

Professional Statement, Nancy Michael

Teaching

When I arrived at Notre Dame, I was pedagogically well-versed, had developed and instructed courses, mentored undergraduates in research, etc., and felt equipped to officially begin my career in higher education. But since being at Notre Dame, I have further enhanced my approach to creating effective learning environments. During my first two semesters at Notre Dame, I learned that just because my course could be “hard” and my student could perform well it didn’t mean that my students were actually *learning* for the long-term and “hard” by no means equated to an engaging learning environment. I used to think about teaching from the perspective of *what* I wanted my students to know, but since the fall of 2015, I have come to think much more about how to create opportunities for earnest student learning: how do I want my students to be *different* as a result of taking my course? What do I hope they take with them well into the future? My teaching philosophy and all of my pedagogical practice now focus on creating opportunities for my student to use what they know and grow their existing knowledge and experience to discover who they can become when they combine knowledge and purpose.

As Director of Undergraduate Studies (DUS) the Neuroscience and Behavior (NSBH) major by contract I am responsible for administrative DUS duties, advising NSBH majors in the College of Science and a 1-2 teaching load. In spring 2018, growth of the NSBH major mandated the creation of an additional course, increasing my teaching load to 2-2, which I embraced, but also brought challenges. During the 2018-2019 academic year, my teaching load further increased to a 2-3, and I also developed a summer SSLP course that was enrolled for the first time in summer 2019. I have developed each of my five courses *de novo* with two novel courses currently under development. In addition to the above, almost every semester I have guided multiple undergraduates in community-based research and accommodated 1-3 students via Directed Readings. My direct contributions to student learning and development have been integral to the growth and overall success of the NSBH major.

My NSBH laboratory course is required for all NSBH majors. For this laboratory course, I am not just a ‘coordinator’ but have been the instructional lead for 2-6 sections every semester since beginning my position. Sustainable graduate TA support was not available until the 2018-2019 school year, mandating I be in the instructional space for the duration of each section and responsible for the bulk of grading. Laboratory content creates the conceptual framework for understanding how nervous system microstructure organizes and informs behavior through structure-function relationships. Students develop five independently-designed experiments throughout the semester. In the lab’s first semester, to come prepared, each student would take a pre-quiz prior to each laboratory session and for assessment would write a full scientific paper for each experiment to demonstrate mastery. From this experience, I learned that Notre Dame students will complete this level of work with outstanding effort and performance, but for a one credit course, this workload was too much. This experience also taught me that “hard” does not necessarily equate to earnest learning.

Shortly after arriving at Notre Dame, I had the opportunity to participate in the Intellectual Virtues conversations spearheaded by Dom Chaloner and Dan Lapsley. As

scientists, we know the importance of things like curiosity, carefulness, tenacity, persistence, courage, etc., so this discussion centered on why then don't we, as instructors of future scientists, explicitly discuss these dispositions and develop them skills in our students? This conversation of Intellectual Virtues permanently shifted the way I teach and assess my undergraduate Neuroscience and Behavior laboratory. I had noticed that instead of helping students prepare, the pre-quizzes actually made my students 'get lost in the weeds.' They were so focused on the details of 'getting the right answer' they struggled with thinking about the big picture and how their data could inform the broader literature. Intellectual Virtues inspired development of my "plan-do-review" to replace the pre-quiz. The plan-do-review requires review of the upcoming materials but also necessitates students to develop their own metacognitive awareness of their own knowledge base and intellectual dispositions. I began to explicitly discuss things like curiosity, courage, communication and tenacity and I shifted the weight of assessment away from 'what do you know' to 'what have you learned.' These changes have resulted in a remarkably positive shift in both formal and informal student feedback surrounding learning gains and personal growth.

