Undergraduate Institutional Learning Outcomes (ILO) Report

Presentation of survey and focus group results & ILO recommendations

Prepared by *ILO* Team

April 15, 2022

***ILO* Website:**

https://www.pace.edu/provost/about/undergraduate-institutional-learning-outcomes-ilo

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: https://www.pace.edu/provost/about/undergraduate-institutional-learning-outcomes-ilo . 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 institutionôs 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 Provostôs Office, with information regarding the survey, and (3), reaching out, via specialized listservs, to faculty, students, staff, about the survey.

Focus Group:

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 quantit

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 statemeM

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*ôs importance, we presented results in two ways: (1) Percentage rated

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 -

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-	

Figure 1: Percent Rated Very Important for Knowledge Acquisition SLOs

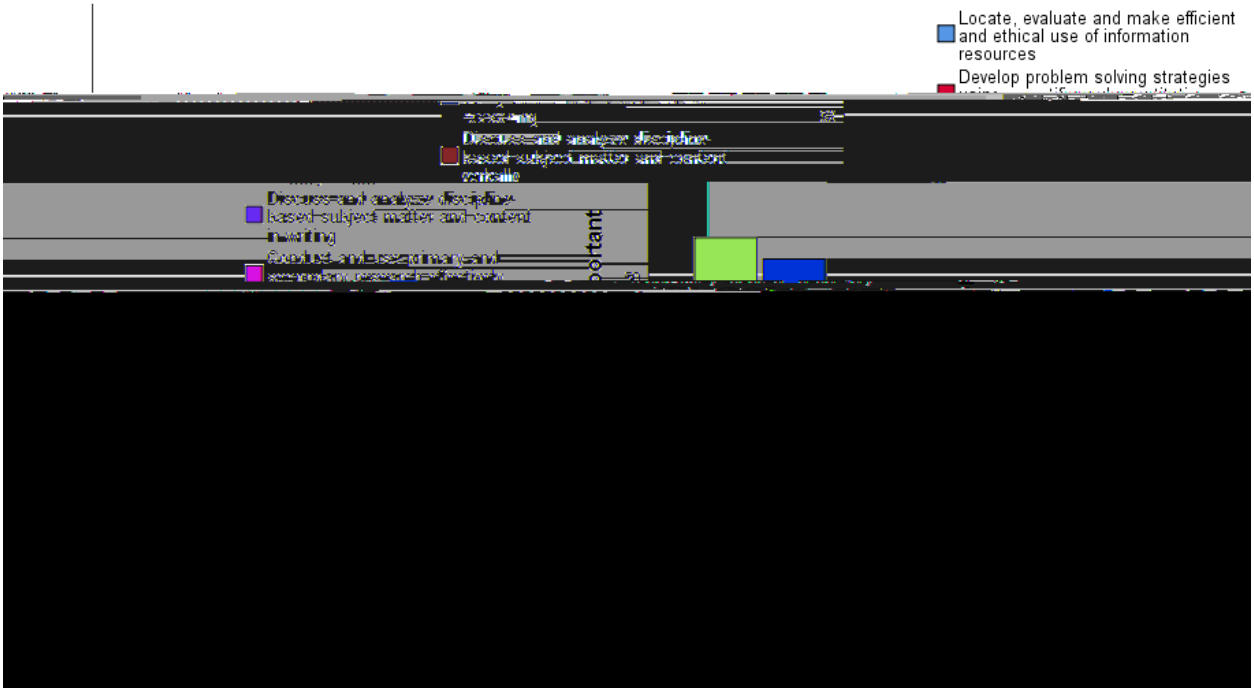

Figure 2: Percent Rated Very Important for Professional Dispositions SLOs

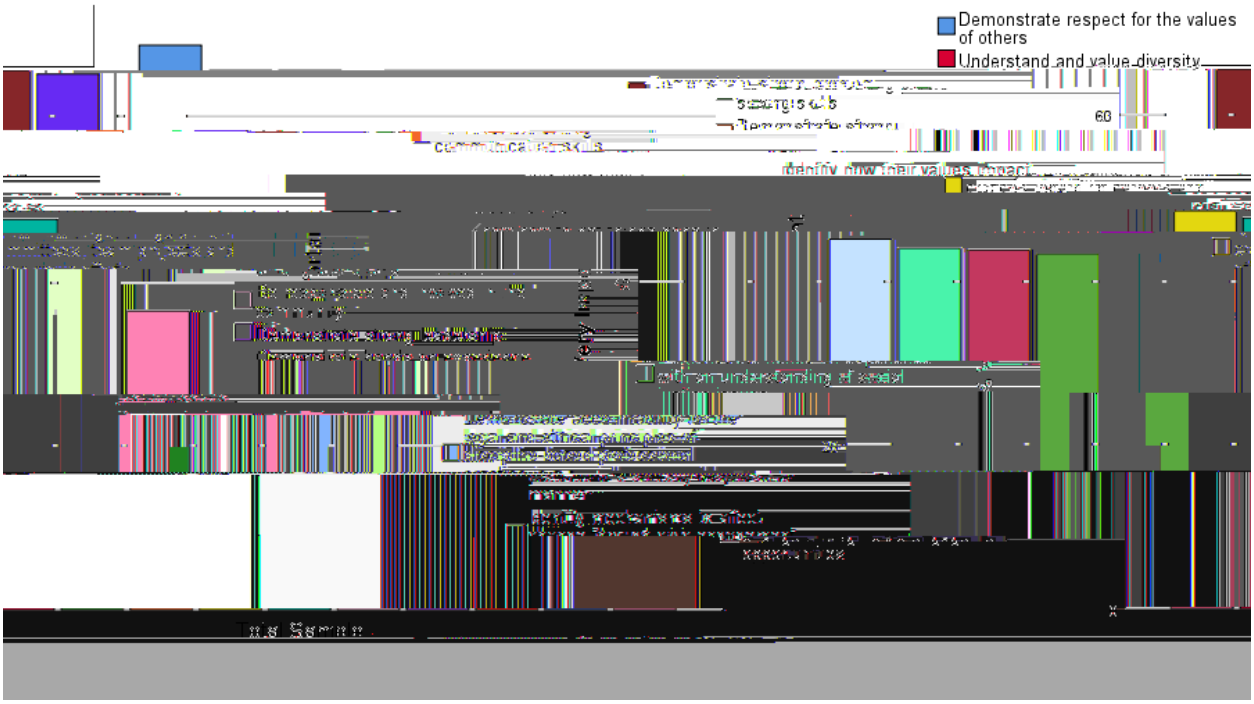

Figure 3: Percent in Top 5 for Knowledge Acquisition SLOs

Figure 4: Percent in Top 5 for Professional Dispositions SLOs

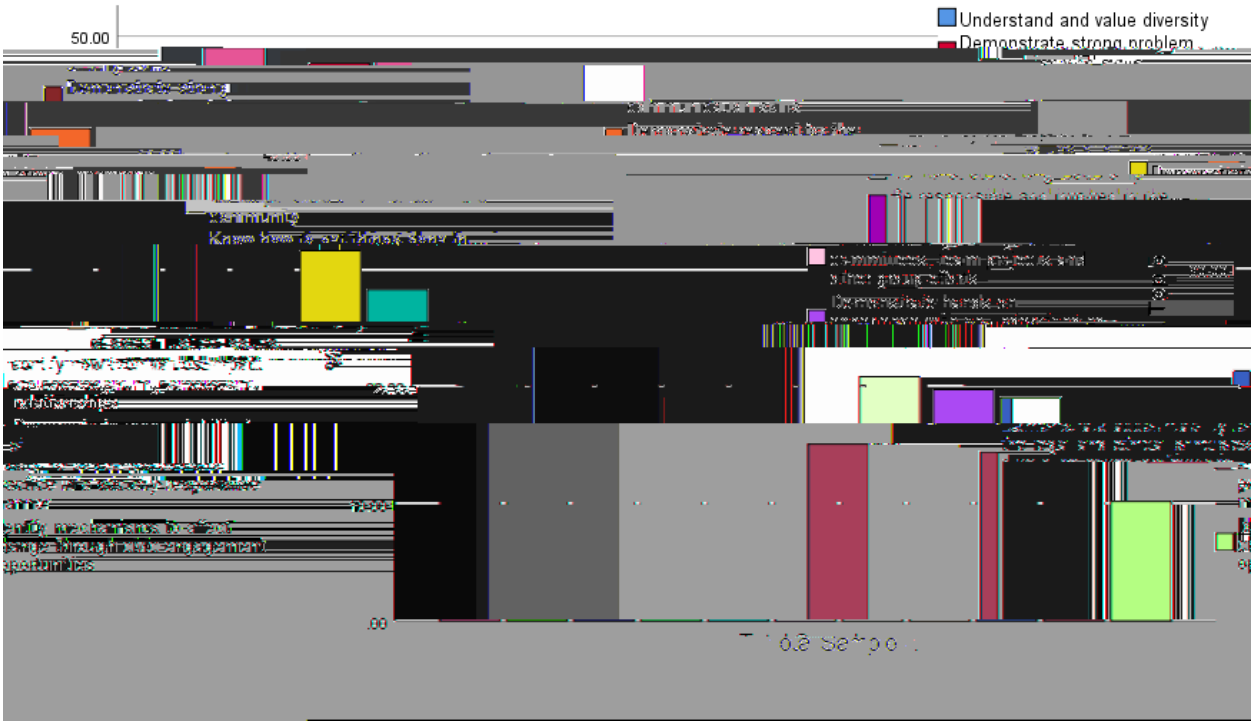

Figure 5: Percent Rated Very Important by Cohort for Knowledge Acquisition SLOs

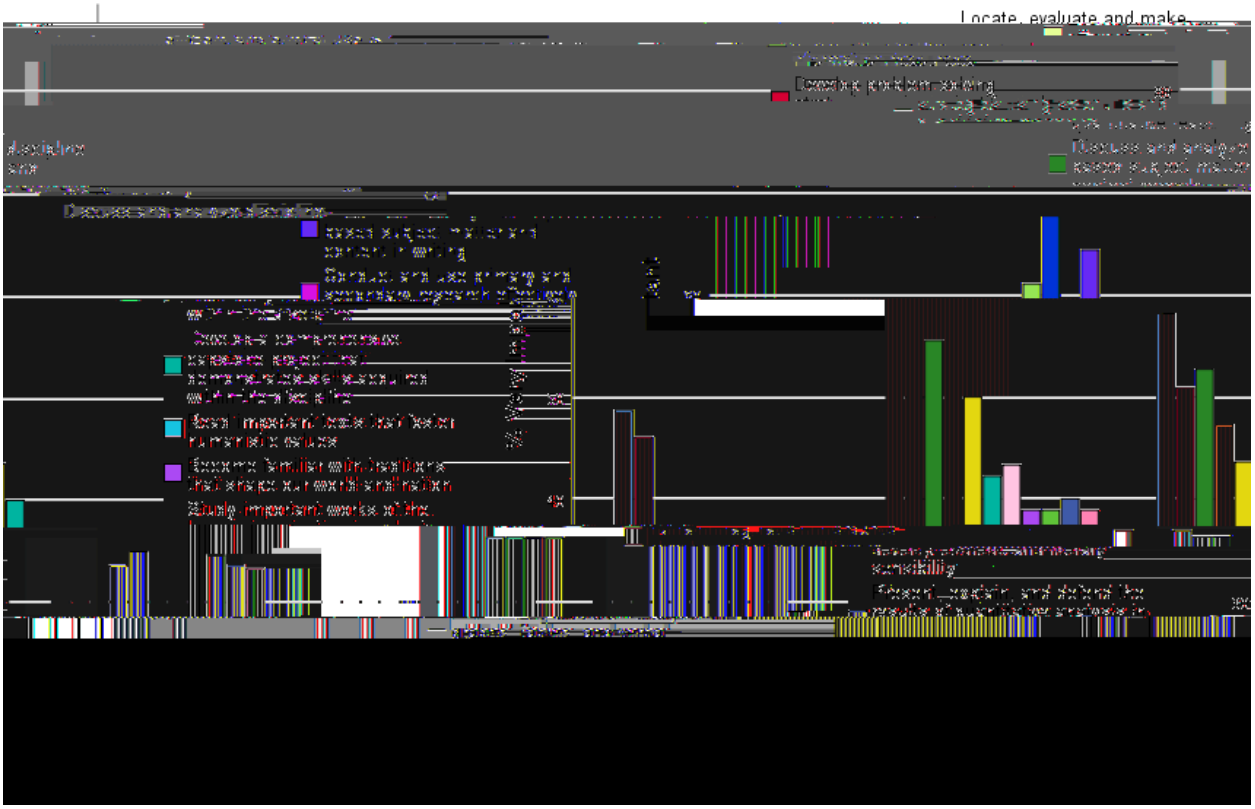

Figure 6: Percent Rated Very Important by Cohort for Professional Dispositions SLOs

