Undergraduate Institutional Learning Outcomes (ILO) Report

Presentation of survey and focus group results & ILO recommendations

Prepared by *ILO* Team

April 15, 2022

***ILO* Website**

Extended Abstract

Overview

The results we are sharing with the Pace community in this report is part of the longer process in the development of university Institutional Learning Outcomes (*ILO*s). A detailed accounting of this process can be found on the *ILO* website. Engaging in an *ILO* development process allows us to explore the interrelationships among student learning outcomes (*SLO*s) across both academic and non-academic, or student-facing programs and how SLOs inform the creation of *ILO*s. Additionally, this inquiry process will help inform our current work on strategic planning. Our general goal is to generate a set of *ILO*s in collaboration with the university community. We have initiated a process of undergraduate *ILO* development unique to Pace and offer three principles guiding this inquiry process:

1. *ILO*s should represent student learning competency that is commensurate with the institution's mission.
2. *ILO*s should be clearly operationalized defined and their assessment achievable via a range of methodological approaches.
3. The number of *ILO*s should be reasonably small (say, 5 or less), which would allow for sustainable and efficient assessment.

This report describes the methodologies used in creating the *ILO* survey and focus groups and the administration process. Results for both the survey and the focus groups are then presented. General themes suggested by the findings will be described and be used to develop a set of recommended *ILO*s. The entire report will be placed on our *ILO* website and the community will be asked to comment on the report and our recommendations. Once the comment period has ended, the final *ILO* recommendations will be presented to the Pace community for approval.

Survey and Focus Group Development and Administration

ILO Survey: The goal of our survey was to gather perceptions of the importance of Student Learning Outcomes (*SLO*) in the formation of a Pace student graduating with an undergraduate degree. To meet that end, *SLO*s were chosen from 2020-21 program-based assessment reports, sampling from both academic and non-academic units. An initially large number of *SLO*s was reviewed by the *ILO* team and were winnowed down to 22 *SLO*s to be included in the survey. The survey consisted of three components. First, participants rated each *SLO* on level of importance based on the following instructions: *we are asking that you rate, using the following 4-point scale,* ***the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university.*** Secondly, participants were asked to identify, from the list of 22 *SLO*s, the ***five*** most important *SLO*s (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university. They were also asked to identify one *SLO* not listed in this survey that they believe is an important contributor towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university. Thirdly, participants were asked to respond to a series of demographic questions.

The survey was placed on Qualtrics and strategies were implemented to maximize participation by the Pace community. These strategies included (1) placing an announcement on the *Classes* homepage, with a brief description of the survey purpose and the link, (2) sending out separate emails to faculty, students, and staff, from the Provost's Office, with information regarding the survey, and (3), reaching out, via specialized listservs, to faculty, students, staff, about the survey.

Focus Group: In order to gather qualitative data on the importance of *SLO*s, focus groups were conducted for faculty, students, staff. Focus group participants were asked, as part of the process of developing Institutional Learning Outcomes (*ILO*), to engage in small-group discussions in order to gather your insights and perspectives. Specific scripts for faculty, students, and staff were used by focus group facilitators (members of the *ILO* team) to help standardize the discussions.

Focus groups were conducted via Zoom and lasted between 45 and 60 minutes. All sessions were recorded and written transcripts were generated. These transcripts were used to extract themes from the discussions and this process was aided by the use of NVivo, a qualitative data analytic program.

Samples

ILO Survey: Of the 451 participants who completed the survey, 68% were students, 20% were faculty, and 12% were staff members. Seven academic disciplines were represented for both students and faculty and seven divisions were represented for staff.

Focus Groups: Ten focus groups were conducted: six staff groups, two faculty groups, and two student groups. Focus group sizes ranged from four to eight participants. The faculty groups were evenly balanced between the arts and sciences and professional disciplines. The staff participants represented the range of administrative divisions. Student groups were formed in consultation with representatives from the Student Government Associations.

Results Presentation Considerations

We made several decisions on how to present results of the *ILO* survey which we will review here. First, off the 22 Student Learning Outcomes (*SLO*) chosen for our survey, we evaluated whether they could be organized around meaningful themes. Aided by a dimension reduction statistical technique, was used for this purpose, we determined whether the *SLO*s could be explained by a smaller number of groupings in an interpretable manner. We decided that the 22 *SLO*s could be organized within two meaningful thematic groups. These groupings were entitled (1) *Knowledge Acquisition – General and Disciplinary* and *(2) Professional Dispositions - Values, Cognitive, Communication.* Results are presented separately for each *SLO* grouping.

Key Findings

Although most *SLO*s were seen as important, survey results identified five *SLO*s in each of the thematic groupings that emerged as most important:

Knowledge Acquisition – General and Disciplinary: (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem-solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, (4) Locate, evaluate and make efficient and ethical use of information resources, and (5) Conduct and use primary and secondary research effectively within the discipline.

Professional Dispositions - Values, Cognitive, Communication: (1) Demonstrate strong leadership (2) Demonstrate strong problem solving skills, (3) Understand and value diversity, (4) Demonstrate strong communication skills, and (5) Demonstrate respect for the values of others.

Faculty rated the following *SLO*s more important than students (listed in order of strength of difference): (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, and (4) Demonstrate strong problem-solving skills. Students rated the importance of strong leadership skills higher than faculty.

Two notable differences emerged for faculty within the professions versus the arts and sciences. Those within the professions valued problem-solving skills using scientific and quantitative reasoning more highly than arts and sciences faculty, whereas arts and sciences faculty valued becoming familiar with traditions that shape our world and nation more highly than those within the professions

Students in both yearly categories tended to value all professional dispositions *SLO*s more highly than knowledge acquisition *SLO*s. However, in their latter time at Pace Juniors/Seniors reported higher importance on the following *SLO*s, relative to Freshman/Sophomores: (1) become familiar with traditions that shape our world and nation, (2) reading texts and foster humanistic values, and (3) develop a comprehensive capstone project that demonstrates skills within the discipline.

Evaluation of focus group narratives yielded themes that were commensurate with the *SLO*s identified as most important via the survey data. Moreover, they highlighted, with greater emphasis than the survey results showed, *SLO*s reflective of practice- and community-based competencies. These emphases were more strongly reflected in student and staff groups. For faculty, the following five major *SLO* themes were garnered from these discussions: (1) Communication skills, (2) leadership skills, (3) disciplinary knowledge, (4) valuing diversity, and (5) global responsibility. For students, five major *SLO* themes emerged from these discussions: (1) Communication skills, (2) Collaborative skills, (3) adaptability, (4) transferable skills, and (5) valuing diverse perspectives. For staff, (1) Communication, (2) Professional dispositions, (3) Collaborative problem-solving, (4) Leadership skills, and (5) adaptive and transferable skills.

In our review of *SLO*s evaluated for academic and non-academic (student facing) units, it was evident that professional dispositions and practice-based *SLO*s were more frequently evaluated in non-academic program-based reports, whereas disciplinary-specific *SLO*s were more frequently evaluated in academic program-based reports. The importance differences found in this study were consistent with what was emphasized in program outcomes evaluated for each unit.

ILO Recommendations

At the beginning of the *ILO* development process, we put forth three principles guiding the inquiry process:

1. *ILO*s should represent student learning competency that is commensurate with the institution's mission.
2. *ILO*s should be clearly operationalized defined and their assessment achievable via a range of methodological approaches.
3. The number of *ILO*s should be reasonably small (say, 5 or less), which would allow for sustainable and efficient assessment.

We believe our recommendations are commensurate with those three principles.

The following recommended *ILO*s were informed by the quantitative and qualitative findings garnered from the data collection/analysis phase of the *ILO* process. Only *SLO*s listed and evaluated in program-based assessments were used in the survey analysis phase, whereas focus group discussions were not tethered to any set of *SLO*s. However, even those discussions related to actual *SLO*s assessed at Pace. Consequently, these *ILO*s reflect student learning that is actually assessed at Pace. Hence, they are not aspirational.

Program development and evaluation are not static at the university. As program-based *SLO*s expand via the dynamic process of program growth, *ILO*s will need to be modified to account for that expansion. We end this section with guidelines on how *ILO* reformulation can be informed by dynamic program change.

*SLO*s organized around two general themes, *Knowledge Acquisition: General & Disciplinary* and *Professional Dispositions: Values, Cognition, & Communication*. Five *SLO*s within each grouping stood out as most important by faculty, students, and staff: albeit with varying differences between students and faculty and within academic disciplines. Additionally, focus group narratives not only supported the numerical findings,

but highlighted the importance of professional practice competencies. Our full report and recommendations were available for public comments from 4/1 through 4/14, and minor changes to our recommendations were guided by those comments.

From these findings, we recommend three key *ILO*s related to knowledge acquisition:

1. *Students are equipped to thoughtfully discuss, analyze, and apply discipline-based subject matter in writing and verbally*. These attributes reflect the ability to locate primary and secondary source material, understand source integrity, and use that information in an effective manner.
2. *Students possess effective problem-solving strategies*. These skills promote effective use of textual material and scientific and quantitative reasoning and the ability to adapt strategies relevant to changing contexts.
3. *Students are engaged in discipline-based professional practice in a socially responsible manner*. Development of these skills were, in part, shaped via the myriad of experiential learning opportunities offered to students.

We also recommend two *ILO*s related to professional dispositions:

4. *Students demonstrate strong leadership and communication skills*. These skill manifest in group activities, fostering effective change, augmented by values that respect opinions of others.
5. *Students understand and value diversity.* These skills have been shaped by civic engagement activities and an understanding of social justice issues.

Note that the first sentence of Mission Statement, developed as part of the Strategic Planning Process, reads: *Pace University provides to its undergraduates a powerful combination of knowledge in the professions, real-world experience, and a rigorous liberal arts curriculum, giving them the skills and habits of mind to realize their full potential.* Our recommended *ILO*s, we believe, are commensurate with this statement, emphasizing student learning for Pace graduates in their chosen disciplines, general knowledge, and the social skills enabling them to effectively contribute to the broader community. These attributes are succinctly expressed in the last sentence of our mission statement, *…will enable all Pace graduates to realize their full potential as innovative thinkers and active problem solvers who are uniquely trained to make positive and enduring contributions to our future world.*

Program development and modification is a dynamic process at Pace, and, consequently, reformulating *ILO*s may be required based on the expansion of *SLO*s assessed and developed over time. We recommend mechanisms for driving this process. Yearly summary reports on program-based assessment activities are currently required for all programs within both our academic and non-academic (student-facing) units. We should highlight, from these annual summary reports, year-by-year changes in programs offered and *SLO*s assessed to formally document the results of dynamic program development. After, say, five years, we should evaluate our current *ILO*s considering these longitudinal changes, and modify those *ILO*s guided by the evidence collected.

STUDY OVERVIEW

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METHODOLOGY

Survey and Focus Group Development and Administration

ILO Survey

The goal of our survey was to gather perceptions of the importance of Student Learning Outcomes (*SLO*)in the formation of a Pace student graduating with an undergraduate degree. To meet that end, *SLO*s were chosen from 2020-21 program-based assessment reports, sampling from both academic and non-academic units. An initially large number of *SLO*s was reviewed by the *ILO* team and were winnowed down to 22 *SLO*s to be included in the survey. The survey consisted of three components. First, participants rated each *SLO* on level of importance based on the following instructions: *we are asking that you rate, using the following 4-point scale, **the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university.*** Secondly, participants were asked to identify, from the list of 22 *SLO*s, the ***five*** most important *SLO*s (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university. They were also asked to identify one *SLO* not listed in this survey that they believe is an important contributor towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university. Thirdly, participants were asked to respond to a series of demographic questions. The compete *ILO* survey can be found in Appendix A.

The survey was placed on Qualtrics and strategies were implemented to maximize participation by the Pace community. These strategies included (1) placing an announcement on the *Classes* homepage, with a brief description of the survey purpose and the link, (2) sending out separate emails to faculty, students, and staff, from the Provost's Office, with information regarding the survey, and (3), reaching out, via specialized listservs, to faculty, students, staff, about the survey.

Focus Group

In order to gather qualitative data on the importance of *SLO*s, focus groups were conducted for faculty, students, staff. Focus group participants were asked, as part of the process of developing Institutional Learning Outcomes (*ILO*), to engage in small-group discussions in order to gather your insights and perspectives. Specific scripts for faculty, students, and staff were used by focus group facilitators (members of the *ILO* team) to help standardize the discussions. These scripts are contained in Appendix B.

Focus groups were conducted via Zoom and lasted between 45 and 60 minutes. All sessions were recorded and written transcripts were generated. These transcripts were used to extract themes from the discussions and this process was aided by the use of NVivo, a qualitative data analytic program.

RESULTS

Description of Samples

ILO Survey

Of the 451 participants who completed the survey, 68% were students, 20% were faculty, and 12% were staff members. Disciplines represented for students included: Natural Sciences (5%), Social or Behavioral Sciences (15%), Humanities/Arts (22%), Business (29%), Education (9%), Health Professions (14%), and Computer Science/Information Systems (6%). The distribution of students by year is as follows: 41% Freshman, 19% Sophomores, 19% Juniors, and 21% Seniors. Disciplines represented by faculty included: Natural Sciences (12%), Social or Behavioral Sciences (34%), Humanities/Arts (17%), Business (10%), Education (8%), Health Professions (12%), and Computer Science/Information Systems (7%). Divisions staff worked in included: Student Affairs (29%), Academic Departments (25%), President/Provost/Dean's Offices (20%), Student Advisement (12%), Library (8%), University Relations (4%), and Tutorial Services (2%). Seventy-seven % of faculty and 85% of staff were full-time. Mean ages for faculty, staff, and students were 54, 24, and 42, respectively. For the general sample, 29% identified as male, 67% as female, and 4% as non-binary/other. 49% of the sample identified as White, 15% as Black or African American, 14% as Hispanic or Latinx, and 13% as Asian.

Focus Groups

Ten focus groups were conducted: six staff groups, two faculty groups, and two student groups. Focus group sizes ranged from four to eight participants. The faculty groups were evenly balanced between the arts and sciences and professional disciplines. The staff participants represented the range of administrative divisions. Student groups were formed in consultation with representatives from the Student Government Associations.

Results

Results Presentation Considerations

We made several decisions on how to present results of the *ILO* survey which we will review here. First, off the 22 Student Learning Outcomes (*SLO*) chosen for our survey, we evaluated whether they could be organized around meaningful themes. Aided by a dimension reduction statistical technique, was used for this purpose, we determined whether the *SLO*s could be explained by a smaller number of groupings in an interpretable manner. We decided that the 22 *SLO*s could be organized within two meaningful thematic groups. These groupings are presented in Table 1 and are entitled (1) *Knowledge Acquisition – General and Disciplinary* and *(2) Professional Dispositions - Values, Cognitive, Communication.* Going forward, results are presented separately for each *SLO* grouping. A more detailed accounting of the dimension reduction technique, used in helping us

reach these groupings, is presented in Appendix C. Secondly, the *SLO* importance ratings for were heavily skewed in the positive direction. Given that pattern, to best differentiate each *SLO*'s importance, we presented results in two ways: (1) Percentage rated *Very Important*, and (2) Percentage included in participants' top 5 most important lists. Finally, to aid the reader in better understanding results patterns, we presented our findings in graphical form throughout the report (Figures 1 – 20). However, numerical results presented in tabular form are contained in Appendix D as well.

