

E2020 Student Scholar Survey:

The Research Institute for Studies in Education (RISE)

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Author: Jason Pontius

Contributors: Robyn Cooper and Corey Rumann

Research Institute for Studies in Education (RISE)

E005 Lagomarcino Hall

Iowa State University

Ames, IA 50011

Introduction

The E2020 Scholars Program offers scholarships for cohorts of undergraduate engineering students within the college's established learning community infrastructure, giving specific attention to the aspirations and attributes of the National Academy of Engineering's (NAE) vision for the engineer of 2020. The project outlined a set of student development and learning opportunities consistent with this vision to be integrated into curricular and co-curricular activities: leadership development, global awareness and understanding, systems-thinking, and innovation. The scholarship program promotes student engagement and development centered on these E2020 outcomes.

The E2020 Scholars Program is pursuing the goals of the S-STEM program through four objectives:

1. Provide opportunities of the Engineering Leadership Program to greater numbers of students and create learning outcomes consistent with the E2020 vision.
2. Engage students in new learning opportunities through cohorts and communities focusing on E2020 concepts.
3. Involve greater numbers of students in the Engineering Leadership Program and use E2020 scholarships in coordination with new programs being developed in a related NSF STEP grant.
4. Use the E2020 focus in coordination with the NSF STEP grant to prepare more graduates to fulfill the NAE and college vision.

This evaluation study is designed to investigate student participants' experiences in the E2020 Scholars Program, and to address the degree to which the program's goals, objectives, and outcomes are being met.

The Study

This report details the survey responses of 18 current E2020 Scholars program students. While the sample is small and non-random, it includes almost all of the 19 students currently active in the program. All E2020 participants were contacted via email during the last week of August, 2010 and asked to complete the survey. In the email, students were informed that their participation was voluntary and that confidentiality would be maintained throughout the course of the study. Survey questions were developed in coordination with E2020 team members and RISE personnel.

Statistical Analysis

Quantitative and qualitative data analysis methodologies were used to analyze the survey data. Statistical evaluation of data included descriptives and frequencies of survey responses. Open-ended questions were coded for common themes.

Results

Almost all ($n = 18$) of the 19 student scholars responded to the survey. Of that group, 12 had entered Iowa State University (ISU) as freshman, 6 had transferred into ISU. Male students ($n = 14$) and White students ($n = 15$) comprised the vast majority of respondents. All six transfer student respondents were White and male. See table below for additional details.

	Freshman		Transfers		Total
	Female	Male	Female	Male	
White students	3	6	0	6	15
Students of color	1	2	0	0	3
Total	4	8	0	6	18

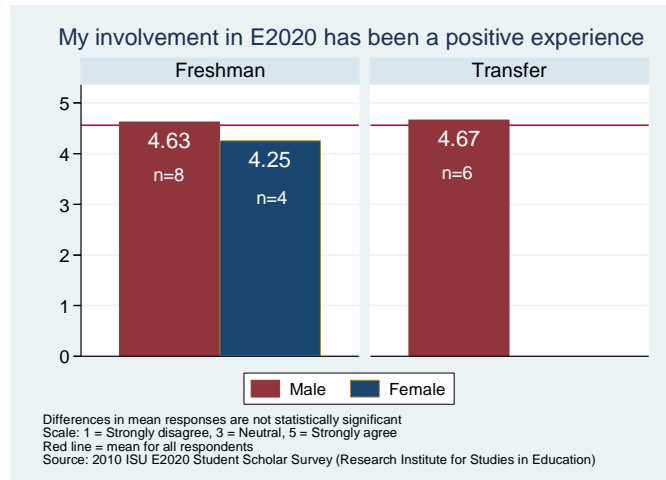
Wilcoxon-Mann-Whitney Test. Due to the non-normal distributions of many question responses, the non-parametric Wilcoxon ranksum, or Mann-Whitney test, was used. The analysis looked for statistically significant differences in responses between transfer students ($n = 6$) and freshman students ($n = 12$), gender differences among freshman students (4 women and 8 men), and between male freshman ($n = 8$) and male transfer students ($n = 6$). No statistically significant differences in students' responses were found.

Frequencies, means, and student comments. For all of the survey questions, simple frequency distributions and mean responses are presented below (1 = Strongly disagree, 3 = Neutral, 5 = Strongly agree). Mean responses are shown by gender within each freshman or transfer student category, though, no t-tests were run by gender due to small numbers ($n = 4$). None of the transfer students were women. Additionally, themes derived from student comments are included for each question. Response themes are provided for transfer students and female respondents where possible.

Q1: My involvement in E2020 has been a positive experience.

Response	Percent	n
Strongly agree	66.7%	12
Somewhat agree	22.2%	4
Neutral	11.1%	2
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q1 Student Comment Themes

Overall: Students liked meeting other engineering students, enjoyed the discussion of the four pillars, learned a lot about being an engineer, and now think of the role of an engineer differently.

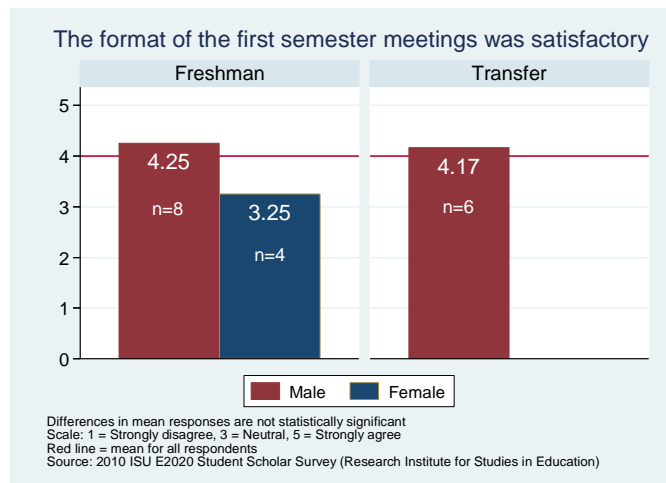
Women: Had a very positive experience and gained greater insight into the role of an engineer.

Transfers: The program really helped with their transition, helped them meet people, and helped them understand the four pillars.

Q2: The format of the first semester meetings was satisfactory.

Response	Percent	n
Strongly agree	27.8%	5
Somewhat agree	50.0%	9
Neutral	16.7%	3
Somewhat disagree	5.6%	1
Strongly disagree	0.0%	0
Total		18

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Q2 Student Comment Themes

Overall: Students thought there were an appropriate number of meetings and enjoyed the program’s laid-back pace. A few students did not like the group dynamics and felt the class lacked structure.

