



”Leveraging Co-op Experiences to Enhance Engineering Students’ Leadership Skills”

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Colonel McGonagle held numerous leadership positions in his 23-year Army career, including Chief of Training Operations, US Pacific Command. A graduate of Norwich University and Florida Tech and a US Army Ranger, he served as Professor of Military Science at Providence College and Director of Operations at King Industries.

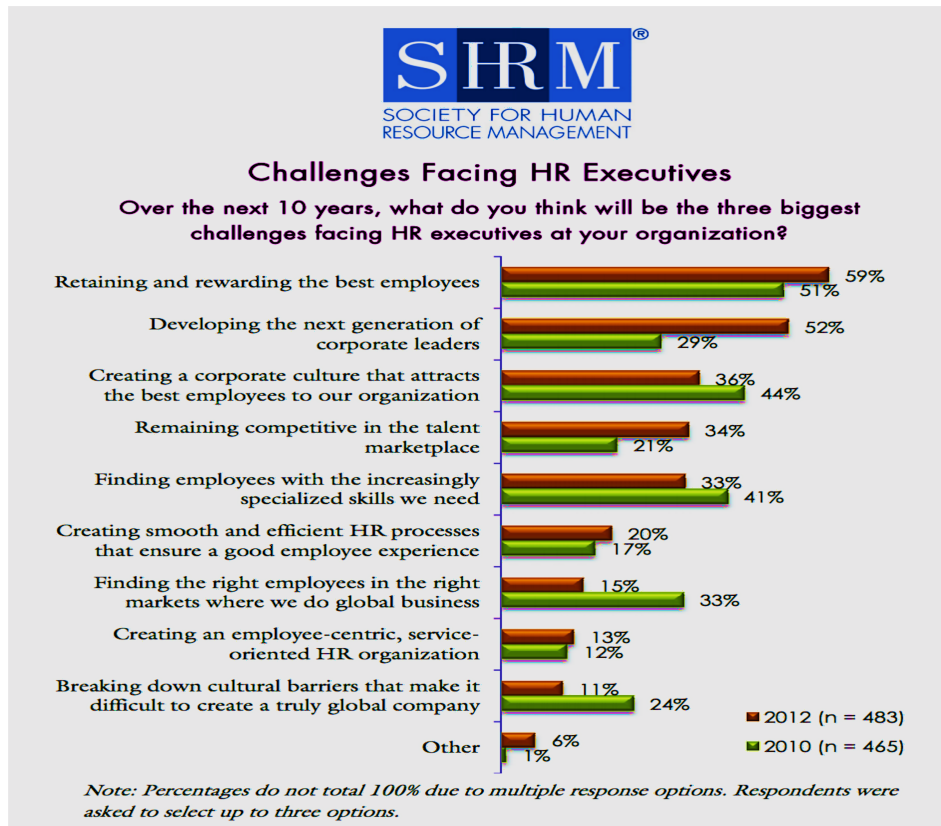
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Introduction:

The ability to lead others (leadership ability) is a very desirable quality sought by engineering organizations. Knowing this we must ensure that our engineers are offered opportunities to not only practice, but also observe effective leadership in action. Engineering students are trained to design and innovate but very little of their education is spent on developing their leadership skills. "Engineering schools have concentrated on knowledge and skills but have not traditionally stressed attitudes and leadership," says Bernard Gordon who founded the Gordon Leadership program at Northeastern University. From the earliest stages of engineers' careers, they are expected to lead projects and teams, and to bring new ideas to fruition. Students can become technical masters but the most successful engineers are ones who have the right combination of technical skill and the ability to influence and lead others.

The National Society of Professional Engineers (NSPE) is considering what knowledge, skills, and attributes are important in the education and training of professional engineers, focusing on components currently not part of the education and training of most engineers. One of these areas of critical importance is leadership. The NSPE has defined it as follows: *"In an engineering context, leadership incorporates a number of capabilities which are critical in order to function at a professional level. These capabilities include the ability to assess risk and take initiative, the willingness to make decisions in the face of uncertainty, a sense of urgency and the will to deliver on time in the face of constraints or obstacles, resourcefulness and flexibility, trust and loyalty in a team setting, and the ability to relate to others. Leadership skills are also important to allow engineers later in their careers to help develop and communicate vision for the future and to help shape public policy. These leadership capabilities are essential for the professional practice of engineering and for the protection of public health, safety and welfare."* (Source 3) In the face of uncertainty, engineers must possess the ability to assess risks, take initiative, and make hard decisions. They also must have a sense of urgency and the desire to deliver on time. It is important for them to have the ability to relate to others and demonstrate trust and loyalty working in teams. Yet still to date, we don't teach these leadership skills to engineers in the majority of engineering undergraduate programs. Considering engineers are responsible for protecting the public's health, safety and welfare; educating engineers on how to be confident and competent leaders should be a vital element of the undergraduate curriculum. (Source 1)

