

Academic Coaching Tools for Increased Retention: Empowering First-Year Engineering Students in Their Education

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Abstract - What steps can we take and what skills can we use to help first-year engineering students to set and work toward their own goals, to take charge of their education and career path, and to hold themselves accountable – all without adding more to the workload for support staff and faculty? The answer to this powerful question lies in this highly interactive workshop where you can learn and practice key coaching skills, such as asking powerful questions. Participants will also engage in an academic coaching process that is similar to the engineering design process: identifying the underlying problem, brainstorming solutions, and creating a timeline with action items, along with accountability (and revisiting the coaching process, if needed). Using coaching skills with students you advise, students in a classroom, mentees, or student staff you supervise can be a valuable tool for inspiring critical thinking and self-reflection and for improving student retention.

Index Terms - student success, design project, first year students

WORKSHOP DESCRIPTION

Learn how to empower first-year engineering student to “own” their education, utilizing tools in coaching such as asking powerful questions and active listening skills. Inherent in the structure of academic coaching is the engineering design process: identify the underlying problem, explore solutions, and create a timeline with action items, along with accountability (and revisiting the coaching process, if needed). Using coaching skills with students, mentees, or staff you supervise can be a valuable tool as studies demonstrate that coaching impacts critical thinking and self-reflection and improves student retention (Barkley, 2011; Bettinger, 2011). Using coaching skills in the classroom can also promote active and engaged learning (Devine, 2013; Fazel, 2013; Griffiths, 2005).

Coaching in the business arena has long shown to improve work performance, time management, and team effectiveness in individuals and organizations. Coaching clients also note greater self-confidence, enhanced

relationships, more effective communications skills, better work-life balance and improved wellness (AMA, 2008; Grant, 2009; McCarthy, 2013; Parker-Wilkins, 2006). Drawing parallels to this in higher education, where the use of academic coaching is beginning to increase on campuses nationwide (Robinson, 2015), coaching tools can be used to empower students in these same areas, as well as in areas relevant to a successful engineering career (e.g., taking initiative, embracing risk, navigating resources, honing innovation skills).

Academic coaching is an ongoing partnership to help students produce fulfilling results in their lives, including skill development, performance improvement, and persistence (Robinson, 2015). Through the process of coaching, students deepen their learning, take responsibility for their actions, improve their effectiveness and consciously create outcomes in life (LifeBound, Inc). By asking powerful coaching questions, the influential adult (academic advisor, faculty member, supervisor, mentor) helps the student navigate their own personal goals, life experiences, & new learning experiences to overcome adversity, break goals into manageable steps and set priorities. In the case of underrepresented groups in engineering (e.g., women and by ethnicity), a coaching approach can help these populations see negative assumptions they might be making about themselves that are actually a result of cultural/societal norms or implicit bias at work. With that understanding the student can then progress with the coach to come up with goals and action plans to persist in spite of bias.

WORKSHOP OBJECTIVES

In summary, integrating a coaching approach within advising, supervision and mentoring enhances educational and work environments by asking thought-provoking questions and using purposeful listening.

Participants in this highly interactive workshop will:

- Learn about and practice coaching skills to help you **grow as a leader, mentor, supervisor, director....**

Session M2B

- Practice formulating **thought-provoking questions** and **improving listening skills**
- Draw **parallels to inquiry-based learning and design procedures** prevalent in science, engineering, technology and math (STEM) fields to help to **foster problem-solving and critical thinking skills in students**
- Identify specific ways that you can **adapt and use coaching strategies** in your role in higher education and everyday life in general

For those you advise, mentor, supervise and teach, learn how coaching skills can help you inspire and hold others accountable to their highest and best selves by:

- Taking initiative and ownership of her/his education and preparation for professional work
- Embracing challenges to set her/him apart as young professionals
- Thinking creatively, innovating, and taking positive risks
- Questioning assumptions they might be making which are holding them back
- Setting goals and action plans to persist in engineering

WORKSHOP AGENDA

I will open this interactive workshop with a discussion of what participants can gain and take home from this session. I will also ask the audience about their expectations for the workshop and then work to address these expectations throughout the workshop. A brief background as to what is coaching and academic coaching and LifeBound, Inc. services will include a discussion with participants to gauge/expand their knowledge on coaching vs. mentoring, followed by the Coaching Arc: Analysis of Challenge, Creative Solutions, Practical Steps. Other important components of coaching we will cover include Listening and Powerful Questions (including a listening skills quiz taken by participants to gauge their current level of active listening), Acknowledging and Accountability.

After this introduction to the basics of academic coaching, participants will use what they have learned to practice coaching with fellow participants. I will observe to provide feedback and answer questions. Pairs and/or trios can devise their own problem scenarios through which to practice coaching or can select from sample situations related to FYEE conference themes. We will follow this exercise with a debriefing on what the experience was like to coach and be coached.

We will also review additional resources/techniques for participants to better engage with the person they are coaching, such as techniques for creating an environment of trust and brainstorming of solutions to the problem posed. We will provide a brief introduction to other areas of coaching which we will not have time to cover in detail: Vision, Challenging, and Championing.

Concluding activities will include a group think-pair-share discussion of how academic coaching tools and methods could be used in participants' home organizations to better serve first-year engineering students and underrepresented groups in engineering. I will then share how other universities are using academic coaching to increase retention of first-year students. If time remains, I will also facilitate an activity where participants find an accountability partner and complete a contract to remain in contact after the conference and encourage each other to use academic coaching tools in their personal/professional lives. Additional resources related to academic coaching will also be shared with participants.

WORKSHOP FACILITATOR BIO

Jennifer L. Groh, PhD, is the Associate Director of the Women in Engineering Program (WIEP) at Purdue University. Dr. Groh has invested over 60 hours of training in academic coaching with LifeBound Inc. (based in Denver, CO). She is currently pursuing more advanced training in coaching to become a certified LifeBound Affiliate with a specialized focus in serving Science, Technology, Engineering, and Math (STEM) populations nationwide.

Her interactive workshops on elements of coaching have been well received by a variety of audiences, including undergraduate and graduate students, faculty and staff in higher education; K12 teachers and staff members in informal and formal education settings; and corporate representatives. Dr. Groh enjoys sharing coaching strategies which people can adapt for leadership endeavors, difficult conversations, fostering deeper conversations, and countless other scenarios. In addition to leading these engaging sessions, Dr. Groh integrates coaching into her mentoring interactions with students, WIEP programming, and her personal life.

Dr. Groh received holds B.S. and PhD degrees in Microbiology. As the Associate Director, Purdue Women in Engineering Program, she develops, implements, and assesses peer mentoring programs (serving 400 university students) and two Women in Engineering seminars (serving over 150 students). She also directs engineering outreach programming to over 3000 pre-college students annually.

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