Teaching and Educational Commentary

We Need to Talk About Curriculum Innovation

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Abstract
Is it time to refresh your applied agricultural economics and agribusiness curriculum? How do you know? Where do you start? In this commentary, we review why curriculum updates are challenging and suggest that an information problem is partly to blame. Others highlight our discipline's wide scope, our students' diverse backgrounds, and our employers' high expectations as inherent challenges to curricular planning. We point additionally to an economic challenge, namely that curriculum innovators do not advertise their discoveries and lessons learned at the socially optimal level. To address this public goods problem, we propose that an interested organization (e.g., the Agricultural and Applied Economics Association, AAEA) centrally facilitate information sharing in two ways: (1) inventory the range of curricular diversity regularly and (2) create an annual curricular innovation award.

1 Introduction

The U.S. Council for Higher Education Accreditation requires covered institutions ("Standard 1") to demonstrate "advancement of academic quality and continuous improvement" (Council for Higher Education Accreditation 2021, p. 9). Institutional accreditors require program faculty regularly to assess the strengths, weaknesses, opportunities, and threats facing their programs, as well as engage in appropriate quality improvement efforts in response.

Curricular improvements take many forms. For example, programs might incorporate additional ways or "domains" of learning such as the cognitive (or knowing) domain (Bloom et al. 1956), the affective (or attitudes) domain (Krathwohl 2002), or the psychomotor (or skills) domain (Harrow 1972). Programs might integrate "growth mindset" or "deeper learning" models to help students better understand new problems; persevere through challenges, setbacks, and ambiguity; and take initiative to resolve conflicts (Finegold and Notabartolo 2010; National Research Council 2012; Dweck, Walton, and Cohen 2014). Programs might innovate to include one or more additional "high-impact practices" defined by Kuh (2008) to include, among others, first-year seminars, capstone courses, writing-intensive courses, and learning communities (see also Zilvinski et al. 2022).

In this commentary, we first describe three inherent factors—disciplinary complexity, student diversity, and employer expectations—that make curricular planning challenging for directors of agricultural economics and agribusiness (AEAB) programs. We then identify an additional complicating factor—insufficient information sharing among AEAB program directors—which we characterize as a public goods problem. As such, we recommend that a central organizing group like the Agricultural and Applied Economics Association (AAEA) facilitate information sharing on behalf of its membership. We call for two specific efforts: (1) a regular survey of program directors to identify current curricular diversity and (2) the creation of an award to highlight excellence in curricular innovation. We include recommendations about survey content and award criteria.

2 Three Inherent Complications

One factor that complicates curriculum improvement efforts is the inherent complexity of the AEAB discipline. AEAB resource decisions are made in complex operating environments reflecting well-integrated agricultural network relationships as part of food, fiber, forest, feed, and fuel supply chains within industrialized economies (Davis and Goldberg 1957; King et al. 2010; Boehlje, Roucan-Kane, and Bröring 2011). These networked agricultural entities are complex adaptive systems that incorporate heterogenous interactions that are not easily understood simply by considering separate components (National Research Council 2015). Local, regional, national, and global agricultural economic systems are dynamic systems that need to and do evolve over time. Yet, these systems show increasing resistance to change given recent trends towards increasing vertical integration, growing industrial scales, and increasing structural interdependence.

AEAB curriculum designers must figure out how to cover critical and widely divergent content areas, including risk management, industrial organization, supply-chain management, technology adoption, short- and long-term decision making, among other options (Boehlje et al. 2011). Other required content includes the production of differentiated and value-added farmed products, marketing channels, contracts, and financial services, as well as persistent structural shifts to increasingly larger and larger farm sizes across a broad range of U.S. commodities, geographic regions, and associated supply-chain industries (MacDonald, Korb, and Hoppe 2013; MacDonald, Hoppe, and Newton 2018; MacDonald 2020). Each reader could no doubt add two or three other critical content areas, helping us to make our point; the wide scope of the AEAB discipline complicates curricular planning and innovation.