In the Society for Human Resource Management's 2012 survey, "Challenges Facing HR Executives", 52% of human resource executives stated the greatest challenges facing them would be further developing the next generation of corporate leaders. This response was up from only 29% in 2010 and demonstrates why universities should be focusing on developing leadership skills in order to produce students who can fully compete in a challenging market. (Source 4)



(Source 4)

Many organizations now notice the lack of engineering talent capable of stepping into leadership roles in today's fast paced, technology-driven environment. To remedy this situation, larger businesses are taking it upon themselves to develop their own leadership development programs for new college hires. Examples of such programs are found in GE's Edison Development Engineering, Operations Management Leadership Programs and J&J's Global Operations Leadership Development or "Gold" program. In fact, many employers in need of hiring better-trained leaders are now modeling their leadership programs after these programs. Looking closely at leadership develop programs, often the participants are simply rotated through different sectors of the business to observe various roles, with no formal leadership education or training. As Michael Feiner states in his book the "Feiner Points of Leadership", businesses schools and universities have done a very thorough job of teaching management skills that are easily identifiable, easily quantifiable, and easily communicated. Leadership on the other hand is difficult to get right. Feiner points out that it is hard to quantify or agree on tenets of great leadership and if this skill set is not agreed upon it is not surprising that leadership skills are often lacking. Knowing this, it is wise for undergraduate engineering programs to develop leadership curriculum and courses to meet the needs of businesses who are thirsting to hire engineers with this valuable skill. (Source 9)

We can all agree that classroom learning is practical and effective but performance or practice oriented education, where students are able to learn from working in the real world can be much more valuable. Northeastern's renowned Cooperative Education program, where students are able to work in a professional setting related to their field of study and attain increased responsibility, is

naturally viewed as an untapped resource. Their co-op program bridges the gap between classroom and real world learning. Northeastern's Gordon Engineering Leadership program consequently reasoned, why not use students' co-op experiences to expand and enhance students' leadership abilities? Understanding this, the Gordon Undergraduate Engineering Leadership program has partnered with the College of Engineering undergraduate co-op program to provide leadership training and to supply students with the tools they need to challenge themselves and their respective leaders while practicing sound leadership in the workplace.

Background - Cooperative Education

The College of Engineering, Cooperative Education program at Northeastern University guides students majoring in engineering to secure relevant, paid co-op positions in their field of study. Now more than 100 years old, this unique co-op program, where students work for three, six-month semesters, prepares them for the global challenges of the next century. Students can work with any of more than 2,000 employers across the United States and in 69 countries around the world. These connections make the Northeastern experience a path to intellectual and personal growth. It adds complexity to classroom studies, provides exposure to career paths and opportunities, inspires students to sharpen their focus and pursue greater career opportunities.

Preparation begins in sophomore year where students complete an Introduction to Co-op course to get them ready for their first work experience. Here students learn about expectations in the workplace through employer panels, mock interviewing and peer mentoring. Many students have no professional work experience and it is our job to educate them to project confidence, summarize their skills and interests and begin demonstrating their leadership experiences. Upon the completion of co-op, students reflect on their work experiences and share their views in both individual meetings with faculty co-op coordinators and with other students. Discussions revolve around not only their acquisition of technical skills but also how they manage their time and work independently. Most students cycle through three work experiences and are able to observe how companies operate and are led. Seeing leadership in action is a powerful way for students to learn how it can shape the success of a business. As students progress through their co-op experiences they gain more confidence, are given more independence in completing tasks and begin to manage their own projects. With this comes their ability to demonstrate their leadership skills. With no formal leadership training, students often stumble through this via trial and error. The Gordon Undergraduate Leadership program looks to bridge this gap and offer students the ability to practice and understand leadership in the workplace.



