IMPACT of Empowering Leadership Alliance @ Rice University
July 2011

Richard Tapia, PI
Rudy Guerra, co-PI
Alice Fisher, program manager
Cynthia Lanius, consultant

Table of Contents

Abstract

During the academic year 2010-2011, the Empowering Leadership Alliance @ Rice University or ELA Rice established and maintained a community of students, faculty, and staff whose mission was to support undergraduates, especially those from traditionally underrepresented minority (URM) groups, in science and engineering to complete their degree and even pursue a graduate degree.

The program built valuable relationships among students and faculty mentors. Thirty-six URM students (16 African-Americans, 19 Hispanics, and 1 of mixed ethnicity) were matched with Rice science and engineering faculty mentors and met with them one-on-one at least twice per month. Of the ELA scholars who participated anonymously in a survey at the end of the year, 100% strongly agreed or agreed that participating in the ELA program helped them feel more connected to Rice faculty, and 95% strongly agreed or agreed that participation in ELA increased their dedication to complete their degrees in STEM (Science, Technology, Engineering, Mathematics).

ELA Rice is also a local chapter of the NSF-funded national ELA organization that offered ELA Rice members resources and opportunities including attending the 2011Tapia Celebration of Diversity in Computing in San Francisco and participating in live webinar mentoring sessions led by URM faculty from research institutions.

As an active chapter, ELA Rice engaged students in monthly community/network meetings and the ELA Rice Undergraduate Research Symposium that was held on the Rice campus on January 22, 2011. Seventy-five Rice undergraduates attended the day-long meeting, of which 71% are URM, and 15 Rice graduate students participated in the poster session. All 75 undergraduates submitted an evaluation survey afterwards which stated that 98% of the students were very satisfied/satisfied with the overall research symposium, and 97 % strongly agreed/agreed that they are interested in learning more about doing research as a result of attending the research symposium

Leobardo Rosales, one of the faculty mentors, wrote at the end of the year:

> "I always looked forward to the ELA activities, all of which I left with renewed sense of purpose.. As a postdoc, encouraged by my department to focus on research, it is easy to forget why years ago I decided to become an academic. I wanted to make a difference in the lives of students with underprivileged backgrounds analogous to mine, and I wanted to do so including in the individual setting which ELA stressed through the mentoring component of the program."

Thirty-nine ELA undergraduates who had attended at least one ELA Rice activity during the year participated in an anonymous end of year survey. Indicative of ELA success at meeting its goals, 82% of those surveyed strongly agreed/agreed that participating in the ELA program increased their dedication to complete their degree in STEM, increased their confidence that they will finish their degree in STEM, and helped them feel more connected to Rice faculty. Ninety-five percent stated that they would recommend ELA to a friend.

The data demonstrate that the ELA program provided a resource for URM Rice science and engineering students that was sorely needed, and we feel strongly that we should continue to offer the ELA program at Rice this coming year.

1 Introduction

> "Students have a hard time acknowledging that they need help but they do. They also need the type of guidance that comes from faculty and peers." -Rice senior

The Empowering Leadership Alliance @ Rice University or ELA Rice aims to provide the kind of support described by the Rice senior above. In particular, ELA Rice strives to retain underrepresented minority undergraduates in science and engineering to complete their degrees and even pursue graduate degrees. Evolving in the fall of 2010 from a Faculty Initiatives Fund grant called CAMPUS (Community and Mentoring Program for Undergraduate Success) that had begun a year earlier, ELA Rice is led by Richard Tapia and Rudy Guerra and is managed by staff member Alice Fisher.

Throughout the year, ELA Rice engaged students in community meetings, built valuable relationships among students and faculty mentors, and established a network of students, faculty and staff whose focus was to support URM students pursuing degrees in science and engineering and to encourage them to consider research and become academic leaders. In addition, several non-URM students participated in ELA Rice community events.