A second factor complicating curricular innovation in AEAB programs relates to the broad range of prior experience that entering students have with farming, agriculture, work, and life in general. Traditionally, AEAB students learned about agricultural system complexities and applied new knowledge principally through robust class discussions emanating naturally from and rooted in students' real-world case-in-point stories. This worked when there was a relative plentitude of students who grew up living and working on one or more farms. The situation today is inherently different. Many AEAB students have little, if any, real-world agricultural experience beyond perhaps the local retail sector (Swan and De Lay 2014). Overall, the numbers of students and faculty in AEAB academic programs from farming backgrounds and rural areas is declining (Blank 1998; Dyer, Breja, and Andreasen 1999; Blank 2001; McCluskey, Loureiro, and Wandschneider 2002; Labo, Jefferson-Moore, and Turner 2013; Dale, Robinson, and Edwards 2017). Transfer students from other nonagriculture programs (e.g., business or engineering) tend to further dilute levels of prior agricultural knowledge found in AEAB classrooms.

Another kind of prior knowledge diversity among AEAB students further complicates curricular design challenges. Traditionally students enter AEAB programs immediately after high school, but increasingly adult learners with years of prior work and other life experiences are choosing to enter AEAB programs, especially as options for remote learning continue to expand. The U.S. National Center for Education Statistics (2022a) reports that business-related studies are undergraduate students' first choice by far. In that context and with demand for online courses and programs increasing[1] (National Center for Education Statistics 2022b), Gardner et al. (2022) surveyed nontraditional students, looking for patterns between adult learner characteristics and online course preferences. These authors surveyed respondents (n = 7,861) who were over the age of 24 and had never attended college, were pursuing further credentials, or were returning to complete an unfinished degree. Among these

[1] In Fall 2020, 71 percent of postbaccalaureate students took at least one distance education course, with 52 percent of those students enrolling in those courses exclusively (National Center for Education Statistics 2022b). In Fall 2019 (i.e., prior to the Coronavirus Disease 2019 pandemic), these numbers were 42 percent and 33 percent, respectively.

students, those working the most (i.e., full-time) were twice as likely to be enrolled in business courses online compared to those who were not working.

The diversity of students' prior agricultural and work/life experiences complicates curriculum design efforts (Figure 1). Content that was once covered organically and easily through authentic classroom discussions has declined. This dearth presents challenges for delivering engaging classroom discourse that incorporates a breadth of real-world agricultural examples (Barkley 1991). With student and instructor backgrounds increasingly unable to provide real-world context, classroom discussions are left instead to focus on static economic models, concepts, and principles or on aging textbook examples that do not reflect current legal, business, and social protocols or evolving workplace situations.

