



Service and Collaboration at Dickinson College

BY CYNTHIA MWENJA, PhD

Anthony Underwood, associate professor of Economics at Dickinson College, not only researches issues concerning environmental economics but also continues to collaboratively develop and publish key data needed by economics educators to understand and respond to the shifting landscape of the field.

He has also played a vital role in meeting student needs by helping to create several dynamic new majors at Dickinson in recent years, taking great care to anchor each curriculum design in the campus' liberal arts values.

As an environmental economist, Underwood works within a field which “applies the principles of economics to study how environmental and natural resources are developed and managed” (EPA.gov). Underwood’s dissertation considers the ways that demographic changes have affected household CO2 emissions, and several of his subsequent publications have pursued that line of inquiry. Underwood has also published articles on subjects such as lead emissions and non-profit activity related to natural disasters.

Curriculum Design

Underwood notes that faculty members in the liberal arts “need to be nimble”; they are often asked to take on responsibilities outside their areas of expertise. From his first years at Dickinson, Underwood has

acquired new skills through his involvement in several curriculum development projects. Edward McPhail, professor of Economics and chair of the Economics Department at Dickinson, credits Underwood’s leadership to the successful establishment of three new majors (to date): Quantitative Economics, Data Analytics, and Finance. Through these initiatives, Underwood has garnered a reputation for excelling at both curriculum design and implementation.

Additionally, Underwood points out that Dickinson is unique among liberal arts program in offering business and business-related classes. As a result, the planners of these degree programs at Dickinson are careful to ensure that each one is consistent with the liberal arts mission of the school. Dick Forrester, professor of Mathematics and Data Analytics at Dickinson, underscores this idea, appreciating how Underwood is “always looking to enhance the curriculum, especially from a liberal arts perspective.”

As Underwood and Peter Sak, outgoing

Chair of International Business and Management, co-chaired the working group that put together the new Finance major, they borrowed classes from economics, business, and math to give students complementary skill sets, and they included an interdisciplinary Finance elective to strengthen the liberal arts underpinnings. According to Underwood, the biggest concern for establishing finance curricula at a liberal arts school is ensuring that the programming seamlessly includes humanities and social sciences coursework. He says that this aspect of designing a major is not easy, but it has the great additional advantage of offering a variety of perspectives during the development process; one of Underwood’s tasks was coordinating with various departments to identify courses for this interdisciplinary requirement. The courses he found for the finance major include “Philosophy of Data,” “Practical Ethics,” and “Sociology of Money.” Underwood can also imagine additional courses with finance content that could be established in departments across campus. For example, he can envision a class in Art and Art



History focusing on arts markets and art as a store of value. Such ideas demonstrate his skill in seeing interdisciplinary possibilities that could spark interest in faculty members from many departments.

Developing a new major involves coordinating both data and people. Emily C. Marshall, associate professor of Economics at Denison University, appreciates the way that Underwood combines a pragmatic approach and academically oriented mindset when addressing curriculum design. As with any newly proposed major, Underwood and Sak needed to establish demand from existing students as well as projecting whether a finance major would attract new students to the college. They highlighted existing strengths, most notably that Dickinson graduates were already securing excellent internships and jobs in finance, even without showing a finance major on the transcript—so the planners could show that existing coursework had given students the needed skills for the field. Beyond assembling data, Underwood sees his fundamental role in

helping to design new majors as that of bringing people together, getting campus stakeholders in the room to think through everyone's ideas and viewpoints. Doing so gives everyone the opportunity to reduce any perceived frictions and collaborate to create a curriculum grounded in the liberal arts that everyone can buy into.

Forrester respects Underwood's skills in both hearing and addressing concerns that the various stakeholders raise. As he champions each emerging program, he has a gift for helping everyone to understand how it fits within a liberal arts institution. Because of these strengths, Underwood is then able to get each program across the finish line, due to the buy-in that was developed throughout the process. Forrester states that these approaches have led to "resounding success. You can't create a program in a vacuum; you need to work with everybody." Underwood's skill in facilitating collaborative decision-making is invaluable at a small liberal arts college.

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Economics Education

While Underwood began his career focusing on environmental economics, he reports that his graduate school experience did include a strong component of economics education. Not only did the program offer “pluralist training in both neoclassical and heterodox economics methods,” but it also gave the graduate students many opportunities to teach their own classes. Additionally, students in the program received training in pedagogy and syllabus design, which is not always the case in Economics graduate study. As a result, Underwood says, he developed a curiosity regarding matters of educating students in the field of Economics; he has now grown this curiosity into an additional area of published research.

At Dickinson, Underwood began teaching Econometrics, which was an upper-level elective at the time. The course “packed a lot in,” with an introduction to Econometrics

and statistical software, as well as individual student projects. These projects included literature reviews and aspects of technical writing; they were also developed through a guided drafting and revision process which helped students meet conventional standards of writing in the field. The writing components meant that the class could serve as one of Dickinson’s required Writing in the Disciplines courses. Since Underwood and Marshall both taught the class, they shared a set of prompts, rubrics, and scaffolding strategies. They later documented their parallel workflows and outcomes, ultimately publishing their results in “Writing in the Discipline and Reproducible Methods: A Process-oriented Approach to Teaching Empirical Undergraduate Economics Research.” Marshall recalls that they wanted to convey their approaches to teaching students how to work with data in ways that were reproducible and made sense to someone outside of the process.

