

The Career Identity Program: Designing a Values Based Career Plan for First-Year Engineering Students

Lori Nero Ghosal, Rachel Worsham, Chester Miller

NC State University

Abstract

Engineering students are under intense pressure to determine their major by the end of first year. Most focus on their interests and skills, along with advice from trusted others, and match them to majors. Yet, there is much more to choosing a major that will set the foundation for a fulfilling lifelong career. With limited knowledge of career fields, students are disadvantaged at knowing their fit in the world. Students need to understand themselves, the curriculum, as well as different career fields. Through a collaboration with academic units and The Career Development Center, students benefit from examining all of these comprehensively. The Career Identity Program guides students through a process of exploration and reflection on these components to help students create an authentic and meaningful career. Students complete their first year with a sense of confidence in their choice of major and a detailed academic-to-career plan.

Keywords

First-year engineering

Career Development

Coaching

First-year Engineering

At NC State University, first-year students accepted into the College of Engineering are admitted into a foundational curriculum and must complete these courses satisfactorily before being accepted into the engineering major of their choice. Over this first year, engineering students take general education courses, Calculus I & II, Chemistry, Physics and Intro to Engineering and Problem Solving (E101), among others. At the end of the first year, freshman complete a Change of Degree Audit (CODA) application identifying their three (3) top engineering disciplines. As each engineering major is highly competitive, it is important for students to choose wisely, based on their abilities, interests, skills and career goals. During that first year, they are exposed to informational sessions on different engineering disciplines and complete an engineering project, all well designed to support first-year students in successful identification of their chosen major.

Many students enter the University with engineering course credit transferred from high school and early colleges, some even have internship experience and enter college with a defined engineering field of interest. Others are less directed and choose engineering because of an interest in science and math, an identified skill or recommendations by family, friends, or teachers. While the College culture is one of fast-tracking decision making, students are given the opportunity to explore the profession through E101 and experiential learning opportunities.

These opportunities help students learn about the various engineering majors and prepare for the CODA process, yet, despite these efforts, many first-year students still lack knowledge of the vast distinctions in engineering fields. Additionally, first-year students are in various developmental stages and still discovering their emerging adult identity. Their oftentimes undeveloped career goals and lack of experience in the field further complicates students' ability to make informed decisions about their major.

While first-year students are tasked with choosing their major this first year, choosing their major is intertwined with their choice of career. For 18-year olds, choosing the career they will commit to for the next 47 years is often overwhelming and intimidating. It is one thing to choose a major based on interests and aptitude, but how to create the ideal career path is an entirely different matter.

Given all of this, it is not surprising that 80% of undergraduates in the U.S. change major at least once before graduation [6]. These students face serious consequences: increased time to degree, additional financial burden, anxiety and doubt about major and career choices and the potential loss of relevant internship or co-op experience. And even more importantly, students run the risk of misaligning their career path with who they are, and may end up majoring in a field that does not draw on their strengths, causing them to struggle to make grades and potentially find themselves unhappy in their academics or career. Students are searching for a sense of purpose and meaning within their future career. In many cases, engineering students approach discussions around their career interest as a generalized interest in helping people, society or to improve the world, with expertise in math and science as the resources on which they draw. Some know the subject they want to address, such as improving the environment through renewable energy. Some just know they want to help people live a better life through technology. Yet, oftentimes the typical 18-year-old college student is lacking in experience, global awareness, and a sense of their own identity. Tobolowsky (2008) states it is critical that students become more self-aware, develop a sense of purpose and life direction that informs both their decisions on choice of major as well as their career path. Students need to make decisions on their choice of major and that choice may impact their future success in preparing for their career [2]. A fundamental building block in this decision is clarifying a sense of purpose [3], [4], [5].

But how do we, as higher education professionals, help freshmen navigate their most important choice in college, find their purpose and passion and apply it to a major and career path by the end of first year? The Career Identity Program addresses this concern by helping students self-author a path to a profession that best fits their personal values, interests, skills and passions. This goal is based on the belief that people will be happier and more successful in their jobs if these aspects of their identity are incorporated into their career.

The Career Identity Program

The University's Career Development Center identified the need to support first-year engineering students in their career development from the first day they step on campus. Oftentimes students consider the Career Development Center when they want to create their resume or find an internship. However, students benefit greatly from working closely with career coaches as they combine their major decision making with career exploration.

In 2016, the Career Development Center developed the Career Identity Program (CIP). Collaborating with academic units (Colleges of Engineering, Science and Humanities & Social Science), the Career Development Center helps navigate students toward their academic and career goals successfully while also increasing the percentage of students who successfully choose their major, reducing the number of major changes and time to degree completion, and increasing participant career readiness upon graduation. This program combines career choices with personal exploration to help students learn more about their interests, skills, passions, purpose, values and apply all of these components to their career pathway.