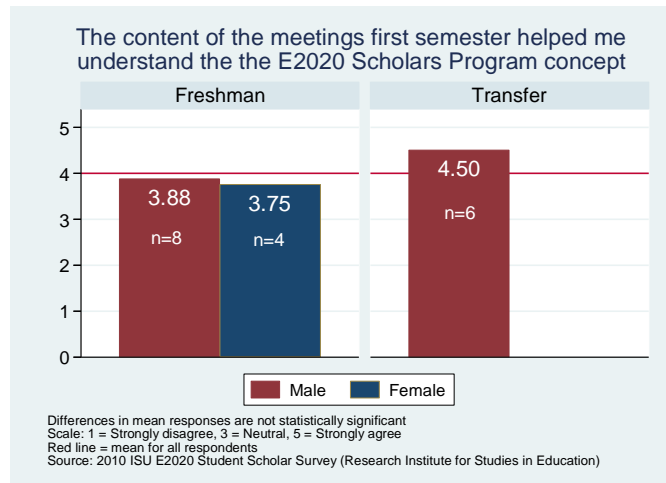
Women: Thought there was not enough class structure and preferred a set/standard meeting time.

Transfers: Indicated that they enjoyed the meetings and their frequency.

Q3: The content of the meetings first semester helped me understand what the concept E2020 Scholars Program meant.

Response	Percent	n
Strongly agree	27.8%	5
Somewhat agree	55.6%	10
Neutral	11.1%	2
Somewhat disagree	5.6%	1
Strongly disagree	0.0%	0
Total		18

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Q3 Student Comment Themes

Overall: Most students thought the first semester meetings helped them understand what the E2020 Scholars program was about. A few students wanted more details about the second semester class and how the pillars would be used in the second semester.

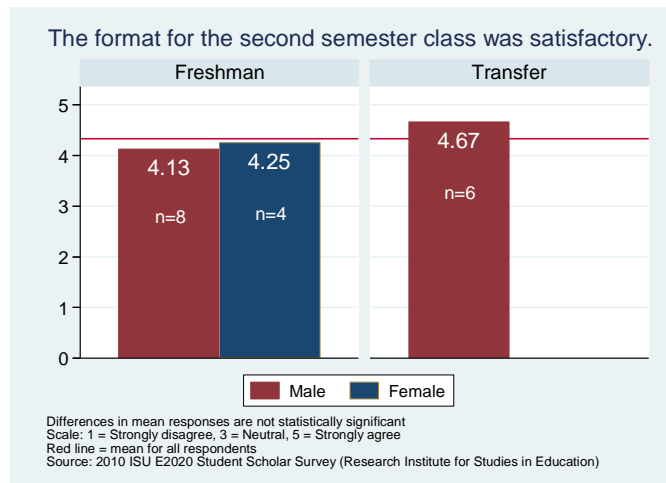
Women: Thought the first semester provided a good overview.

Transfers: Responded that they gained a good understanding of the four pillars.

Q4: The format for the second semester class (first year and transfer students meeting every week in a class setting) was satisfactory.

Response	Percent	n
Strongly agree	44.4%	8
Somewhat agree	50.0%	9
Neutral	0.0%	0
Somewhat disagree	5.6%	1
Strongly disagree	0.0%	0
Total		18

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Q4 Student Comment Themes

Overall: Liked the meeting format and set times. Many thought that the second semester built upon their understanding of the four pillars from first semester. Several stated that the group projects were valuable in helping them understand material.

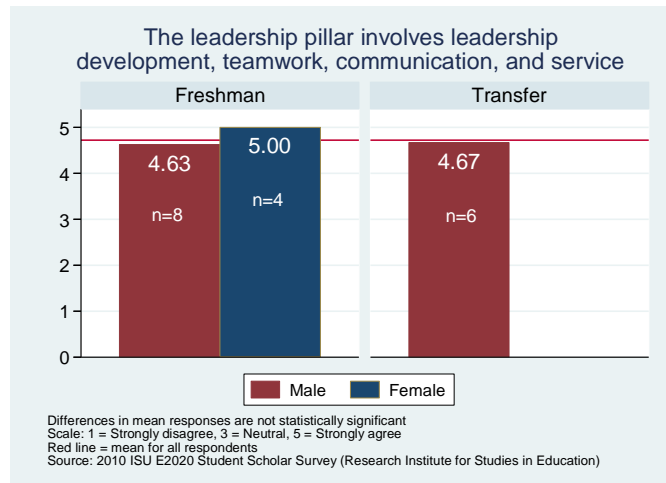
Women: Liked the format of projects and meeting times (based on only two responses).

Transfers: Liked the additional structure and depth of information.

Q5: I understand that the leadership pillar involves leadership development, teamwork, communication, and service.

Response	Percent	n
Strongly agree	72.2%	13
Somewhat agree	27.8%	5
Neutral	0.0%	0
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q5 Student Comment Themes

Overall: Many believed the personality tests helped with their leadership skills and liked the opportunities to practice them. The tests also helped broaden their understanding of leadership.

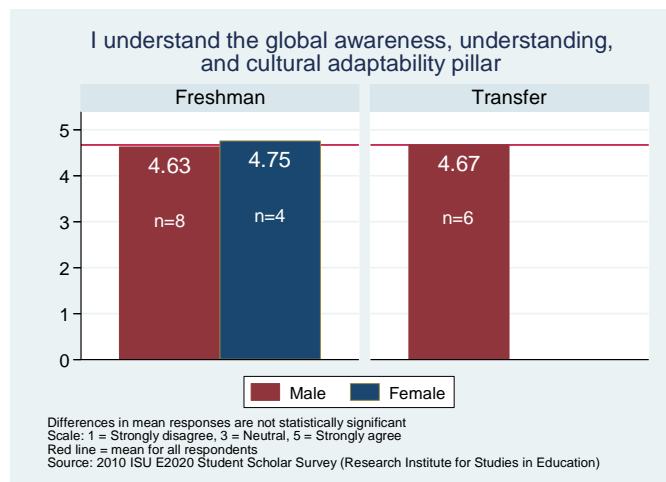
Women: No common themes found.

Transfers: Gained a better understanding of personal strengths and weaknesses and how to incorporate them into leadership and communication.

Q6: I have an understanding about the global awareness, understanding, & cultural adaptability pillar.

Response	Percent	n
Strongly agree	66.7%	12
Somewhat agree	33.3%	6
Neutral	0.0%	0
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q6 Student Comment Themes

Overall: Enjoyed looking at different cultural problems and seeing how Americans have attempted to solve them. The pillar also led them to understand the importance of knowing cultural differences and standards.

