavic Studies, Social Welfare, Sociology
Technical skills (e.g., coding, statistical packages)	Informatics, Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
Nothing/don't know	Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology
The importance of community	Public Health, Art	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, Economics, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Slavic Studies, Social Welfare, Sociology
How to choose better courses/instructors	Economics	American Indian Studies, Anthropology, Aquatic & Fishery Sciences, Art, Asian Languages & Literature, Astronomy, Biology, Business, Chemical Engineering, Computer Science & Engineering, Earth & Space Sciences, English, Environmental & Forest Sciences, Evening Degree Program, , French & Italian Studies, Geography, History, Industrial & Systems Engineering, Informatics, Law, Societies, & Justice, Linguistics, Materials Science & Engineering, Neurobiology, Political Science, Program on the Environment, Psychology, Public Health, Slavic Studies, Social Welfare, Sociology