In an anonymous end-of-year survey, all of the students that took part in the ELA faculty mentoring program (100%) strongly agreed or agreed that participation in ELA helped them feel more connected to Rice faculty, and 95% strongly agreed or agreed that participation in ELA increased their dedication to complete their degrees in STEM (Science, Technology, Engineering, Mathematics).

This report gives further details of the program's accomplishments, its impact on participating Rice students, and what is needed to sustain the program for the future.

2 What is ELA Rice?

"ELA created a network for me as I was completing my degree. It could be of real value to underclassmen that are struggling with class work and are thinking about switching to a non-STEM field. It got me talking with other students and professors and just knowing that you are not alone is a boost." - Rice senior

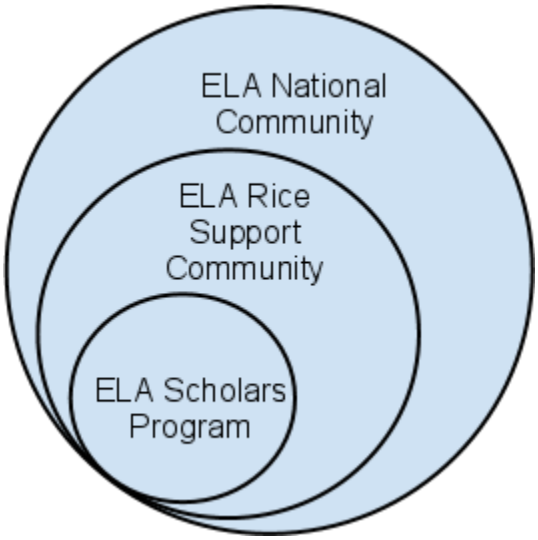

Figure 1: Three types of student participation.

ELA Rice includes three types of student participation as illustrated in Figure 1: the ELA Scholars Program (faculty mentoring), a support community (an ELA local student chapter), and participation in the national Empowering Leadership Alliance organization.

Through the ELA Scholars Program (faculty mentoring program), ELA scholars:

- Applied to participate at the beginning of the academic year and when accepted were awarded $500 scholarships;
- Met with their assigned faculty mentor 1-2 times per month and documented their meetings at http://bit.ly/cxO5oV during the fall semester and at http://bit.ly/ELAadvising_spring11 in the spring;
- Shared academic progress with their mentor including both midterm and final course grades (via Owlspace), and discussed a variety of topics including research, internships, graduate schools, career choices, etc.;
- Attended monthly community meetings, participated in a peer mentoring initiative, and attended the ELA Rice Undergraduate Research Symposium in January 2011; and
- Were encouraged to use campus academic resources as needed, such as study groups, peer tutors, recitation sessions, faculty office hours, and other academic advising resources.

More details about the ELA Scholars program are included in 2A on page 5.

Through the ELA Rice support community, students (ELA scholars and other interested students) participated in:

- Monthly community meetings showcasing faculty guest speakers, a student panel discussion, and networking opportunities with science and engineering faculty. Students were encouraged at meetings to use campus academic resources as needed, such as study groups, peer tutors, recitation sessions, faculty office hours, and other academic advising resources;
- Student study groups; and
- The Undergraduate Research Symposium held on January 22, 2011.

More details about the ELA Rice Support Community are included in 2B on page 8.

Through the national ELA, an NSF-funded program led by PI Richard Tapia and consisting of students, faculty, industry professionals and staff from across the country, ELA Rice students gained access to the following:

- ELA national offers resources and opportunities that support students at research universities. Activities include the establishment of strong student chapters similar to ELA Rice (UT Austin, UC Berkeley, Indiana U.) and live mentoring webinars for the national community. An active listserv announces relevant scholarships, internships, conference opportunities for community members.
- 11 Rice undergraduates and 10 Rice graduate students attended the national ELA meeting held on April 2, 2011 and the Tapia Celebration of Diversity in Computing conference held from April 3-5 in San Francisco. One Rice freshman wrote of the experience, *"Through this program I also loved getting the chance to go to San Francisco and attend the 2011 Tapia Diversity in Computing Conference where I met amazing people who helped me get a summer internship."*

More details about the national ELA are included in 2C on page 9.

