

Service to Freshmen by the Office of Personal Development

Joseph Holtgreive, Ed.M., Heather Bacon, M.S.Ed.
Northwestern University, jjh@northwestern.edu, h-bacon@northwestern.edu

Abstract - The McCormick School of Engineering and Applied Science may be the only engineering school in the country with a formally established office of personal development. We are proud of our student-centered focus and the opportunities for personal growth available at McCormick. Our engineering undergraduates matriculate with a bias toward left-brain ways of thinking. They are comfortable solving technical problems with discrete answers leveraging their analytical, quantitative, and critical thinking skills. In addition, due to the virtual nature of much of their social interaction they have become disembodied with very limited awareness of their mind body connection. Our challenge is to support the development of our students into whole-brain engineers™ capable of bringing an integrated whole-self to the challenges they face. In McCormick, one way we are addressing this need is through the McCormick Office of Personal Development. Its mission is to support the exploration of self and co-curricular opportunities, engagement with these opportunities, and reflection on these experiences leading to transformative growth. At McCormick, personal development means an opportunity to: Explore - personal strengths, values, and goals; and explore opportunities to build essential skills. Engage - with academic, professional, and extracurricular experiences in an intentional way. Transform - into an adult with a clearly defined sense of purpose and the skill set to succeed. Our goal is to foster the development of five core competencies through this effort: Awareness, Optimization, Fidelity, Resilience, and Self-Reliance.

THE MCCORMICK APPROACH

In a world of accelerating transformation, the boundaries between science, engineering, and technology are blurring. Under these dynamic conditions, we face global challenges at a scale never before seen. Engineering plays a critical role in addressing our challenges. That's why the McCormick School of Engineering is committed to educating and developing engineering students with the competence, creativity, and skillset to meet these challenges.

At McCormick, our goal is to educate whole-brain leaders who thrive at the intersection of global challenges and the knowledge to address them. Whole-brain engineers leverage a balance of both “right-brain” and “left-brain” ways

of thinking to understand, frame, and solve problems. While metaphorical, “left-brain” refers to skills that are logical, analytical, rational, and quantitative, in contrast to “right-brain” skills which are creative, integrative, artistic, and emotional. Whole-brain engineers possess the ability to apply both ways of thinking to the problems they solve. As engineers go on to work in an increasing variety of disciplines, this is a skill that will serve them well no matter what they do.

McCormick endeavors to foster whole-brain thinking through courses such as the freshman-year Design Thinking and Communication sequence, through connections to Northwestern's strength in the humanities, and through opportunities to conduct research, study abroad, and gain entrepreneurial experiences. We take a comprehensive approach that combines career and personal development.

In order to develop whole-brain leaders we have identified three complimentary dimensions of a McCormick education: technical expertise, innovative experiences, and personal effectiveness.

The three dimensions of a McCormick education:

- *Technical expertise* – our students develop a mastery of an engineering domain through their curriculum and opportunities to engage in research, design, and entrepreneurial experiences.
- *Innovative experiences* – from the very beginning of their McCormick education our students are immersed in a human-centered design experience in the form of our Design Thinking and Communications course sequence. Opportunities to innovate in the areas of design, research, and entrepreneurship continue at all levels of the curriculum.
- *Personal effectiveness* – our students begin engaging in self-exploratory exercises before they even arrive on campus. Through deliberate exploration and engagement in transformative experiences, our students develop the self-awareness and skills necessary to set their course and successfully launch their careers.

EXPLORE

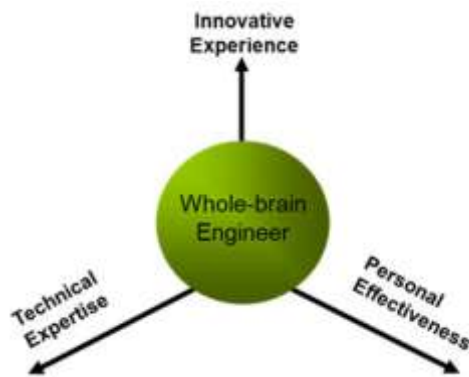


FIGURE 1
THE THREE DIMENSIONS OF A MCCORMICK EDUCATION.