Table 1: Thematic SLO Group Based on Principal Components Analysis

Thematic Group 1 (11 SLOs:): Knowledge Acquisition – General and Disciplinary

Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline

Use the scientific method to develop questions and experimental methods within the discipline

Discuss and analyze discipline-based subject matter and content in writing

Conduct and use primary and secondary research effectively within the discipline

Discuss and analyze discipline-based subject matter and content verbally

Study important works of the human imagination in order to develop esthetic and literary sensibility

Develop problem solving strategies using scientific and quantitative reasoning

Read important texts that foster humanistic values

Develop a comprehensive capstone project that demonstrates skills acquired within the discipline

Become familiar with traditions that shape our world and nation

Locate, evaluate and make efficient and ethical use of information resources

Thematic 2 Group (11 SLOs): Professional Dispositions - Values, Cognitive, Communication

Be responsible and involved in the community

Understand and value diversity

Demonstrate strong leadership

Know how to get things done in committees, team projects and other group efforts

Demonstrate respect for the values of others

Identify how their values impact choices regarding careers and relationships

Demonstrate strong communication skills

Identify mechanisms to affect change through civic engagement opportunities

Demonstrate hands-on experience with an understanding of social justice issues

Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner

Demonstrate strong problem solving skill

ILO Survey

Overall Sample. Figures 1 through 4 present results for percentages rated Very Important and percentages in top 5 list separately for *Knowledge Acquisition* and *Professional Dispositions SLO*s. In each figure, *SLO*s are listed in order of level of importance. Although most SLOs were seen as important, these figures identify five SLOS in each of the thematic groupings that emerged as most important:

Knowledge Acquisition – General and Disciplinary: (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, (4) Locate, evaluate and make efficient and ethical use of information resources, and (5) Conduct and use primary and secondary research effectively within the discipline.

Professional Dispositions - Values, Cognitive, Communication: (1) Demonstrate strong leadership (2) Demonstrate strong problem-solving skills, (3) Understand and value diversity, (4) Demonstrate strong communication skills, and (5) Demonstrate respect for the values of others.

By Cohort. Figures 5 through 8 present Very Important ratings and top 5 percentages by students, faculty, and staff, separately for *Knowledge Acquisition* and *Professional Dispositions SLO*s. Rating patterns were mostly similar across cohorts, with students and staff generally rating professional dispositions *SLO*s above that of faculty. Faculty viewed a number of discipline-based *SLO*s as more important than students and staff. These differences will be evaluated in more detail in the next section.

Exploring Cohort Differences. The aforementioned results identified some cohort differences in *SLO* importance. To better understand patterns of differences, the following strategy was followed. First, students versus faculty only are explored. This decision was motivated by the similar importance patterns between students and staff and the smaller number of staff participants, which would impede identifying these patterns. Secondly, based on review of the results presented in Figures 1 - 4, we explored differences on the top five most important Knowledge Acquisition and Professional Dispositions *SLO*s only. Discriminant Analysis was performed to compare the set of ten *SLO*s between students and faculty. Appendix E contains a more technical summary of these results. We found some differences and similarities in rating importance between these two cohorts, which are presented in Table 2. In this table, *SLO*s were separated in to the two thematic groupings and listed in order of strength of differences between students and faculty. To summarize, faculty rated the following *SLO*s more important than students (listed in order of strength of difference): (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, and (4) Demonstrate strong problem solving skills. Students rated the importance of strong leadership skills higher than faculty.

By Academic Discipline. Figures 9 through 16 present Very Important ratings and top 5 percentages, separately for student and faculty academic disciplines. Note, for ease of presentation, academic discipline was collapsed into two categories: *Arts and Sciences*, constituting, Natural Sciences, Social or Behavioral Sciences, Humanities/Arts and *Professions*, constituting Business, Education, Health Professions, and Computer Science/Information Systems. Importance patterns by discipline were generally similar within both the student and faculty samples. Two notable differences emerged for faculty within the professions versus the arts and sciences. Those within the professions valued problem-solving skills using scientific and quantitative reasoning more highly than arts and sciences faculty, whereas arts and sciences faculty valued becoming familiar with traditions that shape our world and nation more highly than those within the professions (this pattern most vividly seen in Figure 13).

Table 2: Differences Between Students and Faculty on Level of Importance for the Top 5 SLOs in each Theoretical Grouping

***SLO** (Top 5 in theoretical grouping included)*	***Students Vs. Faculty On level of SLO Importance***
Knowledge Acquisition – General and Disciplinary	
Discuss and analyze discipline-based subject matter and content in writing	Students < Faculty
Develop problem solving strategies using scientific and quantitative reasoning	Students < Faculty
Discuss and analyze discipline-based subject matter and content verbally	Students < Faculty
Locate, evaluate and make efficient and ethical use of information resources	No Difference
Conduct and use primary and secondary research effectively within the discipline	No Difference
Professional Dispositions - Values, Cognitive, Communication	
Demonstrate strong leadership	Students > Faculty
Demonstrate strong problem solving skills	Students < Faculty
Understand and value diversity	No Difference
Demonstrate strong communication skills	No Difference
Demonstrate respect for the values of others	No Difference

Note: The top 5 most important SLOs in each theoretical grouping presented in this table were determined by review of results in Figures 1 – 4. SLOs in each grouping listed in order of strength of difference between students and faculty.

