

Response from Students regarding North Albany Academy's visit to Rensselaer Polytechnic Institute on December 12, 2011

By Christopher Shing

Introduction:

On Monday, December 12, 2011, twenty-four eighth grade students from North Albany Academy, a K-8 school in the Albany school district, visited Rensselaer Polytechnic Institute. They participated in four major themes, "*What is college?*", "*Smart Lighting*", "*Turning Ideas into Reality*," and "*Tour of campus*." Two of these larger themes can be broken into subcategories. For the "*Smart Lighting*" the subcategories include "*Spectrum of Visible Light*," "*Simple LED Circuits*," "*LED Stickies*," and "*Optical Transceiver*." For the "*Turning Ideas into Reality*" the subcategories include "*African Fractals*," "*Apollo 2 1/4*," "*Action Equations! (name pending)*," and "*Hexastrip Weaving (bucky balls)*".

At the end of the visit students were asked to fill out an exit survey (included in Appendix A). Of the 24 students who came, 15 students responded to the survey. The following information below discusses the results of that survey.

Background Information:

A total of 24 students attended this visit. Of those 24 students, 8 of the students were male and 16 were female. Of the 24 students who attended, only 15 students completed the survey. 13 of the surveys were completed by female students. 2 of the surveys were completed by male students.

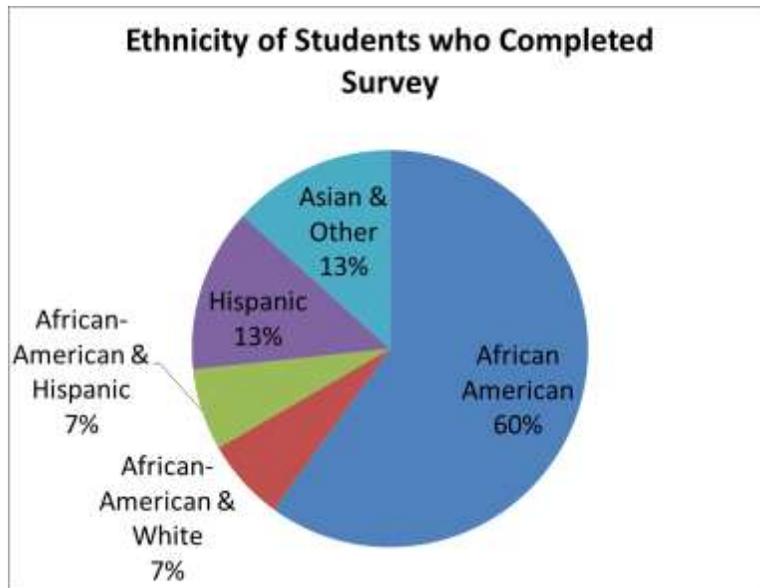


Figure 1: Ethnicity breakdown of students

72% of the students who completed the survey considered him or herself African-American, with a portion of that 72% of the student defining themselves as African-American plus another ethnicity. 20% considered him or herself Hispanic with a portion of that 20% defining him or herself as Hispanic plus another ethnicity. 13% considered him or herself Asian & Other.

