AC 2007-754: A STEP IN THE RIGHT DIRECTION: STUDENT TRANSITION TO ENGINEERING PROGRAM

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A STEP in the Right Direction:
Student Transition to Engineering Program

Abstract

In 1995, Virginia Tech's Center for the Enhancement of Engineering Diversity (CEED) established and implemented a summer bridge program for pre-enrolled freshman students entering the College of Engineering in the subsequent fall. From 1995 to 2004, the program was targeted to under-represented engineering students under the name ASPIRE (The Academic Summer Program Introducing Resources for Engineers). In 2004, the CEED office received a $2 million dollar STEP (STEM Talent Expansion Program) grant from the National Science Foundation. The goal of the project is to increase the number of students earning degrees in engineering and computer science. One component of the grant activities was the expansion of ASPIRE, marketing it to a larger number of first-year students admitted to the College of Engineering (COE). The expanded bridge program still operates under the auspices of the CEED and has been named STEP Bridge – Student Transition to Engineering Program.

Here, we provide a brief overview/history of ASPIRE and then discuss the transition to, and implementation of the STEP Bridge program. We will compare the logistics of managing both programs, costs, demographics of the populations served, fall semester academic performance of the participants as compared to appropriate non-participating cohorts, and student satisfaction with bridge programs. We will also project the program impact and discuss anticipated growing pains as we continue to expand to our target participation of 100 students. We will present what we have learned from the past two years of implementation, as STEP Bridge moves into its third year.

Introduction

In 1995 Virginia Tech's Center for the Enhancement of Engineering Diversity (CEED) first implemented a summer pre-freshman bridge program targeted to under-represented engineering students[2]. ASPIRE (The Academic Summer Program Introducing Resources for Engineers) was a five-week program that assisted African American and Hispanic students with the academic and social transition between high school and college. Specifically, the program goal was to support diversity within the college by increasing retention of minority students through enhancing first-semester performance.

From 1995-2004 ASPIRE served approximately 300 students. CEED has maintained data on the academic performance of all ASPIRE students with a cohort control group as they progress through Virginia Tech. The data indicates increased academic performance, improved grades in general freshman courses, and higher retention and graduation percentages as compared to control groups[2].

At present, only 50% of all students entering an engineering discipline continue through graduation[1]. Successes of programs such as ASPIRE have fueled an expansion of transition and

retention programs to benefit more incoming engineering students. To that end, the CEED office received a $2 million dollar STEP (STEM Talent Expansion Program) grant from the National Science Foundation. The goal of the project is to increase the number of students earning degrees in engineering and computer science. One component is the expansion of ASPIRE, marketing it to a larger number of first-year students admitted to the College of Engineering (COE). The expanded bridge program still operates under the auspices of the CEED and has been named STEP Bridge – Student Transition to Engineering Program.

History of ASPIRE

ASPIRE (The Academic Summer Program Introducing Resources for Engineers) was a five week long summer bridge program that assisted both African American and Hispanic students who were accepted to enroll in the COE at Virginia Tech. The average ASPIRE enrollment was 29 students per year. Program goals were implemented through three main components: (1) academic enrichment in math, chemistry, and engineering fundamentals, (2) social development within the university community, and (3) professional and personal development. The following is a brief overview of each component which provides the foundation for expansion to STEP Bridge.

Classes were designed to be similar to those taught in the fall semester. Students were treated as if they were enrolled as freshmen, a key to past success[2]. Students attended classes during the day, Monday through Friday. Instructors gave tests and homework to show students the rigor of college curriculum. Below are brief overviews of each subject. The average size of ASPIRE allowed one section for each class.

Chemistry

- Influence on problem solving through problem sets and homework assignments
- Covered chemical fundamentals, bonding, and thermodynamics
- Three exams given with the opportunity to participate in prior help sessions
- Pre- and post-tests given to assess comprehension of material

Chemistry Lab

- Covered lab safety, lab report format, and laboratory experiments similar to those performed fall semester
- Topics included determination of chemical formula, stoichiometry, properties of gases, and line spectra

Math

- Reviewed geometry, trigonometry, and algebra
- Designed to assist students to pass the Mathematics Department's Mathematics Readiness Test (MRT). Students earning 60% or higher were eligible to enroll in calculus the following fall semester.
- Three exams with supplemental quizzes were given

Engineering Problem-solving

- Exposed students to pencil and paper engineering problems, AutoCAD, math problem solving software (MatLab), and Microsoft Office software
- Students were divided into two smaller "problem solving groups" which met separately twice per week. On Friday both groups met to take a test.