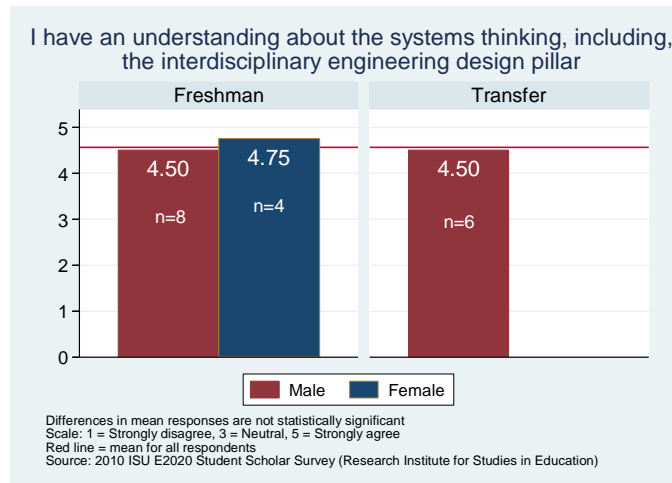
Women: No common themes found.

Transfers: Have a better understanding of global differences and how they will affect the workplace.

Q7: I have an understanding about the systems thinking, including the interdisciplinary engineering design pillar.

Response	Percent	n
Strongly agree	61.1%	11
Somewhat agree	33.3%	6
Neutral	5.6%	1
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q7 Student Comment Themes

Overall: Many felt that this pillar gave them a greater appreciation for the complexity of situations. They enjoyed learning about this pillar through talks and projects. One person thought this pillar was challenging to understand fully.

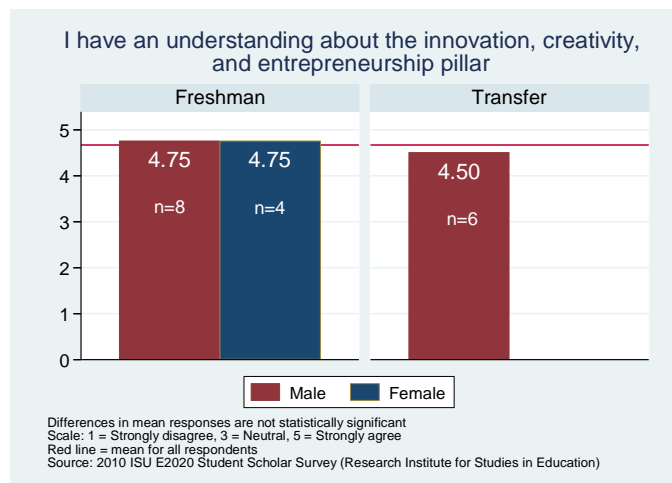
Women: Now have a greater understanding of the pillar (based on only two responses).

Transfers: No common themes.

Q8: I have an understanding about the innovation, creativity, and entrepreneurship pillar.

Response	Percent	n
Strongly agree	66.7%	12
Somewhat agree	33.3%	6
Neutral	0.0%	0
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q8 Student Comment Themes

Overall: Students now have a good understanding of what innovation involves. They enjoyed the 2050 challenge.

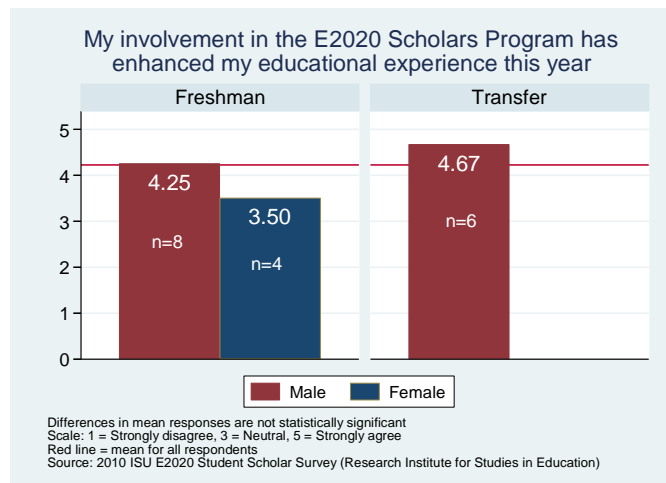
Women: No common themes.

Transfers: Enjoyed the inventing group project.

Q9: My involvement in the E2020 Scholars Program has enhanced my educational experience this year.

Response	Percent	n
Strongly agree	44.4%	8
Somewhat agree	44.4%	8
Neutral	0.0%	0
Somewhat disagree	11.1%	2
Strongly disagree	0.0%	0
Total		18

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Q9 Student Comment Themes

Overall: Many believed that the program enhanced their educational experiences and made them better students. They have used the skills and resources they gained from the program.

Women: The program helped them see the big picture of engineering (based on only two responses).

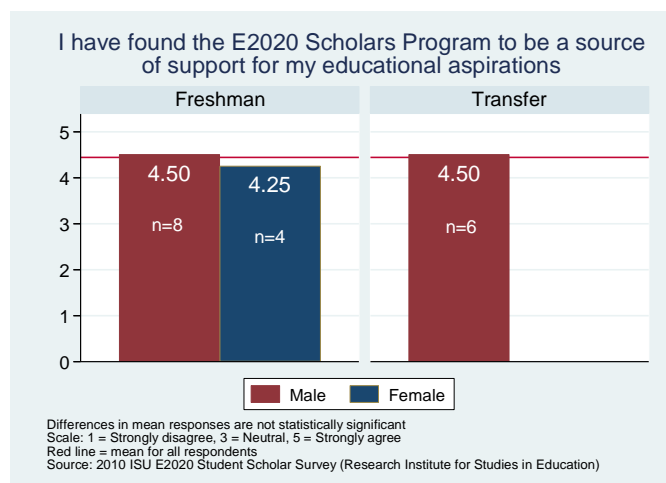
Transfers: Have found that it was a very helpful class.

Note: There were no comments from respondents who indicated "Somewhat disagree"

Q10: I have found the E2020 Scholars Program to be a source of support for my educational aspirations.

Response	Percent	n
Strongly agree	66.7%	12
Somewhat agree	16.7%	3
Neutral	11.1%	2
Somewhat disagree	5.6%	1
Strongly disagree	0.0%	0
Total		18

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Q10 Student Comment Themes

Overall: Many thought that the program helped create a passion for engineering and provided ideas for the future. Several stated that the program helped them find a job.

Women: Helped provide support and insight into their future career (based on only two responses).

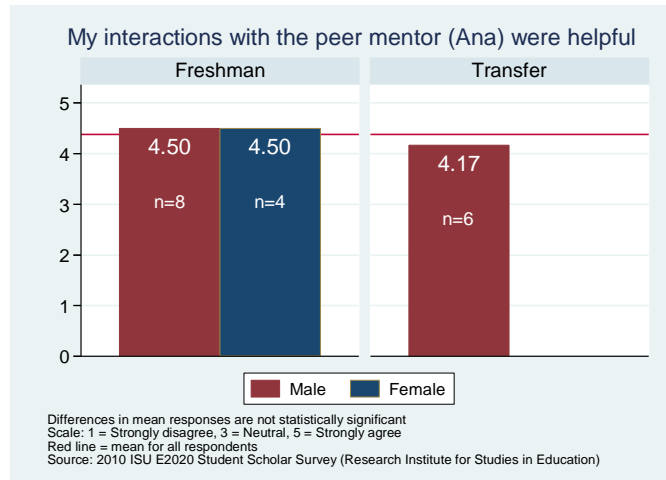
Transfers: No common themes.