2A ELA Scholars Program

> "The faculty networking is key, and any opportunity to increase this connection in more informal settings is invaluable." -Rice sophomore

This section contains details of the ELA Scholars Program, where students participate in a structured faculty mentoring program.

The demographic information of the **36** ELA scholars follows:

Ethnicity

African American	16
Hispanic	19
Mixed (Pacific-Islander/Caucasian)	1

Table 1: Ethnicity of ELA Scholars

Gender

male	14
female	22

Table 2: Gender of ELA Scholars

Majors

Engineering	23
Natural Sciences	10
Kinesiology	2
Humanities (original Physics; changed major mid-year)	1

Table 3: Majors of ELA Scholars

Year in School

Freshmen	12
Sophomores	9
Juniors	7
Seniors	8

Table 4: Year of ELA Scholars

RECRUITING FACULTY Program Directors Richard Tapia and Rudy Guerra selected over 30 faculty members, most of them in STEM fields, to invite to participate as mentors in the ELA Scholars program. Tapia wrote to all faculty mentors prior to the initial lunch meeting held on September 22, 2011:

> "We have been working very hard to establish this program and there is little doubt that its success depends on the relationship you are about to develop with your mentee. Based on our own experiences we built this program around the mentor-mentee relationship, knowing that a genuinely caring professor can be one of the most important driving forces in a student's academic life. Of course, we know that it's a two-way street; your mentee will have to work hard at their courses and the relationship with you. We value your time and energy and realize you don't have to do this. So, it is with deep gratitude that we say thank you for joining our effort."

At the beginning of the meeting, Tapia and Guerra addressed the faculty and explained the purpose and goals of ELA Scholars Program. The ELA students then joined the meeting for the remainder of the meeting and met their faculty mentors for the first time. That the faculty met as a group and were introduced to their student protégés seemed to make an impression on both faculty and student participants that this program was a substantial community effort.

As a token of appreciation, ELA offered $200 awards to all faculty mentors in December 2010.

MEETING DOCUMENTATION ELA Scholars were asked to document their one-on-one meetings throughout the academic year. One of the protégés met with his mentor on a weekly basis, some met bi-weekly, others met 3-4 times during the semester. Although the expectation was to meet with the advisor 1-2 times per month, the program allowed flexibility in frequency of meeting so that students could feel ownership of the advising relationship with their mentor.

An email message sent to ELA scholars from Alice Fisher at the beginning of the academic year articulated the goal of the Scholars Program to the students:

> "Our intent is the development of a special advising relationship between you and your faculty mentor. I encourage you to talk to your advisor about not only your successes but also your struggles. They were chosen by Dr. Tapia and Dr. Guerra because they have shown a real interest and care in students beyond the classroom."

MENTORING MEETING TOPICS Topics at advising meetings seem to fall between underclassmen and upperclassmen concerns. Underclassmen topics included undergraduate-related academic issues such as: class loads, fulfilling distribution credits, dropping courses, summer courses, changing majors, majors vs. minors, exams, midterm grades, confidence in classes, more effective study techniques, prioritizing school work. Underclassmen also received guidance on networking and getting to know faculty better, possible labs to work in, becoming a TA or grader, REUs, and stress management. One of the freshmen asked about what can be done with a CAAM degree and another student discussed math groups/clubs and relevant math conferences. Many of the protégés received information about summer opportunities, internships and research possibilities.

Upperclassmen tended to discuss life after graduation such as: applying and interviewing for graduate/professional schools, choosing academic advisors in graduate school, paying for an advanced degree, MD vs. PhD, research interests and field camps. One of the upperclassmen wrote that he received help on writing his personal statement and another scholar talked to his mentor about doing research as an MD without a PhD. A senior recorded that his mentor reassured him that the student would find a job.