Gordon Engineering Leadership (GEL) Program:

“Our purpose is to develop leaders who will make a significant contribution to society.” Bernard M. Gordon, Founder, Gordon Leadership Program

The Gordon Engineering Leadership program (GEL) was founded on the belief that a fundamental disconnect exists between industry needs and the output of contemporary engineering education. A "real" engineer, according to Gordon, is not the "geek" or "nerd" who has sacrificed intellectual breadth and social ease for narrow expertise and introversion. Rather, it is a person who, because of his or her broad education and habit of thought can conceive and invent; one who does not wait to be told to initiate, but imagines, conceives, proposes, and acts on a cause and a vision. The real engineer is not afraid to assess and take acceptable risks because doing so may lead to the creation of products beneficial to society.

Started with a grant bestowed by Dr. Bernard Gordon, the Gordon Engineering Leadership program actively works with over 20 industry partners in honing the key knowledge, skills and attitudes essential in building a new generation of engineering leaders. The program consists of class work in scientific foundations and in engineering leadership. In addition, the curriculum helps students establish a solid background of technical tools used for engineering solutions and provides project management tools for leading teams and effectively attaining goals. Also required is a Challenge Project which is a master's thesis-equivalent that is a tightly scheduled, deliverable-oriented demonstration of human and material resource management and engineering problem solving.

The mission of the GEL Program at Northeastern University is to create an elite cadre of engineering leaders with an exceptional ability to lead engineering teams by providing purpose, direction and motivation to influence others to achieve a collective goal, realizing the successful completion of engineering projects from concept to market success. Their purpose is to develop core capabilities at the intersection of engineering and leadership. Most importantly, to create engineering leaders who have awareness, confidence, vision and technical skills to achieve the stakeholder goals.

Gordon Undergraduate Engineering Leadership (GUEL) Program

The primary objective of GUEL is to enhance the value of Northeastern's Cooperative Education (Co-op) program by offering a supplementary leadership component that makes

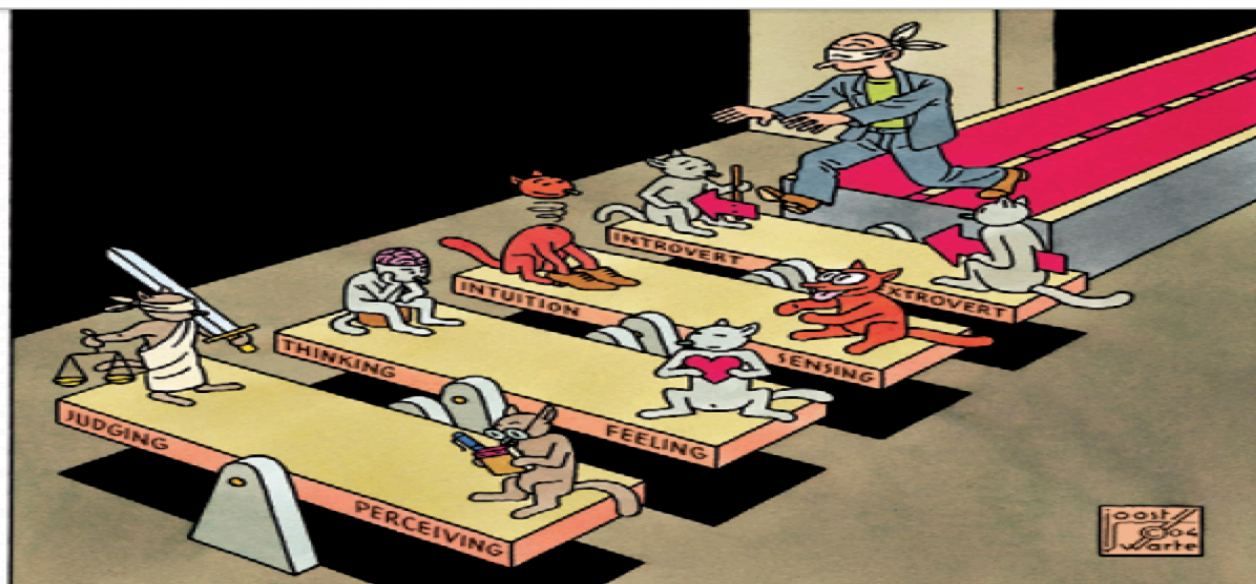
engineering leadership development a focus of the co-op experience. As a secondary objective, GUEL naturally establishes a pipeline of engineering leaders who become top candidates to enter the graduate-level Gordon Program after they complete their undergraduate studies at Northeastern and spend time working in industry.