Figure 1: Percent Rated Very Important for Knowledge Acquisition SLOs

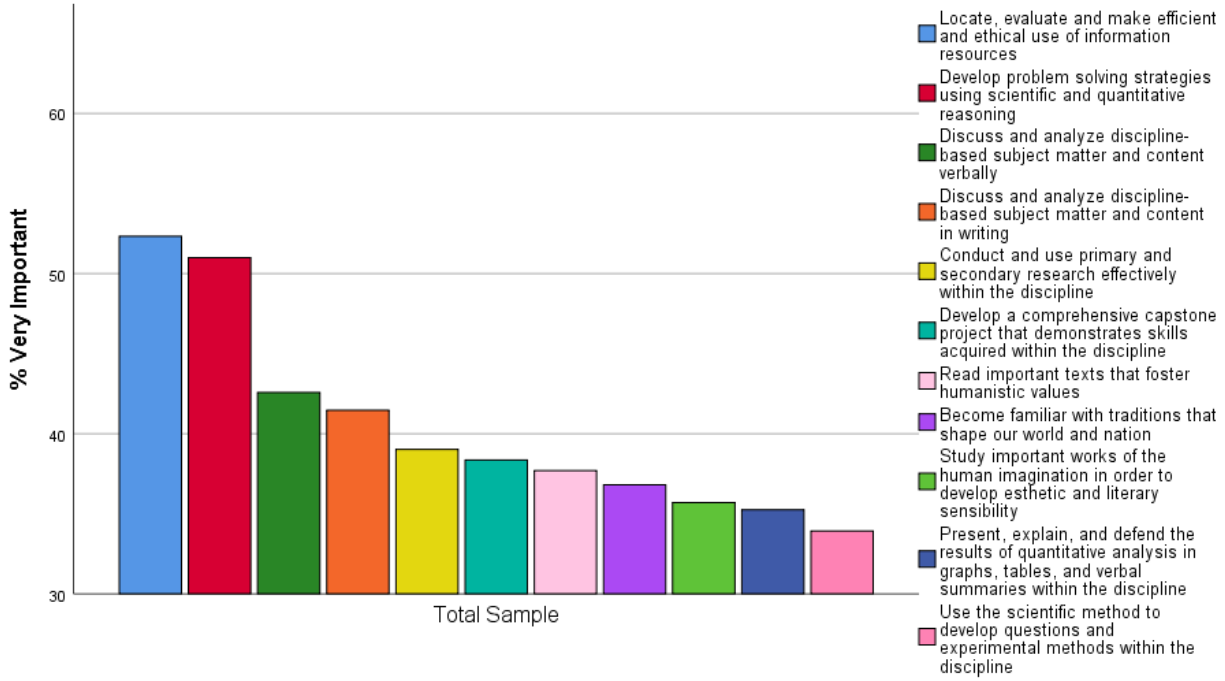


Figure 2: Percent Rated Very Important for Professional Dispositions SLOs

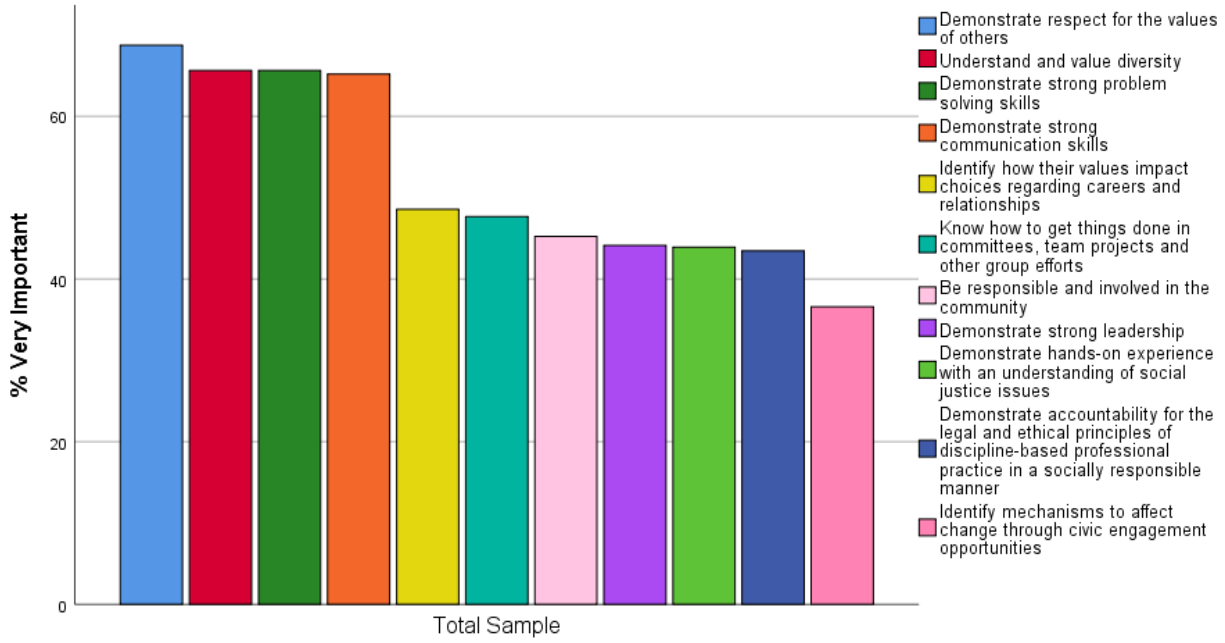


Figure 3: Percent in Top 5 for Knowledge Acquisition SLOs

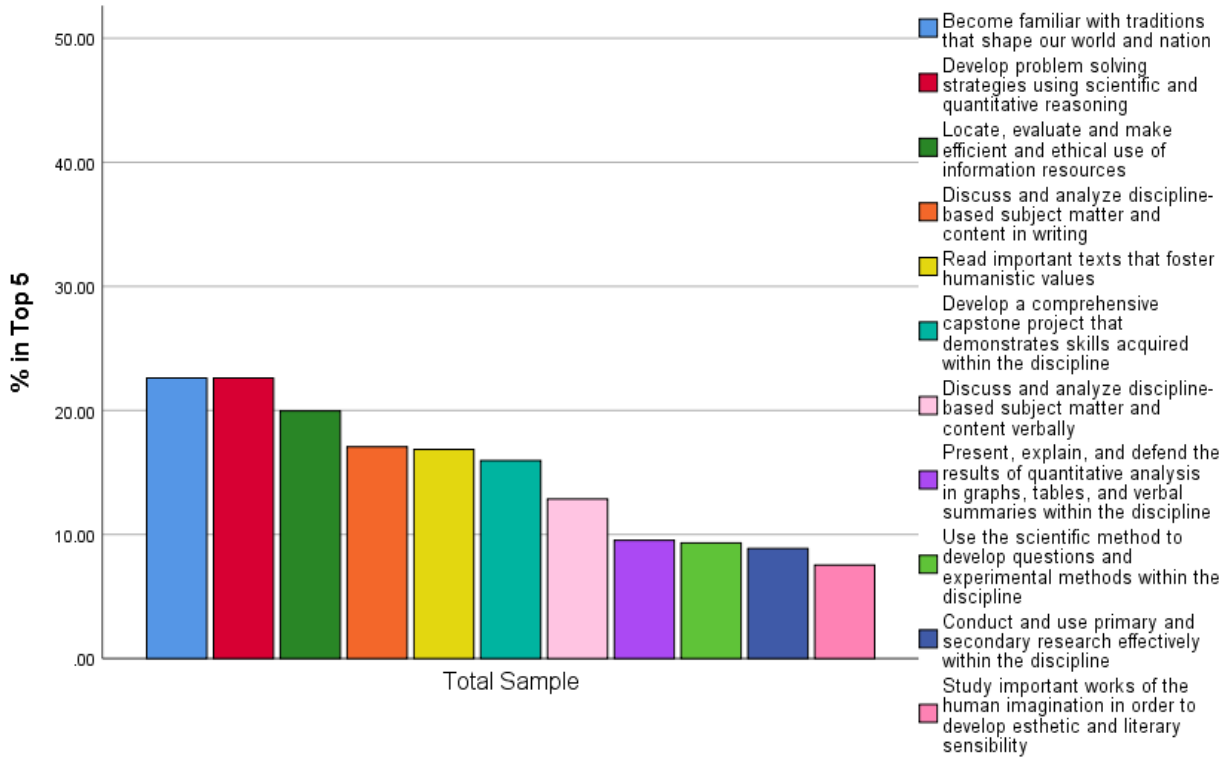


Figure 4: Percent in Top 5 for Professional Dispositions SLOs

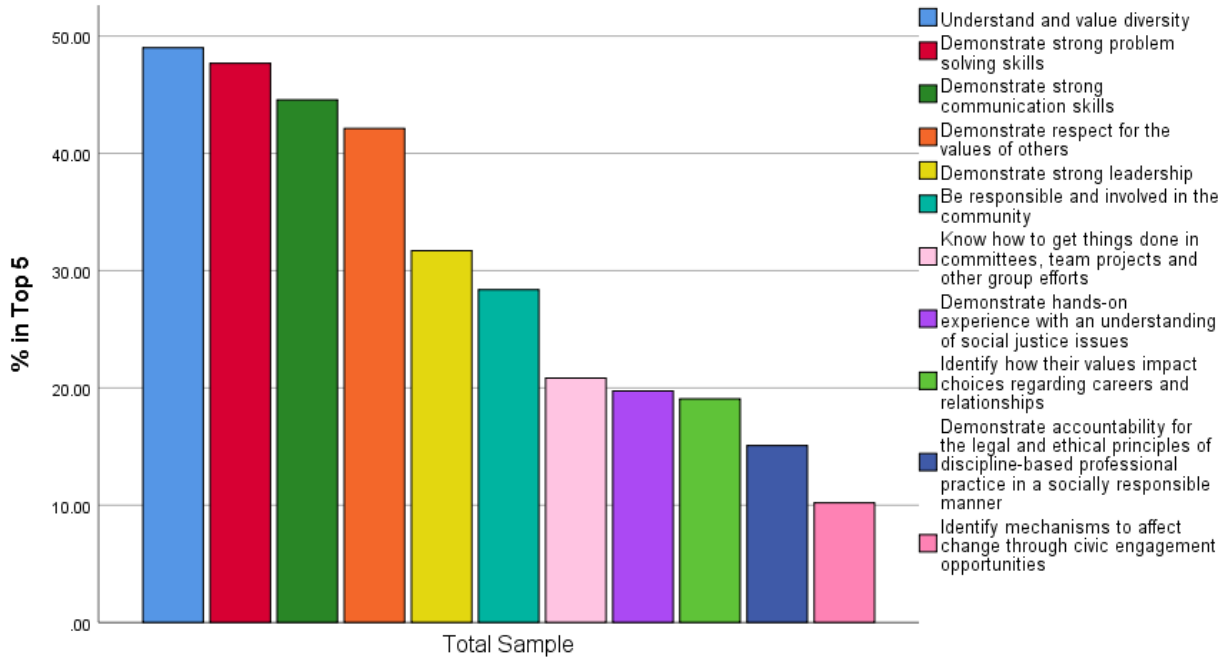


Figure 5: Percent Rated Very Important by Cohort for Knowledge Acquisition SLOs

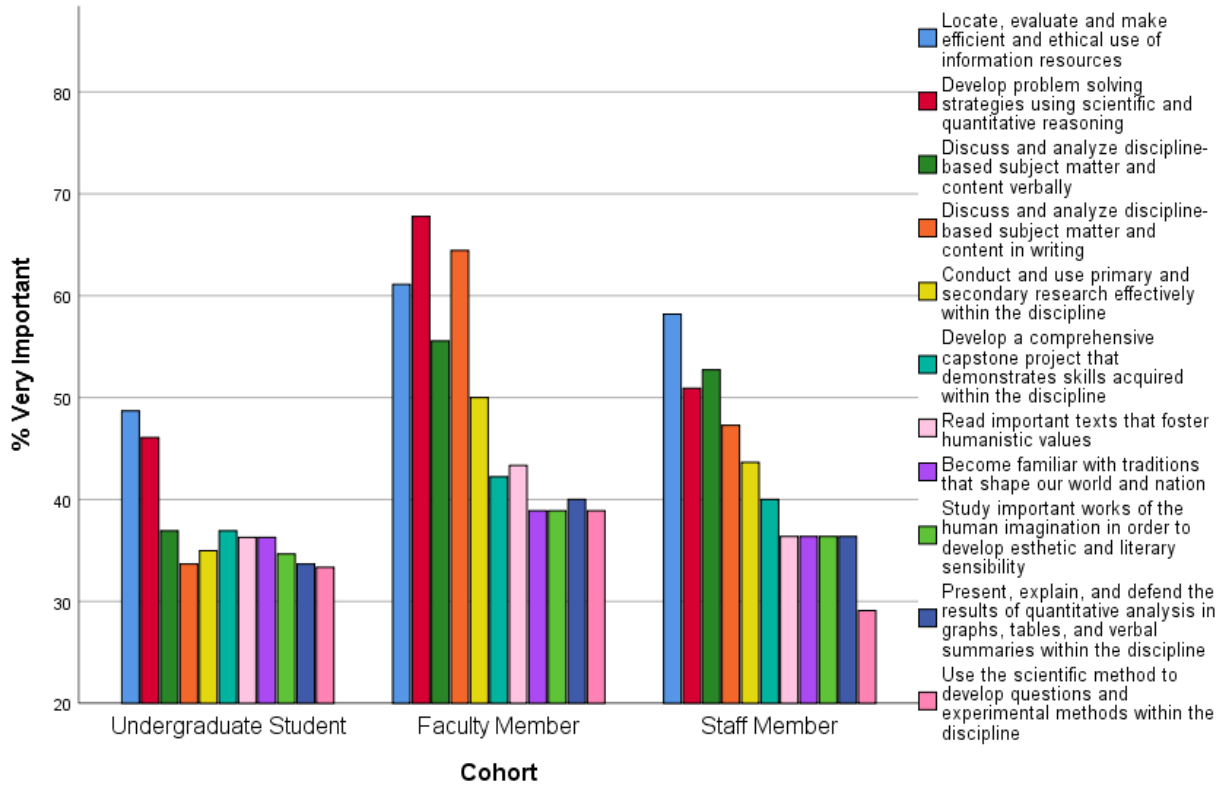


Figure 6: Percent Rated Very Important by Cohort for Professional Dispositions SLOs

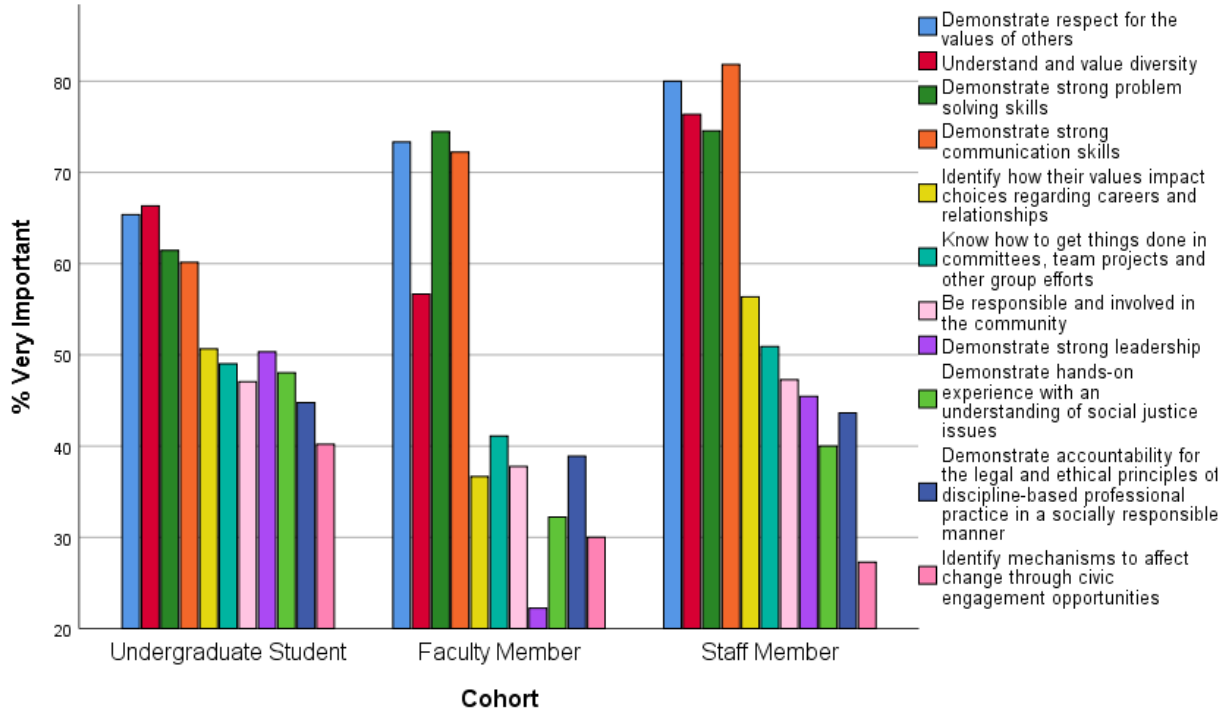


Figure 7: Percent In Top 5 by Cohort for Knowledge Acquisition SLOs

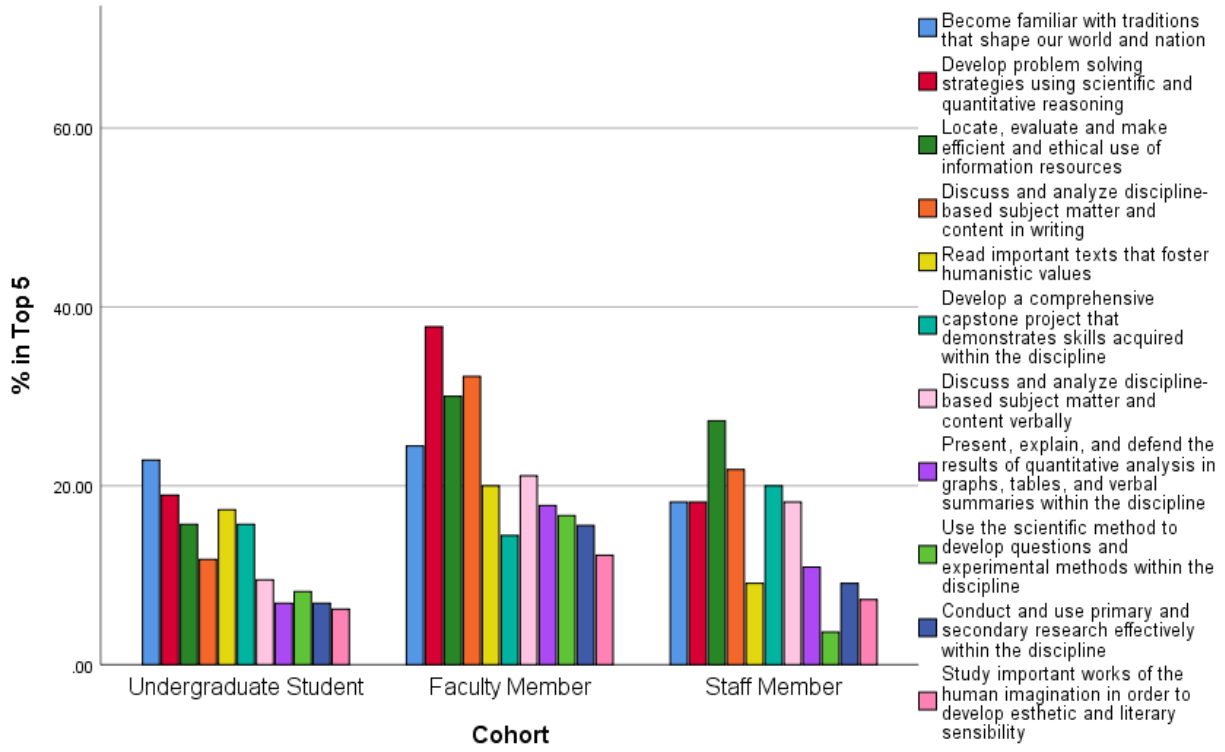


Figure 8: Percent In Top 5 by Cohort for Professional Dispositions SLOs

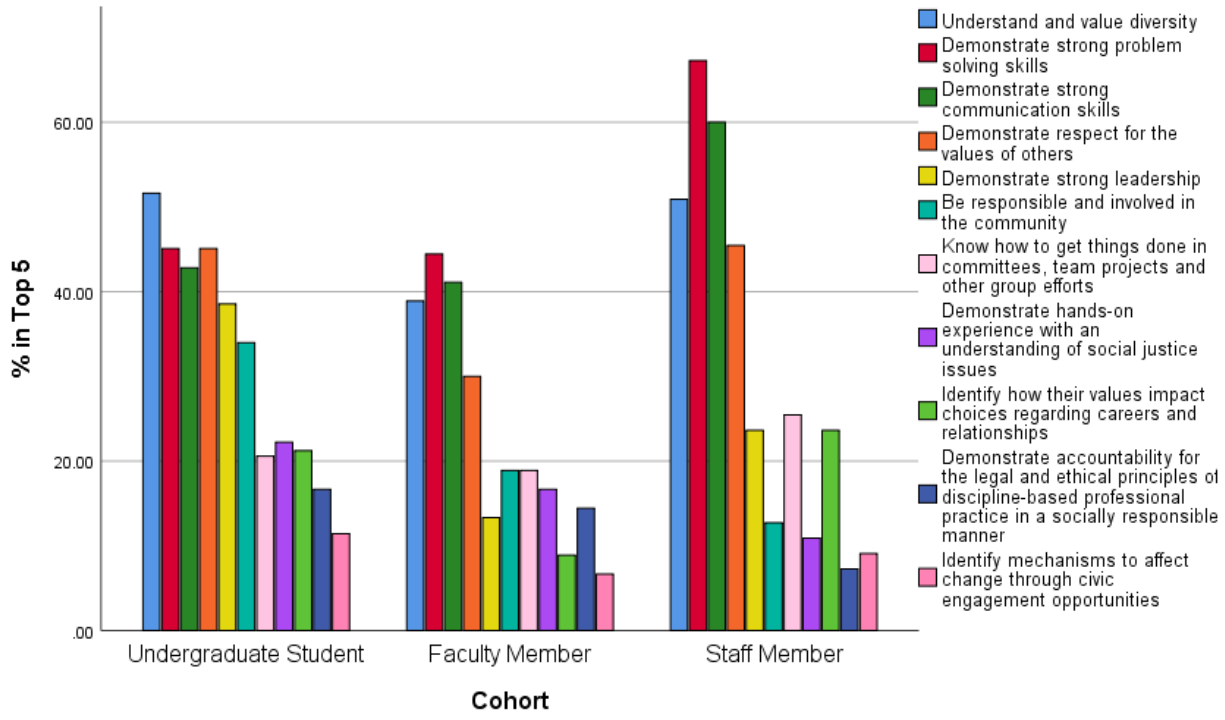


Figure 9: Percent Rated Very Important by Faculty Discipline for Knowledge Acquisition SLOs