Developmental Neuroscience (Dev Neuro) was the second course I developed, for which I earned a Center for Social Concerns Course Development grant for integration of a community-based learning (CBL) approach. Broadly, learning goals require students to be able to articulate the constant interplay and plasticity between the brain and its environment, that this interplay is life-long, and that critical periods of development are exactly that: critical in laying the foundations for whatever comes next. I accomplish these goals through the lecture and active learning, reading of primary literature and assess mastery through small group journal club discussion, "translational" writing, self-reflection and a robust CBL component that culminates with a final Capstone. I also use the University's Mission and principles of Catholic Social Tradition to invite students to a dialogue about our responsibility as scientists to the Common Good. Pre/post assessment of content knowledge, scientific literacy and confidence in communicating science demonstrate significant learning gains through the semester. Self-reflection and long-term student feedback demonstrate that by simultaneously engaging basic science, personal reflection and community, students also evaluate not only how they live but how they *want* to live. Evidence of significant student learning and personal development resulted in an invitation to write a chapter in the book *The Pedagogy of Vulnerability*; a compilation of academic essays invited from scholars nation-wide to reflect on questions of whether vulnerability in teaching can promote self-growth, social transformation and deep learning in students. This volume will be published in hardcopy by Information Age Publishing by the end of the 2019.

The deep impact of CBL on student outcomes resulted in the development of two additional courses: Community-Engaged Brain Health Research and a Summer Service-Learning Program: Plasticity and Compassion. Capstone projects for Dev Neuro require the development of neuroscience-based programming that is specific to the students' CBL population. These Capstones demonstrate great promise, but they occur at the end of the semester as a one-off opportunity. My Community-Engaged Research course aims to provide a mechanism through which students, community partners and I can work in collaboration to develop evidence-based programming that is rooted in developmental neuroscience, trauma-awareness and resilience while also

meeting the unique needs of the community partner. This course was offered for the first time in 2019, and while it certainly needs improvement, students reported that their learning experience was the most significant of their undergraduate career.

I have also worked in close partnership with Ben Wilson, Director of SSLP at the Center for Social Concerns, developing introductory materials for all SSLP students that have also been published in Notre Dame's Church Life Journal in August 2018 (non-peer-reviewed) and ultimately drove the creation of a for-credit, NSBH specific SSLP course. This course immerses students in the neuroscientific literature of the impact of poverty and stress on brain development and behavior. Assessment for this course challenges students to think about their own behaviors and choices in the context of Catholic Social Tradition. Summer 2019 is the first time this course ran, and I am looking forward to the fall 2019 sessions to discuss, debrief and learn how we can improve this experience for future students.

I also teach Topics in Neuroscience: Sex Differences in Brain and Behavior, a course based in lectures, active learning and small group journal club discussion of primary literature. Part of the assessment of the course requires the students to identify lay articles (blog posts, opinion pieces, etc.) that claim to be scientific in nature and seem to be related to primary class content. Using the primary scientific evidence to support their analysis or refutation, students evaluate lay articles for fact, misinformation and opinion. The pedagogical innovation is in what I call "Critical Analysis" discussions used to close each unit. For Critical Analysis discussions, I summarize the lay articles with a brief statement and use these statements as an opportunity for students to identify their emotional reactions and reflect on their value systems that drive these emotional reactions. I then ask them to discuss in small groups... how does one get beyond their strong emotional reaction to create space for a dialogue and compromise? The first semester I led Critical Analysis discussions I was very nervous about the outcome, but it turns out these discussions provide a safe space for students to practice having hard conversations about emotionally charged, polarizing topics. Students not only develop scientific critical analysis skills, but also the metacognitive awareness of origins of their emotional reactions, courage to speak up about topics close to their heart, skills to invite someone with an opposing view to a dialogue with the openness to leave changed; all essential skills no matter the professional destination of the student.

For my innovative and effective instructional practice, I was nominated and selected for Notre Dame's O'Malley Teaching Award in 2018. Feedback from the selection committee stated that I was "nominated quite a few times [i.e. by many individuals] for this award, more than any other professor [they] have seen." Additionally, evidence of my pedagogical prowess and impact is demonstrated by the competitive selection of my proposal by the 2019 Provost Learning Initiative (PLI). I have also been nominated by College of Science (CoS) Dean's office to be a part of the PLI's Kaneb Center Course Design Academy. Beyond the scope of my appointment, I also remain active in the Scholarship of Teaching and Learning research and have presented my work at the Society for Neuroscience (2014, 2015, 2017, 2018), Medical Humanities (2017) and Scholarship of Teaching and Learning (2016, 2017) conferences.

