
Full Paper The Career Identity Program: Creating a Personalized Academic-to-Career Plan for First-Year Engineering Students

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Chester Miller currently serves as the Director of Living and Learning Initiatives at North Carolina State University with oversight of 16 living-learning communities serving approximately 2900 students.

Chester has a strong blend of engineering, higher education knowledge and experience. He earned a B.S. in Electrical Engineering from Morgan State University and an M.S. in Electrical and Computer Engineering from Binghamton University. He spent seven years at IBM as a Design and Verification Engineer and has 15 years experience working in higher education supporting student retention, success, and development. Most of his years in higher education include direct and intentional relationships and connections focused on students in STEM fields. With tangible industry experience as a practicing engineer and Residence Education experience, Chester brings a unique blend of competencies and perspectives to serving students with in the First Year Engineering program at NC State University.

Ms. Rachel Elizabeth Worsham, North Carolina State University

Rachel Worsham is a doctoral student in Educational Leadership, Policy, and Human Development at North Carolina State University and serves as the Graduate Assistant for the Engineering Living Learning Village. She received her Bachelor's in History and Peace, War, and Defense from the University of North Carolina at Chapel Hill in 2015. After graduation, Rachel became a College Adviser at John Motley Morehead High School in Eden, NC as a part of the Carolina College Advising Corps. This work helped Rachel develop a passion for ensuring college access and success for first-generation, low-income and underserved students.

Dr. Lori Nero Ghosal, North Carolina State University

BIOGRAPHY

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Dr. Lori Nero Ghosal has more than 10 years' experience in academia creating programming to help students build comprehensive academic and career plans. As Career Identity Coach with NC State University, she 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 work with the Career Development Center, Dr. Ghosal has served as Academic Coach for TRIO programs both at NC State University and Buffalo State College, where she worked on a grant-funded program from the U.S. Department of Education to help first-generation and under-resourced students to successfully persist and graduate from college.

Before her career transition into higher education, Lori worked in private industry in educational publishing. She has more than 10 years' experience leading research and development of new products and sales training programs in a successful start-up company. She combines her multi-dimensional experience in student services in higher education, private industry and business and career coaching with her passion for helping students, alumni, and professionals identify and achieve their chosen career path.

She has a doctorate in Higher Education Administration with a minor in Counseling from NC State University, a Master's in Student Personnel Administration from Buffalo State College, a Bachelor's in Psychology with a minor in Theology from St. Bonaventure University and holds the distinction of Associate Certified Coach with the International Coach Federation.

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First-year engineering

First-year programs support students in many ways throughout their transition to college and research shows these college adjustment programs facilitate a smoother transition and positively impact students' sense of belonging and success [1]. With a strong emphasis on encouragement and support, first-year students are buoyed up and usually progress to sophomore year only to be met with new challenges. The focus of sophomore year is for students 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].

At the University in question, the timeline for choice of major is necessarily moved back to freshman year. The institution accepts engineering students into both the University and the College of Engineering, but students must apply to and compete for their chosen engineering major by the end of freshman year. Many enter with engineering course credit transferred from high school and early colleges, some even have internship experience and enter college with a defined field of interest. Others are less directed and choose engineering because of an interest in science and math, identified skill or inspired by family. Admitted freshman engineering students spend their first year taking general education courses and Intro to Engineering and Problem Solving (E101). 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.

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. Given this, it is not surprising that 30 percent of undergraduates 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, 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, which has a direct bearing on their choice of major. 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 resource they draw from. 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. But how do we, as higher education professionals, help freshmen

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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

In 2016, the Institution's Career Development Center (CDC) developed the Career Identity Program (CIP). Collaborating with academic units (Colleges of Engineering, Science and Humanities & Social Science), the CDC works to help navigate students toward their academic and career goals successfully while also increasing the percentage of engineering 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 students with a comprehensive experience of moving through different stages of self – academic – career – life exploration.

Fall and spring semesters each include 3 core workshops and 1-3 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 representing the College of Engineering introduces the students to the program via a classroom visit the second week of classes. The fall 2017 cohort of first year engineering students include 1419 admitted students with the following demographics.

1. Gender
 - male - 1023
 - female - 396
2. Converted gpa = 4.48
3. Ethnicity
 - 978 - White
 - 118 - Asian
 - 75 - Hispanic/Latino
 - 71 - Nonresident Alien
 - 63 - Unknown
 - 57 - Two or more races
 - 54 - Black
 - 3 - American Indian/Alaska Native

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Students self-select to participate with a cap of 135 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 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.

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 CDC sought ways to increase reach to more students. In the second year (2017-18), the CDC partnered with Engineering Village to increase student participants to 123 in engineering. CIP also served 65 humanities and social science students, and a small pilot of 10 students in other STEM majors. To support the coaching of additional students, CDC launched the first Career Identity Coach training program in August, 2017. A group of 12 adviser/staff partners, including Living & Learning Village Directors, were trained as Coaches and Program Advocates.

Career Identity Program Collaboration with the Engineering Village

The Engineering Living Learning Village (EV) is a living-learning community with a capacity to serve 409 first and second-year students pursuing a degree in engineering. The program is a collaboration between the College of Engineering and University Housing.

The Engineering Village has a capacity of 409 students. The fall 2017 cohort included: 392 student participants

1. Gender
 - 291 - male
 - 101 - female
2. Ethnicity
 - 299 - White
 - 30 - Asian
 - 18 - Black
 - 23 - Two or more races
 - 13 - Not specified
 - 7 - Hispanic/Latino
 - 2 - Did Not Disclose

The program's 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

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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 a few students who participated in the 2016 cohort, the Director and Graduate Assistant sought to expand the CIP to impact more Engineering Village students. The Director and Graduate Assistant completed Coach Training and committed to working with 35 students as part of the fall 2017 CIP cohort. 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 job 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, establish a rapport of trust and respect. By word of mouth, students began sharing the impact of coaching relationships on 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.

Outcomes

Students took a pre and post assessment survey with the same questions to gather 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 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 the pre and post survey in 2017.

1. 100 percent of respondents said CIP helped them learn about and plan for co-curricular and High Impact experiences as part of their academic and career plan
2. 90 percent said it helped them create a comprehensive academic plan to prepare for their career pathway
3. 95 percent of respondents said the CIP afforded them the opportunity to learn about complementary curriculum areas.
4. 78 percent of respondents know the career competencies employers want from new graduates
5. 91 percent of respondents said the CIP helped them articulate their elevator pitch
6. 98 percent said the CIP helped them connect their values, interests, talents, purpose and passions into their work

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7. 91 percent said the CIP helped them identify and choose a major that reflects their interests, skills, abilities, and passions and relate them to a meaningful career path
8. 98 percent said the CIP helped them identify their personal and professional values and how to incorporate them into their career plan
9. 100 percent said the CIP provided education and support to help them develop career confidence, awareness and competence
10. 98 percent said the CIP positively impacted their self-awareness and personal growth
11. 54 percent of respondents reported that their major changed as a result of the Career Identity Program.
12. 100 percent of respondents would recommend this program to other students

Future

As awareness of the CIP grows around campus, the CDC continues to expand. The third cohort year (2018-19) will expect 135 Engineering students, an additional partnership with Inter College Transfer Department will likely increase Humanities and Social Science students to 100, and CIP intends to offer participation for Spring Connect students upon admission in spring semester. The second iteration of the Career Identity Coach Training program will offer participation through those coach trainees in Living & Learning Villages, along with an additional pilot offering for other STEM majors.

The CDC is currently following past cohort students to determine their degree changes, GPA's and graduation rates. As the second year has just been completed, this data collection is in progress.

References

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