Social development within the university was accomplished through class, dorm life, and supplemental activities. Students were housed in a residence hall on Virginia Tech's campus and dined together in a dining hall. They attended weekly seminars on campus resources including career services, the Center for Academic Enrichment and Excellence, student organizations, and course registration among others[2]. Campus and engineering lab tours exposed students to Virginia Tech facilities. Students met once per week with a designated academic advisor to review ASPIRE performance and set goals for the following semester. Professional development was stressed through specific activities which included a dining etiquette seminar, resume writing, and various professional leadership development seminars sponsored by industry. Students took part in a 4th of July cookout and ropes course activity for personal development and fun. A field trip to an amusement park was meant as a capstone of ASPIRE.

A database of retention, graduation rates, and GPA statistics of each ASPIRE cohort with corresponding control data was managed to assess program goals. Retention rates from ASPIRE are summarized in Table 1. Retention and graduation percentages were on average higher for ASPIRE students[2].

Table 1. ASPIRE retention data[2]

Cohort	# of Participants	Graduated in Engr From VT	Graduated from VT	Sill enrolled in Engr at VT	Still enrolled at VT	No longer enrolled at VT
1995	26	13 (50%)	8	0	0	5
1996	26	12 (46%)	6	0	0	8
1997	31	16 (52%)	2	0	0	13
1998	32	15 (47%)	5	1	1	10
1999	31	14 (45%)	6	0	1	10
2000	27	12 (44%)	4	0	0	11
2001	32	14 (44%)	2	5(16%)	1	10
2002	24	4(17%)	2	8(33%)	5	5
2003	27	1	0	18(67%)	5	3
2004	34	0	0	20(59%)	6	8

GPA data for ASPIRE (not shown) demonstrates that participants on average earned higher grades than non-ASPIRE students in freshman math, chemistry, and chemistry lab; while earning a higher overall QCA during their first semester. It should be noted that these differences were statistically significant during the 1997, 2000, and 2003 ASPIRE cohorts[2].

Implementation of STEP Bridge

STEP Bridge is a five week bridge program which starts the last week of June and finishes the last week of July. Like ASPIRE, the major goal of the program is to help students make a smooth transition from high school to Virginia Tech. Promotion of STEP Bridge is more robust. STEP Bridge is promoted to a wider demographic than ASPIRE, but is targeted to certain underrepresented groups; selection is application based. The target size is 100 students. During

the summer of 2005, the CEED staff implemented the first STEP Bridge program; 53 students participated in the first run.

A better recruitment protocol was developed for the 2006 program in an effort to increase enrollment. Certain students were targeted and actively recruited for STEP Bridge. All minority and women students accepted to enroll in the College of Engineering were sent brochures, emailed, and called by past program participants. Students that reported an overall high school GPA below 3.5, below 600 on SAT Math, and/or first generation college students were recruited in the same manner. Employing past STEP Bridge participants to call targeted prospective students was both efficient and effective as they were able to share their own personal experiences with prospective students. When the target of 100 students was still not attainable recruitment was further expanded. Offers were extended to all women and underrepresented students that applied to the College of Engineering but were deferred and set to enroll as University Studies (US) students. These students were offered a second chance at admission to the College of Engineering for the upcoming fall semester upon successful completion of STEP Bridge. This offer was quite significant to students and parents as being able to enroll in the fall as an engineering student would put students back on the path toward completing their degree in four years. As a result of this recruitment procedure, 67 students participated in the second run of STEP Bridge in the summer of 2006; 13 of them were university studies students.

Recruitment is important as we continue to work toward our target number of 100 students. For 2007 the program will be better advertised through online multimedia. A five minute marketing video was compiled from STEP Bridge footage collected during 2006. Our goal is to deliver this video through mailing DVDs, online distribution, and utilization of social networking websites.

Diversity is an issue at many universities and a cornerstone of STEP Bridge recruitment. Like many other engineering institutions, there is a lack of diversity within the student body and it was difficult to recruit underrepresented students to attend the bridge program. Some of the targeted underrepresented students did not attend because they did not want to sacrifice their summer break for the program due to financial needs that would be met by summer employment. Others were not interested because they would not receive official academic credit. Some also indicated conflicts such as summer vacation as a reason for not attending. Recruitment efforts for future runs of STEP Bridge will continue to center on enhancing program diversity.