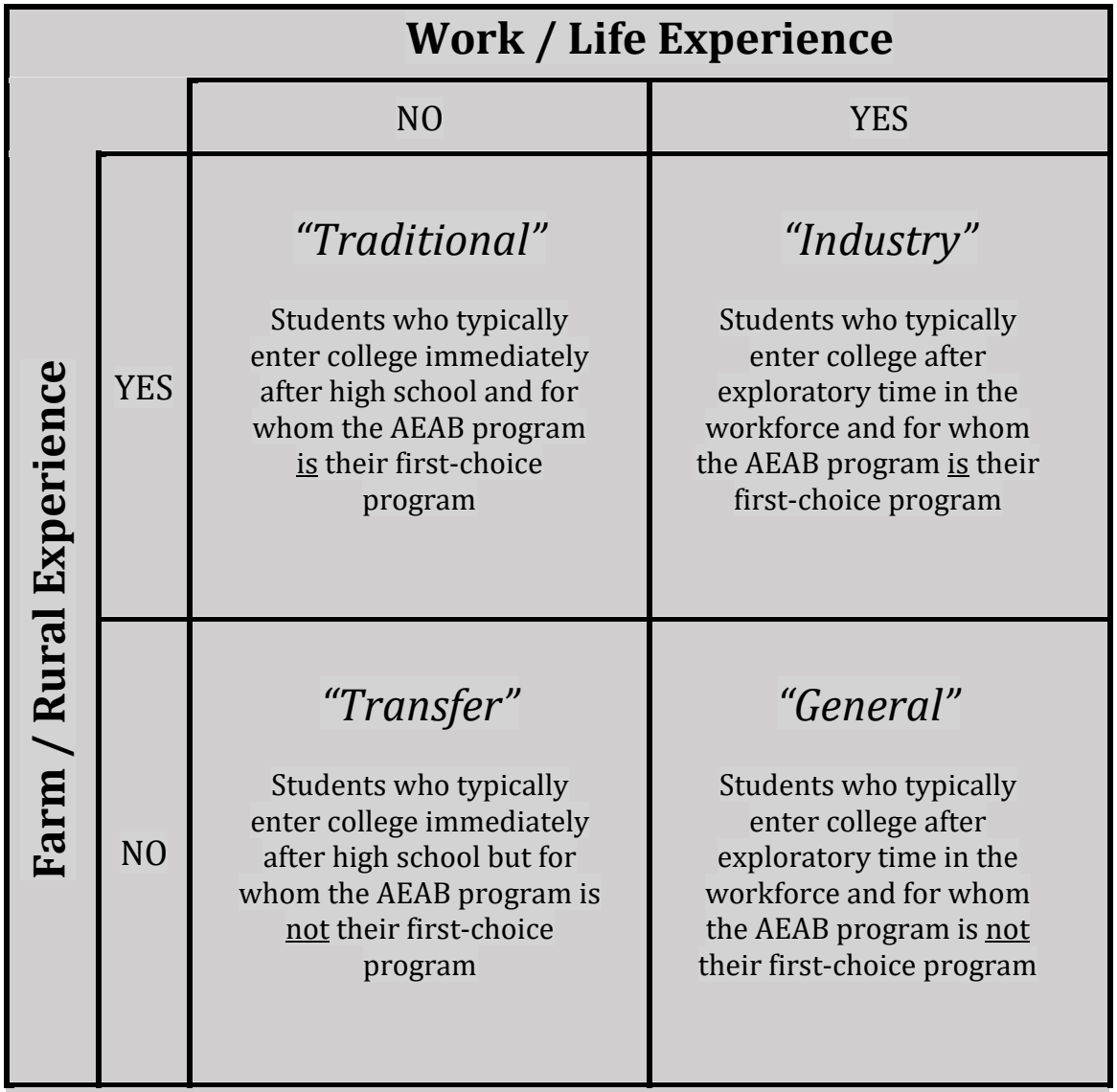

Figure 1. **Four Kinds of AEAB Students**. As a group, students who enroll in agricultural economics and agribusiness (AEAB) programs typically have diverse levels of prior agricultural and work/life experience. This diversity is one factor that inherently complicates curriculum design efforts.

To some extent, scenario-based tools like case studies and simulation exercises may help. Case studies are in-depth, (usually) real-world descriptions of example situations (e.g., a merger decision in business). When all students study the same detailed case or scenario, there is a common starting point for all students. Case studies employ real-world data and situations and, as such, they easily motivate thought-provoking discussions among students about how best to address those complex situations, respond to diverse interests, and craft recommendations supported by AEAB principles. Sterns, Schweikhardt, and Peterson (1998) rigorously examine case study methodology as a general strategy for socioeconomic research that is applied to complex, dynamic, and interdependent systems.

Like case studies, simulation games and scenario models also give students a common and detailed starting point. Simulation models present instructional scenarios where learners are placed in decision "realities" and invited to interact with other students to achieve complex learning outcomes. These pedagogical tools enable all students, even those without agricultural backgrounds or experiences, to discuss and debate problems related to farm production, supply centers, cooperatives, retail chains, and financial markets (Boehlje and Eidman 1978; Babb 1985; Dahlgran 1986; Dobbins et al. 1995; Fisher et al. 2000). Still, even as partial solutions, creating case studies and other simulation tools is costly work with weak incentives, two recurring issues that we address in our analysis and recommendations that follow.