To ensure the greatest potential for leadership growth, students have been invited to participate in the Gordon Engineering Undergraduate Leadership program (GUEL) during their second or third co-op experience. The program strategically elects to only invite students who have completed at least one co-op, believing they need to have professional work experience to draw upon. Many who have participated have had one year or two co-op work experiences giving them a much richer perspective. This outreach to undergraduates has been a welcome opportunity to enhance students' interest in the topic and learn more about how they can become effective leaders. The program includes a series of engineering leadership development activities focused on developing leadership skills, helping students engage in more meaningful interactions with their supervisors, and taking active roles in shaping their overall co-op experiences. Upon completion of this program, students earn a Gordon Undergraduate Leadership Certificate which they proudly add to their resume and sparks valuable dialogue with future employers.

Getting Students Ready - Leadership Boot Camp:

The Gordon Undergraduate Leadership Boot Camp is offered to all engineering majors within the first few weeks of students' six-month co-op experience. So far we have conducted 6 Boot Camps with 105 participants. The Boot Camp is advertised as an opportunity for students to learn more about leadership, their personal styles and how these might enhance the co-op experience. The curriculum examines the traits of effective leaders, discovering leadership styles and prepares students to put their leadership talents into action while they are on co-op.

Students begin by taking the short version of the Myers Briggs Type Indicator (M.B.T.I) a psychological-assessment system based on Carl Jung's notion that people make sense of the world through a series of psychological frames. Some people are extroverts and some are introverts. Certain people process information through logical thought and some are directed by their feelings. Others make sense of the world through intuitive leaps while some collect data through their senses. This psychometric questionnaire is designed to measure psychological preferences in how people perceive the world and make decisions. (Source 5) Leadership styles include: participatory, ideological, change, visionary, action, goal and executive orientations. Knowing their individual personality type, students are guided through a session where they discover how their style impacts how they lead.



Eighty-nine of the Fortune 100 companies use the Myers-Briggs Type Indicator.

(Source 5)

During the second Leadership Boot Camp session students discuss and arrive at a definition of leadership and also discover that leaders lead people and managers manage “stuff” including budgets, inventory and timelines, etc. Having them shape this definition as a cohort pushes them to reflect upon effective and ineffective leaders they have encountered in their past work experiences and ways to shape their personal leadership style. Students also discover core leadership values including trust, respect and loyalty and their influence in becoming a valuable leader. This conversation is then utilized to influence much of the conversation in the rest of the boot camp session.

It is important for students to contemplate and identify with well known historic leadership views as a foundation to help them develop their own. Students are requested to bring historic leadership quotes to class as well as to create their own quotes on large pieces of paper and hang them around the classroom for all the students to read. Students are asked to explain why they chose a given quote and what it means to them. We also ask the students to stand by the quote that resonated the most strongly and why. Here are a few examples of past quotes that proved to be impactful:

A leader is best when people barely know he exists, when his work is done, his aim fulfilled, they will say: we did it ourselves. —Lao Tzu

I must follow the people. Am I not their leader? —Benjamin Disraeli

Lead me, follow me, or get out of my way. — General George Patton

Before you are a leader, success is all about growing yourself. When you become a leader, success is all about growing others. —Jack Welch

A leader is one who knows the way, goes the way, and shows the way. —John Maxwell

The nation will find it very hard to look up to the leaders who are keeping their ears to the ground. —Sir Winston Churchill

Helping students understand how to use appropriate power and influence is also a topic of the boot camp. Often power exudes a negative connotation but we teach participants that the key to reaching organizational goals is using authority responsibly to influence others behavior. Often when the students are in a co-op role they believe they have very little power or influence upon the business or co-workers and this exercise explores ways, even as a co-op, they can practice effective use to achieve their goals. To learn this, students participate in an exercise using role-play scenarios where they are asked to think about effective methods to use power and influence on others. We ask that they take into account the different bases of power including coercive, legitimate, expert, reward, referent, informational and connection. This exercise gives students the confidence they need to employ this new skill in their co-op experience.

The last element of the curriculum covered is situational leadership where students learn when leading others one must consider individual skill level and willingness to do the task. The essential foundation of situational leadership theory is that there is no single best style of leadership. This theory demonstrates that effective leadership is task and follower relevant, and successful leaders are those that adapt their leadership style to the maturity of the individual or group they are attempting to lead or influence. The Boot Camp teaches students that effective leadership fluctuates, not only with the person or group that is being influenced, but it also depends on the task or job that needs to be accomplished. This theory was chosen because often students at this level are sometimes one directional and see the world only from their perspective. They also often believe everyone approaches their work just like them, with the same skill and attitude. The pedagogy again is role-playing using different leadership styles taking into consideration both motivation and maturity levels of individuals students might lead. This exercise pushes them into circumstances they might never have experienced on co-op but will use when their careers grow and they take on more leadership roles.

