

## **Teaching Statement**

Teaching is the greatest of privileges. It is an honor to help people acquire the knowledge they seek. I approach every class session, office hours appointment, and hallway conversation with the intention of creating an experience that becomes the story people tell. One morning, I was taking three of my children to school when we were involved in an accident that totaled our car. Thankful for engineers and airbags, I took photos of the wreckage and incorporated them as part of my afternoon Systems Analysis and Design class as an example of why it is necessary to design for the unexpected. Capitalizing on opportunities like this creates moments of impact, and are an essential ingredient to forging connections that will last for decades. It gives me great joy to be an ongoing part of my former students' lives, helping them flourish as human beings.

### **Teaching Philosophy**

The practical application of skills, coupled with continuous reinvestment and study, is a path to success in our discipline. To that end, I facilitate knowledge acquisition through a cycle of exposure, explanation, exploration, and evaluation. When introducing a new concept, I expose it to students through reading, video, and lecture. When lecturing, I reinforce the exposure through explanation before exploring an example with the students. After exploring together, the students delve deeper by working through in-class lab exercises. To ensure that students are retaining new concepts, I layer in two evaluations. The first tends to be low stakes, with the primary intent to confirm their newly acquired skill. The stakes on the second evaluation are higher to confirm progress on the path to mastery.

Building on the experience I gained as an adjunct starting in 2012, I have honed this approach throughout my first full-time faculty appointment. Over the years, assessment of student work, formal student feedback, and unsolicited alumni feedback longitudinally confirm the effectiveness of this approach for both undergraduate and graduate students.

I value the practical application of knowledge to solve problems, drive insights, and I firmly believe that experiential learning provides such an opportunity. I will highlight examples of how I integrate real-world experiences in the next section.

### **Course Development**

During my current Mendoza appointment, I developed three new courses and completed a comprehensive redesign of an additional course. These courses serve our undergraduate Business Analytics and Business Technology majors and our graduate MS Business Analytics (MSBA) programs, here on campus and in Chicago.

The first course I developed is a Marketing and Customer Analytics course for our Chicago MSBA students. While there was a previous Marketing and Customer Analytics offering, it was

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not well-received by students. I introduced the case method, combined with a course-long simulation, to stimulate student engagement. To deepen their connection to previous courses, students must rely on techniques acquired throughout the MSBA curriculum to be successful. I enhanced the course in the Fall of 2020 by adding an experiential component in partnership with No Barriers and Stone Ward. No Barriers is an organization dedicated to working with adults and children with disabilities, while Stone Ward is a marketing and advertising agency. The goal was to identify groups of people with common characteristics, market to them using funds provided by Stone Ward, and assess the effectiveness of the advertising campaign. It is with great joy and a sense of validation that I received this unsolicited feedback from Samuel Yoshino, a recent Chicago MSBA graduate:

“I wanted you to know that your Marketing Analytics course had a profound impact on me; it was my favorite MSBA class by far and sparked a sincere interest in pursuing a career in the field.

Fast forward a few months, and I’ve been offered a job to become the Director of Marketing and Social Media Analytics at Walt Disney World News Today, which is a top independent news source for the best theme parks in the US.”

The second course I developed is an undergraduate Cloud Computing course. I co-developed this course with my colleague, Mike Chapple. First offered as an elective for our Business Technology major, this course is now required for the Business Technology minor and is available as an elective to all ITAO undergraduates. Our design of this course follows the *expose, explain, explore, and evaluate* approach, and has been well-received by the students, as it gives them a practical experience with industry-leading technology. Since its introduction, demand for the course has grown. Feedback from both alumni and employers demonstrates the value of the course beyond the confines of the classroom. Here is an example of what students are sharing about the course on LinkedIn:



The third course I developed is a graduate Cloud Analytics course, the result of another collaboration with Mike Chapple. It will be offered for the first time in the 2021-2022 academic year to our MSBA students, both in Chicago and here on campus. Following the *expose, explain, explore, and evaluate* approach, students will use advanced analytical techniques in the cloud, as well as develop an understanding of when and how using the cloud furthers their analytical objectives.

I completed a redesign of the Data Management offering for our residential MSBA students. Effective Fall 2021, its new name is Data Management in SQL. While the original course has been well-received, student feedback expressed a desire to go deeper and spend more time on the Structured Query Language (SQL). As part of the redesign, I collaborated closely with colleagues to ensure that concepts introduced in my class are reinforced and expanded on later in the curriculum. Examples from my course are used in the next course in the sequence, reinforcing my commitment to a tightly integrated curricular approach.

### **Teaching Collaboration**

In order to ease the transition to Notre Dame for new colleagues in my department, I freely and eagerly share my course content and experience to help them acclimate. Two instances from the past two years stand out for me. In one case, I helped a new colleague, Yoon Seock Son, by providing comprehensive material for his Data Management sections. As his first teaching experience concluded, he wrote, “Again, your materials and advice helped a lot. I don't think I would have survived without them... I really appreciate it and I really can't thank you enough!”

