

An Education/Business Partnership: ASU's Minority Engineering Program and the Tempe Chamber of Commerce

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Abstract

For the past five years, the Minority Engineering Program (MEP) in the College of Engineering and Applied Sciences at Arizona State University (ASU) has directed the MEP Summer Bridge Program (SBP) which targets entering underrepresented minority freshman students, who are considering or have declared engineering as their major. This highly successful program has an outstanding record of recruiting and retaining engineering students to the College. The primary purpose of the two-week residential scholarship program is to encourage the students to pursue engineering, computer science, or construction and to prepare them for the academic demands of these majors.

Each year the program includes a team project. During the 2000 SBP, the MEP collaborated with the Tempe Chamber of Commerce (TCC) to provide the SBP participants with real engineering experience even before they began their freshman classes. These SBP participants, in teams of four students each, designed a web-based version of the TCC newsletter "The Business Advocate." This MEP/TCC partnership benefited both groups, surpassed all expectations, and has resulted in a model that both the MEP and TCC want to continue and to expand in future programs. The students had an increased sense of confidence going into the challenging first year of the engineering curriculum, as well as real-world project experience.

I. Introduction

Arizona State University's (ASU) Office of Minority Engineering Programs (OMEP) in the College of Engineering and Applied Sciences (CEAS) has invested heavily in the critical recruitment, retention, and placement of minority engineering, computer science, and construction students since its beginning in 1993. Since that time, OMEP has worked diligently in recruitment efforts with K-12 groups and then in retention efforts with the students while they pursue their degrees at ASU. In 1996, the OMEP Director, the Minority Engineering Program (MEP) Coordinator, and the CEAS Associate Dean of Student Affairs concluded that K-12 recruitment programs and university retention programs needed a more complete link. The MEP Summer Bridge Program (SBP) [1] was designed to assist in the goals of recruiting, retaining, and placing minority engineering, computer science, and construction students. The SBP assists in these goals by helping students acclimate to university life, build a community of peers, and gain skills to ensure a successful freshman year.

The SBP model became a two-week highly structured schedule in which almost all activities are centered on preparation for freshman courses [2]. This preparation took on the form of a team design project, based in web-design. Each student was assigned to a team and together they engaged in a realistic, substantial, and challenging, engineering project. In addition, SBP participants made industry visits, completed math preparation courses for the math placement exam, and explored student support programs on ASU's Main Campus.

After the Summer Bridge Program in 1999, the program was reevaluated in terms of its adherence to advancing the OMEP's goals of recruitment, retention, and placement. The idea of placement was lacking from SBP's focus. So, the entire staff took this challenge and addressed the need to place SBP students into internships. Soon after the evaluation and subsequent brainstorming sessions, MEP staff found themselves in an ideal situation to make important changes to the Summer Bridge Program.

II. Partnership with the Tempe Chamber of Commerce

Although the Summer Bridge Program's focus on recruitment and retention was phenomenal, the ability to prepare students for placement was in question. During the spring semester of 2000, the OMEP Director examined her work with the Tempe Chamber of Commerce (TCC) carefully, and saw an opportunity to partner with the TCC. She had been serving on TCC's Business and Education Committee chaired by a local industry representative. Together they discussed the OMEP's placement concerns. They concluded that collaboration between the TCC and OMEP SBP would be mutually beneficial.

The OMEP Director and the TCC's Business and Education Chair called a meeting of the President of the Tempe Chamber of Commerce, the Chairman of the Board, the Vice President of Membership Development, and the engineering faculty advisor for MEP's SBP. The initial meeting was called to introduce the group to the past effects of the SBP and its potential to increase the number of minority engineers in the community workforce.

Before the meeting, the OMEP director collaborated and planned with the SBP faculty advisor, who had consistently worked with summer bridge program staff and instructors to ensure that the two-week curriculum would lead to successful team projects. The faculty advisor was a professor of mechanical engineering and had an extensive knowledge of the engineering curriculum, especially of the introductory engineering course, "ECE 100: Introduction to Engineering Design." Together they planned the initial meeting.

The OMEP Director guided the meeting and presented the history of SBP, specifically focusing on its current goal to specifically work towards increasing placement of SBP students both in internships and in permanent positions upon graduation. She emphasized that the participants should work with real clients and not in a "mock" engineering situation. The idea was brainstormed and the Chamber "bought into" the partnership idea immediately.

Through subsequent meetings with the same key players, the project was narrowed down to what the Chamber believed was its most pressing need, a web-based version of their newsletter, “The Business Advocate.” Although the TCC had used the Internet to increase membership and awareness in the community for some time, they had fallen behind in the past few years. It was decided that each student team would design a main page or “home page” for the newsletter. Furthermore, each team would design the page with all the necessary links, as determined by each student team. Then, they would completely develop one of the chosen links.