Learning to be Leaders on Co-op:

The intent then was to give students the opportunity to practice what they have learned in the Boot Camp and apply this learning to their co-op experience. Consequently, five Co-op Engineering Leadership Modules have been developed to enhance and expand their leadership skills. When students are thrust into new work environments, (with our program it can be three times during their undergraduate program) often they are looking for ways to take on more responsibility and challenges, but walk a delicate balance knowing they are new to the company and have to “earn their stripes” before they can take on these challenges. The modules provide students the opening they need to tell their employer, “I am ready to start learning to lead.” Since students must complete these modules with the help of their managers, this is also an opportunity to educate employers about the Gordon Engineering Leadership program and the topic of leadership. Very importantly, integrating the modules into the students’ co-op experience enables them to engage in conversations with supervisors/bosses they might not have had otherwise. For most students, the modules spark discussions concerning their career goals and leadership opportunities within the organization. As for employers, they are able to “test drive” the student and see their leadership potential and maybe make an offer for full time employment.

Within the first month of co-op we send participants the first two modules via email and request they email their responses back within a certain deadline. Once these are completed we send modules three and four. Module five, students summarize what they have learned from the modules and make a final presentation the Gordon Leadership team. Upon completion of these requirements they earn a Gordon Undergraduate Engineering Leadership certificate.

GUEL - Co-op Engineering Leadership Modules

Module #1 Leadership in your Organization – *Locate an organizational chart of your company and or division. Ask your supervisor or a manager to review the chart with you. Elaborate on the following:*

- *Find out where your supervisor fits into the organizational chart.*
- *Who does he/she report to?*
- *How does the organizational chart influence your supervisor's work and or goals and objectives?*
- *Discuss with your supervisor leaders he/she believes you should meet and develop a plan to introduce yourself to these individuals. Tell us how you achieved this.*
- *Indicate how your group collaborates with different groups/organizations and how this affects business.*
- *Does the organizational chart you reviewed reflect the same in your everyday business?*

Module #2 Leadership Characteristics – *Review the leadership qualities and the provided definitions below (you can also add your own to this list).*

Initiative: *Assess risk and take the initiative to create a vision and course of action.*

Decision-Making: *Make decisions with information at hand, factoring in risk and uncertainty; take alternative action when necessary.*

Responsibility and Urgency to Deliver: *Demonstrate determination to accomplish mission in the face of constraints or obstacles. Commit to absolute responsibility to deliver on time; pursue necessary follow-up.*

Resourcefulness – Get it Done: *Focus on the tasks at hand with passion, discipline, intensity, and flexibility.*

Ethical Actions and Integrity: *Adhere to ethical standards and principles. Have the courage to act ethically and with integrity.*

Trust and Loyalty: *Commit to actions that instill trust, and to the principle that loyalty to the team yields loyalty to the leader and vision. Work to empower the people around you and to make them successful.*

Courage: *Face difficult/high-risk actions head-on.*

Vision: Create compelling images of the future, identifying what could and should be for new products, systems and enterprises.

Realizing the Vision: Design processes and approaches to move from abstraction to invention, innovation and implementation. Lead an organization to plan and deliver a project, exercising solution judgment and critical reasoning.

Inquiry: Listen to others in order to genuinely understand their thoughts and feelings. Recognize their ideas may be better than yours.

Interpersonal Skills: Respect needs of individuals and the group. Recognize others' strengths; coach, give feedback, both embody and encourage gracious professionalism.

Communicating and Advocacy: Be able to clearly explain your point of view or approach to those with differing backgrounds and proactively assess the extent to which you are understood.

Connect – Across Disciplines, Skills and Cultures: Appreciate, engage, and connect with those who have different perspectives.

Negotiating and Compromise: Appreciate the need to identify potential disagreement or conflict; negotiate to find mutually acceptable solutions.

- Rate yourself on these qualities/characteristics (or ones you choose).
- Pick three areas that are qualities that you would like to improve.
- Discuss your choices with your supervisor and talk about ways you can improve upon these qualities.
- Develop a plan to improve each or some of these qualities. Your plan should have specific ways to measure your improvement. (be specific, e.g. I would like to improve my communication skills. When working to improve processes on the manufacturing floor, I will seek out the advice of the more experienced workers and develop a better rapport. I will measure this by soliciting feedback from individuals on the manufacturing floor).