Note: There were no comments from respondents who indicated "Neutral" or "Somewhat disagree"

Q11: My interactions with the peer mentor (Ana) were helpful.

Response	Percent	n
Strongly agree	66.7%	12
Somewhat agree	5.6%	1
Neutral	27.8%	5
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q11 Student Comment Themes

Overall: Ana was very helpful and easy to talk to. Several stated that they did not have many interactions with Ana.

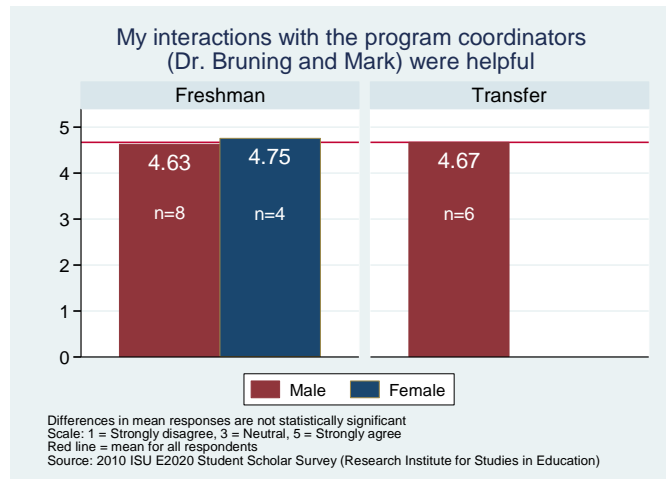
Women: Found her very easy to talk to and helpful in answering questions (based on only two responses).

Transfers: Found her to be very helpful.

Q12: My interactions with the program coordinators (Dr. Bruning and Mark) were helpful.

Response	Percent	n
Strongly agree	77.8%	14
Somewhat agree	11.1%	2
Neutral	11.1%	2
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q12 Student Comment Themes

Overall: Thought Dr. Bruning and Mark were great teachers, well organized, and helpful in answering questions.

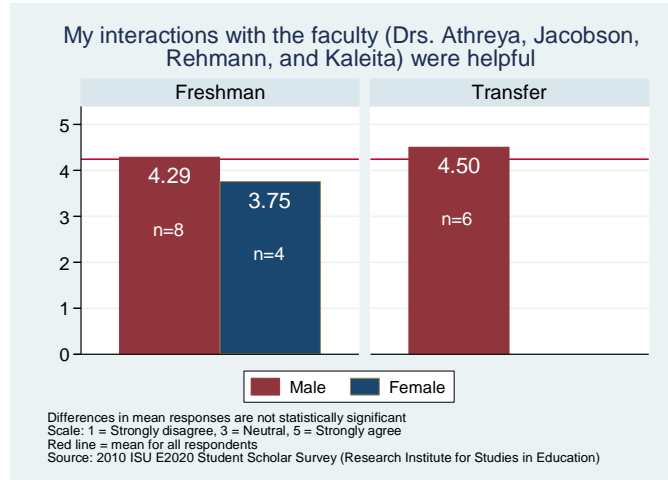
Women: Thought Dr. Bruning and Mark were very helpful and had an involved interest in their success as students (based on only two responses).

Transfers: No common themes.

Q13: My interactions with the faculty (Drs. Athreya, Jacobson, Rehmann, and Kaleita) were helpful.

Response	Percent	n
Strongly agree	38.9%	7
Somewhat agree	38.9%	7
Neutral	16.7%	3
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		17

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Q13 Student Comment Themes

Overall: Many students said the faculty helped them to understand the pillars better. The students enjoyed their segments and found them interesting and helpful.

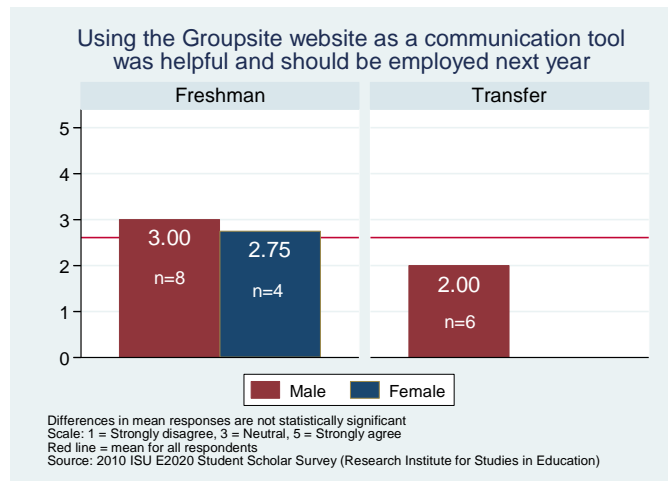
Women: No common themes.

Transfers: The faculty helped them to understand the pillars better.

Q14: Using the Groupsite website as a communication tool was helpful and should be employed next year.

Response	Percent	n
Strongly agree	5.6%	1
Somewhat agree	16.7%	3
Neutral	27.8%	5
Somewhat disagree	33.3%	6
Strongly disagree	16.7%	3
Total		18

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Q14 Student Comment Themes

Overall: Most said they did not use the Groupsite very much because it was inconvenient. They reported that they did not want to check Groupsite when they already checked a number of sites regularly like; WebCT, email, and Facebook. Some students said it was helpful while others said it was confusing to work with.

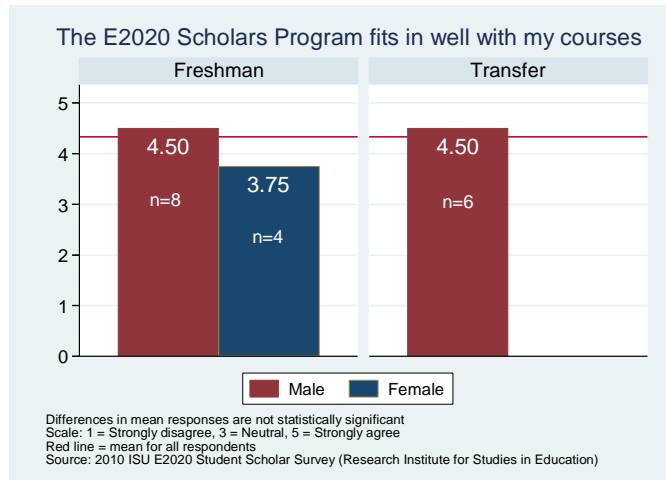
Women: No common themes.

