REU Site: Undergraduate Research in Smart Environments: Year 2 Evaluation Report
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The WSU REU program project leadership team identified six student-focused indicators of overall project success and five methods for measuring the indicators. The student-focused indicators are:

1. Retention in undergraduate science and engineering programs
2. Publications and presentations involving REU participants
3. Percentage of students that go on to graduate school
4. Contentment of students (during and after the program)
5. Percentage of REU participants who are from underrepresented groups in science and engineering.
6. Improved student understanding of the research process

The methods used to measure the indicators were:

1. Student records and feedback (measure 1, 3, and 4)
2. Self-reported demographic data (measure 5)
3. Literature searches for REU authors and self-reports from faculty (measure 2)
4. Preliminary and exit surveys of students (measures 4 and 6)
5. Assessment of students using critical thinking rubrics developed with internal WSU assessment specialists from the Office of Undergraduate Research (measure 6)

11 students participated in the pre-REU survey and 7 in the post- REU survey, although not all responded to each question. In terms of indicators 1 (retention), 2 (publications/ presentations) and 3 (graduate school), data collection for 2016 will take place after submission of this year's project report. The project team intends to follow up with students in 2017 to see if they (a) finished their BS degrees, (b) had any publications/presentations related to their REU experiences, and (c) pursued graduate degrees.

SUMMARY OF STUDENT RESULTS

TABLE 1. Summary of student-focused indicator measurement results 2016.

Performance Indicator		**Results 2016**
1.	Retention in undergraduate science & engineering programs.	• In fall 2016, 6 students from the 2015 REU program out of 10 provided the following data: 5 completed their BS degrees, with 1 ongoing.
2.	Publications and presentations	• In fall 2016, 5 students from the 2015 REU program out of 10 said they'd not published anything from the REU program; 1

	involving REU participants.	student said that 1 conference proceedings paper had been published.
3.	Percentage of students that go on to graduate school.	• In fall 2016, 6 students from the 2015 REU program out of 10 provided the following data: 3 of the 5 students who graduated from BS programs enrolled in graduate programs, 2 were intending to enroll and 1 said he/she was not planning to attend graduate school. • The majority of the 2015 student cohort indicated that going to graduate school was important to them, and that they intended to apply to graduate school. Only one student consistently indicated no desire for graduate school, but never indicated the reason.
4.	Contentment of students.	• For both 2015 and 2016 cohorts, the majority of students were content with all aspects of the REU program.*
5.	Percentage of REU participants from underrepresented groups	• The 2016 cohort was comprised of the following: 44% (N=4) women and 56% (N=7) men; 1 Hispanic/Latino, 1 African American, 2 Other, 7 Caucasian. • The 2015 cohort was comprised of the following: 40% (N=4) women and 60% (N=6) men; 2 Hispanic/Latino, 2 African American, 1 Other, 5 Caucasian.
6.	Improved student understanding of the research process.	• For both 2015 and 2016 cohorts, the majority of students indicated at the outset that they had fewer and less established research process skills than after completion of the REU program.*

NOTE: Because different surveys were used for students in each year, it is not possible to compare survey items for performance indicators 4 and 5. See the detailed results in the tables below for details.

DETAILED STUDENT RESPONSES

Performance Indicator 3: Percentage of students that go on to graduate school.

TABLE 2. Please rate your level of agreement to the following statements, where 5 is strongly positive and 1 is strongly negative.(N=10)

1.	For me to apply to graduate school is (extremely good/extremely bad).	9 students indicated Extremely Good; 1 Somewhat Bad

2.	Most people who are important to me think that (I should/should not) apply to graduate school in [my REU project] discipline.	6 students indicated "I Should"; 2 "I Somewhat Should"; 2 Neutral
3.	I plan to apply to graduate school in a [my REU project] discipline.	3 students indicated Strongly Plan; 3 Somewhat Plan; 3 Neutral; 1 Doesn't Plan
4.	For me, to apply to graduate school in [my REU project] discipline is (extremely valuable/extremely worthless).	4 students indicated Extremely Valuable; 4 Somewhat Valuable; 2 Neutral
5.	It is expected of me that I will apply to graduate school in [my REU project] discipline.	3 students indicated Strongly Expected; 1 Somewhat Expected; 3 Neutral; 2 Somewhat Expected; 1 Not Expected
6.	I will make an effort to apply to graduate school in [my REU project] discipline.	3 students indicated Strong Effort; 5 Somewhat of an Effort; 1 No Effort
7.	For me to apply to graduate school in [my REU project] discipline is (extremely beneficial/extremely harmful).	4 students indicated Extremely Beneficial; 3 Somewhat Beneficial; 2 Somewhat Harmful
8.	I intend to apply to graduate school in [my REU project] discipline.	2 students indicated Strongly Intend; 2 Somewhat Intend; 4 Neutral; 1 Do Not Intend
9.	For me to apply to graduate school in [my REU project] discipline is (extremely pleasant/extremely unpleasant).	3 students indicated Extremely Pleasant; 4 Somewhat Pleasant; 1 Neutral; 2 Somewhat Unpleasant
10.	Most people whose opinions I value would approve of me applying to graduate school in [my REU project] discipline.	7 students indicated Strongly Approve; 2 Somewhat Approve; 1 Neutral

