Mentor-Link: An e-mentoring program ‘linking’ engineering students with women engineers

Lisa S. Anderson and Kimberley A. Gilbride
Women in Engineering Committee, Faculty of Engineering and Applied Science
Ryerson University, Toronto, Ontario, Canada, M5B 2K3

Abstract

Mentor-Link is an e-mail based mentoring program designed to match Ryerson’s female undergraduate students with inspirational women engineers. The program is structured to facilitate convenient communication within the busy schedules of both student and mentor. Through regular e-mails, students can have their questions answered and discuss topics related to engineering or work-life balance. Though the program is structured around dialogue only, mentors have the option of arranging a work-site visit for their student, often referred to as a ‘job shadow day’. When launched in 1999/2000, the program ran for four months but has since been expanded to fill the academic year. The program is facilitated by the WIE Co-ordinator, and after the program finishes in April the mentor and student may choose to maintain their mentorship independently and at the discretion of the mentor. The program is evaluated each spring, with questionnaires for both students and mentors, in order to obtain their feedback and recommendations for improving the program. This paper discusses the development, implementation and evaluation of an e-mentoring program for women engineering students.

Introduction

Ryerson University’s Women in Engineering (WIE) program is an award-winning program dedicated to providing education for students considering engineering as a career, and promoting a friendly and supportive environment in which women can pursue their engineering studies [1].

In 1999, Ryerson University’s WIE Committee launched Mentor-Link for women engineering students to enhance their career planning process and transition to the working world. Each fall, undergraduate engineering students are invited to apply to Mentor-Link and those selected are matched with a woman engineer working in their field of interest. Mentors are invited to participate based on their previous participation in WIE projects at Ryerson, and many are Ryerson University alumnae. Mentors and students receive an information package with guidelines on the mentoring process and both students and mentors receive e-mails from the WIE Co-ordinator, to offer discussion ideas and gauge any progress. In addition, mentors are encouraged to share their experiences with one another over e-mail and students are encouraged to the same.

The Mentor-Link program is very popular with both the Ryerson engineering students and the mentors participating. It has also proven to be “low-maintenance” given the convenience and flexibility that e-mail offers, delivering several benefits to both students and mentors. Students are encouraged and inspired by successful women engineers, and mentors are often overwhelmed at how important the mentorship makes them feel, as well as how they can make a meaningful difference in a young woman’s life by sharing their career-related experiences and building confidence within the student. To date, all of the students participating in the Mentor-Link program evaluation have indicated that they would recommend the program to a friend and all of our mentors have indicated that they would recommend the program to a colleague.
Program Background

Many engineering schools have realized the value of mentoring programs for their female students, to provide a network of support and resources for students [2]. And although there are nation-wide and international programs available [3], there is added value in programs that provide engineering students opportunities to network with engineers from local industry [2]. Prior to launching Mentor-Link in 1999, a number of e-mentoring programs were studied including MentorNet [4-6].

Mentor-Link is a motivational program designed to match Ryerson’s female undergraduate students with inspirational women engineers in local industry. The program is structured to facilitate convenient communication within the busy schedules of both the student and mentor. Through regular emails, students can have their questions answered and discuss topics related to engineering.

The main goal of the program is to enhance the career planning process of our students and Mentor-Link allows the students to network with female engineers in industry, gain insight into the career world, become more informed on engineering topics, gain career guidance from their mentor (i.e. resume and interview skills), and the positive relationship can provide motivation and encouragement for the future.

For the mentors, our program offers the opportunity to teach and guide young women, satisfaction from inspiring future engineers, and allows mentors to develop their network and communication skills. The WIE Co-ordinator selects mentors who demonstrate positive role model characteristics for the female students.

Mentor-Link runs from October to April each year and involves two social events – a “Meet and Greet” night early on in the program and an end-of-program “Soiree” in April. The relationship may continue on beyond the duration of the program, at the mentor’s discretion. Within the first few emails, both the mentor and student should express what they would like to achieve from the email relationship. It is helpful for the participants to include their schedules and indicate how often emails should be exchanged. Although the frequency of emails is at the discretion of each pair, we have found that generally two emails per month are sent by each participant. In order for the experience to be successful, students are expected to respond in a timely fashion to their mentor’s email, respect their mentor’s schedule (as they are volunteering their time to assist), communicate clearly with their mentor, ask questions and accept feedback graciously, and complete the evaluations at the end of the term in order to assist with improving the program. Likewise, mentors are expected to provide an open and comfortable environment to allow the student to express questions and concerns freely, respond in a timely fashion to the student’s email, respect their student’s school schedule, and complete the evaluations at the end of the term in order to assist with improving the program.