Adapting components of ASPIRE to STEP Bridge

The three components of ASPIRE, academic enrichment, social development within the university community, and professional/personal development remained essential during the transition to STEP Bridge. In the past 10 years, average ASPIRE enrollment has been approximately 30 students. Increasing the number of participants made it more difficult to manage details such as courses, skill development seminars, and monitoring and meeting with students about their first semester academic performances.

Academic component

The major challenge faced when adapting the academic component was maintaining a complete collegiate academic experience with the increased program size. The STEP Bridge courses remain the same as those of ASPIRE, which were math, chemistry, chemistry lab, and introduction to engineering. These topics were chosen because it seemed that students were either under-prepared or had forgotten the foundational information for such courses.

Logistically, we had to re-evaluate how classes were scheduled. ASPIRE participants all followed the same class schedule as a single section for each course; class size was manageable and the classroom environment was conducive to learning. Class size was maintained for STEP Bridge by creating different sections to correspond with three different class schedules (see Appendix A for an example schedule). Class size varies depending on the subject. For example, in 2005 we could not conduct a chemistry lab with 53 students in one setting due to rules and regulations set by the Chemistry Department. However all 53 students could attend chemistry lecture. Multiple sections were created for math and engineering classes.

Academic tools including text books, lab goggles, engineering drawing tools, and lab books are purchased for each STEP Bridge participant. The texts chosen for STEP Bridge curriculum are also used during the following school year and are included with the cost of the program, saving students significant costs in the fall.

Social development component

Social development within the university is structured similarly to ASPIRE. The increased size of STEP Bridge demands a more robust residential life aspect to keep students engaged within the community outside of class. Residential advisors are often past participants of the bridge program and current engineering upperclassmen. They must play an active role in facilitating community and program goals. For example, each RA is responsible for holding open "office hours" each week for academic tutoring, mentoring, or answering questions. Residential advisors are also assigned to a group of students, called their activity group, for which they must plan an event each week on a minimal budget. Activities range from volleyball, Frisbee, and basketball to ice cream eating contests and karaoke, among others. The RAs and staff help celebrate birthdays during the program and students attend a 4th of July picnic on campus. The amusement park trip usually planned during ASPIRE has been replaced with a less costly trip to play laser tag, bowl, and/or roller skate. Students could also attend a trip to the local mall and Movie Theater on one weekend.

Students meet every Friday afternoon for seminar to cover different aspects of campus life. The increased size of STEP Bridge did not change seminar. Topics include financial aid, study abroad, tablet PC technology use, and career services.

Students are given tours of various mechanical engineering laboratories during the program. Emphasis is placed on the importance of undergraduate research in engineering and on exposing the interesting yet lesser known things that engineers do.

Professional/personal development component

Students participate in various professional development events sponsored by industry. Lockheed Martin conducts the STARS workshop which stresses the importance of leadership and professionalism. A similar program is conducted by Cummins. Both events are held on a Saturday and are required for all participants. Weekend events tend to keep students more engaged in the bridge experience. A business etiquette dinner is the capstone of the professional development component.

A ropes course activity remains a key ingredient of student personal development at STEP Bridge. Students are bussed to nearby Radford University (RU ABLE Program) for the full day experience. During ASPIRE, the entire group could attend at once: however, the size of STEP Bridge required splitting the group over a two day period. Low and high ropes course elements challenge students, build character, and encourage teamwork. Many students accomplish something they never thought they could. The experience is debriefed to relate the day's events with the upcoming challenges of college.

To support personal development, each student is assigned an academic advisor. Past ASPIRE programs have demonstrated increased student performance when they are required to actively and frequently evaluate their performance each week[2]. STEP Bridge students meet for 15 minutes each week with a CEED staff member to evaluate performance. Each staff member advises six STEP Bridge students, therefore more staff were utilized as compared with ASPIRE needs. Many students also use this as a time to determine their fall semester course load and ask questions about other academic affairs. STEP Bridge students are very well aware of the college's academic system when they begin college in the fall.

STEP Bridge logistics and financial considerations

Due to the increased size of STEP Bridge compared to ASPIRE, organization of the program had to be reevaluated. Administration of the program had to be changed. One aspect of this change was the hiring of faculty and staff. Table 2 summarizes the change in staff and faculty employed between the two programs.