In the second case, I gave my Marketing and Customer Analytics course material to a new colleague, Brandon Erlacher, as the basis for his Marketing and Customer Analytics offering in our residential MSBA program. Upon receiving my material, Brandon said, “Since this is my first go, and your content is outstanding, I left your foundation largely intact.”

### **Teaching Innovations**

I am committed to experimenting with new approaches to teaching and incorporating new technologies into the classroom.

With the global pandemic as a forcing factor, I explored ways to bring the whiteboard experience to distributed students. To that end, I selected Explain Everything, a piece of software that lets me draw on an iPad, as a regular part of my teaching approach. In concert with Zoom, I worked towards experiential parity by simultaneously displaying content to in-person and remote students. Second, it lets me save what I draw as images, which I share with students after the fact. This approach worked particularly well during case-driven classes. I adapted my whiteboard plans and used technology to successfully deliver despite the mixed modality.

## **Service**

I am actively committed to being of service, both to Notre Dame and the broader community of the planet. I strive to embody the concept of “think globally, act locally.”

### **Service to Notre Dame**

I have actively participated in institutional service activities at the University, College, and Department levels. Some of my service work relates to my information technology experience.

I am one of Mendoza’s two appointed representatives to the University Committee on Academic Technology (UCAT), representing the College’s interests to the campus IT community. In that role, I have advocated for creating virtual computer labs to democratize access to software for all Notre Dame students, regardless of location or endpoint device.

I served as a Faculty Representative for the LMS Replacement Pilot, soliciting student feedback, engaging with the vendor, and providing feedback to get the best outcome for Notre Dame.

During the pandemic, I was asked to serve on the Ad Hoc Human Life Committee for Student Technology Needs to ensure students had the technology required to continue their studies.

I also speak for the Notre Dame Alumni Association’s Universal Notre Dame (UND) celebrations. Every year, I travel to two or three Notre Dame clubs around the country and talk about my work and general topics of interest to the extended University community.

At the department level, I am one of two Faculty Technology Liaisons dedicated to ensuring faculty needs are met in the classroom. In that role, I participated in the Stayer Center MSBA residential classroom redesign and provided feedback for classroom renovations in Mendoza.

In the interest of encouraging experiential learning opportunities for our students, I have served as a faculty mentor to 10 Adobe Analytics Challenge teams over the past two years. I am thrilled that one of the teams was honored as a national semi-finalist. Encouraging students to seek extracurricular challenges, I'm delighted that three teams have entered the Fall 2021 competition.

### **Service to the Community**

Nationally, I serve as a strategic advisor to Kovexa. In that role, I advise startups on the applicability of innovative technology and its role in improving the educational experience. I also serve as a director to Bexley Brewfest LLC, a nonprofit organization dedicated to nurturing the community while raising funds for the Alzheimer’s Association. Locally, I am on the steering committee for the IT Sector Partnership, which seeks to understand employer needs, guides workforce development, and creates action plans to improve workforce quality.

## **Research Contributions**

As a scholar-practitioner, I remain interested in and committed to creating value using data. Throughout my career, I consistently derive satisfaction from collaborating with people to make things work. In that vein, I am currently working with Chris Frederick, a colleague in Applied and Computational Mathematics and Statistics (ACMS), serving as a co-Principal Investigator on two Small Business Technology Transfer (STTR) grants. STTR efforts encourage small businesses to participate in federal research and development work with the potential for commercialization.

In the first STTR, we built an Artificial Intelligence (AI) Powered Technical Scouting and Recommendation Engine for matching the federal government's AI needs with small businesses that can fulfill them. The goal is to shorten the time it takes for the federal government to benefit from innovations developed by small businesses. Specifically, as part of our recently completed Phase II, we used natural language processing to ingest AI-related solicitations from the Joint Artificial Intelligence Center (JAIC), extract topics, and build an ontology for how the topics are connected. Based on that ontology, we populated a knowledge graph. We augmented the knowledge graph with public and private data regarding the capabilities of small businesses in the AI space. Using random walks, node embeddings, and vectorized graphs, we used cosine similarity to compare vectors and identify the small businesses that best match a given solicitation. This pilot was successfully delivered, and we are actively pursuing a Phase III engagement. From a commercialization standpoint, we designed our prototype to be flexible so that it is not inherently limited to AI-related proposals.

The second STTR seeks to improve job placement for service members as they transition out of the military. The goal is to improve both job placement and satisfaction, as well as income. Partnering with a colleague from Indiana University, we are developing an AI-driven, gamified, cohort-driven approach to improve placement outcomes. For this STTR, the knowledge graph will serve as the foundation for the recommendation engine. Phase II of this effort is currently underway.