As they developed the paper, Underwood attended his first economics education conference, which opened his eyes to the breadth of research interests in the sub-field. He began regularly attending the Conference on Teaching and Research in Economic Education and sessions at other conferences organized by the Committee on Economic Education, a standing committee of the American Economic Association. Through these endeavors, Underwood says, he has met a supportive group of fellow educators, and he began to see the need for analysis within the field.

Around 2018, Underwood and his economics colleagues heard about a new situation that would lead to additional economics education research for Underwood and Marshall: they began to learn that different universities were designating Economics majors as Science, Technology, Engineering, and Math (STEM) degrees. Previously, the Department

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of Homeland Security (DHS) incentivized international high-skilled workers to settle in the US by giving STEM graduates the option to remain in the US to work for more than one year post-graduation. As time went on, DHS expanded the list of STEM-designated degree programs; in 2012, econometrics and quantitative economics was added to the list. This change meant that international students with F1 (student) visas graduating with this degree could stay and work in the US for longer than the typical one year after graduation that other students were allowed; in 2016, this extension was lengthened to a full two years for STEM graduates.

As a result of these developments, economics departments across the U.S. began changing their curricula so that students could be eligible to work longer in the U.S. after graduation—as well as in response to an increasingly quantitative economics discipline. Students at Dickinson began to inquire
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about STEM designation, so the economics department began discussions around developing a new STEM-designated major. Underwood and Marshall began to research what content would need to be included in the major for it to be STEM-designated, but they could not find any definitive answers to that question; DHS gave very little guidance. As a result, the two began to investigate, realizing that other economics educators also needed this information. Their explorations have now become a multi-year research agenda in economics education.

Underwood and Marshall's 2020 paper, "Is Economics STEM? Trends in the Discipline from 1997 to 2018," explores what had been happening within economics degrees in response to the DHS guidelines. Their 2022 paper, "Is Economics STEM? Process of (Re) classification, Requirements, and Quantitative Rigor," presents their analysis of surveys completed by seventy-three institutions to further discuss trends in STEM-designated and traditional economics degree offerings, as well as factors affecting implementation of econometrics and quantitative economics degrees.

Underwood and Marshall's most recent publication relating to this research updates a 2010 paper published in the *Journal of Economic Education*, which offered a "comprehensive ... assessment of the undergraduate economics major requirements." Rather than relying on survey data, Underwood, Marshall, and student researcher Abigail Hyde combed through the websites and bulletins of the 793 higher education institutions which conferred economics bachelor's degrees in 2019. In their 2024 paper, "Requirements of the Undergraduate Economics Major: An Update and Comparison" they update "the prevalence of the economics major core requirements and their differences by institution type" as well as "recording new information on requirement variations across economics degree types." Benchmark articles such as this one provide an invaluable service to fellow economics educators.

All of Underwood's work carries a throughline of service for and collaboration with others. McPhail appreciates Underwood's insights in daily considerations of the department, as well as his Excel

expertise, which has positively contributed to campus-wide efforts in coordinating long-range planning across departments. Underwood is also a beloved instructor and research mentor; his students, advisees, and student research partners all hold him in high regard, says McPhail. As Underwood continues to explore vital research in environmental economics and economics education—as well as spearheading new initiatives at Dickinson—he exemplifies the communication skills, interdisciplinarity, critical analysis, and collaborative problem-solving for which the liberal arts are known.



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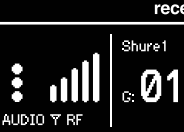
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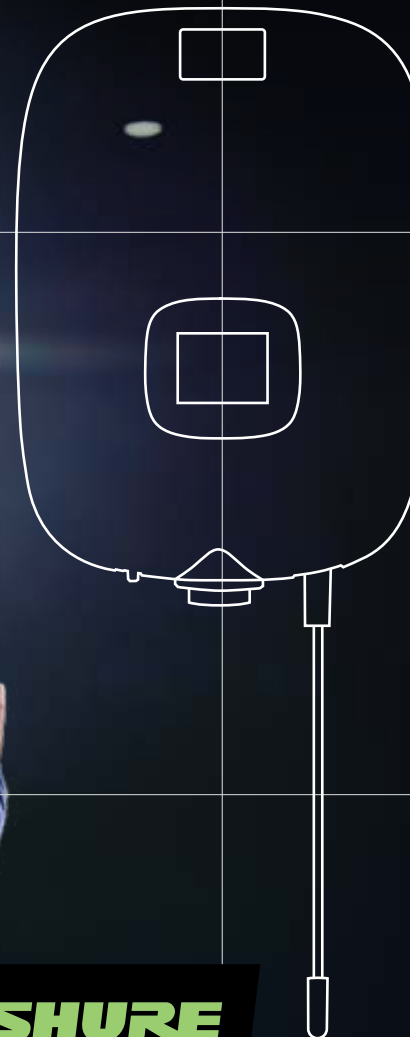
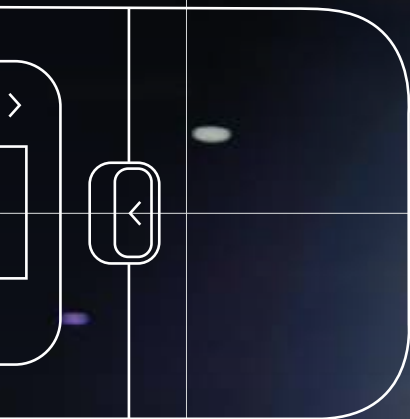
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