Table 2. Faculty and staff comparison between ASPIRE and STEP Bridge

Position	ASPIRE	STEP Bridge
Administrative Staff	1	2
Residential Staff	4	9
Academic Faculty/Staff Total	5	9
Chemistry	1	1
Math	2	2
Engineering Education	1	3
Chemistry Lab	1	3
Tutors	2	0
Computer Monitors	1	0
Academic Advisors*	4	11
Total	18	29

**not included in total*

It should be noted that the figures listed in Table 2 for STEP Bridge are for the 2006 program and that academic advisors are not included in the total because all STEP Bridge staff (not including RAs) are asked to be academic advisors as part of their duties. The ratio of students to residential advisors remained at roughly 7:1 with the increase in program size. RAs play a more significant role in STEP Bridge compared with ASPIRE, and we agreed that student transition could be enhanced by maintaining a robust residential component. For example, to better link the residential and academic components, RAs assumed tutoring roles in STEP Bridge. This was executed by requiring each RA to post hours when they will be available in the residence hall to help during the week. This cut the costs associated with hiring formal tutors, as was done with ASPIRE. Math and chemistry, primarily lecture type classes, did not increase staff, while engineering education and chemistry lab, hands-on type classes, did increase staff. This was done to keep the class size at an optimum number.

It was difficult to recruit graduate and upper-class engineering students to work in STEP Bridge. These students are typically looking for internships, co-ops, and/or employment with industry and we are not able to compete with the high summer salaries that the students receive in such employment. Our program is only five weeks long and the students are also looking for employment to span most of the summer.

The cost for both programs varied as would be expected: STEP Bridge is much more expensive to operate. On average, ASPIRE expenses per year totaled $47,077 with a revenue of $28,690. STEP Bridge expenses per year averaged $184,169.80 with a yearly average of $31,180 in revenue over the first two years. The revenue was made through the program fee of $750 charged to participants. If students expressed need for financial assistance, full or partial scholarships were offered and paid through program expenses. Table 3 outlines expenses for STEP Bridge 2006.

Table 3. STEP Bridge 2006 expenses

Item	**Cost**
Wages	$72,028
Printing	$3,744
Food	$44,178
Lodging	$30,788
Books and Supplies	$20,607
Miscellaneous	$7,494
Overhead	$55,301
Total Program Revenue	$36,000
Total Program Expenses	$234,140
Net Program Cost	$198,140
No. of students	67
Receiving full scholarship	10
Receiving partial scholarship	11
Average cost per student	$2,957

There is a significant difference in cost-per-student between ASPIRE ($634 per student, average) and STEP Bridge ($2,957 per student, 2006). There are several factors contributing to the average cost per student increase. Most program costs are variable and increase with program size as expected. Such costs include food, books, supplies, salaries, wages, and lodging. Other costs were incurred due to logistic factors associated with the group size. It seemed that once the group size grew beyond a, "tipping point," logistical costs were incurred at an increased rate. One such logistic factor was transporting students. In ASPIRE, we used vans as a means of transportation but, due to liability issues with increased numbers, we could not use vans for STEP Bridge. Instead, we utilized the university bus system which had many restrictions, including limited hours of operation that made it difficult for us to plan STEP Bridge activities. University bus restrictions, along with ropes course safety concerns, resulted in the need to spread the ropes course activity over two days, doubling transportation and personnel expenses for the activity.

Data collection

Data on STEP Bridge participants are collected through the university database and through an online survey. Academic and retention data is tracked throughout the students' academic career. Control cohorts for a given year are built by selecting non-bridge students with the same combined SAT score then with the closest possible high school GPA to matching bridge students. Additionally, students for the control cohort are matched to reflect the relative distribution of College of Engineering and University Studies students: a more accurate representation of the overall group. It should be pointed out that University Studies students for the control cohort were those that indicated engineering as their first choice of major but were deferred to US.

A pre- and post-program survey was administered online at the start of the program and six weeks into the fall semester to gauge student feedback. Students are asked to evaluate their bridge experience in relation with their current semester.

Results and discussion

A demographic summary of STEP Bridge participants for the first two runs is provided in Table 4. We had 53 students in 2005 and 67 in 2006.