Transfers: Didn't use it very much and thought it was a hassle.

Q15: The E2020 Scholars Program fits in well with my courses.

Response	Percent	n
Strongly agree	44.4%	8
Somewhat agree	44.4%	8
Neutral	11.1%	2
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q15 Student Comment Themes

Overall: Many said that it helped change their mind-set in different classes. The pillars complemented their different courses.

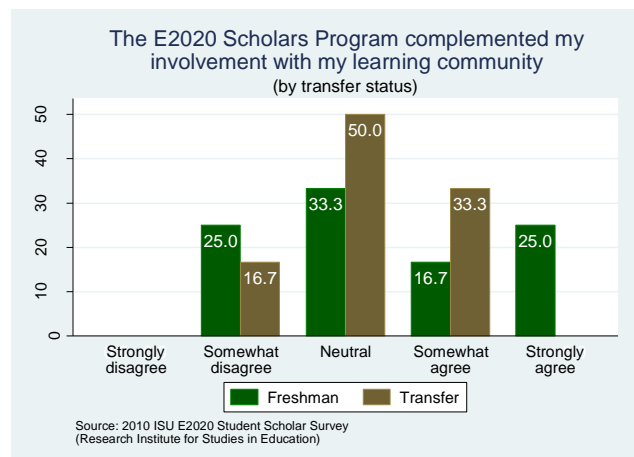
Women: No common themes.

Transfers: The E2020 program complements their other courses.

Q16: The E2020 Scholars Program complemented my involvement with my learning community.

Response	Freshman		Transfer Student	
	Percent	n	Percent	n
Strongly agree	25.0%	3	0.0%	0
Somewhat agree	16.7%	2	33.3%	2
Neutral	33.3%	4	50.0%	3
Somewhat disagree	25.0%	3	16.7%	1
Strongly disagree	0.0%	0	0.0%	0
Total	100.0%	12	100.0%	6

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Q16 Student Comment Themes

Overall: Several students said that the Scholars Program and their learning community did not overlap very much. Two students indicated that they didn't get a lot out of their learning community.

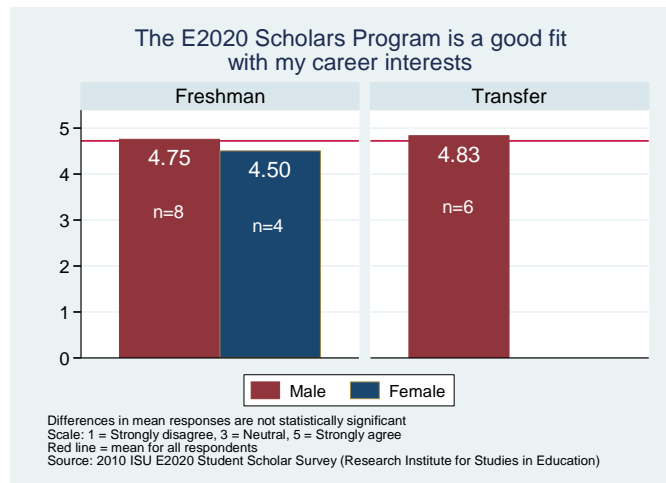
Women: No common themes.

Transfers: No common themes.

Q17: The E2020 Scholars Program is a good fit with my career interests.

Response	Percent	n
Strongly agree	77.8%	14
Somewhat agree	16.7%	3
Neutral	5.6%	1
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q17 Student Comment Themes

Overall: Many students found that the program helped them develop necessary workplace skills. Some realized that the skills they gained from the Scholars Program will improve their career prospects. One student suggested incorporating a project that identifies future and current problems that they might have to deal with as engineers.

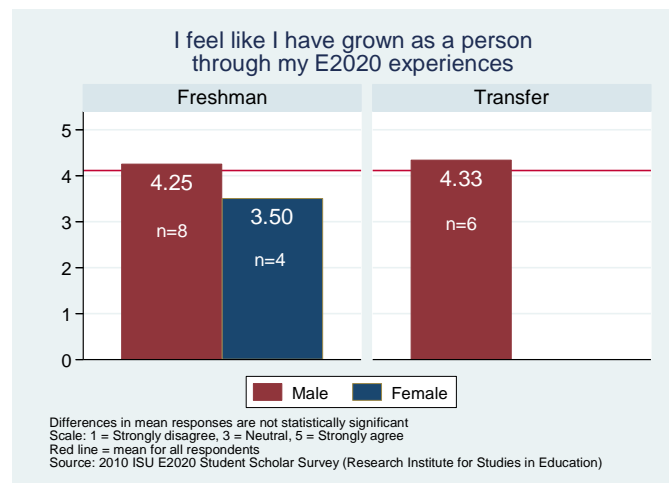
Women: No common themes.

Transfers: The program fits with their interests and careers by addressing work place skills.

Q18: I feel like I have grown as a person through my E2020 experiences.

Response	Percent	n
Strongly agree	33.3%	6
Somewhat agree	55.6%	10
Neutral	5.6%	1
Somewhat disagree	0.0%	0
Strongly disagree	5.6%	1
Total		18

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Q18 Student Comment Themes

Overall: Many students said that it challenged them to think differently. Some said it helped them grow socially.

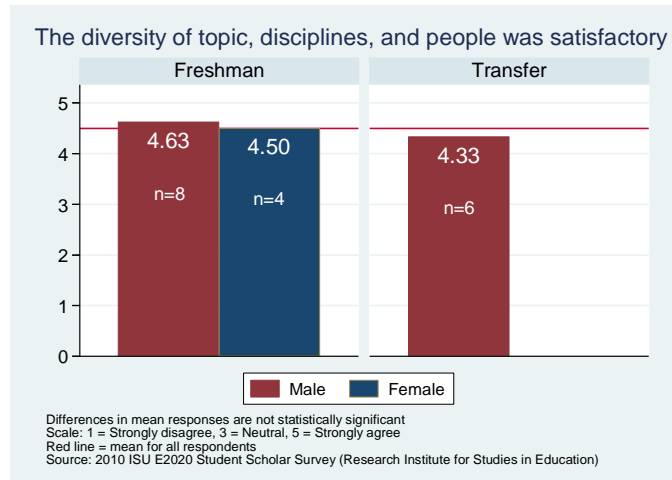
Women: No common themes.

Transfers: E2020 has improved them as individuals.

Q19: The diversity of topics, disciplines, and people (students and staff) was satisfactory.

Response	Percent	n
Strongly agree	55.6%	10
Somewhat agree	38.9%	7
Neutral	5.6%	1
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

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Q19 Student Comment Themes

Overall: Many students liked the diversity of the topics covered in the program. They liked how people with diverse backgrounds contributed to discussions making them more interesting.