Some of the meetings were quite relaxed. A Rice senior wrote that it was nice change to have a conversation with someone other than his college peers. Both upper and underclassmen indicated that being able to ask for recommendation letters from faculty mentors was a great benefit of the program. Different programs such as RCEL, Engineers without Borders, NSBE, and VIGRE were also discussed during mentoring meetings. Students also documented that creativity in science and research and channeling one's energies into other activities to help overall health were also topics of discussion.

FACULTY SUPPORT ELA program leaders are extremely grateful for the faculty support that was given throughout the year.

Leobardo Rosales, one of the faculty mentors, wrote at the end of the year:

> "The running joke between my mentee and I was that the ELA program helped retain faculty from underrepresented groups in STEM fields; in particular, me. I always looked forward to the ELA activities, all of which I left with renewed sense of purpose.. As a postdoc, encouraged by my department to focus on research, it is easy to forget why years ago I decided to become an academic. I wanted to make a difference in the lives of students with underprivileged

backgrounds analogous to mine, and I wanted to do so including in the individual setting which ELA stressed through the mentoring component of the program.

As invigorating as I found the ELA program, the activities were even more for the students. One of our first discussions was catalyzed by a question posed by Dr. Tapia to the students: whether the students felt, given their background, as though they belong at Rice. This question became the impetus of the program for the year, as the students were challenged by various testimonies to resolve this matter for themselves. Moreover, through the organization of study and mentoring groups amongst the ELA students, a real sense of community was created in order to better understand the question of belonging. Given what the current ELA students have learned, and the relationships they have formed, one can see that the next set of ELA students will be benefited on an exponential scale.

The ELA program is one which should be mirrored throughout. Many universities have programs designed to help immerse students from underprivileged groups into college life. As a participant myself as an undergrad, I know the value of these programs. Nonetheless, many of these programs are not designed to address the issue of retaining these students specifically in STEM fields. Programs which are designed to address this issue, which I also participated in as an undergraduate, typically are geared towards advanced students already well into their majors. The structure of the ELA program, with its focus on new students, makes it both valuable and successful. "

SUPPORT FOR STUDENTS ELA also provided paid peer tutors for 4 ELA Scholars to support them in introductory science and mathematics courses. The tutors meet with the ELA students 1-2 times a week for 1-2 hours per session. A freshman ELA Scholar wrote,

"Having a physics tutor was extremely helpful to me my freshman year. Before getting a tutor I struggled to keep up in class...I was able to ask questions and get help on problems specific to my needs in physics. I no longer felt behind in class...Without ELA I wouldn't have such a great resource."

2B ELA Rice Support Community

"There are many parts of ELA that were fabulous and integral to my friends and my success. Most of it was the support group. I am a first generation college student, so I did not have many other people to turn to to ask questions about graduate school and other STEM fields in a relaxed setting." -Rice junior

This section contains details on the ELA Rice Support Community that includes all ELA Scholars along with other interested Rice science and engineering students.

Community building through monthly meetings was a strong component of the local program. Throughout the academic year, the seven monthly meetings showcased both faculty and student speakers. The number of students and faculty/staff members that attended each month were: 74, 43, 50, 27, 43, 38, 35.

A group of four upperclassmen initiated a peer mentoring effort in the spring 2011 to extend the community building. The small student group meetings consisted of both underclassmen and upperclassmen facilitators who were grouped by related majors. Because the effort was such a success, a peer mentoring component will be added to the local ELA Rice program starting in the fall of 2011. One of the ELA freshmen wrote:

> "I really enjoyed the start up of the student peer mentoring with older members of ELA, it allowed for me to meet more students and feel more comfortable."