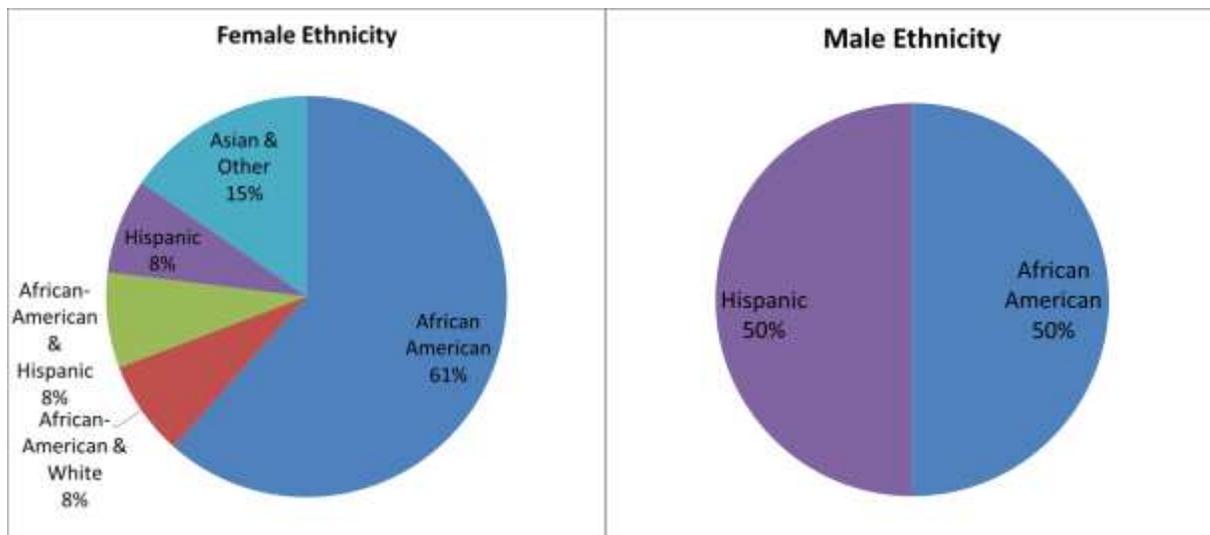


Figure 2: Ethnicity of (left) Female Students and (right) Male Students

60% of the female students surveyed identify herself as African-American, 8% identify herself as Hispanic, 16% identify herself as Asian & Other, and 16% identify herself as African-American plus another ethnicity. This adds up to a total female student surveyed of 9 African-American, 1 Hispanic, 2 Asian & Other, and 2 African-American plus another ethnicity. Of the two male students, one identifies himself as African-American, the other as Hispanic.

Knowledge of College:

Students were asked about background information they regarding college. Of the students asked, 15 of the students completed the first question while 14 completed the second question. The first question asked if the students have had a “college experience” yet. Prior to visiting RPI, 14 of the 15 students have visited to a college campus. The one student who had not visited a college was an African-American female. This indicated that the majority of students have been to a college campus before.

The second question asked how many of the students were planning on going to college. 11 of 14 students replied they already planned to attend college prior to this visit. Of the three that responded in the negative, 2 were African-American females and 1 was a Hispanic male. 1 student did not answer this question.

The third question asked if the students had changed their opinion regarding college after the visit. Of all of the students who returned the survey, 1 student responded they would like to go to college. The other 14 students stated their opinions had not changed.

Introduction to College & Student Panel:

The first activity the students participated in was an orientation/what is college discussion. Students were asked first to categorize colleges into different categories with only prior knowledge of college names (e.g. local vs. distance, big vs. small). This activity proved difficult for the students. Next a discussion regarding how to choose college was presented. Students were provided materials developed by the Department of Education and a brief discussion based on several key points was undertaken. Last a panel of undergraduate students consisting of 3 women and 2 men, (2 chemical engineers, 2 mechanical engineers, and 1 electrical engineer), presented upon their views and opportunities afforded to them by college. At first the students did not appear to be too engaged with the panel, but eventually opened up after several leading questions were asked.

In this part of the survey students were asked how useful they believed the panel was to them.