Beyond the scope of my contractual appointment, I spearhead efforts of NSBH curricular development and assessment that have already resulted in identification of

curricular gaps and the hire of one additional teaching faculty in the Chem/Biochem department, with another hire Cognitive/Affective/Social neuroscience hire approved in the summer of 2019. I have collected syllabi of existing courses to conduct initial course-mapping for NSBH content. In summer of 2019, I worked with Elliot Visconsi and the PLI to successfully advocate and secure funding for a graduate student summer stipend to conduct an external program review to evaluate best-in-class neuroscience programs at aspirational and near-peer institutions. These data will be used to refine the NSBH core competencies and launch robust program assessment to evaluate program efficacy, identify curricular gaps and inform the research expertise of future NSBH-affiliated hires.

During the 2015-16 and 2016-17 academic years, I was also an integral part of the development and approval of the NSBH Honors program. As the NSBH major is a cross-college major, developing the requirements for the NSBH honors program took coordination and communication across every department in the CoS, and dialogue with the Psychology Department in Arts and Letters is continual. Related, my community-based research has resulted in three NSBH undergraduate research theses, two of which will contribute to the Community Science primary literature with one manuscript near submission and another undergoing revision before re-submitting. In 2019-20, I am mentoring two more undergraduate senior theses.

My community-based research collaborations with the after-school programs at the Robinson Community Learning Center earned a \$7000 Ganey Grant seed grant for a three-year pilot study to develop age appropriate brain health curricula that increases neuroscience knowledge, perceived self-control and motivate behavioral change. While data from this pilot are currently under analysis, positive outcomes of behavioral observations have led to conversations with both Penn-Harris-Madison and Mishawaka school districts to pilot my Brain Health curriculum at primary centers and middle schools in the 2020-21 school. Because of my dedication to evidence-based change and impact in the Northeast Neighborhood community, I was awarded the Arthur Quigley, Ph.D. award in 2017. My brain health community-based research drove the formation of a partnership with the Saint Joseph County-CARES coordinator, Rebecca Zakowski. In June 2019, we submitted for \$24,455 of funding through the Indiana Clinical and Translational Sciences Institute (CTSI) Trailblazer Award. This project aims to facilitate broad community knowledge of brain development and build research practices within local organizations to empower organizations to develop evidence-based interventions that are population specific.

Service

As a member of the University of Notre Dame and South Bend community, I am involved in a number of service and engagement efforts in the Department, College, University and broader community. Within the **Department of Biological Sciences**, I have had formal appointments on the Events, Honors and Community Engagement committees. As a member of the Events committee I contributed to the organization of annual faculty retreat, departmental happy hours and the annual holiday party. As a member of the Undergraduate Honors committee, I am responsible for reading and discussing selection of junior honors student candidates and reading and providing comments on drafts and final thesis. The Community Engagement committee (formerly

Service committee) works to track and publicize departmental engagement and service activities. In the 2018-19 academic year, we also worked in collaboration with the Department Chair to revise the annual scholarly report to reflect community collaborations and community-engage research efforts.

At the **College** level I serve as the Neuroscience and Behavior (NSBH) Director of Undergraduate Studies (DUS) which requires regular DUS meetings to assess new College of Science (CoS) coursework, CourseLeaf course scheduling, eForm approval, coordination across CoS and Psychology departments to evaluate university and study abroad coursework for alignment with NSBH learning goals, among other duties. I serve the NSBH Honors program in the same capacity as on the BIOS Honors committee (proposal/thesis reading, feedback). I am an informal faculty mentor for Dr. Rachel Branco (Chem/Biochem Dept), with weekly meetings during her first academic year. January 2015-January 2019, I was the sole advisor for sophomore-senior NSBH majors in the CoS, which grew from tens to hundreds of students under my supervision, providing exceptional advising (well beyond just semester mapping and career discernment) to about 300 students annually. In spring of 2019, CoS NSBH advising became split between Dr. Branco and myself. Annually, I write close to 100 letters of recommendation for graduate and professional schools, summer internships, job references, etc. I plan, organize and successfully execute NSBH CoS diploma ceremonies (all logistics, speakers, photography, venue, A/V, etc). In 2018, I worked with CoS Dean's Office on the CoS All Staff Meeting to develop multiple activities that introduced ideas of neuroplasticity, mental and physical health for a "field day" experience. The success of this event drove collaborative efforts with the Athletics Department to develop and implement a similar experience for their joint Advisory Board meeting in September of 2018. I recruited/coordinated approximately 30 undergraduate volunteers each of these events.