Another activity hosted by ELA Rice was the undergraduate research symposium held on Rice campus on January 22, 2011. ELA leaders designed the day-long meeting to ensure that URM undergraduates learn about and receive encouragement about research early in their studies. The agenda included talks given by senior research faculty, a panel discussion by Rice minority PhD recipients in industry, and a poster session featuring the research of AGEP graduate students. Seventy-five Rice undergraduates attended, of whom 71% are URM, and 15 Rice graduate students participated in the poster session. All 75 undergraduates submitted an evaluation survey afterwards which stated that 98% of the students were very satisfied/satisfied with the overall research symposium. 97 % strongly agreed/agreed that they are interested in learning more about doing research as a result of attending the research symposium, and 84% strongly agreed/agreed that the research symposium has helped them develop confidence about doing research. A student commented about the symposium in the post-conference survey:

> "The research symposium was very engaging and helped me realize that Rice has a support system in place for minorities in the sciences. I had never heard of ELA before this event, so I hope that ELA will continue to hold more events such as the symposium to further inform minorities in the sciences about the opportunities they have before them and the adversities they must face."

2C ELA National

> "Thank you so much for the opportunity to go to the Tapia Conference, it was very beneficial to me. While at the conference I was talking with a few of the ELA members, and they were telling me more about ELA and how they each have a mentor, and how involved in ELA they are. Is there a way for me to get one of these mentors? As well as get more involved with ELA?" - Rice sophomore who attended the Tapia Celebration of Diversity in Computing National Conference in April 2011

This section contains information on the national ELA program.

Being connected to the national ELA provides Rice students with an opportunity to belong to a larger community whose purpose is to support students as they obtain undergraduate and graduate degrees in their respective fields. Networking in this way is especially important for Rice URM students since many times, they are one of a few or sometimes the only URM student in their academic courses. Various conference scholarships (Tapia, Super Computing, Grace Hopper) allow students to meet peers and professionals from across the country and develop leadership and camaraderie.

> "I would love to see more people that look like me study the same thing I'm studying and succeeding with the assurance and guidance offered by ELA..." - Rice senior

The national ELA organization also offers access to renowned and respected professionals and faculty through webinars. Presenters who themselves are URMs address minority issues by describing their path to success. As we know, these role models can be few and far between at research institutions. Examples of past webinar speakers include Dr. Valerie Taylor, Department Head and Royce E. Wisenbaker Professor, Computer Science and Engineering, Texas A&M University and Dr. Juan Gilbert, Professor and Chair of the Human-Centered Computing Division in the School of Computing at Clemson University. For more information, see empoweringleadership.org.

3 ELA Rice Impact on Students

> "[ELA] is just what students need to assure them that they CAN do it and they are not alone in their struggles!" -Rice freshman

Thirty-nine ELA Rice members participated in an anonymous student survey that was sent out to all Rice undergraduates who attended at least one ELA Rice activity throughout the year. Eighteen of the thirty-nine were ELA Scholars (received faculty mentoring).

How many ELA Rice activities or events did you attend this past year?	**ELA Scholars**	**Non-ELA Scholars**
1 to 2	0%	67%
3 to 5	39%	33%
6 or more	61%	0%

Table 5: Number of ELA Rice activities or events students attended this past year

As seen above in Table 5, there is a significant difference between participation of ELA scholars and that of non-ELA scholars. Thus, we disaggregate the impact of ELA Rice on the two groups in the tables below.

Below is the demographic information of those surveyed:

Gender	**ELA Scholars (18 total)**	**Non-ELA Scholars (21 total)**
females	61%	86%
males	39%	14%