A third factor complicating curricular innovation in the AEAB space is the high expectations of target employers. Generally, these employers want programs to develop both analytical (hard) skills and human interaction (soft) skills in students. In an early study, Litzenberg and Schneider (1987) collected graduate competency feedback data using a national survey of 543 entry-, middle-, and top-level managers at agribusiness firms across 41 U.S. states to evaluate emerging needs for undergraduate and graduate programs.[2] These authors presented agribusiness and agency survey responses that ranked six categories of skills and characteristics important to managers who hire AEAB graduates. The authors found that interpersonal characteristics and communication skills ranked above business, economic, technical, computer, and quantitative management information system skills, as well as previous work experience. Barkley (1991) later reported survey responses from alumni (n = 288) who ranked oral communication, people skills, and problem solving as the career skill competencies most important in their current position.[3] Boland and Akridge (2004) reported feedback from an industry steering committee of executive-level food and agribusiness organization professionals (n = 26) who shared similar sentiments about the importance of interpersonal and critical thinking skills, which they considered essential for new employees to develop.[4]

Bampasidou et al. (2016) more recently presented evidence from survey and interview responses that alumni, employers, and students (n = 105) value high-impact learning activities such as student club leadership, competitive academic teams, and mentored career pathway events.[5] These respondents said these activities improved career skill competencies, which included critical and analytical thinking, time management, and communication. However, undergraduate students indicated that they valued the communication and professional networking relatively less than other study participants. In a study of

[2] Respondents were identified by their membership in ag-based industry associations. Represented firms were from twelve different industries (e.g., co-ops, ag banking, seed production, food wholesale/retail, and grain production/marketing) and varied widely both by size (e.g., 35 to 1,000+ employees) and sales volume (e.g., less than $10 million to more than $1 billion).
[3] This was a mail survey of 5,023 College of Agriculture students who had graduated from Kansas State University between 1978 to 1988. The survey yielded a 30 percent response rate (n = 1,539). Of those respondents, 19 percent were agricultural economics graduates, and 49 percent were employed in agribusiness.
[4] According to these authors, the 26 surveyed senior executives represent "a broad range of food and agribusiness organizations, with eight 'food' and twelve 'agribusiness' executives from a variety of multinational and regional investor-oriented firms and cooperatives" with "six other leaders from various industry associations and government and nongovernment organizations that have frequent contact with graduates of agribusiness programs" (p. 568).
[5] These authors surveyed 304 students enrolled in and 117 alumni recently graduated from the Food and Resources Economics undergraduate program at the University of Florida.

employers, alumni, faculty, and students (n = 11,428) identified with the help of 32 universities from across the United States, Crawford and Fink (2019) found gaps between academic program outcomes and student skills that are needed for employment in a number of different critical competency categories such as areas of student persistence, ambiguity, change, and conflict resolution. Their study indicated that AEAB programs could improve student employability and early career success by helping students improve their: (1) awareness of entry-level roles in the workplace, (2) tolerance for accepting critiques, (3) listening effectiveness in the communication process, (4) realization of decision consequences, and (5) ability to build professional networks.

The above studies focus on employer demands in AEAB disciplines specifically. Other surveys look regularly at employer demands for college graduates across all disciplines. The National Association of Colleges and Employers (NACE), for example, surveys its employer members each year and publishes a list of top attributes that employers seek on student resumes in addition to a high grade point average (GPA). The 2022 NACE survey showed that employers (n = 246) most desire that students have: (1) problem-solving skills, (2) an ability to work in teams, (3) a strong work ethic, (4) analytical and quantitative skills, and there was a tie for (5a) written communication skills, and (5b) technical skills.[6] As such, the NACE survey (National Association of Colleges and Employers 2023) mirrors the AEAB-specific studies and shows that employers generally, like those who recruit from AEAB disciplines specifically, prefer graduates from programs that cultivate students with a wide range of skills, both technical and interpersonal. This wide range of employer demands—along with the discipline's complexity and students' diverse backgrounds—are the three factors that we think make curriculum innovation in the AEAB space inherently challenging.