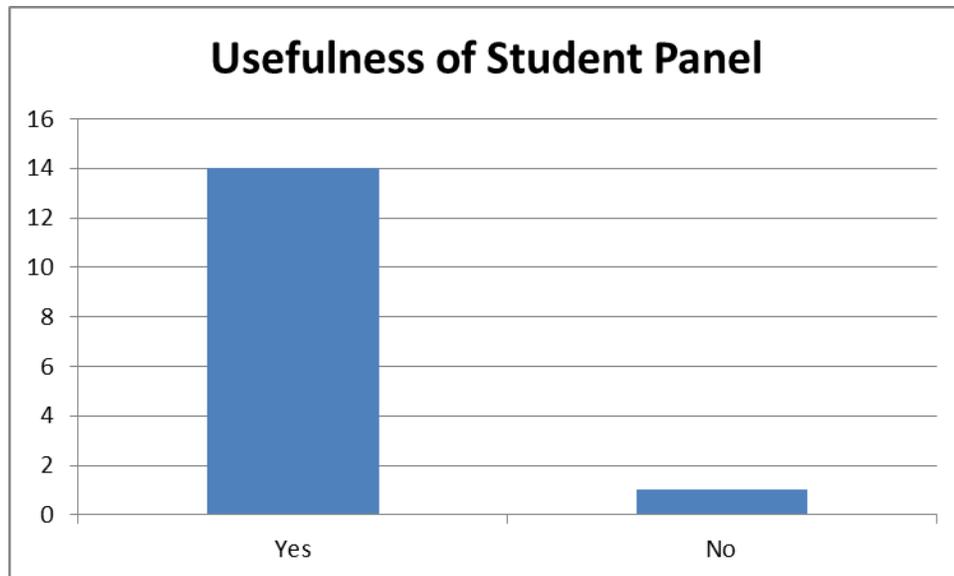


Figure 3: Student's opinion of Panel's Usefulness

14 of the 15 students felt talking to the student panel was useful. However, I believe several lingering questions could still exist as the students did not gain the vocabulary yet to converse seriously about their futures.

Activities:

The following part of the survey asked students to reflect upon the morning activities. The two themes revolving the morning activities the students participated in were “Smart Lighting” and “Turning an Idea into Reality.” In turn, individual activities were provided within each theme. For the “*Smart Lighting*” the individual activities include “Spectrum of Visible Light,” “Simple LED Circuits,” LED Stickies,” and “Optical Transceiver.” For the “Turning Ideas into Reality” the individual activities include “African Fractals,” “Apollo 2 1/4,” “Action Equations! (name pending),” and “Hexastrip Weaving (bucky balls)”.

The first question asked what the favorite activity the students participated in was. The purpose of this question was to find if there was a particular way in which the activity was presented or if there was a particular theme the students were interested in. Of the students asked, only 14 of the students completed this section of the survey.

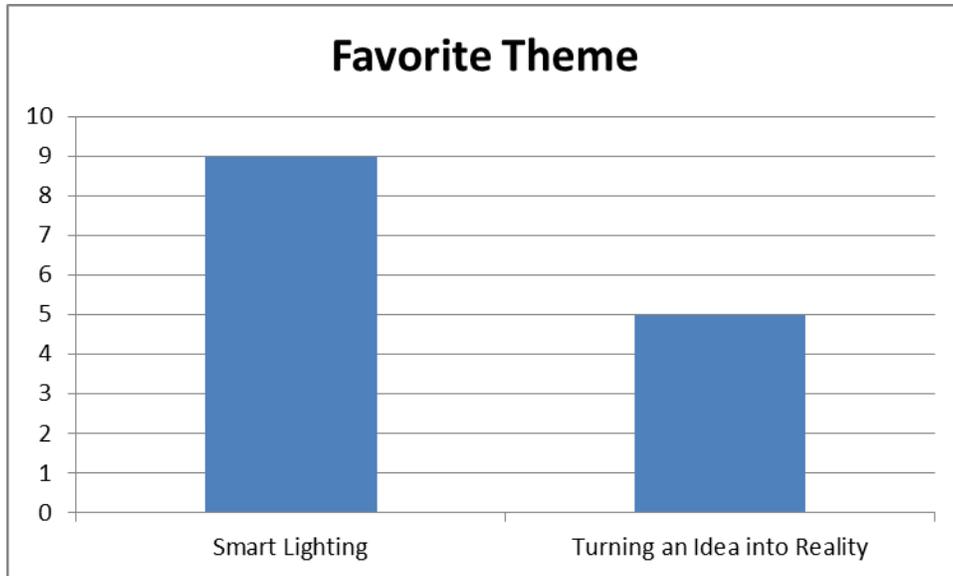


Figure 4: Favorite Activity of Students

Based on an observation of the themes, the students liked the “Smart Lighting” activity better compared to the “Turning an Idea into Reality.” However, without sufficient data regarding the operation of each activity we do not know what method was effective for peaking the student’s interest.