After the project had been defined and the parameters established, a “Request for Proposal” (RFP) was created and approved by the TCC President and the Chairman of the Board. The MEP Coordinator met with TCC staff to coordinate the team project and to create an RFP to give to each student team. The RFP dictated the timeframe of the team project, desired results, usability, structural elements, and professional criteria. Each team would be instructed to act as a company for the program’s duration of two weeks. SBP-MEP staff, led by the faculty advisor, planned the curriculum and then held training with the minority engineering students who would be acting as instructors for the SBP [3]. Together, they finalized the schedule of classes and the material that would be taught.

Next, the TCC and OMEP began scheduling the team project phases and developed a protocol for communication between the participants, the Chamber, and the Chamber’s members. It was decided that the Chamber would communicate needs and wants to the participants in two main ways. First, representatives of the chamber (including the Chairman of the Board) would meet with a representative from each student team. The Chamber representatives would officially present their request to the group, detail the general purpose of a Chamber of Commerce, and communicate project goals and desired end results. The second meeting between the Chamber and the participants would be set up as client interviews. Each student team would meet with a member of the Chamber to find out what they would want from a Chamber web-based newsletter. These two forms of client/professional communication were designed to be an opportunity for the students to gain information about the project in a professional setting.

Finally, the TCC and the OMEP developed the judging structure. The judging component of the program was broken down into three components: documentation, computer design, and oral presentation. The judges would be comprised of general Chamber membership, executive leaders, company representatives, and Chamber staff. The Chamber’s assignment was to find the volunteers to judge the elements of web-design. Both the MEP and the Chamber agreed that TCC members would be the best judges in determining how closely each team adhered to the wants and needs expressed by the Chamber.

The MEP and TCC also planned to receive feedback and publicity through university and TCC connections with the media. A press release was created and sent to both organizations’ contacts, along with an invitation to attend any of the communication events between the Chamber and the students.

III. Realization of the MEP/TCC Project

On a Monday evening, the Bridge students arrived and were oriented to the general program components and schedule. The following morning, they were introduced to the

TCC project, and more specifically, to the RFP that had been released by their “new client.” Students received their team assignments and were immediately immersed in teambuilding activities. The students were then instructed to prepare for their first meeting with the Chamber.

The students’ initial reaction to the project was positive. They were relieved to “not be pretending” and they felt that they were getting the opportunity to really “dive” into engineering. Each team nominated a member to represent them at the initial meeting with the Chamber. Each representative was instructed to have a list of questions to ask the Chamber during the meeting and each group received training on professional meeting etiquette. Most students expressed uncertainty as to what a Chamber is and what they do in the community.

The TCC Chairman of the Board, the Vice President of Membership Development, and the Vice President of Public Affairs represented the Chamber. They greeted the SBP students with excitement and enthusiasm. The meeting was held in a conference room, round-table style, and was completely and professionally arranged before the students arrived. The Chamber gave information about chambers in general and then narrowed the information to the web-based newsletter and its prominence on their “need list.” Students asked questions and then received a tour of the office area. The Chamber made sure the students had received business cards of key Chamber members who would be good references for the web-design project.

The next step in the process of completing the engineering, web-design project was to empower the student teams with the necessary skills to fulfill the client’s expectations. Students spent the first three days in classes on HTML, Microsoft Word, Excel, UNIX, and DreamWeaver. Classes were held on ASU’s Main Campus and were taught by former SBP students and current minority engineering students at ASU [3]. While learning the skills necessary to build and to design the newsletter online, the students also prepared for their upcoming Chamber client meetings.

TCC client meetings were held two days after the initial meeting. The Chamber had recruited a variety of Chamber members. Some of the representatives were active in the Chamber and others were either new members or less involved. This presented a great opportunity to both the Chamber and the SBP participants. The Chamber became familiar with less involved members. In addition, they received feedback from potential Chamber members on web layout and chamber communication through a newsletter. The students also received a variety of perspectives, which ultimately resulted in a more successful product for their client.

During the afternoon of client meetings, one Chamber representative was grouped with one student team. They each discussed the potential web-based newsletter. The meetings were each twenty minutes in length, so as not to give one team an unfair advantage over another. Students and Chamber representatives alike responded that more time was needed. TCC members commented that each group took between six and eight

minutes to feel comfortable enough to ask the more specific questions. They concluded that the participants needed at least forty minutes with them for this phase of the project.

In the days that followed the client meetings, the Chamber and the participants continued to communicate through email and telephone. Also during this time, the Chamber focused on the selection of judges for each of the three areas: documentation, web-design, and oral presentation/poster session.