3 An Economic Complication: Information Sharing

In addition to these three inherent factors, we identify one economic factor that complicates curriculum innovation for AEAB programs, namely a suboptimal level of information sharing among AEAB program directors about their curriculum innovation efforts. We surmise there must be a significant amount of curricular innovation occurring regularly for two reasons. One, institutional accreditors mandate regular curricular improvement as noted, and two, there are numerous AEAB programs. We count at least 95 academic institutions on the AAEA website that offer an undergraduate degree program focused wholly or in significant part on the study of applied economics, agricultural economics, and/or agribusiness (Agricultural and Applied Economics Association 2023). Gillespie and Bampasidou (2018) in their study identified 106 state-supported universities with agricultural economics, business, and management programs.

With so much expected curricular innovation happening, it is surprising to see so little related information shared, inventoried, or summarized publicly. We found several related peer-reviewed studies. Gillespie and Bampasidou (2018) reviewed institutional websites for AEAB programs at all U.S. 1862 and 1890 land-grant universities (n = 106) and inventoried which courses were most often selected as required courses for their programs. These authors usefully cited nine other previous studies of AEAB curricula. Litzenberg and Schneider (1987) similarly compared content foci in AEAB programs at 58 institutions with the content foci recommended by employers. The two other works by Boland and various coauthors (Boland, Lehman, and Stroade 2001; Boland and Akridge 2004) are also highly cited. We can also point to two tangential works, one by Perry (2010) looking at "the future of agricultural

[6] NACE reports that "of the 246 total respondents, 150 were NACE employer members, representing 17.4 percent of eligible member respondents" and that the "survey was also distributed to nonmember companies, from which an additional 96 responses were received" with respondents from the Southeast (17.1 percent), the Rocky Mountain/Far West (17.5 percent), and the Great Lakes (22.4 percent) making up the majority (p. 3). Of the 22 industry categories, more respondents were from the "Finance, Insurance, and Real Estate" industry (13.8 percent) than any other with relatively fewer responses from "Food and Beverage Manufacturing" (2.8 percent), wholesale trade (4.1 percent), retail trade (6.1 percent), accounting service (3.7 percent), and management consulting (4.1 percent).

economics departments" and another by Nourse (1916) looking at "what is agricultural economics." Other than these sporadically published studies from the academic literature, we find no other centrally managed or otherwise convenient way for AEAB program directors to find information about the frequent curricular innovation that is occurring.

4 Two Economic Solutions

We consider the lack of information sharing about curricular innovation among public AEAB higher-education programs as a public goods problem, a special case of the collective action problem, since information in this domain is publicly administered and therefore characterized as nonexcludable (Samuelson 1954) and assumed to be nonrival in consumption (Stiglitz 1999). To paraphrase Adam Smith (1776), though it may be in the highest degree advantageous to all AEAB program directors and faculty to have easy access to information about curricular innovations, the benefit of doing so could never repay the individual expense. In short, it is not worth it to any one person to compile and share this information.

There are many theoretical and applied solutions to public goods problems with varying efficiency benefits. The standard solution is for a central organization (or state) to do the work and then collect compensating dues (or taxes) from individual members (citizens). A second solution would be to embed the work into a contest that rewards larger contributions with higher probabilities of winning an appropriately valued prize. The standard solution was first described by Adam Smith in 1776 and appears in any microeconomics principles textbook. The contest solution is described by Kolmar and Wagener (2012).

To fix this public goods problem and make information about curriculum innovation more easily available and accessible, we propose two activities, both requiring the involvement of an interested disciplinary organization (e.g., the AAEA). One activity employs the standard public goods solution and calls on this disciplinary organization to survey AEAB program directors about their curricula improvements and pay for that work from member dues. The other activity employs the contest solution and calls on this organization to sponsor an award (i.e., a contest) to recognize outstanding work in curricular innovation and publish the award nominations.

4.1 The Survey Solution

First, we call for an interested organization (e.g., the AAEA) to administer, centrally, a periodic survey of curricular changes across the AEAB discipline. We and other members of the Teaching, Learning, and Communication section of AAEA have already had preliminary discussions about this idea.[7] As a group, we took an expansive view of what constitutes an AEAB curriculum. It includes, for example, not only required and elective courses but also available high-impact practices (e.g., internships, study abroad, and research) and enrichment activities (e.g., club and competition teams and extension opportunities). It also includes various kinds of student support services (e.g., student recruitment, retention, academic advising, and career counseling). We envision that a survey would gather information about each program's curriculum—broadly conceived—and gather information about each program's perceived strengths, weaknesses, opportunities, and threats.