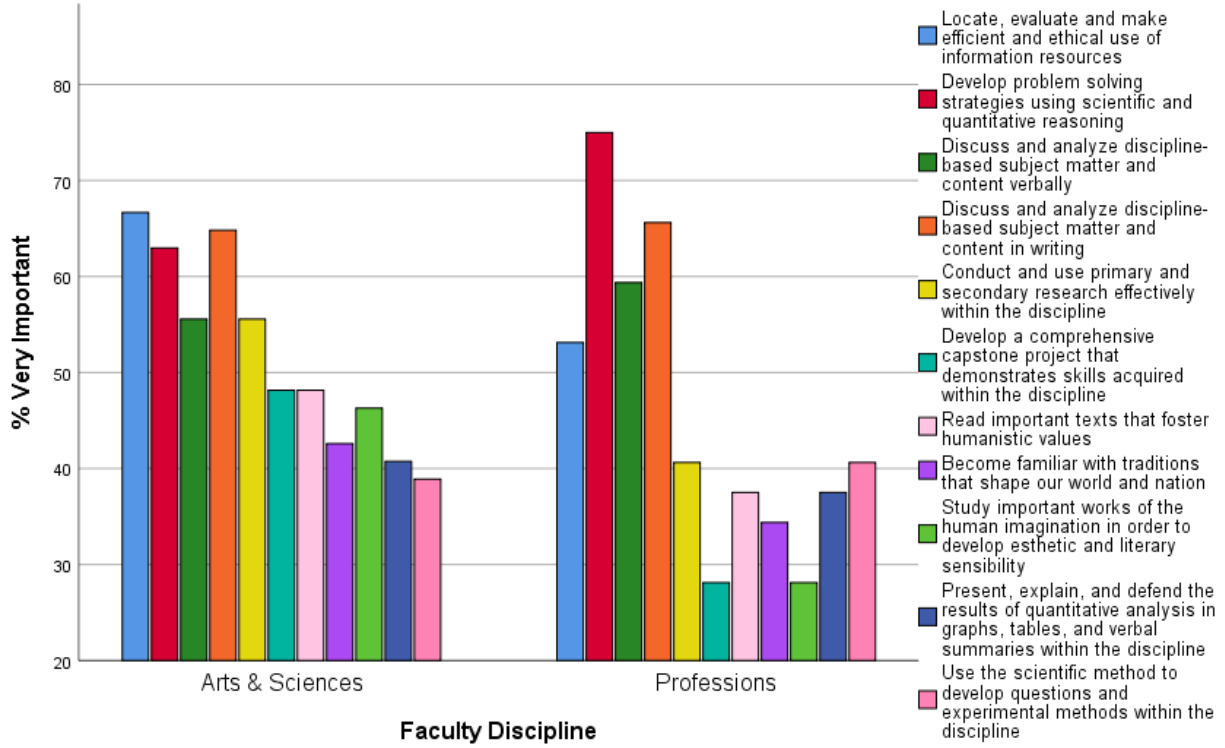


Figure 10: Percent Rated Very Important by Student Discipline for Knowledge Acquisition SLOs

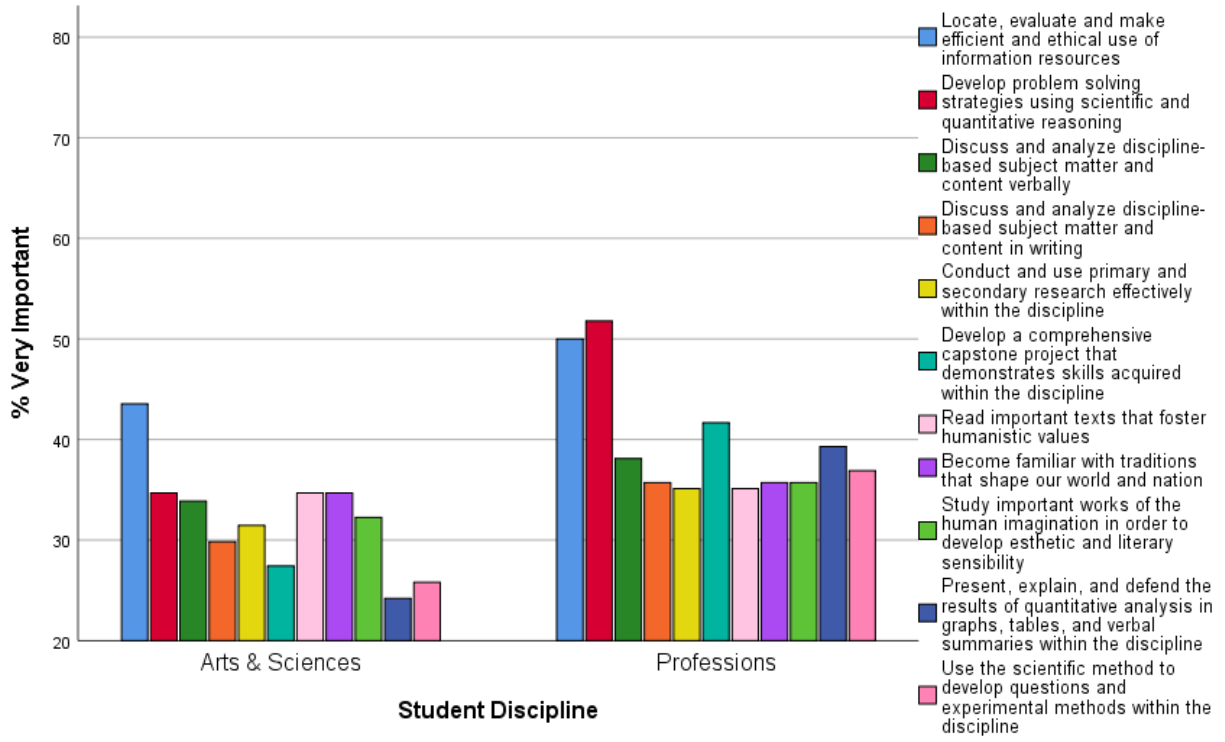


Figure 11: Percent Rated Very Important by Faculty Discipline for Professional Dispositions SLOs

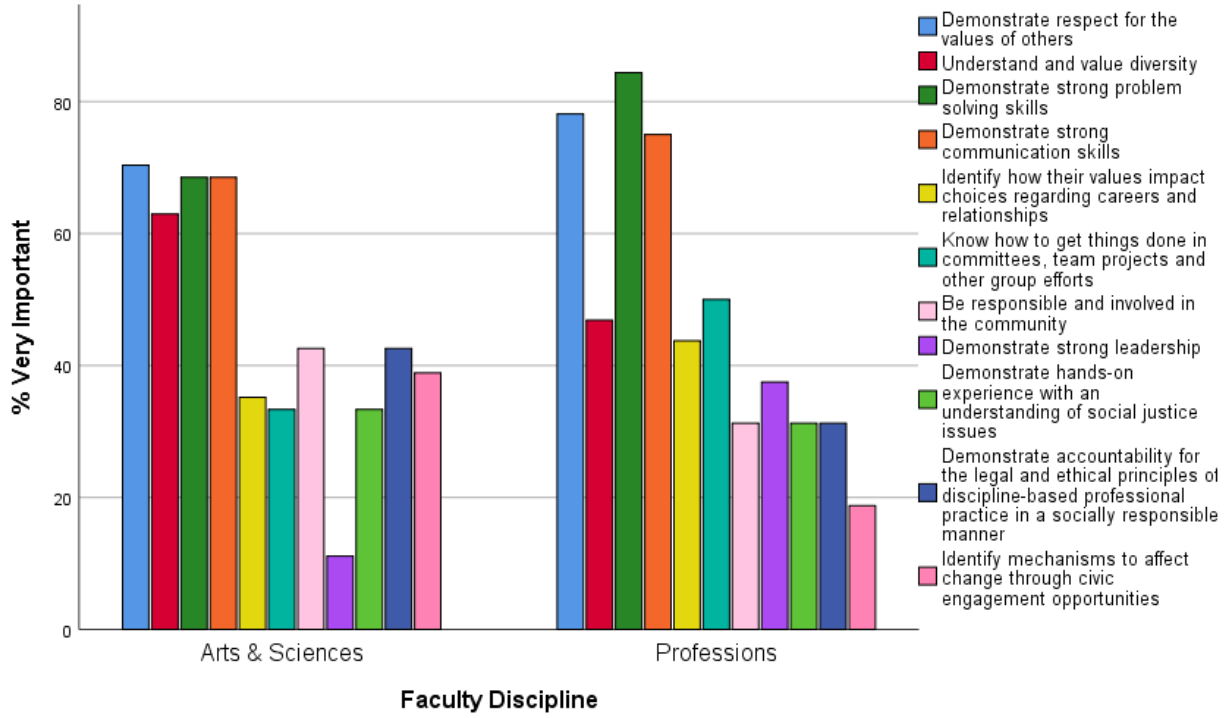


Figure 12: Percent Rated Very Important by Student Discipline for Professional Dispositions SLOs

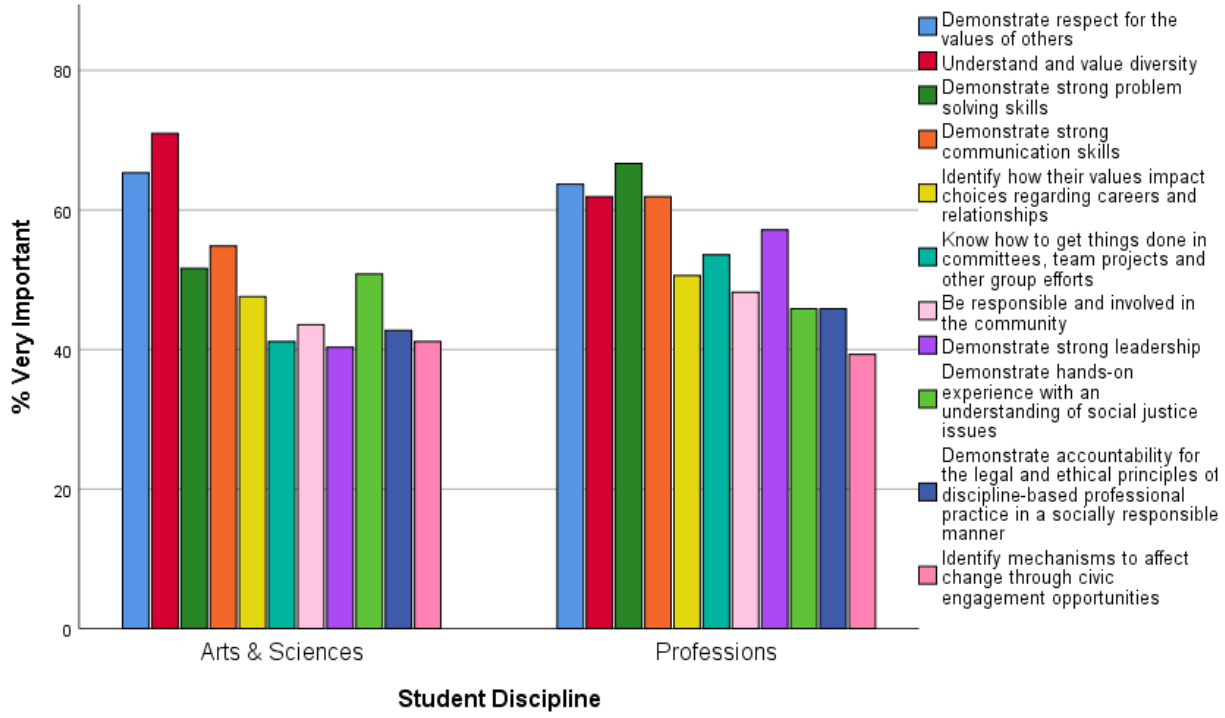


Figure 13: Percent in Top 5 by Faculty Discipline for Knowledge Acquisition SLOs

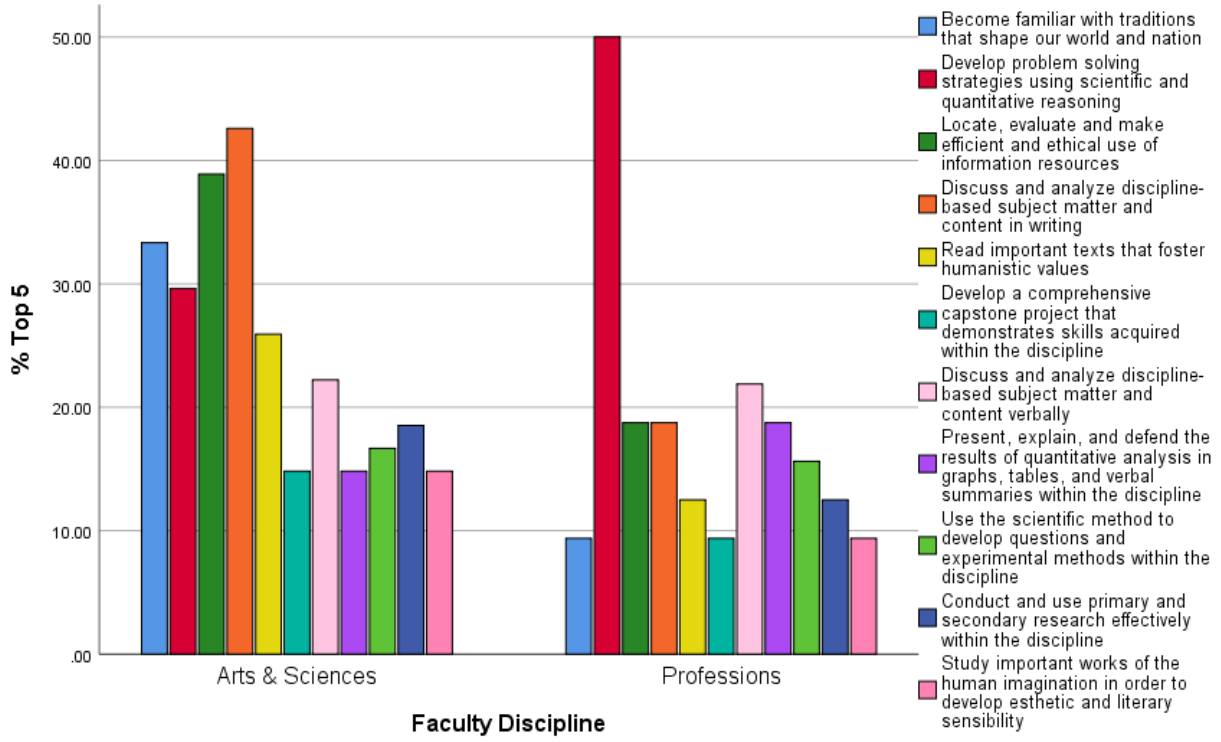


Figure 14: Percent in Top 5 by Student Discipline for Knowledge Acquisition SLOs

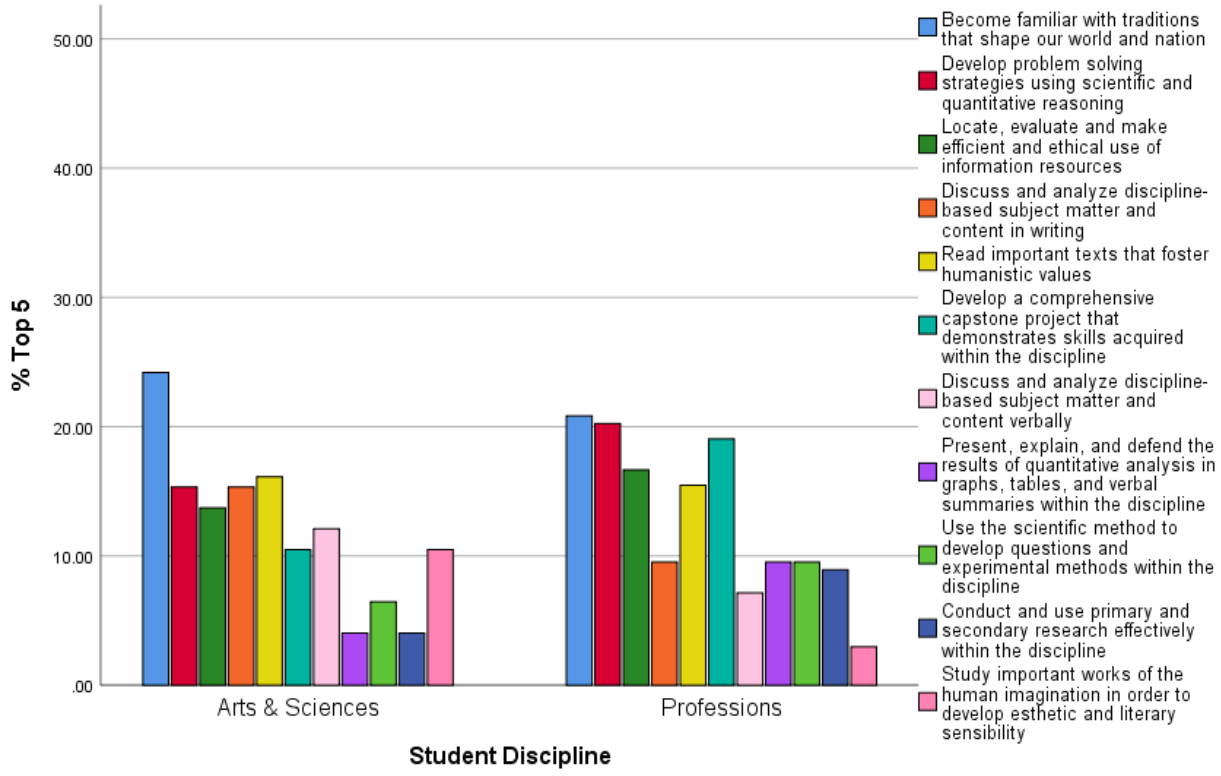


Figure 15: Percent in Top 5 by Faculty Discipline for Professional Dispositions SLOs