Program Outline

Phase 1 – Identify Mentor-Student Pairs (October)
Applications are accepted from Ryerson students early in October. The program is promoted at the Women in Engineering (WIE) Welcome event in September, in the Ryerson Engineering Student Society (RESS) handbook, on the WIE website, and an invitation is mailed out to all of Ryerson’s female undergraduate engineering students. Depending on the number of students applying each year, the existing pool of engineers is reviewed and new/additional volunteers are recruited as necessary. Potential mentors are contacted through local WISE programs and provincial engineering associations. Students are matched one-on-one with a mentor by the WIE Co-ordinator. Every effort is made to match the student and mentor by discipline (mechanical student with mechanical engineer) or industry sector.
(aerospace student with engineer working in aerospace industry). Some students have even requested an engineer from a particular company (i.e. IBM) and this has been accommodated where possible. In mid-October mentors and students are notified of their selection status.

Phase 2 – Orientation (October)
During October, orientation of mentors and students takes place. This includes notifying mentors and students of their match, providing an information package to all participants, and providing mentors with contact information so that they are able to write their first email to their student. Once on-line communication is established between mentor and student the WIE Co-ordinator steps back and provides support only (i.e. assistance if a mentor/student is not responding). A “Meet and Greet” event is held early into the program to introduce mentors to students in a social setting. This event was not included when the program was first piloted, but was initiated due to comments from both students and mentors that they would like to “put a face to the name” early on in the program.

Phase 3 – Mentoring (October – March)
From October to March, mentors and students correspond by email and the program continues to be facilitated by WIE Co-ordinator. Program evaluations are emailed to all participants two weeks before the final Soiree.

Phase 4 – Evaluation (April)
An end-of-program Soiree is held in April each year, to gather feedback about the program and reunite mentors with their students. The Soiree benefits the participants in many ways, as mentor and student pairs get a chance to spend time together in a social setting, and all the participants have an opportunity to network with their peers. The Soiree benefits the WIE Committee as well, as a round-table discussion takes place where participants discuss “what worked and what didn’t” and suggest improvements for the program. In addition, completed evaluations for the program are collected for analysis by the WIE Co-ordinator.

While the program structure allows students to ask any question they wish, a number of topics are suggested to give students and mentors initial discussion ideas:

- resume writing, interview preparation and job hunting
- co-op, internship, and summer job placements
- university life (e.g. balancing work and life, school teams)
- differences/transition between academia and industry
- balancing a career with a family
- managing time, stress and workplace demands
- future career plans
- experiences in university/industry
- challenges faced in school/career/life (e.g. how were they overcome?, what was learned?)
- how to establish your name and gain contacts in the industry

Program Results
Mentor-Link was piloted in 1999, with five mentor-student pairs, and has since grown to accommodate more than ten mentor-student pairs each year. Although the number of participants remains low, annual evaluations demonstrate the value of the program. All participants are sent questionnaires and asked to
respond confidentially. Typically 5-7 students have responded each year, and 100% of the students who responded indicated that they would recommend Mentor-Link to a friend.

Students responding reported high satisfaction with the quality of their match, with an overall score of 4.4 (out of a possible 5), and a high comfort level in both asking questions (4.7 out of 5) and responding to their mentors (4.7 out of 5). The students also indicated high satisfaction with their current engineering program (4.7 out of 5) and also an interest in working in industry (4.4 out of 5). Table 1 indicates the individual scores for each year of the program.

Table 1 (Evaluation of Mentor-Link program 2000-2003)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of “match”</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
<td>4.5</td>
</tr>
<tr>
<td>Comfort asking their Mentor questions</td>
<td>4.6</td>
<td>4.9</td>
<td>4.4</td>
<td>4.8</td>
</tr>
<tr>
<td>Comfort in responding to Mentor’s questions</td>
<td>4.8</td>
<td>4.8</td>
<td>4.2</td>
<td>4.8</td>
</tr>
<tr>
<td>Interest in continuing in their current program</td>
<td>4.8</td>
<td>4.7</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Interest in working in industry</td>
<td>4.8</td>
<td>4.3</td>
<td>4.8</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Table 2 outlines the “Top 10” topics discussed by the program participants, and notes the percentage of Mentor-Link students who indicated that the topic was discussed.

Table 2 (Topics of discussion by Mentor-Link program participants 2000-2003)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
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</thead>
<tbody>
<tr>
<td>Personal backgrounds (education, interests, etc.)</td>
<td>80%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Student’s future career plans</td>
<td>100%</td>
<td>100%</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Mentor’s job, prior work experiences</td>
<td>100%</td>
<td>100%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>Job hunting, interviewing</td>
<td>80%</td>
<td>100%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>Industry workplace, culture, values</td>
<td>60%</td>
<td>86%</td>
<td>40%</td>
<td>67%</td>
</tr>
<tr>
<td>Coursework, majors, or advanced degrees</td>
<td>60%</td>
<td>71%</td>
<td>40%</td>
<td>83%</td>
</tr>
<tr>
<td>Managing time, stress, or workplace demands</td>
<td>80%</td>
<td>71%</td>
<td>40%</td>
<td>33%</td>
</tr>
<tr>
<td>Balancing a career and other interests, family, etc.</td>
<td>60%</td>
<td>71%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Differences between academia and industry</td>
<td>60%</td>
<td>71%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>“Social stuff”: jokes, stories, personal news</td>
<td>40%</td>
<td>71%</td>
<td>40%</td>
<td>67%</td>
</tr>
</tbody>
</table>

The following are some of the quotes from Mentor-Link students:

“I think the program is fantastic. It has allowed me to meet a female engineer in the industry and it has allowed me to gain knowledge about my future in university and in the workforce.”