For both STTRs mentioned, my contributions center on the natural language processing and knowledge graph creation and exploration components.

## **MSBA Program Development**

Along with my colleague, Seth Berry, I serve as the Academic co-Director of the residential MSBA program. We are aggregating feedback from our advisory board, graduate alumni board, employers, and students as we evolve the curriculum. We are also actively collecting data about the MSBA program to identify factors that lead to alumni flourishing. Our goal is to use the MSBA itself as an active laboratory where we test hypotheses in the pursuit of excellence.

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In reaction to student feedback and to foster student collaboration, we are working with Kristen Collett-Schmitt in her role as Associate Dean for Specialized Masters to revise the Graduate Academic Code, removing a forced GPA range for the MSBA program. We will enhance the student exit survey to ensure this change has the desired effect.

I believe every student is a leader, regardless of whether or not they end up in a management role after graduation. Listening to feedback from our departmental advisory board around the importance of soft skills, we are partnering with colleagues in Leadership Development to adapt the MBA Leadership Launch experience for our MSBA students. Serving as a pilot, this will eventually scale to encompass the other specialized masters programs within Mendoza.

To deliberately improve access to graduate education and improve diversity within the student body, I am championing a pilot immersion experience to attract underrepresented minority candidates. The goal is to bring current college seniors to campus, expose them to Chicago MSBA final projects, allow them to connect with faculty, and ensure they understand the value proposition of graduate education. We are deliberately approaching schools within driving distance and will invite students in groups of at least two. That makes the experiential barrier low and creates the conditions for organically amplifying the experience through word-of-mouth. I am excited to see the results of this pilot, as we will collect participant data, identify individuals with the desire to acquire knowledge, convert them to students, and assess their flourishing after they complete the MSBA.

We have also significantly revised the MSBA curriculum to provide students a more integrated experience. Working closely with MSBA faculty, we are advancing the overarching goal of taking a high-level approach to data and analytics. As our students gain expertise in tools and techniques, it is crucial that they are able to identify the best approach for a given situation. This contextual awareness is a point we are amplifying throughout the curriculum, with tighter integration across courses.

We are also focusing on changing how MSBA students think about Notre Dame. We want alumni to have Notre Dame at the forefront of their thoughts, and have them volunteer to present their current work at an Analytics Symposium on campus. The metric of success is when our first alumni works with us to fulfill the brand promise of experiential learning by sponsoring a capstone project for current students. I believe that cultivating relationships, listening to needs, shedding light on the different ways to be a leader, and setting a service expectation with the students will lead to a thriving group of alumni that donate their time and talent to Notre Dame.

### **Presentations**

In addition to my teaching and administrative responsibilities at Notre Dame, I remain an active contributor to the IT and analytics professional communities. I strive to promote the Mendoza and Notre Dame brands, elevating the institution's visibility in all of my external activities.

I have appeared as a podcast guest discussing the effects of cloud computing on education and how cloud skills are crucial regardless of industry or career track.

Aligning with Father Sorin's vision of Notre Dame as a powerful source for good, I have developed a series of cloud computing videos that serve the worldwide IT community through their distribution on LinkedIn Learning. Since I first started creating those videos five years ago, they have impacted hundreds of thousands of learners from around the globe on LinkedIn, bringing recognition to Mendoza and Notre Dame.

I also contribute to the profession by creating books and other materials designed for professional technical education. During the first two years as a full-time faculty member, I co-authored a book chapter with a colleague from Amazon Web Services on how cloud computing enabled agile organizations to thrive during the global pandemic. Currently, I am co-authoring a book to help people prepare for the upcoming CompTIA Data+ professional certification, scheduled for publishing in January 2022 with John Wiley & Sons.

### **Looking Ahead**

As I look to the years to come, I am excited about the opportunity to measure program efficacy over time. I have a particular interest in the application of network theory in the context of tracking alumni flourishing. Over the next three to five years, I am excited to experiment with building a social graph of students, the people they interact with, and how the network effect pays dividends over time. I am most interested in identifying interactions that are instrumental in fostering deep connections with Notre Dame and figuring out how to amplify them.

As an example of the behavior I want to research and quantify, I am working with Annie O'Brien. Showing immense promise when I had her as an undergraduate in 2012, Annie directs Technology and Reporting for Girls on the Run International. Exemplifying the service mentality and love of Notre Dame I seek to nurture in all my students, she is sponsoring a spring 2022 MSBA capstone project. Annie's willingness to give back affirms my belief that deliberately developing and maintaining relationships yields positive outcomes for individuals, Notre Dame, and the world.

I look forward to better understanding the factors of a long-term service mindset to confirm what I anecdotally believe to be true and refine how I nurture relationships going forward.