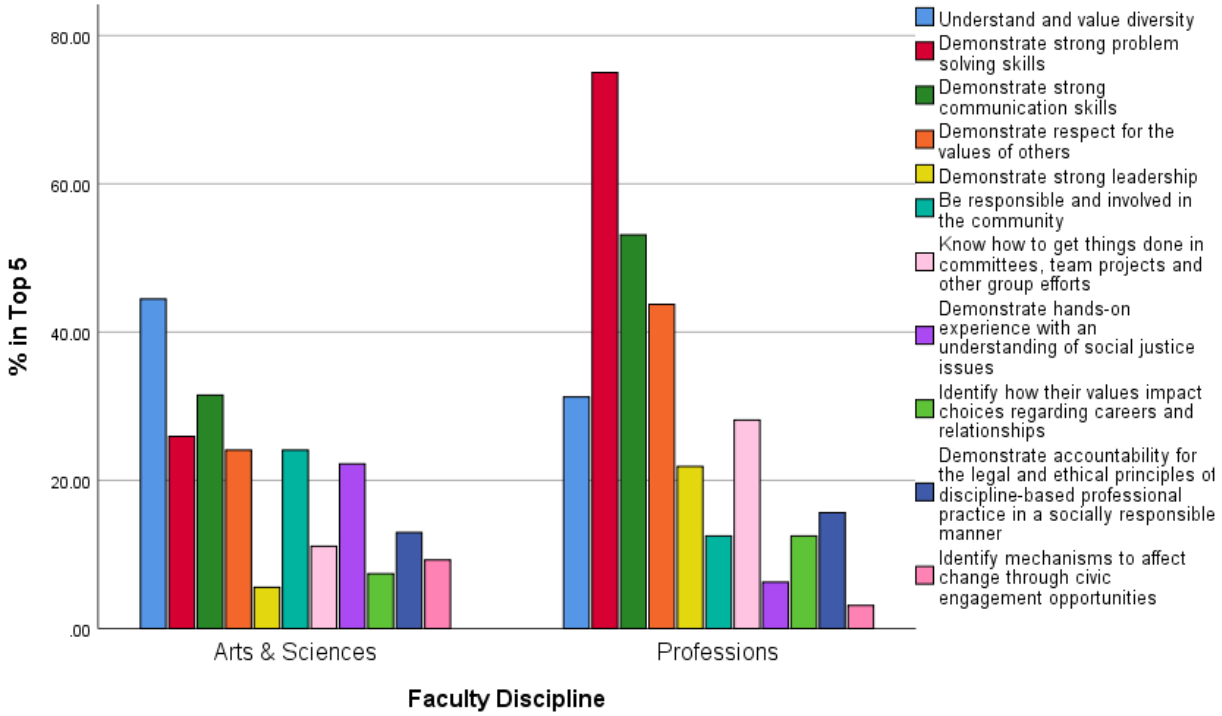
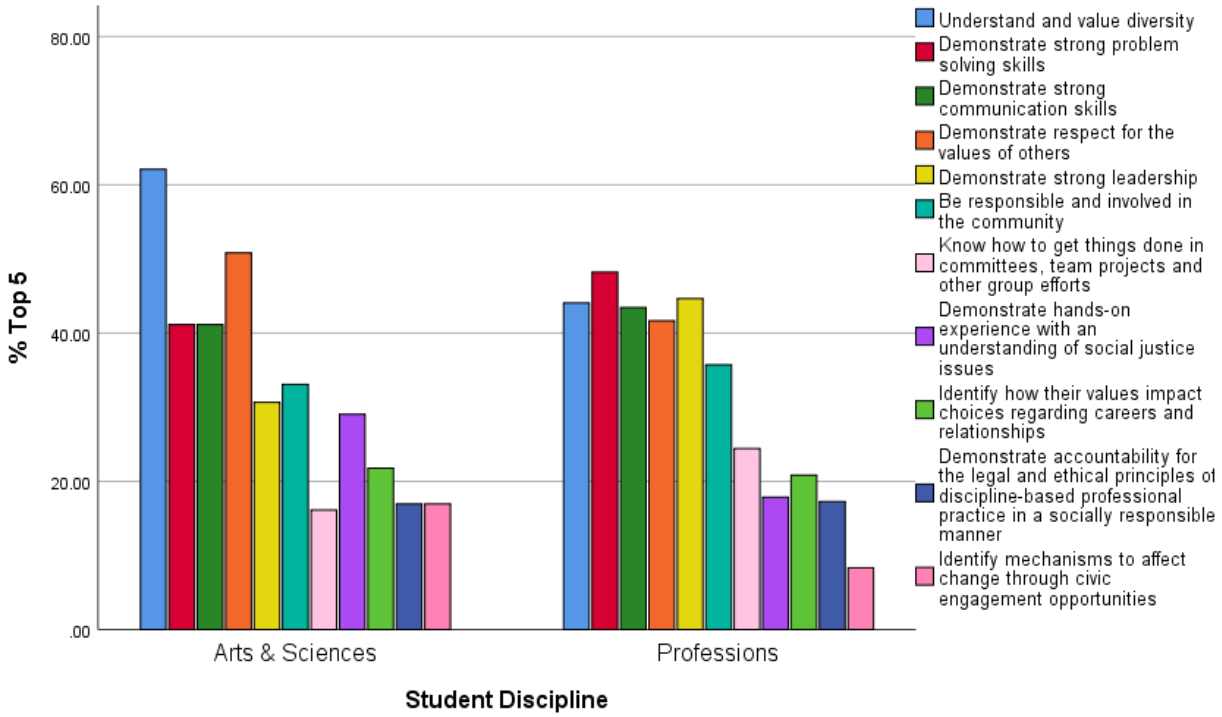


Figure 16: Percent in Top 5 by Student Discipline for Professional Dispositions SLOs



By Student Year. Figures 17 through 20 present Very Important ratings and top 5 percentages, separated by student year. For ease of presentation, student year was collapsed into two categories: Freshman/Sophomore and Junior/Senior. These comparisons evaluated the value of learning as students progress through Pace. Students in both yearly categories tended to value all professional dispositions *SLO*s more highly than knowledge acquisition *SLO*s. However, in their latter time at Pace Juniors/Seniors reported higher importance to the following *SLO*s, relative to Freshman/Sophomores: (1) become familiar with traditions that shape our world and nation, (2) reading texts and foster humanistic values, and (3) develop a comprehensive capstone project that demonstrates skills within the discipline (these patterns most clearly seen in Figure 19).

Figure 17: Percent Rated Very Important by Student Year for Knowledge Acquisition SLOs

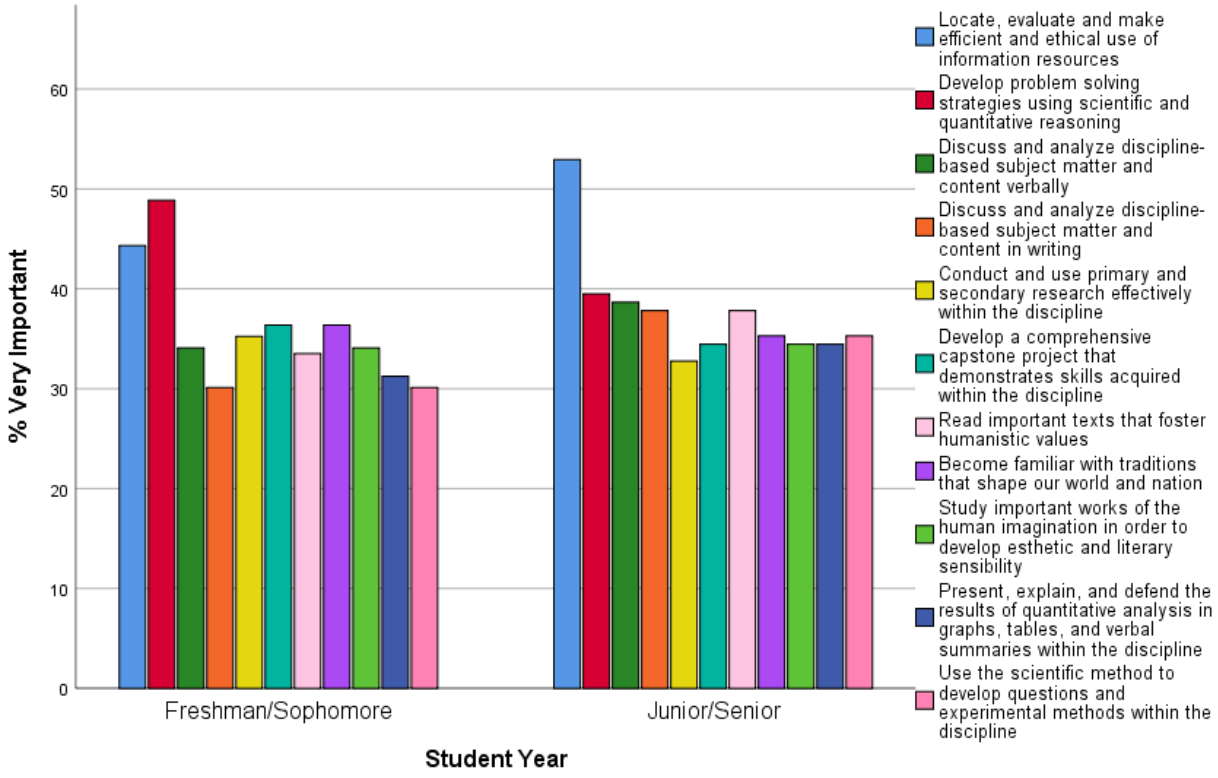


Figure 18: Percent Rated Very Important by Student Year for Professional Dispositions SLOs