Module #3 - Developing Project Management Skills – Is there work you can do that might enhance your understanding and skill in project management? If you are not directly exposed to project management, discuss with your supervisor how you can get more exposure and experience. If you already have accomplished this, outline projects you have managed and how your leadership skills influenced the outcome.

Module #4 - Select two of these challenges to undertake while on co-op. Select one that is outside your comfort zone and you believe would enhance your leadership skills. Tell us which one you have selected and how you plan to tackle this challenge.

Discovering challenges at work - Is there work you must complete where obstacles are in the way? Are there processes that are broken down and impede progress? Select one you would like to improve. Think about how you might improve it and discuss this with your supervisor. Devise a plan to make this happen and the initiative you need to take to achieve this challenge.

Remember, “If you do what you have always done, you will get what you have always got.” Einstein.

Building Relationships – Examine goals/objectives you must accomplish to do your job. List individuals you must communicate with in order to accomplish these goals. Select an individual or a group whom you would like to develop a better rapport (this relationship will help you better accomplish your goals). Develop a plan as to how you might develop an improved rapport with this person/group.

Mentoring/Coaching – Was there a person at work or in school who was a strong mentor or coach to you. What qualities/characteristics did he/she have? List the qualities/characteristics. At the end of co-op examine if you have demonstrated these skills and explain whom you have mentored/coached and why?

Developing initiative and resourcefulness - Is there work you are currently assigned to complete that requires you to be persistent or have a “get it done” attitude? Describe the activity and tell us how you engage other in your pursuit of the end goal.

Vision – Is there a time at work where you needed to imagine the future and create methods to improve new products or systems? Maybe you can become involved in this type of activity/ how did you decide on the project? How did you communicate this to others and advocate for your ideas? Did it take courage to do this?

Ethical Actions and Integrity – Has there been a time at work when you have had to adhere to ethical standards and principles? If so, explain this situation and how you managed to act ethically. What impact did this have on you and the organization?

Inquiry – Has there been a time at work when you have had to listen to others ideas and recognize they are better than yours? If so, explain the situation and how you were able to adapt and be a better listener and supportive. If you have not done this can you set a goal to do this when necessary?

Module #5 Describe and Evaluate your Accomplishments

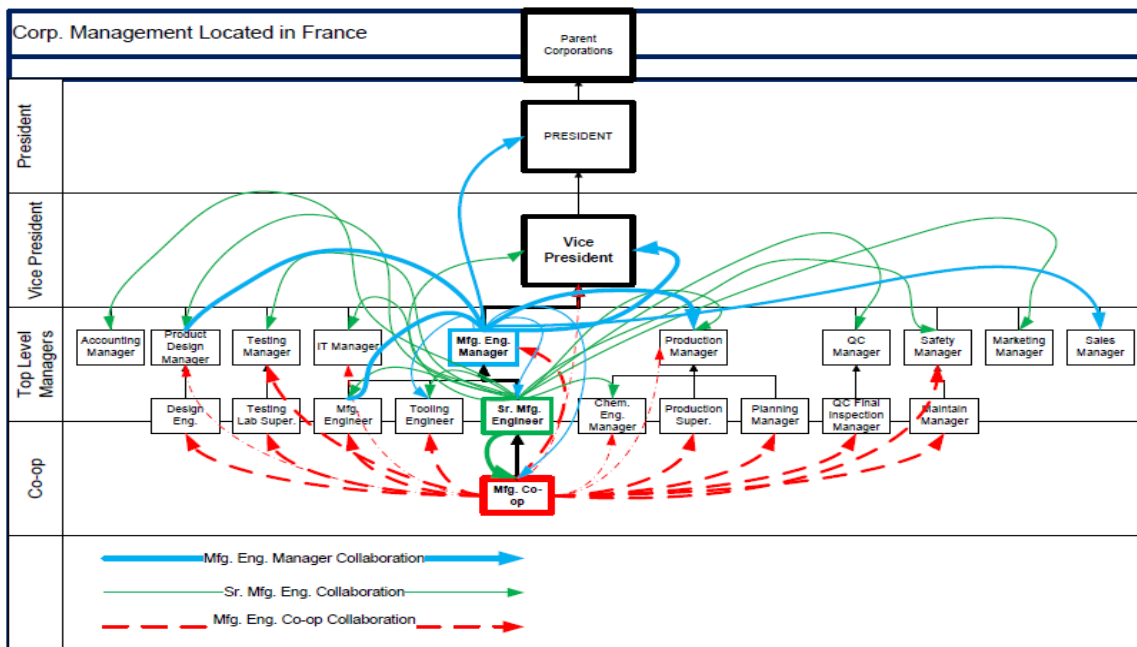
Make a Power Point presentation to the Gordon Leadership Team addressing the following:

- *Describe your co-op experience.*
- *Site two modules that you gained the most from completing and why?*
- *Explain the impact you believe these modules had upon your success on your co-op.*

Student Feedback:

Module 1 asks students to find an organizational chart and discuss the chain of command within the company. It is extremely important for students to know how their organization is structured when they start work and know how their role fits into this structure. This knowledge helps them see the “big picture.” This module helps students talk to their managers about individuals whom they might

meet to help them accomplish their goals. One student who worked at a small company with very little emphasis on an organizational chart, stated “It seems that in this small company, the company's objectives are far more important than an organizational chart, with everybody working to meet the challenges proposed by the Board of Directors. The board is composed of the company leaders (CTO, CFO, CEO) who meet directly with investors and sponsors to discuss the company. In a sense, the organizational chart of the company is simple: the investors, sponsors and potential customers are on the top, and everyone else is right below them. This activity made me realize just how focused a company can be, and also how tightly knit they are.” Another student took this task very seriously and developed an organizational chart of his own. Here is his interpretation.



Without this module, would the student have seen this important aspect of the company that shapes the organization and its goals? This surely demonstrates the value of this module.

Module 2 invites students to examine specific leadership capabilities, rate themselves and chose three they would like to improve upon. Once again this effort involves the student's supervisor. One student wrote, “I am currently working on my ability to meet deadlines and deliver on time. To improve these leadership qualities, my supervisor has given me the assignment of keeping track of all of NSTAR's poor performing circuits and reporting all outages to the director and manager of our department by 7:15AM every morning. Outages per night can range anywhere from 300 to 30,000 customers.” This demonstrates how the module gave the student the impetus to inquire and the manager was able to provide a project the student might not have otherwise had without the modules. Another student commented, “After completing the rankings and looking back at which attributes had been ranked low, there were three that stuck out. Those three were inquiry, communicating, advocacy and initiative. After discussing these traits with my supervisor we came up with a few things to help improve these low rankings. Sometimes I get complacent and don't take any initiative to go above and beyond. Initiative is important, especially at a smaller company where it is not overly bureaucratic and you get passed small direct tasks. My manager said I would

be getting tasks where the solution is not necessarily visible from the start and I would have to take initiative to find new ways to solve it. By being able to complete these tasks I will be able to see improvement.” As you can see this module serves as a “win, win” for the student and employer, with the student gaining confidence and the employer being able to expand a student’s capabilities.

After the completion of the first two modules students are invited to the university for a round table discussion to describe how they are using the modules in their current co-op position and the impact the module work has made upon their experiences. The discussions are open format and student driven. Students share how they have used the modules to stimulate conversations about leadership with their managers. The round table discussions help students stay in engaged and encouraged to complete the modules. It is also very valuable for participants to hear how other students are using the modules to enhance their respective experiences. One student who participated stated, “My Group Leader is aware of my passion for leadership after my meetings with her and she has helped me get the opportunities to work in coverage for her and the other IEs when they need to take leave from work; for example, today she is teaching an Intel course so I will be leading our weekly reflection meeting.” Another student commented, “For the first time on co-op I thought about something other than my day-to-day tasks, I attribute this to the Co-op Leadership Modules. When I left the company after completing the modules, I not only had a clear understanding of how the company ran (from an engineering perspective) but I had also consciously worked on improving my skills as a leader and as an engineer.”

Once the students are settled into their co-op, they begin working on Module 3 asking them to lead a project on their own. When a student requests to step up and take the lead, it presents new and independent challenges. One student offered, “This project is developing my leadership skills by requiring me to be independent, take initiative for other people and lead in an area where I have no prior knowledge. Leading a project and getting multiple parties to coordinate is not always easy. This task is especially not easy when you are unfamiliar with the technology at hand. To overcome this challenge required me to feel comfortable just stepping out of my comfort zone. I did research on my own to familiarize myself with the technology. I think this was a good lesson for me. In the past, I have waited for some explanation from other team members. Teaching myself to be proactive about finding knowledge and teaching myself, in order to be a better team member and leader, is a healthy part of my leadership skill set.”