The closing ceremonies were held at a local hotel conference room donated by a company member of the Chamber. Each student team presented their web design by giving an oral report and PowerPoint presentation to the panel of judges, as well as an audience of family, friends, ASU staff and faculty, and community members. The judges were able to give direct feedback to the student teams during the poster session portion of the judging. Each judge was allowed ten minutes to ask their assigned student team questions regarding their choice of style, content, etc. Again, the benefit was mutual. The judges enjoyed the interaction with the students and had the opportunity to inspire them with encouragement. The participants benefited from the professional situation as well as from the networking opportunity with prominent members of the community and industry.

IV. Results: a Win-win Outcome

From all points of view: the students', the TCC's, and the MEP's, the partnership was a success. Since the TCC's mission is to "Build an environment that enhances the economic vitality of our membership," the TCC is consistently looking for ways to associate with community members and to increase the quality and quantity of its membership [4]. Their monthly newsletter is an important communication and recruitment tool. As of June of 2000, 2,200 copies of "The Business Advocate" were sent out on a monthly basis to a readership of approximately 5,000. However, The Chamber still wanted more exposure to the community and greater publicity for their participating companies. In fact, the Tempe Chamber of Commerce's 2000-2001 business plan states, "By the end of this fiscal year we will have. . . developed and implemented a strong marketing and communication plan [5]."

With this goal in mind and a desire to engage in the increased popularity of communication by Internet, the Chamber wanted to heighten awareness, membership, and influence by allowing more community members to see what they were accomplishing in Tempe. As of June 2000, the Chamber's website was averaging 12,824 hits per week and over 52,000 hits a month. A web-based newsletter would create an opportunity to reach and educate approximately 45,000 more people a month, increasing their visibility to both members and non-members by more than 500 %.

Another important result of the web-based newsletter project was media attention. Two press releases were created and distributed to ASU and TCC media contacts. The chamber received free, positive advertising through an article on the MEP-SBP 2000 in the Arizona Republic, which has a daily circulation of 64,000. MEP-SBP 2000 was featured on KXTV – the NBC affiliate in Arizona. An article highlighting the partnership was published in the ASU Insight newsletter, which is read by over 11,500 faculty, staff, Arizona legislators, and Regents' professors. This overall exposure allowed the Chamber to publicize its connection with the ASU community.

TCC members were also strengthened by their participation. The four “clients” who met with the student teams became more active in Chamber events. They each expressed a desire to participate the following year in the same capacity. Chamber staff were able to get to know these members better than they had before.

From a business perspective, the Chamber received immediate and honest suggestions from the group whose interest they wanted to capture. These SBP students will be graduating and working for the engineering, computer science, and construction industry, the fastest growing group in the country. These students learned what a chamber is, how it functions, how it can affect business success in a community, and how they as students and/or professionals can get involved with a local chamber. This result becomes particularly appealing when one considers that a large number of graduates accept positions in the Tempe area. The exposure both to the general public, ASU community, and future industry management constitutes a winning situation for the Tempe Chamber of Commerce.

The students benefited from the experience in many ways. The students worked for a real client, who gave them immediate and positive feedback on their work. The Chamber met with them in RFP and client meetings, as well as judging sessions. They commented to the students how impressed they were with the students. They specifically stated that the students quickly learned the web-design skills to complete the project, professionally presented themselves, and showed great dedication to their education. The Chamber made it clear that industry and their communities were behind them as students and future business associates. Confidence was an important, and perhaps the most beneficial, outcome of the partnership. Students used, and continue to use, TCC staff as references on scholarship applications and resumes.

Another powerful outcome was the real-world experience that each participant was able to add to his or her resume. Each SBP student was empowered with the documentation that they had completed a professional project for a community business before they began their freshman classes. This exemplified their worth to companies and illustrated their dedication and willingness, as well as their extremely quick learning curve.

The Office of Minority Engineering Programs was able to take the Summer Bridge Program to a new level by broadening the goals to match those of the OMEP, the Student Affairs Office, and the College – those of recruitment, retention, and placement. The placement aspect was specifically affected as freshman students were confident that they could obtain a summer internship and, furthermore, that they could excel once given the opportunity. Out of 46 participants, 41 have contacted two or more companies for possible summer 2001 internships.

The continual focus on internship and industry placement has been influential on the OMEP’s ability to instill this focus on participants. During the 1999-2000 academic year, 38 of the bridge participants completed the fall semester’s Academic Success course. However, only 10 of those Bridge students continued into the spring semester Academic Success Class, where professional development (resume, interviewing, and networking) was emphasized [1]. The 2000-2001 academic year brought 42 bridge students into the fall course and 23 bridge students into the spring professional development course, which

is a 130% increase over the year before. We believe that the opportunity to work for a real client in an engineering capacity gave the students more focus on where they want to be after receiving their degree.