Year in School	**ELA Scholars**	**Non-ELA Scholars**
freshmen	28%	38%
sophomores	17%	19%
juniors	17%	24%
seniors	39%	19%
Ethnicity	**ELA Scholars**	**Non-ELA Scholars**
African American/Black	56%	19%
Hispanic (e.g., Mexican-American, Other Latin American)	39%	24%
Other Asian (e.g., Chinese, Korean, Filipino, Vietnamese, Japanese, etc.)	6%	14%
Caucasian/White	0%	24%
Asian Indian	0%	10%
Mixed heritage	0%	10
Are you majoring in the same major that you intended when you entered Rice?	**ELA Scholars**	**Non-ELA Scholars**
yes	33%	33%
no*	61% (8 out of the 11 of these "no" responses changed to a major in a STEM field.)	48% (8 out 10 of these “no” responses changed to a major in a STEM field.)
undecided	6%	5%
not sure yet (freshmen)	0%	14%
Major	**ELA Scholars**	**Non-ELA Scholars**
Engineering	56%	48%
Natural Sciences	22%	38%
Social Sciences	0%	10%
Humanities	22%	5%

Table 6: Demographic information of students surveyed

Indicative of ELA success at meeting its goals (see Table 7 below), 95% of ELA scholars surveyed agree strongly/agree that ELA increased their dedication to complete their degree in STEM. And 84% of ELA scholars agree strongly/agree that ELA reaffirmed the belief that a career in STEM is right for them, that ELA increased their confidence that they will finish their degree, and that ELA gave them valuable advice for succeeding in their major.

ELA Scholars: PARTICIPATING IN THE ELA PROGRAM...

	Agree strongly	Agree	Don't know/ Not applicable	Disagree	Disagree strongly
Increased my dedication to complete my degree in STEM.	39%	56%	6%	0%	0%
Increased my confidence that I will finish my degree.	39%	44%	11%	6%	0%
Reaffirmed my belief that a career in STEM is right for me.	28%	56%	17%	0%	0%
Gave me valuable advice for succeeding in my major.	28%	56%	17%	0%	0%

Table 7: ELA Scholars: PARTICIPATING IN THE ELA PROGRAM...

Table 8 below indicates the impact of ELA on non-ELA scholars. The impact for non-ELA scholars (students who only participated in community building activities) was still impressively strong given that they participated in fewer events. Eighty-one percent agree strongly/agree that participating in the ELA program increased their confidence that they will finish their degree. Over 70% agree strongly/agree that their participation in ELA reaffirmed their belief that a career in STEM is right for them, gave them valuable advice for succeeding in their major, and increased their dedication to complete their degree in STEM.

Non- ELA Scholars: PARTICIPATING IN THE ELA PROGRAM...

	Agree strongly	Agree	Don't know/ Not applicable	Disagree	Disagree strongly
Increased my dedication to complete my degree in STEM.	19%	52%	19%	5%	5%

Increased my confidence that I will finish my degree.	10%	71%	19%	0%	0%
Reaffirmed my belief that a career in STEM is right for me.	19%	52%	29%	0%	0%
Gave me valuable advice for succeeding in my major.	14%	57%	24%	5%	0%

Table 8: Non- ELA Scholars: PARTICIPATING IN THE ELA PROGRAM

To determine the value that students place on their ELA participation, we asked if they would recommend ELA to a friend (see Table 9 below); 95% stated that they would.

Would recommend ELA to friend	**ELA Scholars**	**Non-ELA Scholars**
yes	18	19
no	0	0
It depends	0	1*
Unsure	0	1*
* Reported attending only 1-2 events		

Table 9: Would recommend ELA to friend

Students were asked to explain their responses. Examples include:

> "Yes, because the program creates dialog amongst a small minority that I never would have known existed had I not been involved in the program. The ELA community is very encouraging and supportive." -Rice sophomore

> "Yes. The program definitely helped me stay on track with my major (Statistics) when I sometimes doubted whether I would be able to finish it. Having a faculty mentor and other minority students in my program gave me a sense of community that I did not get otherwise, especially since there are no other Black students that I know in my major, if there are any at all." -Rice sophomore

> "I would recommend ELA to the right kind of friend. I say that because, there are some minority students who are truely lost within our small Rice community. Some students aren't too sure what to do, what academic path to take, and how they should go about doing so. ELA would be a great basic foundation for a student like that. For students who have an understanding regarding where they lie academically and have a working plan for their future, ELA is a good tool for overall development." -Rice junior