We think such a survey would improve understanding among program leaders and faculty who need evidence about the offerings and attributes of programs across institutions. Broad program information would bring to light the challenges and limitations to meet industry needs that can be addressed at the program or institutional level. The survey findings would potentially also draw

[7] Other members (alphabetical order) are Kate Brooks (U. of Nebraska-Lincoln), Stan Ernst (Pennsylvania State U.), Sierra Howry (U. of Wisconsin, River Falls), Mark Jenner (Greenville U.), Danielle Kaminski (Fort Hays State U.), Kristin Kiesel (U. of California, Davis), Katherine Lacy (U. of Nevada, Reno), Ross Pruitt (U. of Tennessee, Martin), James Sterns (Oregon State U.), Julianne Treme (North Carolina State U.), Yijing Wang (U. of California, Davis), and Na Zuo (U. of Arizona).

attention to curriculum gaps that programs need to address to meet the evolving needs of the industry and graduate programs that recruit AEAB graduates. These survey results, when combined with related information from the published literature, would serve as a useful summary framework (e.g., Figure 2) for programs as they engage in evidence-based curricular innovation.

4.2 The Award Solution

In this section, we first describe several existing curriculum-related awards offered by other institutions and disciplines. Next, we define what we think counts as "curricular innovation" to set some boundaries on the kinds of activities that would be eligible for an AEAB award recognizing excellence in this area. Last, we propose and describe six specific award criteria that we think would be, along with our proposed definition, useful for a call for award nominations.

4.2.1 Existing Awards

Existing curriculum-related awards focus on course-level or program-level innovations or sometimes on both. For example, the Association of Collegiate Schools of Planning (ACSP) and the Association of Public and Land-Grant Universities (APLU) each offer an annual curriculum innovation award, but these awards are for course innovations, not program-level curricular innovations.[8] Similarly, Georgia Tech (GT) offers an award, but it is open to individuals or teams of faculty, recognizing "innovation in their course or departmental curriculum." An award from Missouri State University (MSU), like the GT award, recognizes faculty "individually or as a team." An award from Northwestern University (NU) is perhaps most encompassing; it recognizes enhancements not only to a program curriculum but also "new courses, new course materials, or components for existing courses, and/or new approaches to instruction."

Criteria for most existing awards typically target some version of creative problem solving through inventive application of theoretical and research concepts in practical real-world scenarios, incorporating multidisciplinary knowledge, and providing evidence and documented assessment of student success. Awards usually require applicants to identify an initial curriculum-related problem and then describe or hypothesize how some evidence-based curricular change did or would remedy that problem. For example, the GT award requires nominees to describe the innovation, "including the problem or student learning issue it addresses, the objectives of the innovation, the learning outcomes for the intended audience, and the approach taken." The ACSP award requires nominees to explain how innovations "integrate expertise from multiple disciplines, connect theory and research practice, and incorporate insights from professionals in the field to fill essential knowledge and skills gaps and inspire new ways of thinking." Most awards also ask nominators to describe the innovation's significance, its transferability (i.e., potential for adoption or replication by others), and its sustainability through letters of support from students, observers (e.g., peers), and/or supervisors.

Some existing awards have additional criteria emphasizing emerging needs or pedagogical advancements. For example, the ACSP award explicitly but not exclusively invites nominations for innovative uses of distance learning in response to the global pandemic. Some institutions (e.g., MSU) offer awards for curricular advancements in certain specific areas (e.g., diversity, equity, and inclusiveness). The University of Iowa (UI) offers a curriculum innovation award only for faculty who successfully integrate international or global perspectives into a course. An award given by the

[8] Website URLs for each award mentioned in this section are: (ACSP) https://www.acsp.org/page/LincolnCurricAward, (APLU) https://www.aplu.org/members/awards/aps-innovative-teaching-awards, (GT) https://ctl.gatech.edu/faculty/awards/curriculum, (MSU) https://www.missouristate.edu/FCTL/CurriculumInnovationAwards.htm, (NU) https://www.northwestern.edu/provost/faculty-honors/alumnae-curriculum-award/about.html, (UI) https://international.uiowa.edu/faculty/ip-funding/global-curriculum-development-award, (AAMC) https://www.aamc.org/what-we-do/aamc-awards/curricular-innovation-awards.