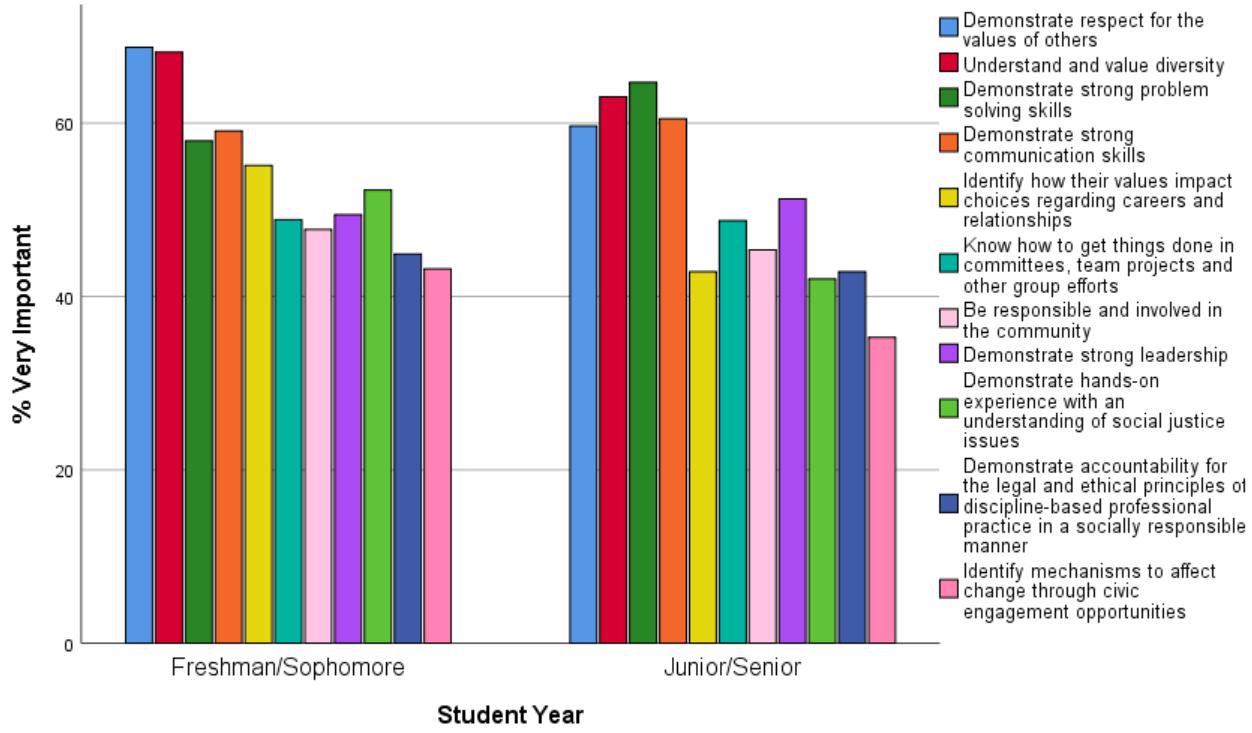


Figure 19: Percent In Top 5 by Student Year for Knowledge Acquisition SLOs

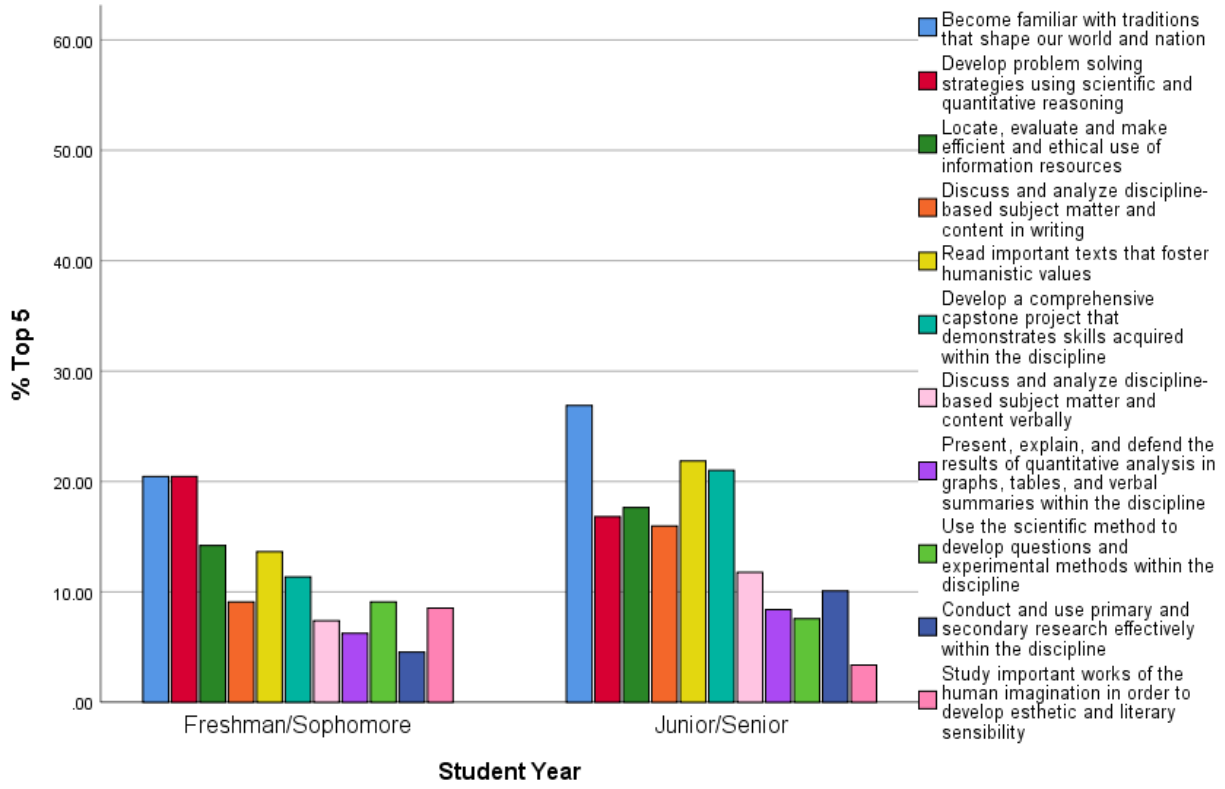
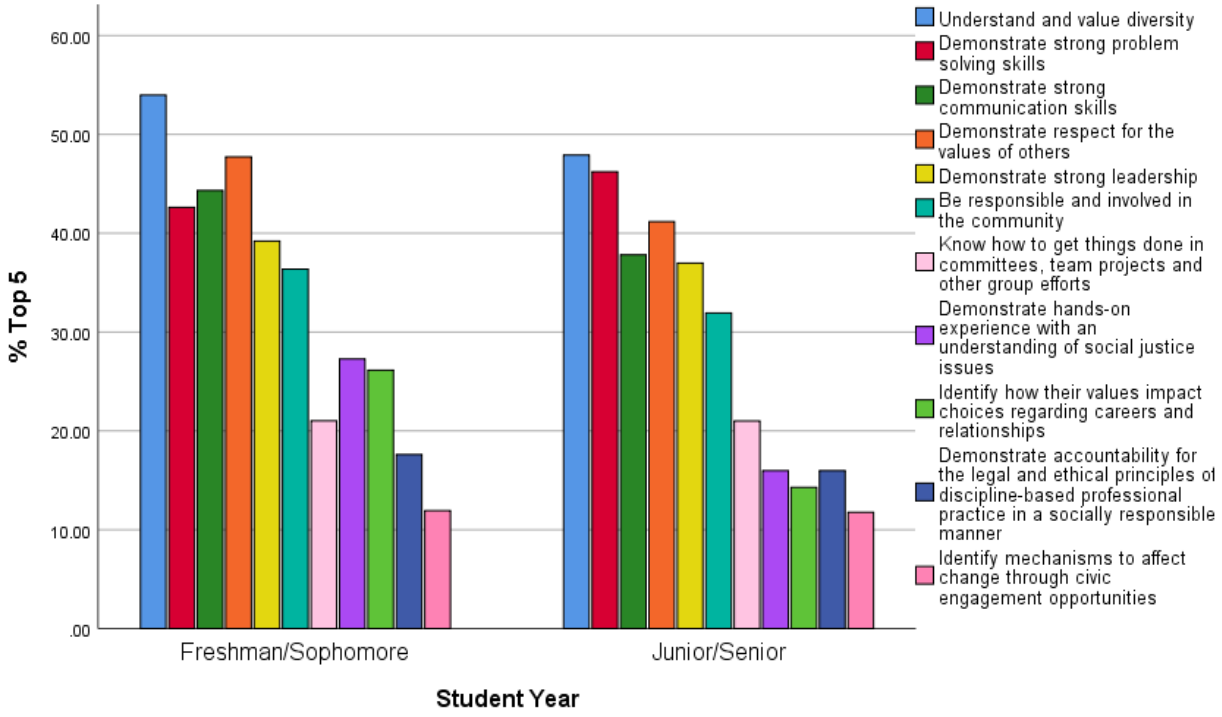


Figure 20: Percent In Top 5 by Student Year for Professional Dispositions SLOs



Focus Group Qualitative Analyses

As stated earlier, in order to gather qualitative data on the importance of *SLO*s, focus groups were conducted for faculty, students, staff. Focus group participants were asked, as part of the process of developing Institutional Learning Outcomes (*ILO*), to engage in small-group discussions in order to gather your insights and perspectives. Three primary goals of the focus group analyses include (1) extraction of themes from the discussions, (2) description of how these themes relate to student learning that we currently assessed, and (3) highlighting differences and commonalities between faculty, students, and staff.

Overall, discussions centered around cognitive and social skills and knowledge acquisition, and their relation to real-world application. At times, focus group members spoke in aspirational terms, identifying *SLO*s they believe are important whether we actually assess them. All three cohorts expressed the importance of critical thinking, communication, and leaderships skills, understanding and valuing diversity, and global responsibility.

Within the faculty groups much of the discussion was framed as aspirational, centering on communication and leadership skills, disciplinary knowledge, and critical thinking. Although they often spoke in aspirational terms, each of these components of student attributes are assessed in student learning throughout our programs. Discussions, in part, centered on how faculty can develop pedagogical approaches to better foster communication, collaboration, informational literacy, thoughtful listening, with the overarching goal of positively contributing to their chosen disciplines and professions. Regarding issues of global responsibility, one colleague noted "I've actually been really pleased to see how many of them care deeply about social justice". An overall assessment of a Pace graduate is summed up in the following quote: "I definitely think our students are ready for and prepared to work in the organizational world". In summary, the following five major *SLO* themes were garnered from these discussions: (1) Communication skills, (2) leadership skills, (3) disciplinary knowledge, (4) valuing diversity, and (5) global responsibility.

Student discussions focused largely on interpersonal attributes, many of which are manifested in *SLO*s assessed at Pace. Many emphasized the important of these skills as they relate to effecting positive change in communities and conducting oneself in an ethical manner within a profession. They also spoke of adaptability, as exemplified in this quote: "…somebody who is able to adapt to any situation. Even if they may not know something, they're not afraid to ask questions and are always willing to keep learning". They spoke of the importance of adaptive problem-solving and transferable skills in the face of an ever-changing world. Communication and collaborative skills were highlighted, as well as the importance of knowledge in the areas of diversity, equity, and inclusion. In summary, five major SLO themes emerged from these discussions: (1) Communication skills, (2) Collaborative skills, (3) adaptability, (4) transferable skills, and (5) valuing diversity.

Staff discussions focused around themes relating to critical thinking, communication, problem solving, leadership skills, and informational literacy. Discussions centered strongly around the role of experiential learning in fostering skills in the aforementioned skill areas, as well as teamwork, adaptability, valuing diverse perspectives, understanding and framing points of view via a community lens, and integrating practical and academic based knowledge. Soft skill attributes were sprinkled throughout their narratives, as, for example, "global responsibility", "entrepreneurial spirit", "flexibility", adaptability" life-long learning", "emotional intelligence", "empathy", and "teamwork". They, more than any other group, stressed the importance of experiential learning opportunities in shaping these aforementioned professional dispositions and highlighting the value of these skills from an employer point of view. Five major SLO themes emerging from their discussions included: (1) Communication, (2) Professional dispositions, (3) Collaborative problem-solving, (4) Leadership skills, and (5) Adaptive and transferable skills.

Key Findings

Although most *SLO*s were seen as important, survey results identified five *SLO*s in each of the thematic groupings that emerged as most important:

Knowledge Acquisition – General and Disciplinary: (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, (4) Locate, evaluate and make efficient and ethical use of information resources, and (5) Conduct and use primary and secondary research effectively within the discipline.

Professional Dispositions - Values, Cognitive, Communication: (1) Demonstrate strong leadership (2) Demonstrate strong problem-solving skills, (3) Understand and value diversity, (4) Demonstrate strong communication skills, and (5) Demonstrate respect for the values of others.

Faculty rated the following *SLO*s more important than students (listed in order of strength of difference): (1) Discuss and analyze discipline-based subject matter and content in writing, (2) Develop problem solving strategies using scientific and quantitative reasoning, (3) Discuss and analyze discipline-based subject matter and content verbally, and (4) Demonstrate strong problem-solving skills. Students rated the importance of strong leadership skills higher than faculty.

Two notable differences emerged for faculty within the professions versus the arts and sciences. Those within the professions valued problem-solving skills using scientific and quantitative reasoning more highly than arts and sciences faculty, whereas arts and sciences faculty valued becoming familiar with traditions that shape our world and nation more highly than those within the professions

Students in both yearly categories tended to value all professional dispositions *SLO*s more highly than knowledge acquisition *SLO*s. However, in their latter time at Pace Juniors/Seniors reported higher importance on the following *SLO*s, relative to Freshman/Sophomores: (1) become familiar with traditions that shape our world and nation, (2) reading texts and foster humanistic values, and (3) develop a comprehensive capstone project that demonstrates skills within the discipline.

Evaluation of focus group narratives yielded themes that were commensurate with the *SLO*s identified as most important via the survey data. Moreover, they highlighted, with greater emphasis than the survey results showed, *SLO*s reflective of practice- and community-based competencies. These emphases were more strongly reflected in student and staff groups. For faculty, the following five major *SLO* themes were garnered from these discussions: (1) Communication skills, (2) leadership skills, (3) disciplinary knowledge, (4) valuing diversity, and (5) global responsibility. For students, five major *SLO* themes emerged from these discussions: (1) Communication skills, (2) Collaborative skills, (3) adaptability, (4) transferable skills, and (5) valuing diverse perspectives. For staff, (1) Communication, (2) Professional dispositions, (3) Collaborative problem-solving, (4) Leadership skills, and (5) adaptive and transferable skills.

In our review of *SLO*s evaluated for academic and non-academic (student facing) units, it was evident that professional dispositions and practice-based *SLO*s were more frequently evaluated in non-academic program-based reports, whereas disciplinary-specific *SLO*s were more frequently evaluated in academic program-based reports. The importance differences found in this study were consistent with what was emphasized in program outcomes evaluated for each unit.

ILO RECOMMENDATIONS

At the beginning of the *ILO* development process, we put forth three principles guiding the inquiry process:

1. *ILO*s should represent student learning competency that is commensurate with the institution's mission.
2. *ILO*s should be clearly operationalized defined and their assessment achievable via a range of methodological approaches.
3. The number of *ILO*s should be reasonably small (say, 5 or less), which would allow for sustainable and efficient assessment.

We believe our recommendations are commensurate with those three principles.

The following recommended *ILO*s were informed by the quantitative and qualitative findings garnered from the data collection/analysis phase of the *ILO* process. Only *SLO*s listed and evaluated in program-based assessments were used in the survey analysis phase, whereas focus group discussions were not tethered to any set of *SLO*s. However, even those discussions related to actual *SLO*s assessed at Pace. Consequently, these *ILO*s reflect student learning that is actually assessed at Pace. Hence, they are not aspirational.

Program development and evaluation are not static at the university. As program-based *SLO*s expand via the dynamic process of program growth, *ILO*s will need to be modified to account for that expansion. We end this section with guidelines on how *ILO* reformulation can be informed by dynamic program change.

*SLO*s organized around two general themes, *Knowledge Acquisition: General & Disciplinary* and *Professional Dispositions: Values, Cognition, & Communication*. Five *SLO*s within each grouping stood out as most important by faculty, students, and staff: albeit with varying differences between students and faculty and within academic disciplines. Additionally, focus group narratives not only supported the numerical findings, but highlighted the importance of professional practice competencies. Our full report and recommendations were available for public comments from 4/1 through 4/14, and minor changes to our recommendations were guided by those comments.

From these findings, we recommend three key *ILO*s related to knowledge acquisition:

1. *Students are equipped to thoughtfully discuss, analyze, and apply discipline-based subject matter in writing and verbally*. These attributes reflect the ability to locate primary and secondary source material, understand source integrity, and use that information in an effective manner.
2. *Students possess effective problem-solving strategies*. These skills promote effective use of textual material and scientific and quantitative reasoning and the ability to adapt strategies relevant to changing contexts.
3. *Students are engaged in discipline-based professional practice in a socially responsible manner*. Development of these skills were, in part, shaped via the myriad of experiential learning opportunities offered to students.

We also recommend two *ILO*s related to professional dispositions:

4. *Students demonstrate strong leadership and communication skills*. These skill manifest in group activities, fostering effective change, augmented by values that respect opinions of others.
5. *Students understand and value diversity.* These skills have been shaped by civic engagement activities and an understanding of social justice issues.

Note that the first sentence of Mission Statement, developed as part of the Strategic Planning Process, reads: *Pace University provides to its undergraduates a powerful combination of knowledge in the professions, real-world experience, and a rigorous liberal arts curriculum, giving them the skills and habits of mind to realize their full potential.* Our recommended *ILO*s, we believe, are commensurate with this statement, emphasizing student learning for Pace graduates in their chosen disciplines, general knowledge, and the social skills enabling them to effectively contribute to the broader community. These attributes are succinctly expressed in the last sentence of our mission statement, *…will enable all Pace graduates to realize their full potential as innovative thinkers and active problem solvers who are uniquely trained to make positive and enduring contributions to our future world.*

Program development and modification is a dynamic process at Pace, and, consequently, reformulating *ILO*s may be required based on the expansion of *SLO*s assessed and developed over time. We recommend mechanisms for driving this process. Yearly summary reports on program-based assessment activities are currently required for all programs within both our academic and non-academic (student-facing) units. We should highlight, from these annual summary reports, year-by-year changes in programs offered and *SLO*s assessed to formally document the results of dynamic program development. After, say, five years, we should evaluate our current *ILO*s considering these longitudinal changes, and modify those *ILO*s guided by the evidence collected.