The following graphs depict gender and ethnicity breakdown of students who favored “Smart Lighting” to students who favored “Turning an Idea into Reality.”

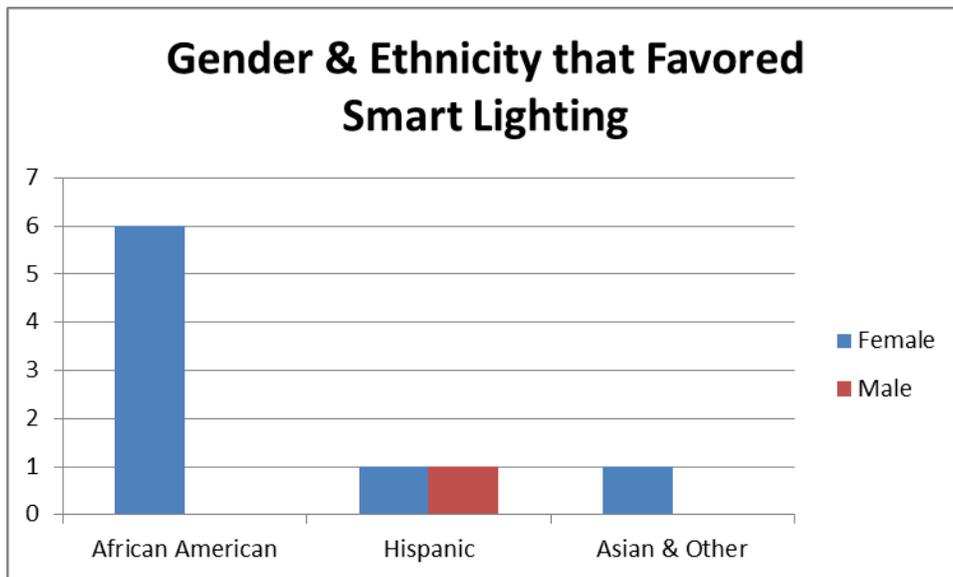


Figure 5: Gender & Ethnicity that Favored Smart Lighting *Since 1 student wrote they were both African-American & Hispanic, that student was included with the African-American category

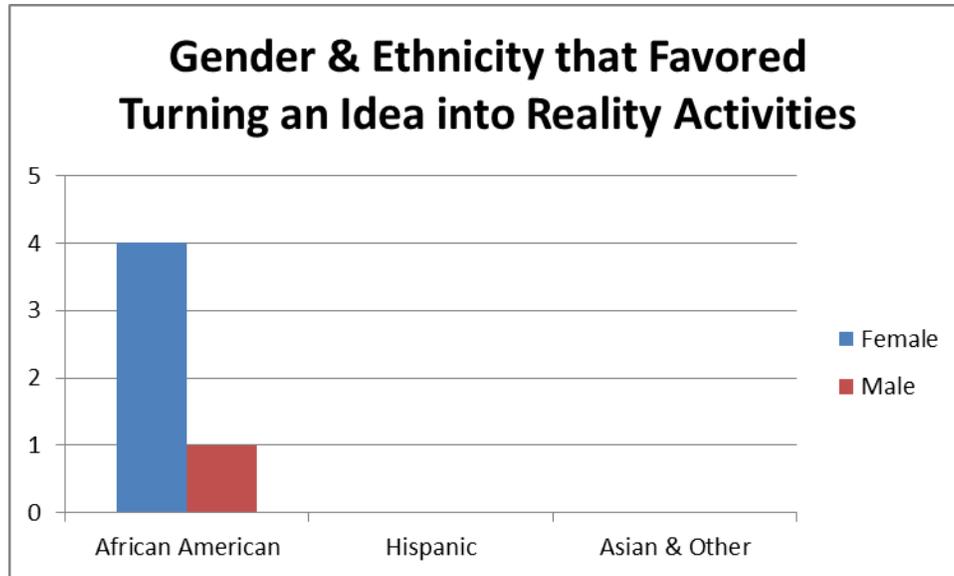


Figure 6: Gender & Ethnicity of those favoring "Turning an Idea into Reality"