About halfway into the co-op experience, Module 4 provides students a list of challenges including building relationships, creating a vision, mentoring or coaching, etc. to undertake to further develop their leadership skills. This module comes when students have established goals and objectives and are prepared to take on increased challenges. At this time, managers have assessed students’ knowledge, skills and abilities and have a good understanding of their strengths and weaknesses. One participant reflected, “I think that the biggest thing that I am working on currently is developing grit and determination. Both of the projects that I am currently working on require lots of trial and error, and are sometimes tedious to focus on. I am analyzing an electronic component for an MRI machine in FloEFD, a fluid dynamics program which we just recently started using. No one here really understands how to use it, so I am on my own to figure out how to solve the numerous issues that come up daily, and to provide what I believe is a realistic thermal profile without comparing to any real world testing. I am also working on a project to select bolts for a CT system. This system is rotating at 210 rpm, so not only do the effects of gravity need to be

considered, I also need to include centripetal forces. This is a lot of math that I am simplifying into excel spreadsheets for future use, but again it is very tedious. It is very easy to get lost in the math, especially when there are 300+ bolts to be selected. If I was not able to grit my teeth and get through it, I would not get very far on either project, and that is something that I am still working to improve.” Another participant shared, “Module #4 had the biggest impact on me in both the short and the long term. While on co-op, a key to my success is to build relationships with not only those in my group but also in the sales and manufacturing groups. I was called out in a department meeting once for being one of the few engineers who would walk upstairs to talk to the sales and marketing department when working on quotes for them.”

The last module requires GUEL participants to make a formal presentation to the Gordon Engineering Leadership Program faculty. The presentation summarizes the impact the modules have had on their co-op experiences. As a result of having completed the leadership modules the Gordon Faculty have been impressed with the students ability to present in a very capable and confident fashion. These presentations also serve as a data point when considering students for admission into the Graduate level engineering leadership program.

Employer Participation and Feedback:

Employer feedback has been superb. In dialogue with employers, the Gordon Program was thrilled to learn that GUEL participants they have hired often choose to undertake a leadership development program and seek to employ these leadership skills in the workplace. From the moment the co-op student presents the leadership modules to their supervisor, indicating interest in leadership development, the manager becomes interested in increasing the dialogue, offering them more independence. Pete Wardwell of Instron Corporation first learned about the Gordon Engineering Leadership Program (GEL) from a student who participated and completed the GUEL Co-op Modules and stated, “Instron/ITW aggressively cultivates leaders to fill corporate needs in an ever expanding environment. The company relies on leaders to create new markets, bring innovative products to market, and optimize production processes.” Another manager, Jake Warren of Quinetiq North America had this to say: "We have a passion for technology and thrive on innovation. We are always looking for bright, energetic people who are willing to go the extra mile. But when we find someone like our current Northeastern University Co-op student, who is participating in the Gordon undergraduate leadership program; someone who brings all the personal drive and technical skills but with an added yearning to understand and effect leadership activities, this is as good as it gets."

Summary:

Both Co-op and Gordon Faculty have found the implementation of the modules to be quite successful for both the employers and GUEL participants. Until we implemented this program many engineering students thought that if they managed projects, budgets, etc. they were learning to lead. Before this program, students were also passively approaching their co-op and hoping to practice their leadership if it was part of the co-op job. The GUEL modules gave students a better understanding of leadership and the opportunity and drive to obtain assignments, where they could practice their leadership skills and learn from their experience.

Collected data indicates that three of GUEL participants are in or have completed the masters level program. This entire interactive process between students and the Gordon faculty begins a mutual evaluation. Gordon faculty are able to determine if this is the type of student they seek to admit into the masters level program, and students begin to determine if they want to take a deeper dive in developing their leadership capabilities via the masters level Gordon Engineering Leadership program. This creates a pipeline of students who may chose to develop their leadership skills and will elect at some point to apply to the Gordon program. Optimally, the masters level Gordon applicant has two to four years of industry engineering experience. However, some GUEL participants opt to apply directly out of their undergraduate engineering program. Either way, the Gordon Engineering Leadership program receives applicants from the GUEL with a basic understanding of leadership and a hunger to refine and improve these essential leadership skills. The GUEL program and the completion of the modules distinguish the applicant, setting them apart from other candidates for admission.

Another outcome of the program is for engineering students to walk away with a better understanding of leadership, its role in the engineering process and for them to seek out these opportunities upon graduation. Often the Gordon Program will hear from a student who participated in the GUEL program a few years after they graduated and are seeking to complete a master's degree and the Gordon Engineering Leadership Program is their first and only application for admittance. This is another win-win where we are able to better prepare them for the workplace and for life long learning.

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