Identified Industry Needs	Skills Gaps in Student Preparedness
• Knowledge of food and agricultural markets • Interpersonal characteristics • Communication skills • Business skills • Economics skills • Computer information • Quantitative information • Management information • Previous work experience • Culture awareness • International experience	• Recognize and deal constructively with conflict • Build professional relationships • Accept critique and direction in the workplace • Understand role and realistic career expectations • Deal with ambiguity and navigate change • Identify and analyze problems • Realize the effect of decisions • Transfer knowledge across situations • Listen effectively • Communicate accurately and concisely • Ask good questions and have the ability to work well in a diverse environment
Measurable Program Outcomes	**Ideas for Curricular Innovations**
• Regional and national conference and contest participation • Employer surveys • Undergraduate and graduate program enrollment • Industry and alumni satisfaction and job placement • Evidence in universal design for learning (UDL) and inclusion, diversity, equity, and accessibility (IDEA) initiatives • Student retention and graduation rates • Experiential and high-impact learning opportunities • Leadership roles and member participation in student organizations • Evidence of high-impact learning activities (HILA) • Participation in teacher education and instructional design opportunities • International travel, study abroad, and exchange programs	• Exposure to real-world learning environments to solve specific issues or problems (e.g., case study) • Opportunities to promote student confidence (e.g., perseverance, conflict, ambiguity, change) • High-impact learning opportunities (e.g., innovative projects, games) • Opportunities for discussion and exchange of ideas (e.g., seminar courses, industry speakers) • Emphasis on improving written communication (e.g., rubric innovation) • Foundational course enhancement preparing advanced skills (e.g., tools) • Enhancement to oral communication challenges (e.g., public speaking, professional networking) • Opportunities to develop technical writing (e.g., research, market reports) • Curriculum addressing data analytics (e.g., spreadsheets, database, programming software) • Emphasis on professional ethics and integrity (e.g., scenario, role-play) • Opportunities to explore global cultures and economies

Figure 2: Curricular Innovation Framework for AEAB Programs

A regular survey of agricultural economics and agribusiness (AEAB) programs coupled with summary information from the literature would help AEAB programs to identify industry skill needs, student skill gaps, curricular innovation ideas, and associated measurable program outcomes.

Note: Adapted from Carnevale, A.P., and N. Smith. 2013. "Workplace Basics: The Skills Employees Need and Employers Want." *Human Resource Development International* 16(5):491–501; Litzenberg, K.K., and V.E. Schneider. 1987. "Competencies and Qualities of Agricultural Economics Graduates Sought by Agribusiness Employers." *American Journal of Agricultural Economics* 69(5):1031–1036; and Gillespie, J.M., and M. Bampasidou. 2018. "Designing Agricultural Economics and Agribusiness Undergraduate Programs." *Journal of Agricultural and Applied Economics* 50(3):319–348.

Association of American Medical Colleges (AAMC) is similarly only for curricular innovations that advance education "about opioids, substance abuse disorder, and pain management."

Existing awards are presented either *ex-post*, recognizing completed efforts, or presented *ex-ante*, recognizing and often providing funding for planned innovations. The ACSP, APLU, and GT awards are examples of the former. The MSU and NU awards are examples of the latter. All awards described in this section, including the ex-post awards, include some monetary reward ranging from $2,500 (AAMC) to $12,500 (NU).

4.2.2 New Award: Purpose

A new AEAB award—like any award—should clearly define the award's purpose and evaluation criteria. We define a curriculum as a cohesive set of required learning experiences designed to develop in students a corresponding set of desired competencies. This definition encompasses both course-level and program-level curricula, though we recommend that the AEAB award be limited only to program-level innovations. At most institutions, faculty groups (e.g., the department faculty) have major deciding roles about changes to both types of curricula. Faculty decide, for instance, what the program's student learning objectives will be and how they will be embedded in various credit-bearing courses. While faculty typically make curricular decisions, these decisions are informed by input from other stakeholders (e.g., students and employers).