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

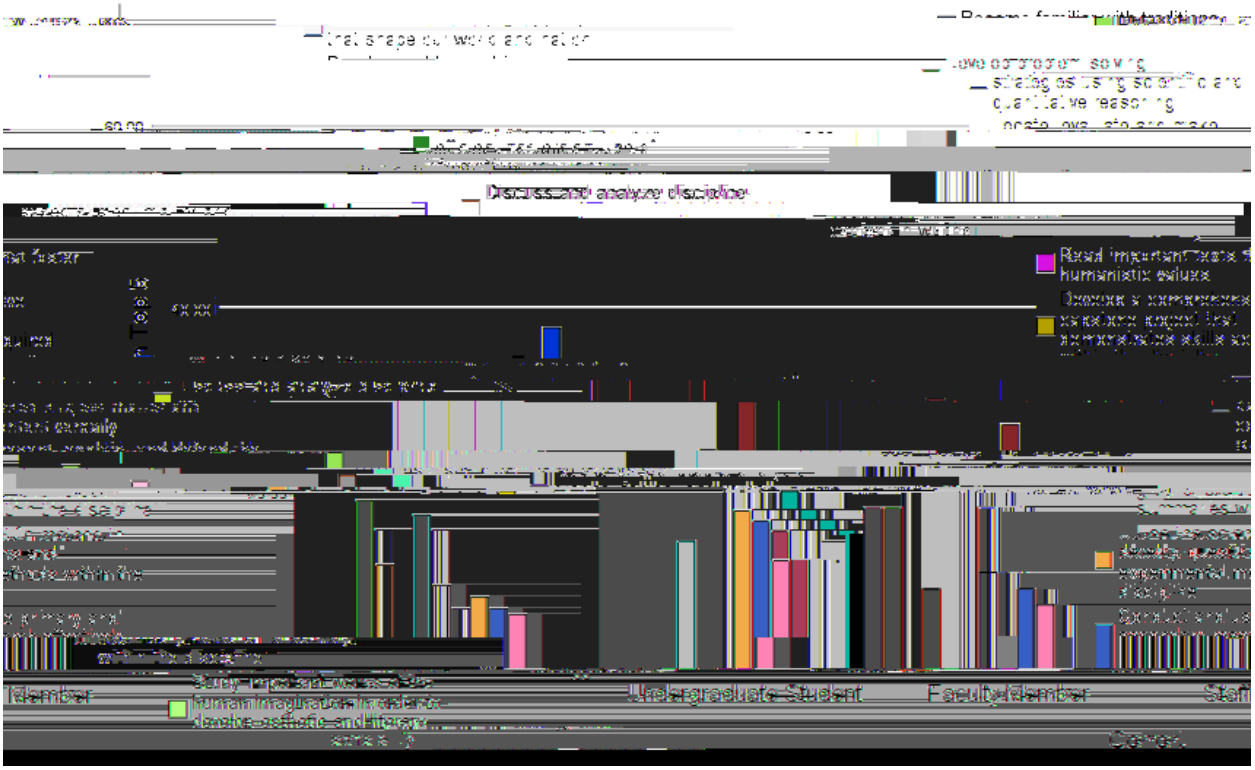

Figure 8: Percent In Top 5 by Cohort for Professional Dispositions SLOs

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

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

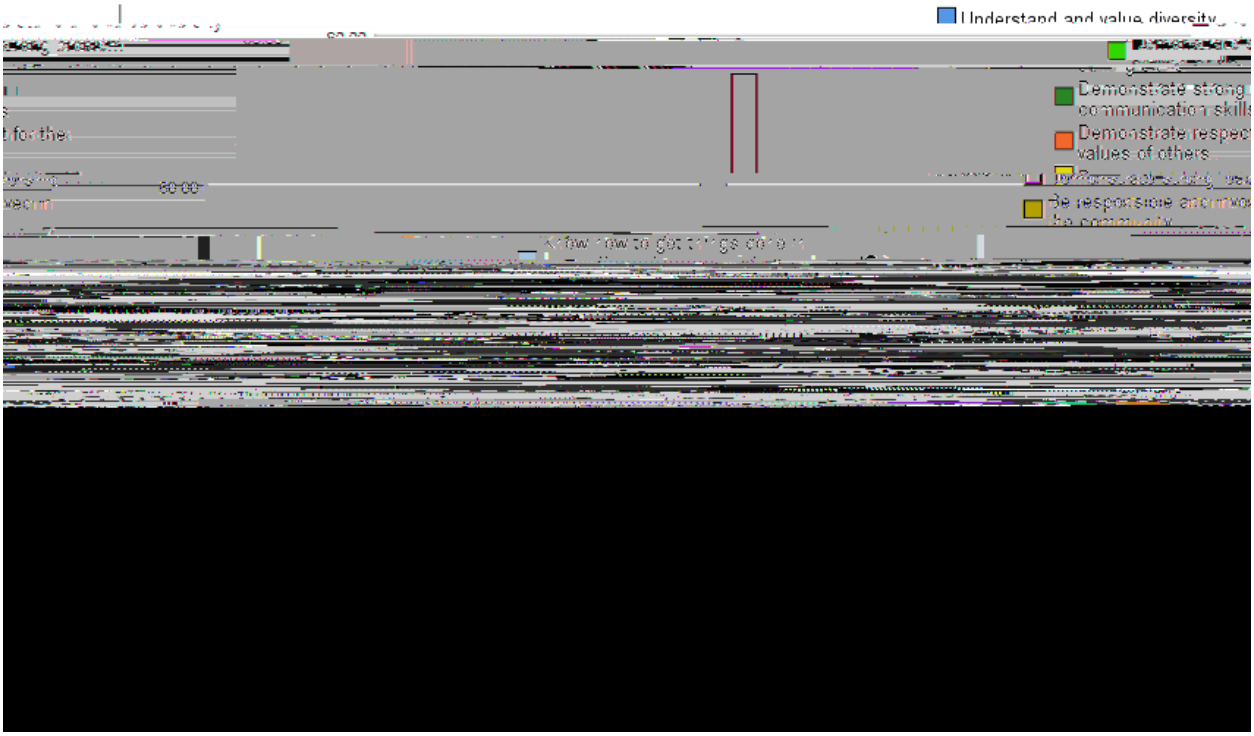

Figure 16: Percent in Top 5 by Student Discipline for Professional Dispositions SLOs

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

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

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.

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 institutionôs 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, é *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*

Rate the importance of each SLO towards the development of knowledge, skills and attitudes undergraduate students are expected to achieve

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.

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:/F2 12 Tf1 0 0 1 36re

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 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.*
   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 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 pe

Appendix C

Development of SLO Thematic Groupings via Principal Components Analysis

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

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

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)	.73		

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:

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			

	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*

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	7ETBT1 0 0 1 525.1 396.f704 Tm3[ )]TJETBT1 0 0 1 468.0	

13.3

	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

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	

	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 Tml 275.TJETles								

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

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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.				

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

	Structure Coefficient