Career Identity Coaching takes place at the intersection between self-knowledge, knowledge of majors, knowledge of career, and student development theory. The CIP is a series of interconnected activity-based workshops to help students design meaningful, values-driven careers. The structure of the program is to introduce students to a concept through group workshops. Students have an opportunity to interact with each other and participate in an activity based in self-exploration. The workshops provide students with a comprehensive experience of moving through different stages of self – academic – career – life exploration.

Fall and spring semesters each include three (3) required core workshops and three (3) elective workshops from which students can choose. Two of the electives are panel discussions with upperclassmen speaking from first-hand experience to students about high impact experiences, student involvement, and pathways for exploring other majors and complementary minors.

The Career Identity Coach working with the College of Engineering introduces the students to the program via a classroom visit the second week of classes. Students self-select to participate with a cap of 150 students selected. Students meet with their Career Identity Coach individually twice per semester for customized, intensive career coaching. Coaches review students' progress and discuss students' thoughts, concerns, and delve into personalized exploration. Students review and extend their workshop materials with the coach, allowing the student four (4) opportunities to have a personalized, in-depth, exploratory conversation. Coaches also serve as supplemental advisors and are able to help guide students in coursework selection and supplementary classes. Coaches help students examine 1) their interests, skills, and motivations; 2) their understanding of career pathways and related majors; 3) their career-related activities and experiences, and how to maximize those experiences in becoming career ready.

Currently in its third year, the CIP is experiencing growth and support around campus. The first year (2016-17), CIP served 93 engineering students and 59 humanities and social science students. With overwhelming support from students and advisors alike, the Career Development Center sought ways to increase reach to more students. In the second year (2017-18), the Career Development Center partnered with Engineering Village, a Living & Learning Village in Residential Life, to increase student participants to 141 in engineering. Humanities and social science students increased to 70, and a small pilot of 8 students in other STEM majors were added.

The Career Identity Advocate (CIA) Coach Training

As Engineering Village took on a cohort of students in the program, the Career Development Program needed to augment coaching support for these additional students. To maintain the value and integrity of the coaching experience, the Career Development Center launched the first

“Career Identity Advocate” (CIA) Coach Training program in August, 2017. The Career Identity Coach for Engineering, an ICF certified career coach, developed and led a 15-hour training program for faculty, staff, advisors and directors on coaching skills combined with the Career Identity Program workshops. A pilot group of 9 adviser/staff partners throughout the University, including Living & Learning Village Directors, were trained as CIA coaches to support and provide individual coaching to their cohort of students in the program. In the fall of 2018, a second iteration of the CIA training program saw an increase to 30 faculty/advisors/staff in various departments across campus enrolled in the training. Most took part as a means of professional development and to better support their work with students.

Career Identity Program Collaboration with the Engineering Village

The Engineering Village (EV) is a living-learning community through Residence Life with a capacity to serve 500 first and second-year students pursuing a degree in engineering. The program is a collaboration between the College of Engineering and University Housing. Its mission is to stimulate skills, talents and behaviors in first- and second-year engineering students that lead to success. The program’s vision seeks to establish the Engineering Village as an integral part of every first-year engineering students’ purposeful and successful transition to the University, the College of Engineering, their chosen discipline and the global community. The program offers diverse high-impact experiential learning activities to help students determine the best path to the profession. The program integrates housing’s residential curriculum “Experience and Engage” using Dr. Baxter Magolda’s Theory of Self-Authorship. Magolda [7] identifies four non-linear phases of self-authorship defining how students move away from following external influences to developing their inner voice to make meaning of life based on their internal foundation.

After learning about the impact on some Engineering Village students who participated in the 2016 cohort, the Director and Graduate Assistant sought to expand the CIP to impact more EV students. The Director and Graduate Assistant completed CIA Coach Training and committed to working with 35 students as part of the fall 2017 CIP cohort. The fall 2018 cohort included an increase in engineering students with EV taking on an additional staff person to accommodate 50 students in the Village, with an overall increase in the engineering cohort to a total of 181 or 51% over the first year.

Individualized coaching is essential to the success of students. Each coaching session was unique, as each student had differing conceptions of their career goals. Goals typically included identifying a major that fit their interests, determining a specific career path within an engineering field of interest, or searching for extracurricular experiences that helped the student reach their career goal. While the topics discussed ranged widely, the coaching strategy did not. In a departure from the typical advising practices utilized in higher education, coaches challenged students to make decisions and realize goals through guided questioning and reflective inquiry. Additionally, coaches further challenged students with outside research assignments. For example, if a student was interested in biochemical research, the coach may ask the student to search for labs conducting similar research and come back with a list of possible research opportunities. Coaches made themselves available for meetings throughout the semester, and did not limit the number of times a student could make an appointment.

The addition of the CIP to the EV's extant programming helped to foster closer connections with students, establishing a rapport of trust and respect. By word of mouth, students began sharing the impact of coaching relationships on their personal and professional outlook. After serving as coaches, the Director and Graduate Assistant are committed to continue with CIP and look to identify ways upper class students participating in the Engineering Village can add value to the program.