Thus, for the purposes of a new AEAB award, we envision that award for curricular innovation at the program level could be for any educational activity under the control of faculty decision makers that affects enrolled students' attainment of the program's learning outcomes. A list of these activities goes beyond deciding about program content and required courses. It also likely includes decisions about student recruitment, admissions, and retention and decisions about program delivery modes (e.g., in-person, online, and/or hybrid). It also likely includes decisions about co-curricular activities such as academic and career advising (e.g., Mu and Fosnacht 2019), student organization and competition team advising (e.g., Vetter and Wingenbach 2019, p. 39), and support for internships, study abroad, and undergraduate research (e.g., Johnson and St age 2018).

4.2.3 New Award: Evaluation Criteria

We suggest six evaluation criteria for a new AEAB award. Two of those criteria derive from our above definition of curriculum. We think this award should be for program-level (not course-level) innovations. That is, we think curricular innovations should be (1) *relevant* to programs (not individual courses), and those programs should be in our discipline, broadly inclusive of applied economics, agricultural economics, agribusiness, and related areas of study. We also think that this award should be for curricular improvements that were decided in a (2) *cooperative* fashion by the relevant faculty group that is responsible for the program with documented input from interested stakeholders. That is, we believe that this award should recognize the collective efforts of faculty and allied stakeholders (e.g., an entire department) rather than efforts by a lone innovator or administrative group (e.g., the provost's office). Allied stakeholders may include current, past, or prospective students and/or employers, program support staff, and others. The best ideas come from engaging many minds, and nominations for this award should document such cooperation.

We propose four additional award criteria (a total of six). The award should also target innovations that are responsive, interesting, promising, and useful. We think innovations should arise from and be (3) *responsive* to some assessed or perceived curricular weakness, opportunity, or threat, which nominations should document clearly. We also think innovations should be (4) *interesting*. To us, that means that curricular innovations should go beyond typical, standard, or prevailing responses and perhaps include novel and nonobvious developments or similar problem solving. Next, we think innovations should be (5) *promising*, meaning they should seem likely or reasonably to lead to improved student competency and/or more successful functioning of the program. Last, we think that the most

meritorious program-level curricular innovations should be those that are (6) *useful*, meaning they are broadly applicable and/or of benefit to other programs that do or might face similar program weaknesses, opportunities, or threats.

5 Conclusion

Academic programs in applied agricultural economics and agribusiness must be structured as more than a collection of courses. Programs must include coordinated and integrated niche experiences that develop industry-specific knowledge and foster deep critical thinking and diversity of thought. Programs must partner with industry and potentially with each other to empower our graduates to deal with an increasingly broad set of future public policy, macroeconomic, and international realities.

As we consider the changing economic and business operating environment of agricultural food and fiber systems, we also reflect on the alignment of academic programs and workforce needs. We reflect on innovations in the learning environment where interpersonal and intrapersonal skills and attributes are embedded within instructional programs to promote deeper learning. We think about moving beyond easily measurable metrics like test scores and GPA to employment competencies that include higher levels of collaboration, communication skills, reported self-efficacy, critical thinking, and motivation to learn. We think about how we can better translate these values for our students to incentivize their retention and strengthen their performance in our academic programs.

To do this, we need collective action to make curricular planning easier by considering the incentives associated with marginal costs and benefits of creating transformative educational innovations. We need to do more to recognize collective groups of AEAB programs who have assumed an opportunity cost of invested resources in designing and delivering program change. Regularly inventorying the range of curricular diversity can identify emerging issues within the discipline and serve a broad array of educational programs. Recognizing AEAB program innovations through an innovation award increases the marginal benefits associated with institutional efforts by publicly acknowledging “property rights” of invested resources. These two ways of centrally facilitating correction to this public goods problem of sharing how we are improving our academic programs address the current dilemma of suboptimal social welfare within our discipline. In short, we need to talk more about curricular innovation.

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