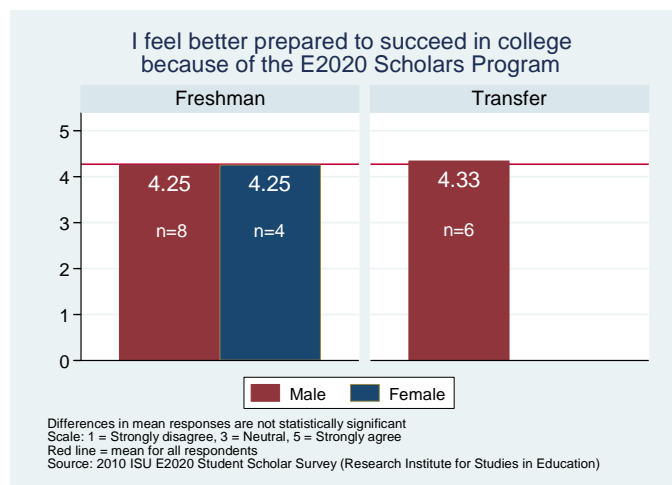
Women: No common themes.

Transfers: No common themes.

Q20: I feel better prepared to succeed in college because of the E2020 Scholars Program.

Response	Percent	n
Strongly agree	38.9%	7
Somewhat agree	50.0%	9
Neutral	11.1%	2
Somewhat disagree	0.0%	0
Strongly disagree	0.0%	0
Total		18

Prepared by RISE, Iowa State University



Q20 Student Comment Themes

Overall: Many students learned qualities that will help them become better engineer. According to some students, the program has helped them achieve goals.

Women: No common themes.

Transfers: E2020 has helped them get involved in college through resources and friends.

Discussion

Student feedback on the E2020 Program was quite positive with 89% of student respondents agreeing (indicating either *Somewhat agree* or *Strongly agree*) that their involvement in the E2020 program:

- was a positive experience
- supported their growth as a person
- enhanced their educational experience
- fit well with their courses
- helped them feel better prepared to succeed in college

Four pillars. The four pillars (leadership development, global awareness and understanding, systems-thinking, and innovation) emerged as a particular area of strength for the program. For three of the pillars, 100% of students agreed that they understood the pillar. For the other pillar (i.e., systems-thinking) 95% of students agreed that they understood the pillar and 5% (one student) had selected “neutral”. Students in their comments expressed that the pillars had expanded their perspective on the field of engineering, given them a greater appreciation for the complexity of engineering, and allowed them to see common threads across their classes.

E2020 faculty and staff. Student evaluations of E2020 faculty staff were also very positive. When asked if the peer mentor, program coordinators, and faculty were helpful, not a single student disagreed. The program coordinators received the most positive praise with 78% of students indicating *Strongly agree* when asked if the Mark and Dr. Bruning were helpful. Students indicated in comments that they appreciated having Ana as a non-staff, non-faculty person with whom they could talk. Two students stated they had little to no interaction with Ana but did not specify the reason.

Transfer students. Average transfer student responses on survey items tended to be higher (more positive) than freshman responses, though the differences were not statistically significant. Similarly, comments by transfer students also tended to be slightly more positive than freshman students. It is difficult to make generalizations due to the small sample size and the homogenous nature of the transfer student population (all six were White males), however, the fact that transfer student responses were generally as positive as freshman responses speaks well for the E2020 program’s ability to integrate transfer students into the curriculum.

Groupwise website. The website was easily the lowest rated aspect of the E2020 program from the survey. Of the students surveyed, 22% agreed and 50% disagreed that the website served as a good communication tool. Transfer students rated the website even lower than freshman, though the difference was not statistically significant.

Learning communities. Only 39% of students agreed (indicated either *Somewhat agree* or *Strongly agree*) that the E2020 program complemented their learning community involvement. Several students indicated that both E2020 and their learning community were valuable experiences but did not believe the two programs interacted or overlapped very much. These responses are expected for two reasons. One reason is that for transfer students, E2020 was their learning community. They did not have another learning community like the freshman students. The second reason is that the four pillars were created to eventually become a common curriculum across learning communities. E2020 program organizers anticipated little content overlap until the curriculum was adopted.

Conclusion

Given the four E2020 program objectives, it is clear that E2020 is on the right path for success.

1. Provide opportunities of the Engineering Leadership Program to greater numbers of students and create learning outcomes consistent with the E2020 vision.

The E2020 learning objectives include: leadership skills to advance and influence commerce and public policy for the betterment of society, innovative and interdisciplinary orientation to engineering solution, competence in an ever-changing environment. While this survey did not measure these objectives directly, it was clear that students in the E2020 program understood and appreciated the four pillars curriculum which touches upon some of these objectives.

2. Involve greater numbers of students in the Engineering Leadership Program and use E2020 scholarships in coordination with new programs being developed in a related NSF STEP grant.

Given the success of integrating both freshmen and transfer students into the program, it is evident that increasing the number of participants can grow the program successfully. Additionally, students who participate in E2020 can serve as a core group to mentor new E2020 students or participate in new programs developed through the Engineering Leadership Program

3. Use the E2020 focus in coordination with the NSF STEP grant to prepare more graduates to fulfill the NAE and college vision.

A majority of the students indicated they were aware and understood the four pillars, cornerstone elements of the NAE and college vision. Given the importance of this objective, future programs should use similar methods when teaching the material.

4. Engage students in new learning opportunities through cohorts and communities focusing on E2020 concepts.

Student respondents, especially transfer students, appreciated the sense of community created by the E2020 Scholars program. The program helped students meet new people, make contacts, and develop friendships. Most students who were already involved in separate learning communities still enjoyed the additional opportunity to build community.

Appendix A: Frequency distribution for all student responses

#	Question	n	Mean	SD	Min	Max
Q5	The leadership pillar involved leadership development, teamwork, communication, and service	18	4.72	0.46	4	5
Q17	The E2020 Scholars Program is a good fit with my career interests	18	4.72	0.57	3	5
Q6	I understand the global awareness, understanding, and cultural adaptability pillar	18	4.67	0.49	4	5
Q8	I understand the innovation, creativity, and entrepreneurship pillar	18	4.67	0.49	4	5
Q12	My interactions with the program coordinators were helpful	18	4.67	0.69	3	5
Q1	My involvement in E2020 has been a positive experience	18	4.56	0.70	3	5
Q7	I understand the systems thinking, including interdisciplinary engineering design pillar	18	4.56	0.62	3	5
Q19	The diversity of topic, disciplines, and people was satisfactory	18	4.50	0.62	3	5
Q10	I have found the E2020 Scholars Program to be a source of support for my education	18	4.44	0.92	2	5
Q11	My interactions with Ana the peer mentor were helpful	18	4.39	0.92	3	5
Q4	The format for the second semester meetings was satisfactory	18	4.33	0.77	2	5
Q15	The E2020 Scholars Program fits in well with my courses	18	4.33	0.69	3	5
Q20	I feel better prepared to succeed in college because of the E2020 Scholars Program	18	4.28	0.67	3	5
Q13	My interactions with the faculty were helpful	17	4.24	0.75	3	5
Q9	My involvement in the E2020 Scholars Program has enhanced my educational experience	18	4.22	0.94	2	5
Q18	I feel like I have grown as a person through my E2020 experiences	18	4.11	0.96	1	5
Q3	The content of the meetings first semester helped me understand the E2020 Scholars	18	4.06	0.80	2	5
Q2	The format for the first semester meetings was satisfactory	18	4.00	0.84	2	5
Q16	The E2020 Scholars Program complemented my involvement with my learning community	18	3.33	1.03	2	5
Q14	The Groupsite website was a useful communication tool and should be employed next year	18	2.61	1.14	1	5