The above information is too small to draw conclusions if ethnicity or gender had a particular influence on which activity the students liked.

Of the 5 students who liked the "Turning an Idea into Reality Activities," "Action Equations" was the most popular activity. Action Equations involved full body movement with immediate feedback interactions from the program itself. The program also graphed a student's body.

One of the students voted for two activities.

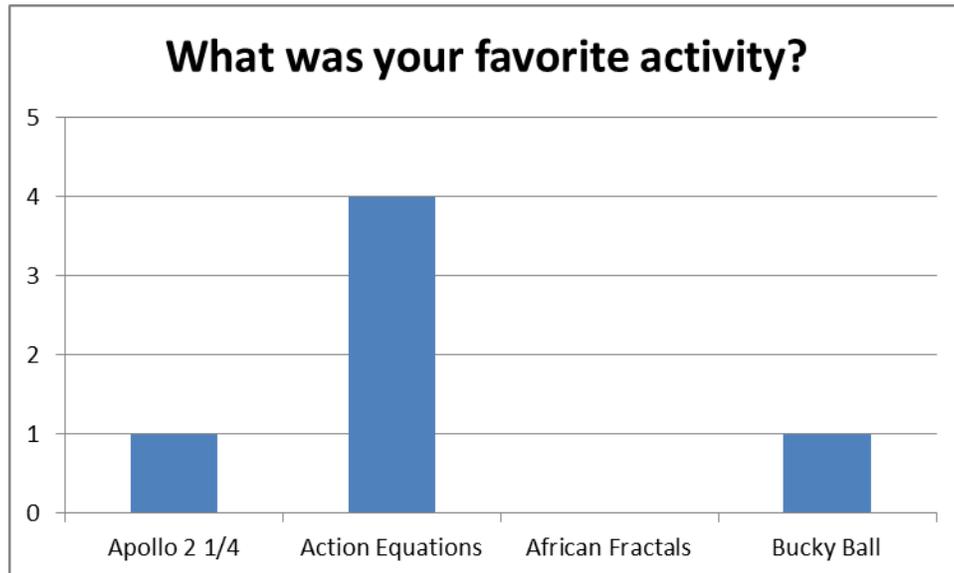


Figure 7: Most popular "Turning an Idea into Reality" Activity

Based on the student's comments few knew how to describe the individual "Smart Lighting" activities. Therefore, we cannot determine if a particular "Smart Lighting" activities was favored the most.

Many of the students were unable to complete all of the activities. It appears that the activity most students had trouble with or did not get to was the Hexastrip Weaving (Bucky Balls).