A few student responses from non-URM students

> "Yes, because I think it's quite informative for both minorities and non-minorities." -Rice freshman

> "[ELA] was a good experience into the career side of a STEM education that our current academic environment lacks." -Rice senior

> "[ELA] promote[s] research in a way that is not promoted often enough-- a way to explore things you love, and solve unsolved mysteries, while still making a good salary. They also encourage STEM careers among those who are not often encouraged to enter STEM careers, which is great." – Rice freshman

4 Lessons Learned

> "This program has allowed me to chance to network with professors like Dr. Tapia and Dr. Embree as well as other faculty that I wouldn't have thought to talk to as a student. Through ELA I feel closer to becoming a biomechanical engineer and having a wonderful career."
> -Rice freshman

To better plan ELA Rice activities next year, we asked, "For the following, would you like to see more, the same, or less of the ELA activity?"

For the following, would you like to see more, the same, or less of the ELA activity?	**more**	**the same**	**less**	**no opinion**
Faculty talks at community meetings	41%	56%	3%	0%
Panel discussions or talks by students at community meetings	46%	49%	3%	3%
Networking meetings with several Rice STEM faculty	79%	18%	0%	3%
Peer group mentoring/networking	64%	28%	0%	8%
Peer study groups/peer tutoring	59%	28%	0%	13%

Table 10: **For the following, would you like to see more, the same, or less of the ELA activity?**

Networking, both with faculty and peers, ranks highest in importance to those surveyed (see table 10 above), suggesting that a sense of community and relationship building is quite desirable for students. Thus, ELA leaders will continue hosting ELA Rice community meetings and plan more STEM faculty networking meetings

Since ⅔ of respondents indicated that they'd like to see more peer group mentoring and networking (see table 10 above), peer mentoring groups will also be planned as well from the beginning of the year and will build on the small peer group activity that was piloted by ELA student leaders during the past spring semester. Having an established group of student leaders from the past year will allow student networking activities to take place more quickly this coming year.

When asked if they'd like to see more, the same or less of the faculty mentoring, ⅔ of the ELA scholars responded that they would like to see the faculty mentoring continue as it did this past year. Meeting with advisors 1-2 times per month seems to fit well with student schedules.

Would you like to see more, the same, or less of the faculty one-on-one mentoring for ELA scholars? (Responses from ELA scholars, those receiving mentoring, only)		
less	1	6%
more	4	22%
no opinion	1	6%
the same	12	67%

Table 11: Would you like to see more, the same, or less of the faculty one-on-one mentoring for ELA scholars? (Responses from ELA scholars only)

A freshman who didn't receive mentoring wrote, *"I really hope the faculty mentoring could be open to all ELA Rice Student, and could be more accessible."* Fifty-nine percent of those who surveyed responded that they'd like to see more faculty mentoring for ALL ELA Rice students.

Dean Hutchinson recently announced a Rice Faculty Mentor Program for first-year students. Each Faculty Mentor will be assigned an O-Week group of approximately six to eight students and will have an initial meeting with these students at a scheduled time during O-Week. Continuing this relationship after O-week, mentors will be asked to be available to their mentees and meet with them once or twice a month, either individually or in groups.

ELA leaders look forward to the success of the Dean's program, and will adapt the ELA Scholars program to complement it. Yet the need still exists for ELA's approach that integrates one-on-one faculty mentoring with a networking community for the support of Rice's URM students.

5 Conclusion

> "It is a great program and has greatly helped ease my transition into Rice." -Rice freshman

The data described above demonstrate that the ELA program provided a resource for URM Rice science and engineering students that was sorely needed. The program rationale that is included in Appendix B describes the need in further detail.