Performance Indicator 6: Improved Understanding of the Research Process

Two question sets informed the achievement of this performance indicator, see Tables 3 & 4 for results.

TABLE 3. Please rate your degree of confidence with the following statements.
Scale: Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree, Strongly Disagree
(N= 10 for the Pre-REU Survey; N= 7 for the Post-REU Survey)

	I can:	
1.	Locate primary research literature (e.g., journal articles)	Pre-REU: 6 students indicated Strongly Agree; 3 Somewhat Agree; 1 Strongly Disagree Post-REU: 5 students indicated Strongly Agree; 1 Somewhat Agree; 1 Neutral

2.	Understand primary research literature	Pre-REU: 2 students indicated Strongly Agree; 6 Somewhat Agree; 1 Neutral; 1 Somewhat Disagree Post-REU: 4 students indicated Strongly Agree; 2 Somewhat Agree; 1 Somewhat Disagree
3.	Formulate a research hypothesis	Pre-REU: 2 students indicated Strongly Agree; 3 Somewhat Agree; 3 Neutral; 2 Somewhat Disagree Post-REU: 3 students indicated Strongly Agree; 3 Somewhat Agree; 1 Somewhat Disagree
4.	Design an experimental test of a solution to a problem	Pre-REU: 1 student indicated Strongly Agree; 3 Somewhat Agree; 4 Neutral; 2 Somewhat Disagree Post-REU: 4 students indicated Strongly Agree; 4 Somewhat Agree; 3 Neutral
5.	Collect data	Pre-REU: 4 students indicated Strongly Agree; 4 Somewhat Agree; 3 Neutral Post-REU: 4 students indicated Strongly Agree; 1 Somewhat Agree; 2 Neutral
6.	Statistically analyze data	Pre-REU: 3 students indicated Strongly Agree; 4 Somewhat Agree; 1 Neutral; 1 Somewhat Disagree; 1 Strongly Disagree Post-REU: 3 students indicated Strongly Agree; 4 Somewhat Agree
7.	Interpret data analyses	Pre-REU: 4 students indicated Strongly Agree; 3 Somewhat Agree; 1 Neutral; 2 Somewhat Disagree Post-REU: 2 students indicated Strongly Agree; 5 Somewhat Agree
8.	Reformulate a research hypothesis	Pre-REU: 1 student indicated Strongly Agree; 5 Somewhat Agree; 2 Neutral; 2 Somewhat Disagree Post-REU: 2 students indicated Strongly Agree;

		3 Somewhat Agree; 1 Neutral; 1 Somewhat Disagree
9.	Orally communicate the results of research projects	Pre-REU: 4 students indicated Strongly Agree; 3 Somewhat Agree; 2 Neutral; 1 Somewhat Disagree Post-REU: 5 students indicated Strongly Agree; 1 Somewhat Agree; 1 Neutral;
10.	Write a research paper for publication	Pre-REU: 2 students indicated Strongly Agree; 3 Somewhat Agree; 1 Neutral; 4 Somewhat Disagree Post-REU: 4 students indicated Strongly Agree; 1 Somewhat Agree; 3 Neutral
11.	Work with others to investigate a research problem	Pre-REU: 4 students indicated Strongly Agree; 5 Somewhat Agree; 1 Neutral Post-REU: 4 students indicated Strongly Agree; 2 Somewhat Agree; 1 Neutral
12.	Discuss research with graduate students	Pre-REU: 4 students indicated Strongly Agree; 4 Somewhat Agree; 1 Neutral; 1 Somewhat Disagree Post-REU: 5 students indicated Strongly Agree; 2 Somewhat Agree
13.	Discuss research with professors	Pre-REU: 3 students indicated Strongly Agree; 4 Somewhat Agree; 1 Neutral; 2 Somewhat Disagree Post-REU: 3 students indicated Strongly Agree; 4 Somewhat Agree
14.	Discuss research at a professional meeting or conference	Pre-REU: 2 students indicated Strongly Agree; 2 Somewhat Agree; 3 Neutral; 1 Somewhat Disagree; 2 Strongly Disagree Post-REU: 5 students indicated Strongly Agree; 2 Neutral