Table 4. Demographic summary of 2005 and 2006 STEP Bridge students

Racial or ethnic identification	**2005**	**2006**
American Indian or other Native American	0 (0%)	0 (0%)
Asian or Pacific Islander	4 (8%)	1 (2%)
Black or African American	7 (14%)	16 (24%)
Caucasian (other than Hispanic)	34 (67%)	37 (56%)
Mexican American	2 (4%)	0 (0%)
Puerto Rican	0 (0%)	1 (2%)
Hispanic	1 (2%)	5 (8%)
Other	3 (6%)	4 (6%)
no answer	0 (0%)	2 (3%)

Sex		
Male	36 (71%)	46 (70%)
Female	15 (29%)	19 (29%)
Age		
17	9 (18%)	17 (26%)
18	38 (75%)	45 (68%)
19	3 (6%)	3 (5%)
Other	0 (0%)	1 (2%)
First generation college students	12 (24%)	14 (21%)
University studies students	2 (4%)	13 (19%)
Average high school GPA	3.66	3.68
Average SAT Math	634	619
Average SAT Verbal	572	562

Between the 2005 and 2006 program, the student racial demographic became more diverse. The percentage of African American students increased 10%, while the percentage of Caucasian students decreased 11%. STEP Bridge also had an increase in Hispanic and Puerto Rican students in 2006. The gender demographic was maintained at roughly 70% male and 30% female. The percentage of first generation college students attending STEP Bridge dropped slightly between 2005 and 2006; the percentage of university studies students increased 15%.

Students were surveyed to determine their intended major at the beginning of the program. A summary of intended majors of STEP Bridge participants is provided in Table 5.

Table 5. Summary of intended engineering major

Intended engineering major	**2005**	**2006**
Aerospace and Ocean Engineering	7 (14%)	14 (21%)
Biological Systems Engineering	1 (2%)	3 (5%)
Chemical Engineering	3 (6%)	4 (6%)
Civil and Environmental Engineering	6 (12%)	5 (8%)
Computer Science	3 (6%)	2 (3%)
Electrical and Computer Engineering	14 (27%)	9 (14%)
Engineering Education	0 (0%)	0 (0%)
Engineering Science and Mechanics	2 (4%)	1 (2%)
Industrial and Systems Engineering	1 (2%)	5 (8%)
Materials Science and Engineering	2 (4%)	0 (0%)
Mechanical Engineering	8 (16%)	18 (27%)
Mining and Minerals Engineering	0 (0%)	0 (0%)
other	4 (8%)	4 (6%)
no answer	0 (0%)	1 (2%)

In both years, the top three intended engineering majors were Aerospace and Ocean Engineering, Electrical and Computer Engineering, and Mechanical Engineering.

The overall fall semester academic performance and current retention data for STEP Bridge 2005 and 2006 participants as compared to appropriate non-participating cohort are provided in Tables 6 and 7. The retention data presented reports early findings of a longitudinal study.

Table 6. STEP Bridge 2005 academic and retention data

2005-2006							
	Number of Students	Overall GPA	Fall '05 Semester GPA	Spring '06 Semester GPA	% still enrolled in Engineering	% enrolled in Other	% not enrolled at VT
STEP Bridge Participants	53	2.79	3.00	2.84	90.6% (48)	7.55% (4)	1.9% (1)
Cohort Group	53	2.61	2.63	2.64	88.7% (47)	9.4% (5)	1.9% (1)

Table 7. STEP Bridge 2006 academic and retention data

2006-2007							
	Number of Students	Current GPA	Fall '06 Semester GPA	Spring '07 Semester GPA	% still enrolled in Engineering	% enrolled in Other	% not enrolled at VT
STEP Bridge Participants	67	2.73	2.73	N/A	86.6% (58)	13.4% (9)	0% (0)
Cohort Group	67	2.78	2.78	N/A	83.6% (56)	16.4% (11)	0% (0)

STEP Bridge 2005 students on average earned a higher fall semester GPA than non-STEP Bridge students. This trend continued into the spring 2006 semester. STEP Bridge 2006 students on average earned a slightly lower fall semester GPA. During ASPIRE, students earned a higher fall semester GPA on average. Between 1995 and 2003, three ASPIRE cohorts earned statistically significantly higher fall GPAs with only one cohort earning less than their respective control cohort[2]. STEP Bridge does not appear to effect retention of students in these preliminary data.

Contradictory fall semester GPA impact between STEP Bridge 2005 and 2006 may be due to variations between fall semester courses each year. Specifically, the Engineering Education course (ENGE) taught in the fall often changes format and exam content from year to year. The fall ENGE course completed by the 2005 cohort was similar but slightly different than the one completed by the 2006 cohort. For example, between fall 2005 and fall 2006, fall ENGE lecture content generally remained the same; STEP Bridge ENGE lecture content followed this trend. However, in fall 2006 the ENGE exams were made more difficult and grades were lower because the exams included more questions on minutiae and content not emphasized in class. Naturally this would effect the control cohort fall GPA too, but as evident in Tables 6 and 7 this statistic actually increased between years. To explain why the average STEP Bridge fall semester GPA dropped while the average non-bridge fall semester GPA increased between 2005

and 2006 one must consider the influence that STEP Bridge 2005 students may have had on STEP Bridge 2006 students. If the fall ENGE exam was easy compared to the STEP Bridge ENGE exam in 2005, this notion was probably passed along to the 2006 STEP Bridge students. When the fall ENGE exam was made more difficult in 2006, the influence of STEP Bridge may have lulled 2006 students into a false sense that they were prepared, because of STEP Bridge, when they were not.