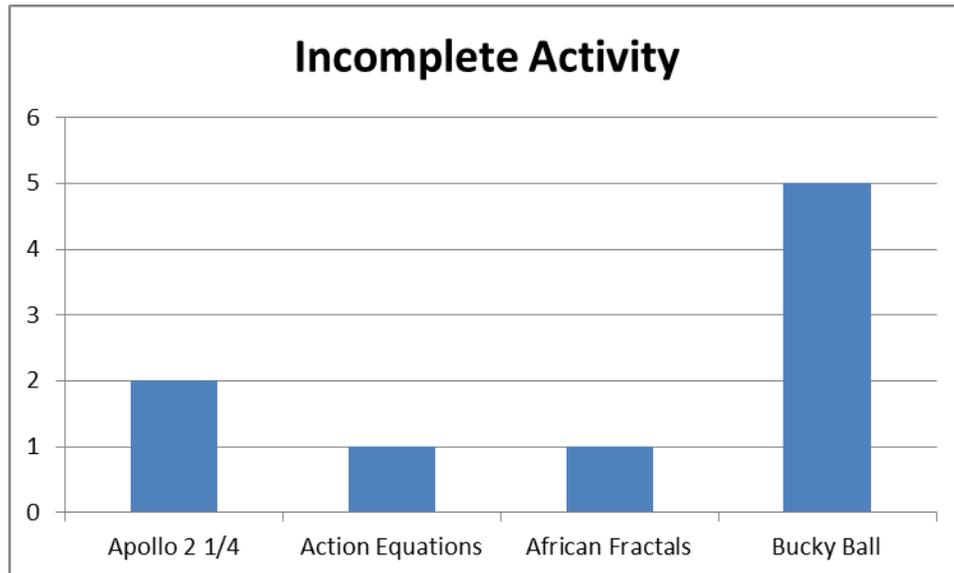


Figure 8: Activities students did no complete

This could be due to the time constraints of the entire program. Initially the panel was expected to last until 10AM, but it lasted to 10:10AM as the students only began to ask questions prior to the panel leaving. Lack of time also arose due to the difficult of the hexastrip weaving activity.

Students were also asked to evaluate if they learned something from the activities. With respect to the Triple Helix program, activities are designed not only to be fun but also education. The students were asked to respond in a short answer form.

For the question regarding "Smart Lighting" answers ranged from very broad to very specific. The most common answers from the students were "build a circuit" or "LED lights." The most specific response was "LED lights can last a long time (50,000 hours) and in the long run are cheaper." The student who provided this response was the same student who did not want to go to college before.

For the question regarding "Turning an Idea into Reality" answers were broader compared to the "Smart Lighting" answers. The question asked the students "Did the educational tools convey the message to you of what they wanted to explore? Please explain." The most common answer was "Yes," with the response "they were fun and conveyed their message." However two students wrote "No," and "I am confused" for their response.

Guided Tour & AML:

The fourth part of the survey asked the students to evaluate their tour experience. This activity included a tour of RPI campus and a visit to the Advanced Manufacturing Lab (AML). The tour was hosted by the RPI Admissions office and they visited several spots the students were interested in. Sam Chiappone hosted the section involving the Advanced Manufacturing Lab.

Of the 15 students 11 students responded to tour related questions. Students who did not respond included 3 African-American female students and 1 Hispanic male student. The majority of the tour related comments were positive. 7 of the 11 students liked visiting the AML and thought the work done there was fascinating. Of the positive comments the majority were from African-American female students who thought the entire process was “cool.” The single male student wrote “No, we did not visit a lab.” This was due to the wording of the question. This could be skewed due to the “gifts” Sam Chiappone gave some of the students at the end of their tour.

10 of the 11 students enjoyed the tour and thought it helped them learn more about living on a college campus. Most of the students were impressed with the facilities they saw, in particular the size of the campus.

Student’s Recommendations:

The final section of the survey asked the students if they had any recommendations regarding the conduct of the visit. 14 students responded to this section. 13 of the 14 students who responded enjoyed the trip to RPI. 13 of the 14 students who responded recommended visiting RPI again.

Students were asked if they felt any additions or subtractions to the entire program should be included.