THE ROLE OF MOPD

The McCormick School of Engineering and Applied Science may be the only engineering school in the country with a formally established office of personal development. We are proud of our student-centered focus and the opportunities for personal growth available at McCormick. The mission of the McCormick Office of Personal Development (MOPD) is to encourage each undergraduate to:

- *Explore* - personal strengths, values, and goals; and explore opportunities to build essential skills
- *Engage* - with academic, professional, and extracurricular experiences in an intentional way
- *Transform* - into an adult with a clearly defined sense of purpose and the skill set to succeed

MOPD seeks to accomplish its mission through fostering five core competencies:

- *Awareness*, leveraging intellectual curiosity and the confidence to question toward the formation of personal, professional, and civic identity.
- *Optimization*, identifying tensions among competing resources and desired outcomes, and applying resources in order to accomplish goals.
- *Fidelity*, loyalty to a consistent level of quality and integrity based on internal motivations rather than external demands or rewards.
- *Resilience*, persevering in the midst of challenging situations.
- *Self-Reliance*, confidently applying knowledge of one's self in the service of one's values and goals in the face of uncertainty.

While all three dimensions of a McCormick education (technical expertise, innovative experiences, and personal effectiveness) are relevant to the mission of MOPD, the development of personal effectiveness is our primary focus.

Who are our students?

Northwestern University has six colleges offering undergraduate degrees. The overall selectivity of Northwestern is high with only 13.9% of applicants being accepted for the incoming class of 2017. With approximately 1600 undergraduate students, the McCormick School of Engineering and Applied Science has the second highest number of undergraduates among the Northwestern colleges. Within McCormick, selectivity for the class of 2017 was also 13.9% and the yield on admitted applicants was 40.6% for a freshman class of approximately 410 students. The McCormick class of 2017 is 28% female. 26.4% of the incoming freshmen are from within Illinois while 20.6% are international students. These international students come to McCormick from 37 different countries including Argentina, Belarus, China, Finland, Ghana, India, Japan, Jordan, Malaysia, and Nigeria.

MOPD's first engagement with the entering freshman is to invite them all to take the *StrengthsFinder* assessment over the summer prior to matriculation. *StrengthsFinder* is a self-assessment tool created by the Gallup Organization based on decades of research exploring the keys to personal effectiveness in a wide range of fields. The tool identifies your top five strengths from a total list of 34 different themes. Gallup defines strength as "the ability to provide consistent, near-perfect performance in a given activity" [1]. According to Gallup, strengths are achieved when naturally occurring talents are refined through the acquisition of knowledge and the development of skills.

When looking at the 34 themes through the lens of whole-brain thinking some of the themes align with either left-brain or right-brain skills. When looking at the overall profile of strengths represented by our entering freshman over the past two years our students reflect a bias toward strengths that align more closely with left-brain skills. The five most commonly shared strengths of our entering freshman are Learner (141), Achiever (113), Restorative (84), Competition (80), and Analytical (66). In contrast, their least commonly shared strengths are Self-Assurance (6), Activator (10), Discipline (15), Belief (16), and Command (17).

It is not surprising that our students would come to us more strongly grounded in left-brain skills. Given the nature of an engineering degree, it is essential that they have these skills in order to handle the quantitatively rigorous demands of the curriculum. However, a more balanced set of skills will be needed to address the complexity and interdisciplinary nature of the problems our students will face throughout their professional careers.

In addition to sharing a strong grounding in left-brain strengths, our experience has revealed that our entering students will generally characterize their high school experiences in one of two ways, either high school came easily to them or they worked their butts off to

succeed. Regardless of their high school experience, the majority of our students will encounter a perceived failure event early in their academic career.

When this perceived failure event occurs, students who were generally not challenged in high school will respond in one of two ways. One set of students will recognize that their previous strategies are inadequate for their new environment and will begin adjusting these strategies and identifying resources they can exploit to improve their performance. These resources may include accessing faculty office hours, forming study groups with fellow classmates and reallocating their priorities. A second set of students, when faced with their first perceived failure event, will experience a crisis of identity leading to denial and/or shame. They often assume they are alone in this experience and isolate themselves academically, leaving them floundering with their old strategies.

Similarly, students who have worked very hard during high school, when faced with a perceived failure event, also respond one of two ways. One set of students recognize that their previous strategies are not robust enough to meet the demands of this new environment; they recalibrate their expectations and begin looking for more efficient approaches to their learning. A second set of students will isolate themselves, determined to further leverage their already highly leveraged strategies by working even harder. This approach is often motivated by a sense of shame, assuming they are the only students experiencing this difficulty and that they need to fix the problem before they can share their distress and access resources.