Appendices

Appendix A: Complete SLO Survey

Appendix B: Focus Group Scripts

Appendix C: Results of Principal Components Analysis

Appendix D: Numerical Results Tables

Appendix E: Exploring Differences in SLO Importance Between Students and Faculty via Discriminant Analysis

Appendix A: SLO Survey

Survey Instructions

On the following page is a list of Student Learning Outcomes (*SLO*) evaluated by academic (school/college) and non-academic units (i.e., Pace Path, student life activities, UNV 101) during the 2020-21 academic year. This survey is a part of our inquiry aimed at developing Institutional Learning Outcomes (*ILO*). As background, Institutional Learning Outcomes (*ILO*) can be generally defined as:

Knowledge, skills, and attitudes undergraduate students are expected to develop from their entire experience at the university. Undergraduate University experiences include, broadly speaking, both academic (i.e., core, majors, minors, certificates, badges) and non-academic (i.e., Pace Path, student life activities, UNV 101) programs.

So, we are asking that you rate, using the following 4-point scale, ***the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university.***

Rate the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university.

Student Learning Outcome (SLO)	*Not Important*	*Somewhat Important*	*Important*	*Very Important*
1. Become familiar with traditions that shape our world and nation.	_____	_____	_____	_____
2. Be responsible and involved in the community.	_____	_____	_____	_____
3. Understand and value diversity.	_____	_____	_____	_____
4. Discuss and analyze discipline-based subject matter and content in writing.	_____	_____	_____	_____
5. Read important texts that foster humanistic values.	_____	_____	_____	_____
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	_____	_____	_____	_____
7. Demonstrate strong leadership.	_____	_____	_____	_____
8. Locate, evaluate, and make efficient and ethical use of information resources.	_____	_____	_____	_____
9. Develop problem solving strategies using scientific and quantitative reasoning.	_____	_____	_____	_____
10. Know how to get things done in committees, team projects, and other group efforts.	_____	_____	_____	_____
11. Demonstrate respect for the value of others.	_____	_____	_____	_____
12. Identify how their values impact choices regarding careers and relationships.	_____	_____	_____	_____

13. Conduct and use primary and secondary research effectively within the discipline. _____ _____ _____ _____

14. Demonstrate strong communication skills. _____ _____ _____ _____

15. Use the scientific method to develop questions and experimental methods within the discipline. _____ _____ _____ _____

16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline. _____ _____ _____ _____

17. Identify mechanisms to effect change through civic engagement opportunities. _____ _____ _____ _____

18. Discuss and analyze discipline-based subject matter and content verbally. _____ _____ _____ _____

19. Demonstrate hands-on experience with an understanding of social justice issues. _____ _____ _____ _____

20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner. _____ _____ _____ _____

21. Demonstrate strong problem solving skills. _____ _____ _____ _____

22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline. _____ _____ _____ _____

From the above list of 22 *SLO*s, identify the ***five*** most important *SLO*s (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university:

Please identify by SLO item number

1_____

2_____

3_____

4_____

*5*_____

Please identify one SLO not listed in this survey that you believe is an important contributor towards the development of knowledge, skills and attitudes undergraduate students are expected to develop from their entire experience at the university:

_____

Demographic Information

Are you an(a)? _____Undergraduate Student _____Faculty Member____Staff Member

*If you checked **student**:*

What year are you in? _____Freshman ___Sophomore _____Junior _____Senior

What is your discipline: _____Natural Science _____Social or Behavioral Science
_____Humanities/Arts _____Business ____Education
_____Health Professions _____Computer Science/Information Systems

*If you checked **Faculty**:*

Are you? _____ full-time_____ part-time

What is your discipline: _____Natural Science _____Social or Behavioral Science
_____Humanities/Arts _____Business ____Education
_____Health Professions _____Computer Science/Information Systems

How long have you been at Pace (in years)?____

*If you checked **Staff**:*

Are you? _____ full-time_____ part-time

What division do you work for? ____IT, _____Human Resources, _____Library,

_____Student Affairs, _____Tutorial Services,

_____Student Advisement _____University Relations

_____Academic Department,_____Registrar
_____President/Provost/Dean office

How long have you been at Pace (in years)? _____

Age:_____

Gender

Male _____Female_____Transgender _____Non-binary_____Other_____

Ethnic/Racial Heritage (optional):

American Indian or Alaska Native _____Asian _____Black or African American _____Hispanic or Latinx_____Native American_____Native Hawaiian or Pacific Islander_____White_____Other _ _____

Appendix B: Focus Group Scripts

Focus Group Scripts for Faculty

Thank you for participating in this focus group. As part of the process of developing Institutional Learning Outcomes (ILO), we are engaged in small-group discussions with various constituencies of the Pace community in order to gather your insights and perspectives. Your perspectives, as faculty, will be important as we move forward. As background, *Institutional Learning Outcomes* (*ILO*) can be generally defined as: *Knowledge, skills, and attitudes undergraduate students are expected to develop from their entire experience at the university.* Undergraduate University experiences include, broadly speaking, both academic (i.e., core, majors, minors, certificates, badges) and non-academic (i.e., Pace Path, student life activities, UNV 101) programs. In summary, the general goal of this working group is to generate a recommended set of *ILO*s for review by the university community.

Please note that this session will be recorded and a written transcript of our discussion will be generated. Both recording and transcript will ***ONLY*** be shared and reviewed by the ILO team, with the purpose of summarizing your comments. Your anonymity will be fully protected.

So, to meet those objectives, we would like you to visualize an ideal student graduating with a Pace University Bachelor's degree. What knowledge, skills, and/or competencies should this student possess?

[after around 20 to 30 minutes, you can introduce one of the following two questions]

1. *You are an employer just completing an interview with a Pace graduate for a position within your organization. How would you characterize this applicant?*

2. *You are interviewing students for your graduate program and you have just completed your interview with a graduate of Pace University. Based on the student's interview, personal statement, academic record, and field experiences, what are the five top attributes this applicant possesses?*

Focus Group Script: For Students

Thank you for participating in this focus group. As part of the process of developing Institutional Learning Outcomes (ILO), we are engaged in small-group discussions with various constituencies of the Pace community in order to gather your insights and perspectives. Your perspectives, as Pace students, will be important as we move forward. As background, *Institutional Learning Outcomes* (*ILO*) can be generally defined as: *Knowledge, skills, and attitudes undergraduate students are expected to develop from their entire experience at the university*. Undergraduate University experiences include, broadly speaking, both academic (i.e., core, majors, minors, certificates, badges) and non-academic (i.e., Pace Path, student life activities, UNV 101) programs. In summary, the general goal of this working group is to generate a recommended set of *ILO*s for review by the university community.

Please note that this session will be recorded and a written transcript of our discussion will be generated. Both recording and transcript will ***ONLY*** be shared and reviewed by the ILO team, with the purpose of summarizing your comments. Your anonymity will be fully protected.

So, to meet those objectives, we would like you to visualize an ideal student graduating with a Pace University Bachelor's degree. What knowledge, skills, and/or competencies should this student possess?

[after around 20 to 30 minutes, you can introduce this follow-up question]

You are an employer just completing an interview with a Pace graduate for a position within your organization. How would you characterize this applicant?

Focus Group Script for Staff

Thank you for participating in this focus group. As part of the process of developing Institutional Learning Outcomes (ILO), we are engaged in small-group discussions with various constituencies of the Pace community in order to gather your insights and perspectives. Your perspectives, as staff members, will be important as we move forward. As background, *Institutional Learning Outcomes* (*ILO*) can be generally defined as: *Knowledge, skills, and attitudes undergraduate students are expected to develop from their entire experience at the university.* Undergraduate University experiences include, broadly speaking, both academic (i.e., core, majors, minors, certificates, badges) and non-academic (i.e., Pace Path, student life activities, UNV 101) programs. In summary, the general goal of this working group is to generate a recommended set of *ILO*s for review by the university community.

Please note that this session will be recorded and a written transcript of our discussion will be generated. Both recording and transcript will ***ONLY*** be shared and reviewed by the ILO team, with the purpose of summarizing your comments. Your anonymity will be fully protected.

So, to meet those objectives, we would like you to visualize an ideal student graduating with a Pace University Bachelor's degree. What knowledge, skills, and/or competencies should this student possess?

[after around 20 to 30 minutes, you can introduce one of the following two questions]

1. *You are an employer just completing an interview with a Pace graduate for a position within your organization. How would you characterize this applicant?*

2. *You are interviewing students for your graduate program and you have just completed your interview with a graduate of Pace University. Based on the student's interview, personal statement, academic record, and field experiences, what are the five top attributes this applicant possesses?*

Appendix C

Development of SLO Thematic Groupings via Principal Components Analysis

Of the 22 Student Learning Outcomes (*SLO*) chosen for our survey, we evaluated whether they could be organized around meaningful themes. Principal Components Analysis (*PCA*), a dimension reduction statistical technique, was used for this purpose. Generally, *PCA* is an exploratory statistical procedure that creates orthogonal weighted components of the 22 *SLO* items. The goal of the procedure is to determine whether the *SLO*s can be explained by a smaller number of components in an interpretable manner. Inspection of the eigenvalues (basically, variances of the components) and plots of the those eigenvalues (called a scree test), we determined that two components could best represent the set of *SLO*s. A component loading matrix, via varimax rotation, was generated, and those results are presented in the following Table C1. Eleven *SLO*s loaded strongly one component and eleven *SLO*s loaded strongly on the second component. Distinctive themes emerged from each *SLO* grouping: (1) *Knowledge Acquisition – General and Disciplinary* and *(2) Professional Dispositions - Values, Cognitive, Communication.* These thematic groupings are summarized in Table C2.

Table C1: Component Loadings for 22 Student Learning Outcomes (SLO)

SLO	*Component 1*	*Component 2*
Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline	**.800**	.146
Use the scientific method to develop questions and experimental methods within the discipline	**.764**	.171
Discuss and analyze discipline-based subject matter and content in writing	**.748**	.225
Conduct and use primary and secondary research effectively within the discipline	**.739**	.265
Discuss and analyze discipline-based subject matter and content verbally	**.705**	.326
Study important works of the human imagination in order to develop esthetic and literary sensibility	**.692**	.242
Develop problem solving strategies using scientific and quantitative reasoning	**.678**	.266
Read important texts that foster humanistic values	**.641**	.278
Develop a comprehensive capstone project that demonstrates skills acquired within the discipline	**.565**	.373
Become familiar with traditions that shape our world and nation	**.549**	.484
Locate, evaluate and make efficient and ethical use of information resources	**.503**	.394
Demonstrate hands-on experience with an understanding of social justice issues	.148	**.786**
Understand and value diversity		**.783**
Demonstrate respect for the values of others	.226	**.745**
Be responsible and involved in the community	.230	**.719**
Identify how their values impact choices regarding careers and relationships	.284	**.665**
Identify mechanisms to affect change through civic engagement opportunities	.372	**.645**
Demonstrate strong leadership	.280	**.635**
Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner	.394	**.613**
Know how to get things done in committees, team projects and other group efforts	.359	**.590**
Demonstrate strong communication skills	.408	**.578**
Demonstrate strong problem solving skills	.444	**.559**

Note: Varimax rotation, loadings sorted and loadings <.100 suppressed.

Table C 2: Thematic SLO Group Based on Principal Components Analysis

Thematic Group 1 (11 SLOs:): Knowledge Acquisition – General and Disciplinary

Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline

Use the scientific method to develop questions and experimental methods within the discipline

Discuss and analyze discipline-based subject matter and content in writing

Conduct and use primary and secondary research effectively within the discipline

Discuss and analyze discipline-based subject matter and content verbally

Study important works of the human imagination in order to develop esthetic and literary sensibility

Develop problem solving strategies using scientific and quantitative reasoning

Read important texts that foster humanistic values

Develop a comprehensive capstone project that demonstrates skills acquired within the discipline

Become familiar with traditions that shape our world and nation

Locate, evaluate and make efficient and ethical use of information resources

Thematic 2 Group (11 SLOs): Professional Dispositions - Values, Cognitive, Communication

Be responsible and involved in the community

Understand and value diversity

Demonstrate strong leadership

Know how to get things done in committees, team projects and other group efforts

Demonstrate respect for the values of others

Identify how their values impact choices regarding careers and relationships

Demonstrate strong communication skills

Identify mechanisms to affect change through civic engagement opportunities

Demonstrate hands-on experience with an understanding of social justice issues

Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner

Demonstrate strong problem solving skill

Appendix D

Numerical Results Summarized in Tables D1 to D5.