TABLE 4: Please indicate how much you know about the following on a scale from 1 to 5, with 1 being "nothing at all" and 5 being "a great deal."

Scale: A Great Deal, A Good Deal, Neutral, Somewhat Little, Nothing at All
(N= 10 for the Pre-REU Survey; N= 7 for the Post-REU Survey)

1.	Research proposal write up	Pre-REU: 2 students indicated A Great Deal; 5 A Good Deal; 3 Nothing At All Post-REU: 3 students indicated A Great Deal; 1 A Good Deal; 1 Neutral; 1 Somewhat Little.
2.	Research presentation preparation	Pre-REU: 2 students indicated A Great Deal; 5 A Good Deal; 1 Neutral; 2 A Little. Post-REU: 5 students indicated A Great Deal; 4 A Good Deal; 1 Neutral
3.	Research presentation	Pre-REU: 2 students indicated A Great Deal; 5 A Good Deal; 1 Neutral; 2 A Little Post-REU: 5 students indicated A Great Deal; 2 Neutral
4.	Technical & scientific writing tools	Pre-REU: 5 students indicated A Good Deal; 3 Neutral; 2 A Little. Post-REU: 3students indicated A Great Deal; 2 A Good Deal; 2 Neutral
5.	Ethics in scientific research	Pre-REU: 3 students indicated A Great Deal; 4 A Good Deal; 2 Neutral; 1 Nothing at All Post-REU: 3 students indicated A Great Deal; 4 A Good Deal
6.	Authorship citations	Pre-REU: 2 students indicated A Great Deal; 3 A Good Deal; 1 Neutral; 2 A Little; 2 Nothing at All. Post-REU: 3 students indicated A Great Deal;

		3 A Good Deal; 1 Neutral; 1 Nothing at All
7.	Project management	Pre-REU: 1 student indicated A Great Deal; 5 A Good Deal; 3 Neutral; 1 Nothing at All. Post-REU: 1 student indicated A Great Deal; 4 A Good Deal; 2 A Little
8.	Application of the scientific method	Pre-REU: 2 students indicated A Great Deal; 3 A Good Deal; 1 Neutral; 1 A Little; 2 Nothing at All Post-REU: 3 students indicated A Great Deal; 3 A Good Deal; 1 Neutral; 1 Nothing at All
9.	Analyzing data with statistics or other tools	Pre-REU: 2 students indicated A Great Deal; 5 A Good Deal; 1 Neutral; 3 A Little; 1 Nothing at All Post-REU: 2 students indicated A Great Deal; 3 A Good Deal; 1 A Little
10.	Formulating a research hypothesis that could be answered with data	Pre-REU: 2 students indicated A Great Deal; 3 A Good Deal; 2 Neutral; 1 A Little; 1 Nothing at All Post-REU: 4 students indicated A Great Deal; 2 A Good Deal; 2 A Little
11.	Identifying appropriate research methods and designs	Pre-REU: 2 students indicated A Great Deal; 4 A Good Deal; 1 Neutral; 2 A Little; 1 Nothing at All Post-REU: 3 students indicated A Great Deal; 3 A Good Deal; 1 Neutral

12.	Understanding the theory and concepts guiding a research project	Pre-REU: 3 students indicated A Great Deal; 4 A Good Deal; 2 Neutral; 1 A Little. Post-REU: 4 students indicated A Great Deal; 2 A Good Deal; 1 A Little.
13.	Defending an argument when asked questions	Pre-REU: 2 students indicated A Great Deal; 3 A Good Deal; 3 Neutral; 1 A Little; 1 Nothing at All Post-REU: 2 students indicated A Great Deal; 4 A Good Deal; 1 A Little
14.	Explaining my project to people outside my field	Pre-REU: 3 students indicated A Great Deal; 1 A Good Deal; 3 Neutral; 3 A Little Post-REU: 3 students indicated A Great Deal; 3 A Good Deal; 1 A Little
	Understanding and summarizing journal articles	Pre-REU: 3 students indicated A Great Deal; 3 A Good Deal; 1 Neutral; 2 A Little; 1 Nothing at All Post-REU: 1 student indicated A Great Deal; 5 A Good Deal; 1 A Little.
	Relate results to the "bigger picture"	Pre-REU: 4 students indicated A Great Deal; 2 A Good Deal; 1 Neutral; 3 A Little Post-REU: 4 students indicated A Great Deal; 1 A Good Deal; 1 Neutral; 1 A Little.