“(Mentor-Link) gives students a one-on-one partnership with someone in the field. You can ask your own questions without having to feel intimidated.”

“Overall, it is a positive experience because you have someone to ask questions from and they know how things work. I would definitely want to have a Mentor next year too!”

“I would recommend this program to everyone because there is always something valuable to be gained. The Mentor can give you an in depth perspective about the working world and personal experiences in engineering.”

“Mentor-Link is a great way to have questions answered in a way they couldn’t be answered before. It sheds a lot of light on your possible future career.”
“It’s a chance to actually speak to a woman who has gone through what every female engineering student, currently enrolled in school, is going through. It’s good to know that there is life after graduation.”

As mentioned previously, the Mentor-Link program has also proven very successful with the mentors participating. Mentors responding reported high satisfaction with the quality of their match (4.2 out of a possible 5), a high comfort level in both asking questions (4.8 out of 5) and responding to their students (4.8 out of 5), and 100% of the mentors who responded indicated that they would recommend Mentor-Link to a colleague.

The following are just some of the quotes from Mentor-Link mentors:

“The sheer pleasure of meeting enthusiastic young women who will provide invaluable support and improve the engineering profession while adding quality to the society at large. It is my way of “thanking” the engineering profession for a wonderful career I have enjoyed.”

“I would consider participating as a mentor again. I think it is an excellent opportunity for female engineering students to gain some insight on possible careers after graduation. I wish that such a program existed when I was a student.”

“The Mentor has the chance to exchange information and pass on some of the best and worst experiences in choosing a career where it is still male dominated, and continuing their careers as a working parent. In some cases, it may be the reason some Mentors analyze and possibly re-evaluate their career path.”

“I have received many grateful letters from my student, thanking me for spending time with her, exposing her to the women in industry and the industry culture. That exposure, and increased confidence by having that exposure and knowing what to expect from industry, is exactly what we need to foster with women industry-student mentor programs.”

“Mentoring is important, especially for students. It helps a student to realize the rewards to be realized after graduating and that the struggles are worth it. As a Mentor it is very rewarding to know I am helping a person, and that I am making a difference in their life.”

“I think it is a good program that allows you to help a student without requiring a large time commitment. It is up to you how involved you can be and I think this is important as many of my colleagues are quite busy.”

Recommendations

Ryerson’s WIE Committee has learned a number of lessons during the four years that this program has been running. Although e-mentoring is convenient for all participants (i.e. mentors and students are allowed flexibility in the number and frequency of the emails they send), the biggest problem we have encountered has been students/mentors not responding for extended periods of time. More often than not it is simply due to busy schedules, but some cases have required intervention by the WIE Co-ordinator. To date, only one student has been removed from the program for not responding to repeated requests by both her mentor and the program facilitator. For Mentor-Link 2002-2003 a new application process was instituted to try to reduce this problem by having all participants sign an agreement indicating their interest and “commitment to the mentor relationship”, and this has improved the situation.
Conclusions

Since its launch in 1999, the feedback from Mentor-Link participants has been extremely positive. Mentor-Link has shown that even a small-scale mentoring program, with minimal structure, can provide a marvelous experience for students, enhancing their university experience and supporting their career planning process, while mentors are able to make a meaningful difference in a young woman’s life and “give back” to the profession.

Email provides a convenient and flexible way to communicate, allowing students and mentors to correspond according to their schedules and with minimal interference from the program facilitator. And while an e-mentoring relationship affords convenience, when coupled with “face-to-face” meetings such as those included in our Mentor-Link program, it can provide a highly rewarding experience for all parties involved.

References


Authors

LISA ANDERSON is the Women in Engineering Co-ordinator at Ryerson University, Toronto, Canada. She provides counselling and referrals, and co-ordinates mentorship and professional development opportunities for Ryerson’s women engineering students. She also oversees the Discover Engineering program, which includes high school outreach, a career conference and a summer engineering camp for young women in high school.

KIMBERLEY GILBRIDE is a Professor in the Department of Chemistry and Biology at Ryerson University, Toronto, Canada. Dr. Gilbride joined Ryerson in 1989 and has been involved with the WIE Committee since its inception, chairing the Committee 1998-2000 and 2002-2004. Her activities in this area include designing evaluation material and analysing data, and helping to establish the DE High School Workshop program.