Table 1: Overall CIP Participants by Cohort

Cohort year	College of Engineering	Humanities and Social Science	Additional Cohorts
2016-2017	93	59	0
2017-2018	141	70	8
2018-2019	181	67	17

Outcomes

Students took a pre assessment prior to beginning the CIP and a post assessment at the conclusion of the CIP to gather information on program effectiveness, their confidence in major and career choices, and other metrics. The results show an overwhelming support and satisfaction for the program. Students indicate participation in the program helped them to find answers sooner, relieve anxiety around not knowing, and make better informed decisions regarding their choice of major and career path. Listed below are the results from respondents who completed both the pre and post assessment in 2017:

- 100% said CIP helped them learn about and plan for co-curricular and High Impact experiences as part of their academic and career plan
- 90% said CIP helped them create a comprehensive academic plan to prepare for their career pathway
- 95% said CIP afforded them the opportunity to learn about complementary curriculum
- 78% know the career competencies employers want from new graduates
- 91% said CIP helped them articulate their elevator pitch
- 98% said CIP helped them connect their values, interests, talents, purpose and passions into their work
- 91% said CIP helped them identify and choose a major that reflects their interests, skills, abilities, and passions and relate them to a meaningful career path
- 98% said CIP helped them identify their personal and professional values and how to incorporate them into their career plan
- 100% said CIP provided education and support to help them develop career confidence, awareness and competence
- 98% said CIP positively impacted their self-awareness and personal growth
- 54% reported that their major changed as a result of the Career Identity Program
- 100% would recommend this program to other students

Future Plans

As awareness of the Career Identity Program grows across campus, the Career Development Center is finding additional interest and opportunities to offer the program to other students. CIAs are looking to add more students to the program as they are trained and excited by the value added to their work with students. An additional partnership with Inter College Transfer Department increased Humanities and Social Science student participation and CIP is offering participation for first year and transfer students admitted in spring semester (Spring Connect students).

The Career Development Center is currently following past cohort students to determine their degree changes, GPAs and graduation rates and intended career path upon graduation. As the first-year cohorts are currently in their junior year, this data collection is in progress.

References

- 1 T. Strayhorn, *College Students' Sense of Belonging: A key to Education Success for All Students*. New York; London: Routledge, 2012.
- 2 S.S. Graunke and S.A. Woosley, "An exploration of the factors that affect the academic success of college sophomores," *College Student Journal*, vol. 39, pp. 367-376, June 2005.
- 3 B.F. Tobolowsky, "Sophomores in transition: The forgotten year," *New Directions for Higher Education*, vol. 144, pp. 59-67, Dec. 2008.
- 4 J. Gahagan and M.S. Hunter, "Engaging sophomores: Attending to the needs of second-year students," *College and University*, vol. 83, pp. 45-49, 2008.
- 5 L.J. Lemons and D.R. Richmond, "A developmental perspective on the sophomore slump," *NASPA Journal*, vol. 24, pp. 15-19, 1987.
- 6 K. Leu, "Beginning college students who change their majors within 3 years of enrollment," U.S. Department of Education, National Center for Education Statistics. Washington D.C. 2018-434, Dec, 2017.
- 7 M.B. Magolda, "The interweaving of epistemological, intrapersonal, and interpersonal development in the evolution of self-authorship," in *Development and Assessment of Self-Authorship*, M.B. Magolda, E.F. Creamer and P.S. Meszaros, Eds. Sterling, VA: Stylus

Authors

Lori Nero Ghosal, Ed.D., ACC

As Career Identity Coach and Career Identity Advocate Trainer at NC State University, Dr. Lori Nero Ghosal is the Career Development Center liaison to College of Engineering where she leads programs and coaches engineering students to create meaningful and authentic academic-to-career plans through creating self-awareness, uncovering skills, interests, and abilities and connecting them to careers. Prior to her own career transition into higher education, she worked in private industry leading R&D of educational programs in a successful start-up company. She has a doctorate in Higher Education Administration and holds the distinction of Associate Certified Coach with the International Coach Federation.

Rachel Worsham

Rachel Worsham is a doctoral student at North Carolina State University working toward her Ph.D. in Educational Leadership, Policy, and Human Development with a concentration in Higher Education. Her research interests include the effects of state policy on college access for low-income, first-generation and underrepresented students, as well as college going in rural areas. Rachel is the graduate assistant for the Engineering Living Learning Village at NCSU

where she works on assessment initiatives in addition to serving as a Career Identity Coach Advocate.

Chester Miller, M.S.

Chester Miller serves as the Director of Living and Learning Initiatives at North Carolina State University where he provides strategic planning and visioning for living-learning communities. Chester's research focus centers on pedagogical frameworks to bridge learning between curricular and co-curricular experiences through an interdisciplinary lens. Chester transitioned to Higher Education to mentor and advise engineering students on how best to achieve career readiness and goal attainment. Chester completed a master's degree in Computer Engineering and worked as a Design and Verification Engineer for IBM.