V. Discussions and Model Outline

The partnership model, as created from the pilot year of the TCC/MEP development, illustrates the perfect match between summer bridge programs and local chambers of commerce. Chambers, as opposed to an independent business entity, have the connections to and resources from many different kinds of industry. Chambers support community businesses ranging from large corporations like Motorola or INTEL to the local used bookstore. They have direct links to community affairs, media, elected officials, and community leaders. They also know what businesses are in need of technology graduates, which companies would most benefit from working with the SBP participants, and which companies would meet the needs of the SBP.

Planning for and scheduling the engineering project was a collaborative effort between the Chamber and the MEP staff. The process began with an initial joint meeting where both groups brainstormed ideas for the project and began on a preliminary schedule. Each group was represented by staff who were directly involved in the realization of the project, as well as those who were able to authorize decisions. Secondly, both groups collaborated together in order to define the project. Third, the project was broken down into planning and execution. Communication between the students and Chamber members was planned and tasks were assigned. Fourth, the MEP and Chamber determined the judging and evaluation criteria. Lastly, avenues were established to ensure that positive feedback was given to the students and that media and local community were exposed to the project. The following outline provides a more detailed version of this model.

- A. Initial meeting between MEP and local chamber
 - 1. Overview of SBP and history of program
 - 2. Goals – want to bring program to next level
 - 3. Benefits of partnership – to all involved
- B. Define project
 - 1. Factors: attainable, doable, consider time frame, expertise in community and within Chamber, decide on key people
- C. Schedule project
 - 1. What needs to be decided before-hand (volunteers, project details, needs/wants of client, judges, press release)
 - 2. How students communicate with Chamber – meetings and situations for client (Chamber) to communicate with participants, i.e. initial meeting and client meetings (focus groups)
 - 3. Accessibility throughout the program's time frame.
- D. Judging project
 - 1. Choose judges and have Chamber members, executive board, top leaders involved with judging the end product. Other judges should be well-known community members, media, local leaders, representatives from the university
 - 2. Chamber contacts – strengthens their membership and visibility
 - 3. One-on-one contact from the judges at the final presentations
- E. Feedback
 - 1. Media attention
 - 2. Article written by Chamber which lets the SBP student teams know what the client thought of their work

3. Feedback shared between MEP and the Chamber

VI. Summary

ASU's Minority Engineering Program saw a need to increase the emphasis on placement within the programming structure of the Summer Bridge Program. The Tempe Chamber of Commerce needed to increase their exposure to the community. The students needed to successfully complete an engineering project. These three sets of needs were all met by this MEP/TCC partnership.

The TCC has created a link to all of the proposed websites created by the SBP students. The MEP page has a link to the TCC website. This has enabled the students to receive continuous praise and positive feedback on their work. Furthermore, the Chamber and MEP are constantly reminded of the partnership. Both groups are now advocates for one another in a system where each needs the other for resources, financial support, stability, workforce, and management. This is a model for interdependence and an opportunity for all groups involved to win.

References

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Biographies

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Jennifer K. Adair is the Program Coordinator of ASU's Minority Engineering Program (MEP). She coordinates both the MEP Summer Bridge Program and MEP's Academic Excellence Workshops Program. She has a bachelor's degree in Cultural Anthropology from Brigham Young University and completed an undergraduate thesis with the Himba tribe of Namibia. Prior to her work with Arizona State University, Jennifer worked for a mental health agency in Utah, providing social and family skill training to children diagnosed with mental illness.

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Maria A. Reyes is the Director of the Office of Minority Engineering Programs. She is a graduate of the Minority Engineering Program (MEP) at ASU, where she obtained a BS in Civil Engineering and a Master's degree in Geo-Environmental Engineering. She spent two years as a project engineer at a local consulting firm. Maria developed the Minority Engineering Program. She also developed and teaches a seminar course for entering minority engineering students. Maria was recently honored with a Student Appreciation Award for staff, one of only six university staff members to be so honored.

MARY R. ANDERSON-ROWLAND

Mary R. Anderson-Rowland is the Associate Dean of Student Affairs in the CEAS at ASU. She earned her Ph.D. from the University of Iowa. She has received several awards for her support of diversity including the YWCA Tribute to Women 2001 (Scientist/Researcher), the ASU-CEAS Alumni Chapter Honorary SOAR Award for support of Student Organizations in 1999, and the University Achievement in Gender Equity Progress Award, Faculty Women's Association, in 1995. She is the director of a successful Graduate Career Change Program in Industrial Engineering. She is a frequent speaker on the myths of mathematics and engineering and of the career opportunities in engineering, especially for women and minority students.

BARRY MCNEILL

Barry McNeill is an assistant Professor in Mechanical and Aerospace Engineering at Arizona State University. He earned all his degrees from Stanford University (BS Chem E and MS & PhD ME). He helped develop and deliver a new first year and a new third year engineering design core course. He has given numerous workshops on course/curriculum development and learning and has co-authored several papers on assessment.