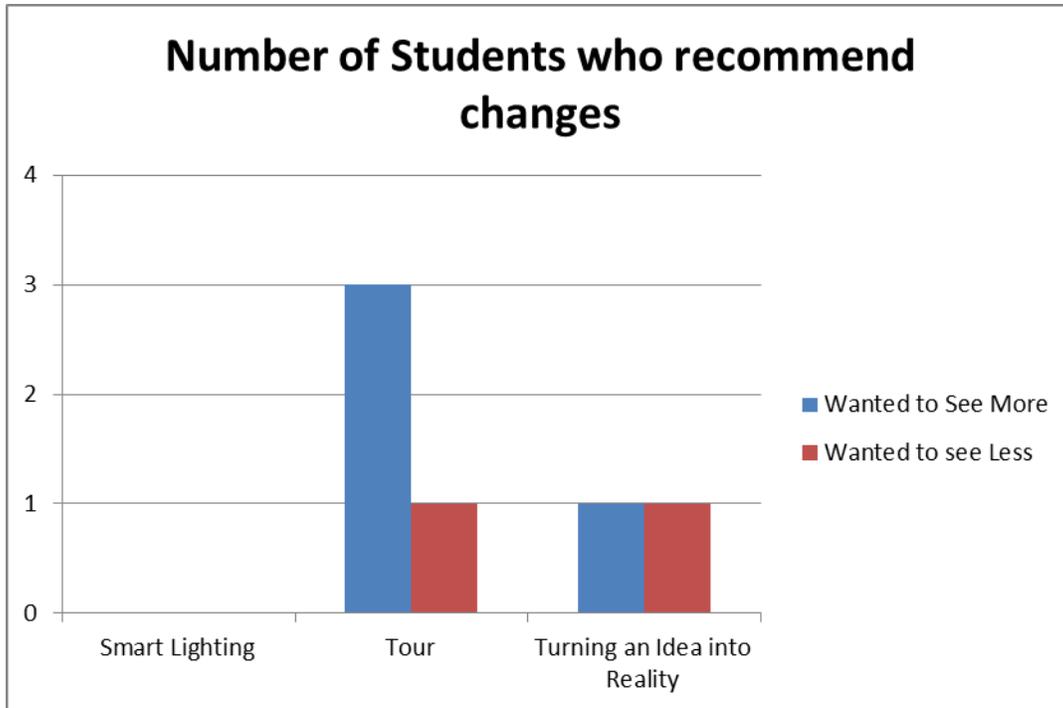


Figure 9: Student recommendation for changes

Of the students asked, several students felt the tour should be longer and include more information. The students specifically asked to:

- Visit the gym
- Visit the inside of a dormitory
- Visit the pool
- Visit the library
- Visit the cafes

One student asked to “Improve the “Turning an Idea into Reality” section.

Of the students asked, a few students felt that certain sections should be removed from the program. One student felt that the tour should not have visited the food court. One student felt that “African Fractals” should have been removed from the program.

Conclusion:

Based on the information retrieved from the students, we can say the students had a positive experience visiting RPI. I believe the “Smart Lighting” activities and the “Tour” were the most successful activities for the students with improvements particularly in timing and possibly connecting content (i.e. creating a better linking theme) to the “Turning an Idea into Reality” program can also make just as appealing. A brief attempt was made to use the information above to find if there was a specific appealing factor or method that would encourage the students to use the activities, however a larger data pool and better targeted questions are needed. Based on the student’s information, my personal

recommendation is to continue to refine individual components of the various programs. I am waiting to receive feedback from the individual participants, but I believe that certain parts of this program should be repeated again in the future.

With respect to the Triple Helix program, I had three goals for this trip. One was to enhance the student's knowledge of college and higher education. Two was to inform the students about the research process. Three was to get the students motivated about the learning. I do not know if I achieved all of these goals with this trip. But I do believe the students took away a great deal of information to get them to think a little bit about their futures. A sub-goal that arose after this survey was to determine if there was any information that can be used to create future activity. This goal was not achieved. With further input from participant surveys hopefully this goal can be achieved.

Tour

Did seeing the AML enhance your opinion of research labs? Please explain.

Was the tour helpful for you to form a better opinion of colleges? Please explain.

Wrap-up

Did you enjoy the visit to RPI?

YES

NO

Would you recommend visiting RPI again?

YES

NO

Were there any parts of the trip you would like to have seen expanded? Please explain.

Were there any parts of the trip you would like to have seen cut out? Please explain.