For each group of students that are able to begin this process of recalibration and strategic alteration it is the capacity to adapt to a new environment that enables this transformation. An indicator of this adaptive capacity is whether a student experiences a perceived failure event as an indictment of their actions or their identity as a learner, the difference between “I feel like I failed” and “I am a failure.”

The goal of MOPD is to create a structure that enables all of our students to succeed. To help those who are ready to take on greater challenges find those opportunities and connect with them while providing the necessary support and perspective for students struggling with their transition to college.

MOPD strives to support the development of our students in a fully-dimensional way. In their *Seven Vectors*, Chickering and Reisser present a holistic developmental model that treats students as more than merely “degree seekers and test takers,” but rather as a compliment of gifts which comprise their human potential. MOPD uses the work of Chickering and Reisser to help understand how best to enable our students to develop as a whole person and nurture a belief in their essential worth [2].

Resources to help students explore

Building on the understood need to develop our students in a multidimensional way, MOPD has developed several

resources to aid students in their exploration of both academic and extracurricular opportunities:

- Quarterly Newsletter – containing notes from each department on important academic information, highlighted elective courses, registration tips, special events from MOPD and other offices across campus.
- Course selection matrix – to aid in course selection, this matrix shows courses that fulfill requirements in multiple majors and those that are unique to one specific major.
- Major snapshots – designed to assist undecided freshmen in major selection, these one page summaries of McCormick’s majors give general information on courses, job outcomes, coursework, and departmental resources. The snapshots were created to allow students to quickly and easily compare multiple majors and find useful contacts across departments.

In addition to these advising tools, MOPD has been involved in an extensive redesign of the current first-year advising system. Students will be assigned to a designated first-year clinical faculty adviser who will work with the student to build study skills, improve time management, provide curricular and major advising, assisting in the transition from high school to college. These advisers will focus on teaching and advising and will not have research responsibilities in order to ensure that they are available to students.

ENGAGE

The wheel, leveraging existing opportunities

While MOPD is strongly focused on serving students and fostering development, the office recognizes that Northwestern is a diverse body of departments, offices, and groups with their own range of excellent opportunities, many of which include a reflective component, that also promote student engagement. Rather than seeking to create all new programs from scratch, MOPD strives to remain aware of and connected with multiple units across campus. This connection helps prevent reinventing the wheel each time a new program is imagined and wasting time and resources recreating initiatives that are already being led elsewhere.

The Center for Leadership, the Study Abroad Office, the Office of Undergraduate Research, the Center for Civic Engagement, and student groups such as the Society of Women Engineers, the National Society of Black Engineers, the Society of Hispanic Professional Engineers, Design for America (DFA), Engineers for a Sustainable World, and various design competition teams are just a few examples of

entities that offer valuable experiences to undergraduates. By promoting these organizations and their programs MOPD can seek to create unique opportunities and identify areas of unmet need.

New opportunities through MOPD

In addition to providing online and in-person advising resources, MOPD continually seeks to provide opportunities for students to engage with new ideas, learn from leaders in various fields, and gain a deeper understanding of their own interests and priorities. The majority of MOPD programs are offered in the form of workshops, invited speaker programs, and collaborations with other Northwestern departments or offices.

Workshops:

- Navigating McCormick – a combination of presentation by the director of MOPD and facilitated group discussion, this event normalizes the first-year transition to college by highlighting common concerns and challenges. Students are encouraged to observe similarities and differences between their high school and college experiences in order to begin refining strategies for new academic and social contexts.
- *StrengthsFinder*: Leveraging your strengths for success – after offering all McCormick freshmen access to the *StrengthsFinder* assessment students are invited to participate in guided discussions of their results. Led by MOPD staff and trained upperclassmen, groups of students explore what can be learned from their strengths and reflect on ways in which these strengths can be utilized when facing various types of challenges throughout college.

Invited Speaker Programs:

- Art in the Abstract – artist Marianne Mitchell led students in a creative exploration of right-brained skills using abstract sketching exercises.
- Success Under Stress – researcher and author of *Choke: What the secretes of the brain real about getting it right when you have to*, Sian Beilock spoke of her work at the University of Chicago's Human Performance Lab and participated in a panel discussion with other high-achieving professionals on the causes and effects of stress as well as a discussion of stress management.
- Mindfulness in the Engineering Profession – a presentation by law professor and mindfulness expert Leonard Riskin centering on the value of

meditation and its usefulness as a tool to maximize your effectiveness and managing stress.