Contradictory fall semester GPA impacts may also be due to variations between STEP Bridge courses between 2005 and 2006. Specifically, the math course in STEP Bridge 2006 was less successful due to personnel. The math instructors hired for 2006 were not as good as the ones hired for 2005. As a result, students lost interest in the STEP Bridge math course in 2006 and may have been less prepared for the fall semester.

To gauge student perception of preparedness due to STEP Bridge, student feedback was gathered during the subsequent fall semester after the program. In the fall semester, a survey was emailed to the students requesting that they provide their feedback about STEP Bridge faculty, staff, and activities in order to assist us in planning for the next program. In 2005, 73% (38 of 53) of students filled out the survey; 70% (47 of 67) in 2006. Three example questions/statements included on the survey were:

1. What do you expect your college grade point average to be at the end of your first semester?
   32% (2005); 30% (2006) of the students indicated that they will receive an A- grade point average
2. STEP Bridge was academically worthwhile.
   74% (2005); 60% (2006) of the students strongly agreed
3. STEP Bridge prepared me for the anticipated workload and demands of college life and engineering as a major.
   61% (2005); 40% (2006) of the students strongly agreed

Students were also asked to evaluate the part of STEP Bridge that they liked best. The top five responses are listed in Table 8 for each year.

Table 8. Top five responses to, "What did you like best about STEP Bridge?"

	1	**2**	**3**	**4**	**5**
2005	Friends	Preparation for college	Engineering education	Study skills/time management	Learning campus
2006	Friends	Preparation for college	Networking with professors	Professional development	Chemistry

The relationships formed during STEP Bridge remained the top experience for both years. Friendship was always in the top five during ASPIRE^2. As for satisfaction with the program, one student stated the following:

> "I enjoyed several aspects of STEP Bridge, […] especially after the fall semester started because that's when I realized that STEP Bridge helped me much more than I expected. However, the most enjoyable event was the ropes course."

Another student stated:

> "The aspects of STEP Bridge that I enjoyed were the introduction to professors, academic demands and the campus. I also liked that STEP Bridge was and is like a small community at Virginia Tech."

Overall, the student satisfaction with the bridge program was positive. We believe that STEP Bridge was very successful in impacting its participants. One way we impacted the students is helping them acclimate to the College of Engineering and the Virginia Tech campus. For example, several of the student's comments on the survey indicated that they benefited from early exposure to the classes, the transition of making new friends, and meeting the faculty prior to their fall semester. This made it easier for the students to approach faculty with concerns about academic, personal, and professional issues.

Conclusions

In preparing for STEP Bridge 2005, we learned that growth is logistically challenging. Through the first two runs of the program we have maintained quality, increased enrollment and diversity, and built a healthy program on the foundation set by ASPIRE. We found that the academic impact of STEP Bridge varies but, overall, student satisfaction was positive. We will continue to track student retention in the College of Engineering to provide a clearer picture of program impact. As STEP Bridge moves into its third year in 2007, we continue to enhance the academic, social, professional, and personal development components of the program. Some of the growing pains we anticipate dealing with are diversity and budget.

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Appendix A: A schedule example from STEP Bridge 2006

Group A Schedule					
	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 AM	Chem Lecture	Chem Lecture	Section 1 and 2	Chem Lecture	Chem Lecture
8:15 AM					
8:30 AM			Chem Lab		
8:45 AM					
9:00 AM					
9:15 AM					
9:30 AM					
9:45 AM	Math	Math		Math	Math
10:00 AM			Section 3 and 4		
10:15 AM					
10:30 AM					
10:45 AM			Chem Lab		
11:00 AM					
11:15 AM					
11:30 AM					
11:45 AM					
12:00 PM					
12:15 PM					
12:30 PM	lunch	lunch	lunch	Lunch	lunch
12:45 PM					
1:00 PM					
1:15 PM					
1:30 PM					
1:45 PM					
2:00 PM	ENGE	Academic Analysis	ENGE	Academic Analysis	Seminar
2:15 PM					
2:30 PM					
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