To build on ELA's success, we feel strongly that we should continue to offer the ELA program at Rice this coming year. A budget is included in Appendix A of what is needed to sustain the program. We are eager to continue our commitment to the ELA student community who gained much support from our program.

> "I really enjoyed being able to spend time with faculty outside of office hours and in a comfortable environment. I'm very jealous of the freshmen that were able to be exposed to such a great community early on because it fostered a safe environment for them to show their frustration about a certain class and to get feedback on how to succeed in other classes." - Rice senior

6 Appendix A: Project One Year Budget

Projected: 100 participants

Description	**Cost**
Undergrad peer tutors	$3,000.00
Advertising	$200.00
Community meetings (monthly)	$5,000.00
ELA website maintenance	$500.00
ELA off campus community building activity	$1,000.00
Supplies	$300.00
Staff labor and fringe benefits (1/3 FTE for 2 staff members)*	$30,000.00
Undergraduate Research Symposium	$10,000
Total budget	**$50,000.00**
*ELA staff members are currently supported by NSF funds for the national ELA organization. However, the funding for ELA will expire in February 2012.	

Appendix B: Program Rationale

ELA Rice addresses the challenges that the Boyer report, *Reinventing Undergraduate Education: A Blueprint for America's Research Universities* [1], cast light on - the serious problems that research institutions have in educating its undergraduates, especially the unique challenges of freshmen. According to the Boyer report

> "The freshman year needs to perform two vital functions: it must be the bridge between high school and home on the one side and the more open and more independent world of the research university on the other…. If it does not perform both those functions successfully, the entire university experience is at risk."

The report points out that the freshman year is, ironically, the year where students are *least* likely to experience the excitement of university intellectual life. At Rice, the freshman year is the year where students are least connected to their future discipline, not declaring a major until the sophomore year. In the freshman year, they rarely get to know the faculty in their future departments or get to learn of the excitement of research in their areas of interest.

Students who attended weaker high schools including many of Rice's underrepresented minority students are often less prepared academically and at the most peril. They not only experience the pressures of university life, similar to all of their fellow students, but their network of formal and informal resources, support, and encouragement, so critical to all students, is significantly smaller and less robust. They may lose confidence when faced with the high level of academic competition that they wouldn't have experienced in high school, and those in science and engineering, may migrate out of those fields into more "welcoming" departments where they may have experienced more success, a great loss to the nation's potential science and engineering leadership.

College impact research repeatedly has indicated a strong positive relation among student-faculty interaction and students' academic achievement, educational aspirations, intellectual growth, and academic satisfaction. [2] Indeed, many studies point to **frequent interaction with STEM faculty as the single most important factor in student success**. The Boyer report recommended that mentorships should begin as early as possible and should be maintained, whenever possible, throughout a student's academic career. [1]

Results of extensive studies at MIT report that students *want* a positive engagement with faculty,

> "But students have a strong desire to know faculty outside of the classroom; to develop personal relationships; and to have the opportunity to discuss complex, difficult issues with faculty". [3]

Results from the ELA Rice end of year surveys support this. 79% of all students surveyed responded that they would like to see more networking meetings with several Rice STEM (Science, Technology, Engineering, Mathematics) faculty. And a Rice sophomore wrote, "The faculty networking is key, and any opportunity to increase this connection in more informal settings is invaluable."

References

1. *Reinventing Undergraduate Education: A Blueprint for America's Research Universities.* The Boyer Commission on Educating Undergraduates in the Research University, 1998.

2. Sax, L. J., Bryant, A. N., & Harper, C. E. (2005). *The differential effects of student-faculty interaction on college outcomes for women and men. Journal of College Student Development, 46*(6), 642-659.

3. Hastings, Daniel and Norman, J. (2007) *The Commons, the Major, and the First Year, The State of Undergraduate Advising.* MIT Faculty Newsletter, Vol. XIX No. 4, February 2007Available Online: http://web.mit.edu/fnl/volume/194/hastings_norman.html