The following results pertain to the mentor-mentee relationship. 5 students were assigned to faculty advisors and 2 to graduate students; 5 of the mentors were male and 2 female.

TABLE 5. Please indicate the extent to which you agree with each statement below about your mentor.
Scale: Scale: Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree, Strongly Disagree
(N= 7 for the Post-REU Survey)

My mentor:		
1.	was accessible	5 Strongly Agree; 1 Somewhat Agree; 1 Neutral
2.	demonstrated professional integrity	7 Strongly Agree
3.	demonstrated content expertise in my area of need	7 Strongly Agree
4.	was approachable	5 Strongly Agree; 1 Somewhat Agree; 1 Neutral
5.	was supportive and encouraging	6 Strongly Agree; 1 Somewhat Agree
6.	provided constructive and useful critiques of my work	5 Strongly Agree; 1 Somewhat Agree; 1 Somewhat Disagree
7.	was helpful in providing direction and guidance on research project issues	6 Strongly Agree; 1 Somewhat Disagree
8.	answered my questions satisfactorily (e.g. timely, clear, comprehensive)	5 Strongly Agree; 1 Somewhat Agree; 1 Somewhat Disagree
9.	acknowledged my contributions appropriately	6 Strongly Agree; 1 Neutral
10.	suggested appropriate resources	6 Strongly Agree; 1 Somewhat Disagree
11.	challenged me to extend my abilities	6 Strongly Agree; 1 Somewhat Disagree

TABLE 6. How satisfied were you with:
Scale: Highly Satisfied, Somewhat Satisfied, Neutral, Somewhat Dissatisfied, Highly Dissatisfied.
(N= 7 for the Post-REU Survey)

1.	You faculty advisor	6 Highly Satisfied; 1 Somewhat Dissatisfied

2.	Your housing arrangements (if applicable)	6 Highly Satisfied; 1 Somewhat Dissatisfied
3.	The program in general	5 Highly Satisfied; 1 Somewhat Satisfied; 1 Somewhat Dissatisfied
4.	Your research experience	5 Highly Satisfied; 2 Somewhat Dissatisfied
5.	Your interaction with project staff	7 Highly Satisfied
6.	Your interaction with other students	3 Highly Satisfied; 4 Somewhat Satisfied

Students were asked: What was the most rewarding experience for you during the REU project?

- "I was awarded independence to design and implement a mobile app."
- "I learned how to run simulation to collect data. How to properly summarize and explain my data and methods. I learned more about the field I want to go to for graduate school and doing this REU has helped me decide to go to graduate school."
- "The most rewarding experience was every time I could use a combination of the things I had learnt in classes in order to solve part of the new problem."
- "Meeting other REU students and using one another of collaboration and support."
- "Being able to go through both the ups and downs in research and find a way to get data and analyze it in such a short time frame."
- "Being able to see what the research field would be like helped me to narrow down what I wanted to do within the field of Computer Science."

Students were asked: What was the most frustrating experience for you during the REU project?

- "I have no experience in mobile app programming."
- "I often got stuck on a problem and would have to work at it for hours to days."
- "The most frustrating moments were the ones at which I could not wrap my head around some concept or definition that was needed in order to proceed to the next step."

- "Working hard to sole a difficult problem, but still not getting the results you would like."
- "Waiting to have participants."
- "I got stuck for a LONG time trying to figure out how to use a tool and unfortunately I wasn't able to get help on how to use it."

Faculty Results

In summer 2015, the WSU site project PI and the external evaluator decided to include indicators of project success from the faculty mentor perspective. Four faculty-focused indicators were developed:

1. Provision of an authentic research experience to students.
2. Encouragement of students to obtain an advanced degree in engineering.
3. Development of students' applied research skills.
4. Becoming more skilled as a faculty mentor (so that students can achieve project goals).