- Are You Crazy Enough to be an Inventor? – Sandy Hawkins, inventor of the lung flute and other devices, explored the process of invention and led students in a discussion about creative problem-solving.
- Get a Professional Life – Mark Horstman, management consultant and co-founder of Manager Tools LLC, shared insight into the recruiting process and advise on how best to launch your professional career.

Collaborations:

- PRDV 935 EI 101 Emotional Intelligence: Managing yourself, Maximizing your Potential – this one quarter full credit course is offered in partnership with Counseling and Psychological Services. Students are introduced to emotional intelligence theory and the professional and personal benefits of developing a high “EQ.” While open to all Northwestern students, freshmen are encouraged to take this course as a means of developing self-management strategies that will serve them throughout their academic and professional careers.
- PRDV 397 Whole-Body Thinking – taught as a half credit course it has been one of MOPD's most popular initiatives, students are taught basic swing dance by School of Communications professor Billy Siegenfeld. Students practice creative collaboration while learning to engage with the intuitive and emotive problem solving required in partner dancing.
- PRDV 396 Mindfulness Workshop – this has been taught as a non-credit 8-week interactive workshop offered in partnership with Counseling and Psychological Services. Students are introduced to practice of mindfulness meditation and effects of this practice on performance.
- Future Collaborations – MOPD is currently exploring partnerships with the Department of Art Theory and Practice, the School of Music, and Crab Tree Farm a private artist community in the Chicagoland area.

To ensure that MOPD programs are tied to the needs and interests of current students, the office established a student advisory board. The board is charged with assessing the needs of undergraduates and actively assisting in the creation, planning, and execution of programming.

TRANSFORM

Creating a Culture of Conversation

The mission of MOPD includes the goal of helping our students turn their experiences into transformative opportunities leading them to deeper self-awareness. One way this is accomplished is by including a reflective component in each of our programs. Most invited speakers, after presenting on their topic, will join a panel of fellow experts to answer questions from the audience. Most programs will end with small group discussions facilitated by MOPD staff, university colleagues and trained upperclassmen.

The ultimate goal of this structure is to foster a culture centered on dialog where all members of the community expect to engage in conversation after each presentation or program. Too often we return to our offices or the dorms after hearing an important talk not having an opportunity to exchange our own insights and ideas with other community members missing out on a potential transformative opportunity.

The Power of Attention

When discussing attention within the context of self-management we consider attention to be a skill not an act. The training of attention can provide students with an important tool for understanding themselves. Applying attention to one's self allows a student to recognize their emotional and physiological reaction to a perceived failure event empowering them to choose a more productive response. The deliberate act of training one's attention leads to greater self-awareness which enables the capacity to adapt to challenging situations.

Many first-year students suffer from the results of fractured attention due to their patterns of communication, the virtual nature of many of their social interaction, and the value they place on multitasking. Jeremy Hunter, management theorist, describes multitasking as the opposite of concentration. "Multitasking reduces the available attention and increasing the chance that disorganizing emotions, like fear and anxiety, will overwhelm brain function [3]." In his work with knowledge works Hunter reports seeing a significant increase in productivity and work quality after making a conscious effort to reduce multitasking. People also report a positive impact on their relationships citing more meaningful connections with colleagues and loved ones and an overall improvement in listening skills.

There is an increasing body of research focused on the neurological effects techniques like mindfulness meditation have on the brain. The evidence is mounting that the practice of mindfulness alters the physiology of the brain in ways that improve attention regulation, body awareness, emotion regulation, and change in perspective on the self [4].

There are also a growing number of programs both in academia and industry designed to fostering emotional intelligence and self-awareness through mindfulness practice. One such program was developed by Chade-Meng (Meng) Tan at Google. Meng's program called, "Search Inside Yourself," teaches Google employees the tools for self-awareness, self-understanding, leading to self-control [5].

MOPD recognizes the importance of emotional intelligence and the value of techniques like mindfulness meditation in helping our students understand themselves and develop the ability to manage themselves in order to achieve the five core competencies of a McCormick Whole-brain Engineer.

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AUTHOR INFORMATION

Joseph Holtgreive Assistant Dean and Director of the McCormick Office of Personal Development, Northwestern University,
jjh@northwestern.edu

Heather Bacon Assistant Director of Advising and Student Development, Northwestern University,
h-bacon@northwestern.edu