Ordered in descending order by mean

1 = Strongly disagree, 3 = Neutral, 5 = Strongly agree

Appendix B: Frequency distribution by transfer status

#	Question	Freshman			Transfer		
		n	Mean	SD	n	Mean	SD
Q5	The leadership pillar involved leadership development, teamwork, communication, and service	12	4.75	0.45	6	4.67	0.52
Q8	I understand the innovation, creativity, and entrepreneurship pillar	12	4.75	0.45	6	4.50	0.55
Q6	I understand the global awareness, understanding, and cultural adaptability pillar	12	4.67	0.49	6	4.67	0.52
Q12	My interactions with the program coordinators were helpful	12	4.67	0.65	6	4.67	0.82
Q17	The E2020 Scholars Program is a good fit with my career interests	12	4.67	0.65	6	4.83	0.41
Q7	I understand the systems thinking, including interdisciplinary engineering design pillar	12	4.58	0.67	6	4.50	0.55
Q19	The diversity of topic, disciplines, and people was satisfactory	12	4.58	0.51	6	4.33	0.82
Q1	My involvement in E2020 has been a positive experience	12	4.50	0.80	6	4.67	0.52
Q11	My interactions with Ana the peer mentor were helpful	12	4.50	0.90	6	4.17	0.98
Q10	I have found the E2020 Scholars Program to be a source of support for my education	12	4.42	1.00	6	4.50	0.84
Q15	The E2020 Scholars Program fits in well with my courses	12	4.25	0.75	6	4.50	0.55
Q20	I feel better prepared to succeed in college because of the E2020 Scholars Program	12	4.25	0.62	6	4.33	0.82
Q4	The format for the second semester meetings was satisfactory	12	4.17	0.83	6	4.67	0.52
Q13	My interactions with the faculty were helpful	11	4.09	0.83	6	4.50	0.55
Q9	My involvement in the E2020 Scholars Program has enhanced my educational experience	12	4.00	1.04	6	4.67	0.52
Q18	I feel like I have grown as a person through my E2020 experiences	12	4.00	1.13	6	4.33	0.52
Q2	The format for the first semester meetings was satisfactory	12	3.92	1.00	6	4.17	0.41
Q3	The content of the meetings first semester helped me understand the E2020 Scholars	12	3.83	0.83	6	4.50	0.55
Q16	The E2020 Scholars Program complemented my involvement with my learning communit	12	3.42	1.16	6	3.17	0.75
Q14	Using the Groupsite website as a communication tool was helpful and should be employed next year	12	2.92	1.16	6	2.00	0.89

Ordered in descending order by freshman mean

1 = Strongly disagree, 3 = Neutral, 5 = Strongly agree

Appendix C: Frequency distribution by gender

#	Question	Male			Female		
		n	Mean	SD	n	Mean	SD
Q17	The E2020 Scholars Program is a good fit with my career interests	14	4.79	0.58	4	4.50	0.58
Q1	My involvement in E2020 has been a positive experience	14	4.64	0.63	4	4.25	0.96
Q5	The leadership pillar involved leadership development, teamwork, communication, and service	14	4.64	0.50	4	5.00	0.00
Q6	I understand the global awareness, understanding, and cultural adaptability pillar	14	4.64	0.50	4	4.75	0.50
Q8	I understand the innovation, creativity, and entrepreneurship pillar	14	4.64	0.50	4	4.75	0.50
Q12	My interactions with the program coordinators were helpful	14	4.64	0.74	4	4.75	0.50
Q7	I understand the systems thinking, including interdisciplinary engineering design pillar	14	4.50	0.65	4	4.75	0.50
Q10	I have found the E2020 Scholars Program to be a source of support for my education	14	4.50	0.76	4	4.25	1.50
Q15	The E2020 Scholars Program fits in well with my courses	14	4.50	0.65	4	3.75	0.50
Q19	The diversity of topic, disciplines, and people was satisfactory	14	4.50	0.65	4	4.50	0.58
Q9	My involvement in the E2020 Scholars Program has enhanced my educational experience	14	4.43	0.85	4	3.50	1.00
Q13	My interactions with the faculty were helpful	13	4.38	0.65	4	3.75	0.96
Q4	The format for the second semester meetings was satisfactory	14	4.36	0.84	4	4.25	0.50
Q11	My interactions with Ana the peer mentor were helpful	14	4.36	0.93	4	4.50	1.00
Q18	I feel like I have grown as a person through my E2020 experiences	14	4.29	0.61	4	3.50	1.73
Q20	I feel better prepared to succeed in college because of the E2020 Scholars Program	14	4.29	0.73	4	4.25	0.50
Q2	The format for the first semester meetings was satisfactory	14	4.21	0.70	4	3.25	0.96
Q3	The content of the meetings first semester helped me understand the E2020 Scholars	14	4.14	0.86	4	3.75	0.50
Q16	The E2020 Scholars Program complemented my involvement with my learning communit	14	3.50	1.02	4	2.75	0.96
Q14	Using the Groupsite website as a communication tool was helpful and should be employed next year	14	2.57	1.09	4	2.75	1.50

Ordered in descending order by male student mean

1 = Strongly disagree, 3 = Neutral, 5 = Strongly agree

Appendix D: Curriculum-Related Comments from E2020 Scholars

Note: The following comments were chosen because they addressed the E2020 curriculum. Comments have been edited to avoid use of respondents' direct quotes.

My involvement in E2020 has been a positive experience.