For the **University** I serve in a number of different modalities. First and foremost, I am an active leader of the NSBH steering committee, a cross-college committee charged with development of the NSBH major. Sitting outside of a department and spanning colleges, most of the daily functions that keep the major running fall to the steering committee. I am currently spearheading efforts to develop a comprehensive strategic plan for the NSBH major and am the lead on curricular development and assessment that will guide future program development. I am also responsible for the development of marketing materials and oversight of the NSBH website. I am the advisor to the NSBH major Senior Leadership Committee (SLC) which has created a NSBH mentoring program, peer advising, a lab shadowing program, a study abroad manual and developed the articles and bylaws to earn Chapter status for both a national undergraduate neuroscience honors society, Nu Rho Psi, and the Society for Neuroscience.

More broadly to University, because of my demonstrated excellence, I was one of six (formerly) SPF selected by Assoc. Provost Maura Ryan to serve on the ad-hoc committee on SPF mentorship. I also serve as an elected member of the Academic Council, Undergraduate Affairs and SPF Executive Committee, and serve as the Neuroscience club and Harmonia faculty advisor. I was an integral component of the GreenDot launch in the 2015-16 school year and participated as a GreenDot trainer throughout the 2015-16 and 16-17 academic years. I've worked in partnership with

Pamela Nolan-Young, Director of Diversity and Inclusion, to develop an Under One Dome Implicit Bias module and since spring 2017, I co-facilitate bi-annual Implicit Bias faculty trainings as part of the Inclusive Excellence series. In addition, in 2016 I worked with the Alumni Association during Alumni weekend to give a lecture on Brain Health. The overwhelmingly positive feedback from this event spurred the development of a Clear-Sighted Career webinar "Brain @ Work" for use on the ND Alumni Association YouTube channel. At the invitation of Notre Dame's Office of Public Affairs, I facilitated a Teachers as Scholars workshop in spring 2019 that earned some of the most positive feedback the program has ever received for classroom relevance and efficacy.

In the **community**, I serve as an ambassador for Notre Dame as a neuroscience content expert to multiple community organizations and will briefly report select efforts. I have provided Holy Cross pre-service teacher training, continuing education experiences for early-childhood educators and multiple teacher trainings with South Bend Community School Corporation (SBCSC). Working in collaboration with the SBCSC Director of Primary Centers in 2017, we developed "Brain Works Camp" for primary center summer school programming, embedding neuroplasticity, resilience and growth mindset activities throughout the summer school experience. I have created multiple collaborations to host annual Brain Awareness community engagement events staffed by NSBH undergraduates who develop activities, serve and learn from their community.

Because of my expertise in neuroscience and dedication to community brain health, in 2017 I was invited to become a member of the Child Development and Well-Being workgroup for the state of Indiana governor's Early Learning Advisory Committee and have earned a place as a local community leader in efforts surrounding trauma-awareness. I served on the Addressing Childhood Trauma advisory board, and currently serve on the Woodford Home advisory board. I work closely with Kimberly Reeve-Green, Director at Beacon Community Impact, to inform community health initiatives, and am an ACE Interface master trainer and facilitator. Responding to community needs surrounding childhood adversity and brain development, in October of 2018 in collaboration with the Center for Social Concerns I organized and presented at the Poverty and Stress workshop, attended by over thirty community organizations. Enthusiastic feedback and demand for further community capacity-building resulted in the foundation for the Trailblazer Award submission. My community contributions have earned recognition as an invited presenter at the Center for Social Concerns Faculty Institute (2018, 2019) and by being honored as a 2018 recipient of the Michiana 40 Under 40 award.

In aggregate, my educational excellence, scholarship and service portfolio demonstrate that I have not only met the expectations of my position but exceeded these expectations across all domains. Pedagogically, I will continue to innovate and develop my practice to cultivate inclusive and challenging classroom atmospheres where all students can move towards becoming their best selves. I will also maintain a leadership position within the NSBH major, driving programmatic growth and development by providing analysis, feedback, direction and strategy that will ultimately build a best-in-class undergraduate program aligned with our Mission and fitting of our Lady's University.