The method chosen to measure the indicators was a brief survey focusing on faculty mentor expectations and the extent to which they were met. A pre and post summer REU survey was developed and administered; 11 faculty mentors participated in the pre-summer REU survey; 9 participated in the post-summer REU survey.

SUMMARY OF FACULTY MENTOR RESULTS

TABLE 2. Summary of faculty mentor-focused indicator measurement results 2016.
(Pre-REU N = 11; Post-REU N=9)

Performance Indicator		Responses 2016
1.	Provision of an authentic research experience to students.	Pre REU: 9 faculty mentor respondents indicated that the REU program would give students "a lot" of authentic research experience. 2 indicated "a fair amount." Post REU: 7 indicated that they thought the REU did give students "a lot" of authentic research experience; 2 indicated "a fair amount."
2.	Encouragement of students to obtain an advanced degree in engineering.	Pre REU: 9 faculty mentor respondents indicated that the REU program would encourage students "a lot" to obtain an advanced degree in engineering. 2 indicated "a fair amount."

		Post REU: 5 indicated that they thought the REU did encourage students to obtain an advanced degree in engineering "a lot" 4 indicated "a fair amount."
3.	Development of students' applied research skills.	Pre REU: 8 faculty members indicated that the REU will help students develop applied research skills "a lot", 3 responded "a fair amount." Post-REU: 5 faculty mentor respondents indicated that the program helped students develop these skills "a lot" and 4 indicated "a fair amount." When asked: *How well did the student meet your expectations in terms of participation in your research program?*, Of 9 respondents, 3 faculty mentors indicated "very well", 4 indicated "well", and 2 indicated "somewhat well." Faculty mentors were asked: *How well did the REU students meet your expectations in terms of research productivity?* Of the 8 (out of 9) faculty survey respondents, 1 indicated "very well", 4 indicated "well", 2 "somewhat well" and 1 "not at all."
4.	Becoming more skilled as a faculty mentor	Pre-REU: When asked if they *would like to become more skilled at mentoring students*, 4 responded "a lot", 3 "a fair amount" and 4 "a little" out of 11 respondents. Post REU: When asked how much they had *benefitted from the mentoring*, 5 indicated "a lot", and 3 "a fair amount" out of 8 respondents.

DETAILED FACULTY MENTOR RESPONSES

Prior to the start of the REU program, faculty mentors had *high expectations of their students in terms of participation in the research program*:

- "Regular working hours, a willingness to learn new skills, and the student's best effort."
- "Weekly meetings with me and attendance at REU-wide activities."
- "The REU student will be participating in the exploration of well-defined research problem, regular meetings, research paper reading, and giving presentation in my research team."

- "Learn how to approach a problem. Data aggregation from experiments and analysis of the results. Breakdown a bigger problem into smaller steps. Not expected but it will be great to see his/her deduction of the analyzed results."
- "Motivation to learn to quickly get up to speed, and enjoy the learning process. Showing curiosity and inquisitiveness about problem, solution space, and research process. Basic understanding that faculty are investing their time and research agenda to give undergrads an opportunity to get first hand research experience -- Being considerate of this fact."

Faculty were asked: *How well did the REU students meet your expectations in terms of participation in your research program?* 3 faculty mentors thought that they did "very well," 4 thought students did "well," and 2 thought students did "somewhat."

Common themes:

- The *program period was brief, which made it difficult for students to contribute significantly*
- Students were *motivated* and/or *active participants*, but that didn't necessarily translate to significant contributions
- The majority of the students were *above average.*

Prior to the start of the REU program, faculty mentors indicated the following *expectations for their students' research productivity*:

- "To perform high integrity data collection and perform initial data analysis."
- "I expect the student to be able to come up with creative solutions to a problem that he is given. At the end of the summer the student will have implemented a software tool."
- I expect the REU student to gain experience in problem solving and programming skills; moreover, the student should practice to deliver the research ideas and techniques to other researchers and practitioners."
- "I would expect that while they are learning new things, they also feel that they are responsible for producing some research outcomes that would benefit my research."
- "Generate something that could form a basis for a workshop/conference submission later."

- "Poster presentation will be must and publishing a paper with graduate student will be plus."
- "Ability to explain the problem towards the end of the REU studies and his contribution to the problem solving. Ability to lead the team for a capstone design project if the student is interested. Lead the work towards a conference paper that will strengthen his graduate school application significantly."
- "Some quantifiable progress (some positive or negative results) on the assigned research problem by working with the graduate students. In the best case, a paper down the line so that it will help the student get into a strong graduate program."
- "Weekly progress reports, final report, poster, and paper suitable for publication."
- "I expect a 1-2 page write up summarizing their research. At the end of the summer, if successful, there should be enough details to include their results in a conference paper submission."