- I have had an extremely positive experience with being involved in E2020. E2020 has given me the opportunity to interact with students I wouldn't have otherwise met and faculty members in the college of engineering. I learned a lot about myself as an aspiring engineering major and about what I need to work on to be a successful engineer in the future.
- My experience in E2020 has provided me greater insight into what engineers do after college and/or graduate school.
- E2020 created a comfortable atmosphere for thinking about the four pillars in ways I otherwise wouldn't have thought about. I feel this added to my thought process during classes and also made the transition into the College of Engineering a good experience.
- It has proved to be a great way to get involved as well as developing a support structure with engineers in other disciplines. E2020 helped provide more of the big picture about being an engineer, especially when first year courses can be sort of tedious.
- I have learned to look at things a different way. The Global Awareness and Entrepreneurship pillars really challenged me to think differently.
- The E2020 program has given me a clearer understanding of the four pillars, and helped me realize how important and universal they really are.

The content of the meetings first semester helped me understand what the concept E2020 Scholars Program meant.

- I gained a strong understanding of the four pillars of the E2020 program. I have since used these ideas to develop better projects for my other classes.

The format for the second semester class (first year and transfer students meeting every week in a class setting) was satisfactory.

- I thought the second semester curriculum did a better job of explaining E2020. After finishing this semester, I felt that I really understand the four pillars.
- I really liked the format for the different pillars each doing 3-week breakouts with real world, group project activities. I thought that Innovation and Global Awareness were the most beneficial and hands-on.
- I liked how we were able to go into more depth with the pillars and understand them better. I liked the professors who spoke with us and shared how they thought it would affect our careers.

I understand that the leadership pillar involves leadership development, teamwork, communication, and service.

- We talked about this quite a bit, but it's hard to really put concepts into practice. I think that maybe transitioning second year scholars into mentors for the first year students would make quite a bit of sense for getting hands-on experience for this pillar. Also, just working in teams on the other pillars integrates this as well.

- I think that the personality tests helped us understand our strengths and weaknesses. It also helped us identify people with whom we would work well. It also helped us understand how to be better leaders when working with people whose personality differed from our own.
- I now understand that leadership is not just about leading other people, but being able to lead myself through teamwork, communication, and service.

I have an understanding about the global awareness, understanding, and cultural adaptability pillar.

- I never realized the importance of culture and customs in designing a product to meet a country's needs. This class has helped me to realize that there is more to engineering than just building something that works for us.
- I really enjoyed the aspect of looking at other cultural problems and how we as American engineers may attempt to solve them. This pillar really opened my eyes to some things I may face as I pursue my degree with the different global standards.
- We discussed past and present global events and received some hands-on experience working on projects to address hypothetical global problems.

I have an understanding about the systems thinking, including interdisciplinary engineering design pillar.

- I enjoyed the section on the systems thinking pillar in the spring semester. I came to realize just how many things you have to consider when you are working on a project. Not only the dimensions of a project and how something works, but also how it is going to affect the surrounding environment and those who use it.
- I really connected with the Systems thinking pillar because I am a very visual person. I enjoyed how we were challenged to think of projects in different ways.
- We had some good discussion about how we need to step back from our specific project focus and understand how it relates to others.
- I would like to develop ideas about upgrading our nation's transportation infrastructure and going green.
- I'm not sure that I have much more understanding of this than I did before, except maybe a greater appreciation for the complexity of some situations.
- The rich picture activity that we did helped me understand how different things are connected and how changing one might change another.
- This pillar is a bit more challenging to fully understand. It's also difficult to put this idea into practice, but I think with time I will be able to fully understand its meaning.

I have an understanding about the innovation, creativity, and entrepreneurship pillar.

- I feel that I have a very good understanding of the innovation pillar. Innovation is not just thinking of new ideas, but working together in a team, taking initiative, accepting criticism and being creative.
- Innovation was another pillar that I really connected with and I enjoyed having to be creative in 2050 problems we face and creating solutions to them.
- We had a good project where we were able to brainstorm a solution to the 2050 challenge. I feel that the project provided me with a better perspective on what innovation involves.

- I would like to be able to revolutionize the transportation infrastructure of the nation. Being innovative on my marketing schemes is very important because it will be very hard to convince people that we need our transportation infrastructure changed.
- I think that attending an entrepreneurship lecture and working on projects with Dr. Jacobson has helped me grow a lot in this area.
- I liked how we had to come up with an idea and then pitch it to a panel in order to receive funding.
- I feel the most confident with this pillar and really enjoyed the group project where we had to invent something.

My involvement in the E2020 Scholars Program has enhanced my educational experience this year.

- It has provided me with another perspective as to what engineers will be doing in the future.
- The faculty and the classroom discussions enhanced my educational experience. I had a lot of questions last year that were answered by the faculty which made my experience enjoyable and helped my transition.
- I cannot say that the program has directly helped me in any classes, but the pillars have expanded my thinking and made me a better student.
- I feel that E2020 has expanded my perception of the field of engineering that goes beyond what I would have received from my coursework.
- E2020 has certainly helped to enhance my education. It taught me about what it means to be an engineer, something my other classes failed to teach.

I have found the E2020 Scholars Program to be a source of support for my educational aspirations.

- With E2020 I was able to see a passion that I hope to pursue in engineering become a reality. Through E2020 I was able to find another job within the university [to further that passion]
- I feel that this program will develop into a forum for innovative engineering ideas. Ideally, I would be able to find people who feel the same as me and we could work on developing our ideas before and after we graduate.
- By participating in E2020 I have been motivated to eventually start my own company working with ideas to solve some of the problems that pertain to the year 2020/2050.
- This program has supported me regardless of the path I choose to take as an engineer.

The E2020 Scholars Program fits in well with my courses.

- I am doing things in my classes such as thinking about global awareness and leadership pillars that I learned about in E2020.
- The E2020 program does a great job of supplementing my courses. Sometimes it was difficult to work on group projects when everyone in our groups had different backgrounds, used different software or programs, or had different experiences. But overall, it fits very well
- The E2020 Scholars Program has really added to some of the material that I am now studying in my courses. It has me thinking about my courses with a different mindset which I feel has enhanced my learning experience.
- It provides a new dimension to my coursework.

The E2020 Scholars Program is a good fit with my career interests.

- It would be foolish of me to not develop myself in the 4 pillars and expect to be a good engineer.

I feel like I have grown as a person through my E2020 experiences.

- Being able to work with and brainstorm ideas with fellow engineering students has helped me gain skills in teamwork and learning how to thinking like an engineer.
- I have really taken on my education through the E2020 program as it has challenged me with thinking differently and many times in ways other than engineering.

What do you think are the best aspects of the current E2020 Scholars Program?

- I really like the ideas and pillars that the E2020 program is based upon. As a student pursuing an engineering degree it has really helped to have faculty who are willing to help and bring up topics that are current but may not be covered in other courses.
- I like the people and I think the pillars are a great description of the traits an engineer should possess.
- The activities we do to practice the four pillars are very helpful. I enjoy the hands-on activities because that is how I learn.
- Some of the best aspects of E2020 are meeting new people and developing the four pillars with this group of people. Doing activities in E2020 makes it easier to use the skills learned in other places.