Table D1: Student Learning Outcomes (SLO): Basic Statistics (total sample; *N* = 451)

Student Learning Outcome (SLO)	*#(%) Listed In Top 5*	*Rating Mean*	*Rating SD*	*% Rated Very Important*
1. Become familiar with traditions that shape our world and nation.	102(22.6)	3.14	.88	36.8
2. Be responsible and involved in the community.	128(28.4)	3.31	.73	45.2
3. Understand and value diversity.	221(49)	3.53	.76	65.6
4. Discuss and analyze discipline-based subject matter and content in writing.	77(17)	3.26	.73	41.5
5. Read important texts that foster humanistic values.	76(16.9)	3.17	.80	37.7
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	34(7.5)	3.14	.79	35.7
7. Demonstrate strong leadership.	142(31.5)	3.24	.80	44.1
8. Locate, evaluate, and make efficient and ethical use of information resources.	90(20)	3.42	.70	52.3
9. Develop problem solving strategies using scientific and quantitative reasoning.	102(22.6)	3.37	.75	51
10. Know how to get things done in committees, team projects, and other group efforts.	94(20.8)	3.31	.78	47.7
11. Demonstrate respect for the value of others.	190(42.1)	3.61	.66	68.7
12. Identify how their values impact choices regarding careers and relationships.	86(19.1)	3.33	.76	48.6
13. Conduct and use primary and secondary research effectively within the discipline.	40(8.9)	3.20	.76	39

Student Learning Outcome (SLO)	*#(%) Listed In Top 5*	*Rating Mean*	*Rating SD*	*% Rated Very Important*
14. Demonstrate strong communication skills.	201(44.6)	3.57	.66	65.2
15. Use the scientific method to develop questions and experimental methods within the discipline.	42(9.3)	3.06	.84	33.9
16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline.	43(9.5)	3.05	.89	35.3
17. Identify mechanisms to effect change through civic engagement opportunities.	46(10.2)	3.14	.81	36.6
18. Discuss and analyze discipline-based subject matter and content verbally.	58(12.9)	3.27	.84	42.6
19. Demonstrate hands-on experience with an understanding of social justice issues.	89(19.7)	3.18	.88	43.9
20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner.	68(15.1)	3.25	.89	43.5
21. Demonstrate strong problem solving skills.	215(47.7)	3.58	.65	65.6
22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline.	72(16)	3.09	.90	38.4

Note: The rating instructions were: *Rate the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university using the following 4-point likert rating scale: 1 = Not Important 2 = Slightly Important 3 = Important 4 = Very Important. Additionally, participants were also instructed: From the above list of 22 SLOs, identify the five most important SLOs (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university. Note that this latter instruction did not require participants to list SLOs in rank order, but rather their top 5 most important only.*

Table D2: SLO Survey: Percentage of SLOs Listed In Top Five Most Important Total Sample, Students, Faculty, and Staff

	Total (N = 451)	*Students (n = 306)*	*Faculty (n = 90)*	*Staff (n = 55)*
1. Become familiar with traditions that shape our world and nation.	22.6	22.9	24.4	18.2
2. Be responsible and involved in the community.	28.4	34	18.9	12.7
3. Understand and value diversity.	49	51.6	38.9	50.9
4. Discuss and analyze discipline-based subject matter and content in writing.	17.1	11.8	32.2	21.8
5. Read important texts that foster humanistic values.	16.9	17.3	20	9.1
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	7.5	6.2	12.2	7.3
7. Demonstrate strong leadership.	31.5	38.2	13.3	23.6
8. Locate, evaluate, and make efficient and ethical use of information resources.	20	15.7	30	27.3
9. Develop problem solving strategies using scientific and quantitative reasoning.	22.6	19	37.8	18.2
10. Know how to get things done in committees, team projects, and other group efforts.	20.8	20.6	18.9	25.5
11. Demonstrate respect for the value of others.	42.1	45.1	30	45.5
12. Identify how their values impact choices regarding careers and relationships.	19.1	21.2	8.9	23.6
13. Conduct and use primary and secondary research effectively within the discipline.	8.9	6.9	15.6	9.1

	Total (N = 451)	*Students (n = 306)*	*Faculty (n = 90)*	*Staff (n = 55)*
14. Demonstrate strong communication skills.	44.6	42.8	41.1	60
15. Use the scientific method to develop questions and experimental methods within the discipline.	9.3	8.2	16.7	3.6
16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline.	9.5	6.9	17.8	10.9
17. Identify mechanisms to effect change through civic engagement opportunities.	10.2	11.4	6.7	9.1
18. Discuss and analyze discipline-based subject matter and content verbally.	12.9	9.5	21.1	18.2
19. Demonstrate hands-on experience with an understanding of social justice issues.	19.7	22.2	16.7	10.9
20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner.	15.1	16.7	14.4	7.3
21. Demonstrate strong problem solving skills.	47.7	45.1	44.4	67.3
22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline.	16	15.7	14.4	20

Note: The rating instructions were: *From the above list of 22 SLOs, identify the five most important SLOs (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university. Note that this latter instruction did not require participants to list SLOs in rank order, but rather their top 5 most important only.*

Table D3: SLO Survey: Percentage of SLOs Listed In Top Five Most Important for Faculty by Discipline

	Total Faculty (n = 90)	*Arts & Sciences (n = 54)*	*Professions (n=32)*
1. Become familiar with traditions that shape our world and nation.	24.4	33.3	9.4
2. Be responsible and involved in the community.	18.9	24.1	12.5
3. Understand and value diversity.	38.9	44.4	31.3
4. Discuss and analyze discipline-based subject matter and content in writing.	32.2	42.6	18.8
5. Read important texts that foster humanistic values.	20	25.9	12.5
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	12.2	14.8	9.4
7. Demonstrate strong leadership.	13.3	5.6	21.9
8. Locate, evaluate, and make efficient and ethical use of information resources.	30	38.9	18.8
9. Develop problem solving strategies using scientific and quantitative reasoning.	37.8	29.6	50
10. Know how to get things done in committees, team projects, and other group efforts.	18.9	11.1	28.1
11. Demonstrate respect for the value of others.	30	24.1	43.8
12. Identify how their values impact choices regarding careers and relationships.	8.9	7.4	12.5
13. Conduct and use primary and secondary research effectively within the discipline.	15.6	18.5	12.5

	Total Faculty (n = 90)	*Arts & Sciences (n = 54)*	*Professions (n=32)*
14. Demonstrate strong communication skills.	41.1	31.5	53.1
15. Use the scientific method to develop questions and experimental methods within the discipline.	16.7	16.7	15.6
16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline.	17.8	14.8	18.8
17. Identify mechanisms to effect change through civic engagement opportunities.	6.7	9.3	3.1
18. Discuss and analyze discipline-based subject matter and content verbally.	21.1	22.2	21.9
19. Demonstrate hands-on experience with an understanding of social justice issues.	16.7	22.2	6.3
20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner.	14.4	13.0	15.6
21. Demonstrate strong problem solving skills.	44.4	25.9	75.5
22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline.	14.4	14.8	9.4

Note: The rating instructions were: *From the above list of 22 SLOs, identify the five most important SLOs (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university. Note that this latter instruction did not require participants to list SLOs in rank order, but rather their top 5 most important only.*

Table D4: SLO Survey: Percentage of SLOs Listed In Top Five Most Important For Students by Discipline

	Total (n = 306)	*Arts & Sciences (n = 124)*	*Professions (n = 168)*
1. Become familiar with traditions that shape our world and nation.	22.9	24.2	20.8
2. Be responsible and involved in the community.	34	33.1	35.7
3. Understand and value diversity.	51.6	62.1	44.0
4. Discuss and analyze discipline-based subject matter and content in writing.	11.8	15.3	9.5
5. Read important texts that foster humanistic values.	17.3	16.1	15.5
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	6.2	10.5	3.0
7. Demonstrate strong leadership.	38.2	30.6	44.0
8. Locate, evaluate, and make efficient and ethical use of information resources.	15.7	13.7	16.7
9. Develop problem solving strategies using scientific and quantitative reasoning.	19	15.3	20.2
10. Know how to get things done in committees, team projects, and other group efforts.	20.6	16.1	24.4
11. Demonstrate respect for the value of others.	45.1	50.8	41.7
12. Identify how their values impact choices regarding careers and relationships.	21.2	21.8	20.8
13. Conduct and use primary and secondary research effectively within the discipline.	6.9	4.0	8.9

	Total (n = 306)	*Arts & Sciences (n = 124)*	*Professions (n = 168)*
14. Demonstrate strong communication skills.	42.8	41.1	43.5
15. Use the scientific method to develop questions and experimental methods within the discipline.	8.2	6.5	9.5
16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline.	6.9	4.0	9.5
17. Identify mechanisms to effect change through civic engagement opportunities.	11.4	16.9	8.3
18. Discuss and analyze discipline-based subject matter and content verbally.	9.5	12.1	7.1
19. Demonstrate hands-on experience with an understanding of social justice issues.	22.2	29.0	17.9
20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner.	16.7	16.9	17.3
21. Demonstrate strong problem solving skills.	45.1	41.4	48.2
22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline.	15.7	10.5	19.0

Note: The rating instructions were: *From the above list of 22 SLOs, identify the five most important SLOs (by item number) towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university. Note that this latter instruction did not require participants to list SLOs in rank order, but rather their top 5 most important only.*

Table D5: SLO Survey: Percentage of SLOs Listed In Top Five Most Important Total Sample, Students, Faculty, and Staff

	Total (N = 451)		*Students (n = 306)*		*Faculty (n = 90)*		*Staff (n = 55)*	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
1. Become familiar with traditions that shape our world and nation.	3.14	.82	3.15	.79	3.14	.86	3.05	.91
2. Be responsible and involved in the community.	3.31	.73	3.35	.71	3.17	.82	3.36	.68
3. Understand and value diversity.	3.53	.75	3.56	.72	3.39	.84	3.65	.70
4. Discuss and analyze discipline-based subject matter and content in writing.	3.26	.73	3.17	.72	3.54	.72	3.35	.70
5. Read important texts that foster humanistic values.	3.17	.80	3.14	.80	3.22	.85	3.24	.69
6. Study important works of the human imagination in order to develop esthetic and literary sensibility.	3.14	.79	3.11	.79	3.16	.83	3.24	.69
7. Demonstrate strong leadership.	3.24	.80	3.34	.77	2.86	.83	3.25	.78
8. Locate, evaluate, and make efficient and ethical use of information resources.	3.42	.70	3.36	.72	3.51	.71	3.56	.54
9. Develop problem solving strategies using scientific and quantitative reasoning.	3.37	.75	3.30	.77	3.61	.65	3.38	.76
10. Know how to get things done in committees, team projects, and other group efforts.	3.31	.78	3.33	.77	3.14	.88	3.44	.63
11. Demonstrate respect for the value of others.	3.61	.66	3.57	.67	3.63	.69	3.76	.51
12. Identify how their values impact choices regarding careers and relationships.	3.33	.76	3.37	.75	3.13	.82	3.45	.69
13. Conduct and use primary and secondary research effectively within the discipline.	3.21	.76	3.17	.73	3.30	.84	3.29	.74

	i. *Total* *ii.* *(N = 451)*		*Students* *(n = 306)*		*Faculty* *(n = 90)*		*Staff* *(n = 55)*	
	iii. *Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
14. Demonstrate strong communication skills.	3.57	.66	3.51	.69	3.66	.64	3.82	.39
15. Use the scientific method to develop questions and experimental methods within the discipline.	3.06	.84	3.05	.84	3.12	.86	3.04	.79
16. Present, explain, and defend the results of quantitative analysis in graphs, tables, and verbal summaries within the discipline.	3.05	.89	3.04	.88	3.07	.95	3.07	.86
17. Identify mechanisms to effect change through civic engagement opportunities.	3.14	.81	3.20	.79	2.93	.93	3.13	.64
18. Discuss and analyze discipline-based subject matter and content verbally.	3.27	.74	3.19	.75	3.43	.74	3.47	.60
19. Demonstrate hands-on experience with an understanding of social justice issues.	3.18	.88	3.28	.81	2.87	1.00	3.11	.90
20. Demonstrate accountability for the legal and ethical principles of discipline-based professional practice in a socially responsible manner.	3.25	.79	3.28	.77	3.11	.87	3.25	.75
21. Demonstrate strong problem solving skills.	3.58	.65	3.53	.67	3.69	.61	3.71	.53
22. Develop a comprehensive capstone project that demonstrates skills acquired within the discipline.	3.09	.90	3.10	.86	3.12	.92	2.93	1.01

Note: The rating instructions were: *Rate the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university using the following 4-point likert rating scale: 1 = Not Important 2 = Slightly Important 3 = Important 4 = Very Important.*

Appendix E

Exploring Differences in SLO Importance Between Students and Faculty via Discriminant Analysis

To better understand patterns of differences, the following strategy was followed. First, students versus faculty only are explored. This decision was motivated by the similar importance patterns between students and staff and the smaller number of staff participants, which would impede identifying these patterns. Secondly, based on review of the results presented in Figures 1 - 4, we explored differences in the top five most important *Knowledge Acquisition* and *Professional Dispositions SLO*s only. Discriminant Analysis was performed to compare the overall set of ten *SLO*s between students and faculty. This procedure generates a weighted composite of the ten *SLO*s (referred to as a discriminant function), where the weights were estimated to maximize the differences between students and faculty. Table E1 presents means and SDs for each of the ten *SLO*s for students and faculty. Table E2 presents univariate inferential analyses for group differences for each of the ten *SLO*s. Table E3 presents the list of *SLO*s rank ordered based on the strength of the structure coefficients generated for each *SLO*. Structure coefficients are basically correlations between each *SLO* and the discriminant function. The higher the structure coefficient, the strong a given *SLO* contributes to differences between students and faculty.

Table E1: Means and SDs for Top Ten SLOs for Students and Faculty

	Students (n = 306)		*Faculty (n = 90)*	
	Mean	*SD*	*Mean*	*SD*
1. Discuss and analyze discipline-based subject matter and content verbally.	3.19	.75	3.43	.74
2. Understand and value diversity.	3.56	.72	3.39	.84
3. Discuss and analyze discipline-based subject matter and content in writing.	3.17	.72	3.54	.72
4. Demonstrate strong leadership.	3.34	.77	2.86	.83
5. Locate, evaluate, and make efficient and ethical use of information resources.	3.36	.72	3.51	.71
6. Develop problem solving strategies using scientific and quantitative reasoning.	3.30	.77	3.61	.65
7. Demonstrate respect for the value of others.	3.57	.67	3.63	.69
8. Conduct and use primary and secondary research effectively within the discipline.	3.17	.73	3.30	.84
9. Demonstrate strong communication skills.	3.51	.69	3.66	.64
10. Demonstrate strong problem solving skills.	3.53	.67	3.69	.61

Note: The rating instructions were: *Rate the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve from their entire experience at the university using the following 4-point likert rating scale: 1 = Not Important 2 = Slightly Important 3 = Important 4 = Very Important.*

Table E2: Tests of Equality of Group Means: Students vs. Faculty

SLO	*Wilks' Lambda*	*F*	*df1*	*df2*	*p*
Discuss and analyze discipline-based subject matter and content verbally	.981	7.586	1	394	.006
Understand and value diversity	.991	3.445	1	394	.064
Discuss and analyze discipline-based subject matter and content in writing	.954	19.092	1	394	<.001
Demonstrate strong leadership	.936	26.908	1	394	<.001
Locate, evaluate and make efficient and ethical use of information resources	.992	2.997	1	394	.084
Develop problem solving strategies using scientific and quantitative reasoning	.971	11.964	1	394	.001
Demonstrate respect for the values of others	.999	.582	1	394	.446
Conduct and use primary and secondary research effectively within the discipline	.995	1.943	1	394	.164
Demonstrate strong communication skills	.992	3.329	1	394	.069
Demonstrate strong problem solving skills	.990	4.063	1	394	.045

Table E3: Discriminant Analysis Results: Structure coefficients for each of the Ten SLOs

	Structure Coefficient
Demonstrate strong leadership	-.476
Discuss and analyze discipline-based subject matter and content in writing	.401
Develop problem solving strategies using scientific and quantitative reasoning	.318
Discuss and analyze discipline-based subject matter and content verbally	.253
Demonstrate strong problem solving skills	.185
Understand and value diversity	-.170
Demonstrate strong communication skills	.167
Locate, evaluate and make efficient and ethical use of information resources	.159
Conduct and use primary and secondary research effectively within the discipline	.128
Demonstrate respect for the values of others	.070

Note: Structure coefficients are interpreted as correlations between each *SLO* and the discriminant function. The larger the coefficient, the stronger the *SLO*s contribution to Student/Faculty differences. *SLO*s are listed in order of strength of contribution.