How well did the REU students meet your expectations in terms of research productivity?

3 faculty mentors indicated "very well", 4 indicated "well", and 2 indicated "somewhat well."

Open-ended responses follow:

- "[My student] showed vigor and tried to adapt to details on the coding and hardware design. However, he needs to adapt to paying more attention to smaller details and use that towards the goal and the target in his mind. His research productivity will improve further from this."
- "The student was given significant exposure to resources and people around my research program. Unfortunately, this was not reciprocated by the student to my expectation. I was disappointed by the student's overall level of commitment and honesty."
- "My REU student did a great job on working a nontrivial problem. He understood and established the problem well, and via communicating with graduate level students, he is able to come up with several good optimization strategy to improve the efficiency of the

algorithm. His poster and presentation look good. In general, I am satisfied with the REU student. He will be continue working on the research project towards a submission to a conference."

- "Obtained some good research results. One will definitely lead to a top conference paper. The other will lead to a paper, but probably second-tier conference or workshop. Both students were enthusiastic and enjoyable to work with."

How much did you benefit from serving as an REU mentor?

1 indicated "a lot", and 4 "a fair amount" and 3 "a little" of 8 respondents. Open-ended responses follow:

- "I gained much experience working with undergraduate students from student motivating to management and supervision. The process gives me a chance to think from undergraduate level student's perspective, understand their needs and interests, and shape and connect a research problem to a real-world application. The outcome can be directly used by the students in their future."
- "I learned a lesson on how to calibrate my time expenditure mentoring"

How much do you think your REU student benefitted from your mentorship?

5 faculty respondents out of 8 thought the students benefitted "a lot"; 3 thought the students had benefitted "a fair amount." Open-ended responses follow:

- "My REU student experienced the complete research process, from motivation and problem formulation, to the dataset preparation, algorithm design and experimental study. The feedback, which I quote, says 'I learned so many new things from you and the team, and every single one of them are extremely valuable to me.' In the last day of the poster session, he got the chance to also learn and practice how to present the work to others, and grab the chance to learn from both domain experts and practitioners about their need to initialize the application of his project."
- "The student was given maximum opportunity and generous access."

- "Both made good progress and had a good research experience. Both wished there was more time, but both also want to continue the work."
- "My student got useful exposure related with the design of sensor systems, hardware design, tools used in the lab and the approach and expectations from students in Microelectronics design. He has shown enthusiasm in continuing this further through his senior year and learn more details with respect to board design and IC design using the signal processing and algorithmic approaches."

What suggestions for improvement do you have for the research team as they prepare next year's REU program?

- "Regular social events would enhance their experience."
- "I will prepare in advance to get the undergraduate student aware of this opportunity much earlier. This also allows the students to identify with the project more closely."
- "The REU research team has done an excellent job planning, coordinating and managing the REU program this year. I could not ask for a more organized and effective set up. Congratulations on a job well done!"

EVALUATOR COMMENTS

Overall, the project leadership team has achieved its goals to provide an authentic applied research experience to undergraduate students. Students and faculty alike agree that the program provides this opportunity, as well as providing motivation for continuing education in graduate programs. Faculty, overall seem to enjoy mentoring the students and think that they perform that role adequately.

The leadership team chose to use UNC Charlotte's CISE REU "A la Carte Survey" for the final year; this survey was developed by engineering educators as part of a NSF project and is used by many REU programs. There were a number of items not related to the performance indicators of the project, such as those related to motivation, self-efficacy, teamwork and

leadership. The results of those survey items are not presented here. Future REU programs could include all the performance indicator categories comprised in the student survey. If it is possible to get the Pre-REU results from the student survey prior to the start of the program, faculty could review the student responses to plan and/or adjust the curriculum and activities accordingly.

Future WSU REU programs may want to summarize faculty expectations from previous programs in regards to student productivity and participation. Faculty mentors could then make clear at the outset how specifically they would like students to participate and what the expectations are in regards to producing reports, presentations, conference papers, etc. Post-REU faculty mentor responses during the two years of this REU program suggest that students do not always live up to faculty expectations. It's possible that being more overt at the outset could successfully address this issue.