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What do we want students to (*know* and) be able to do: Learning outcomes, competencies, and content in literacy-targeted principles courses

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ABSTRACT

Using the backward design model, the author of this article surveys and connects the economic competencies literature evolving from Hansen with the literature on literacy-targeted principles courses. He makes the case why departments should offer LT principles courses—which focus on higher-level mastery of a shorter list of concepts that students can apply throughout their lives—explains what students should be able to do after taking LT courses, and differentiates LT principles from existing “intro for non-majors” or “survey” courses. The author intends the article as a starting point for anyone interested in exploring or assessing the LT approach and suggests options for departments thinking about integrating LT principles into their course offerings.

KEYWORDS

Competencies; economic education; economic literacy; Hansen proficiencies; literacy-targeted (LT); principles of economics

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From to *know* to to do

When learning outcomes shift focus from content—what students should know—to competencies—what students should be able to do with the content—course design changes profoundly. Course-level learning outcomes are now *de rigueur*, required by accrediting agencies, administrators, and textbook publishers, as well as advocated by experts in economics education and student learning. For principles of economics courses, those outcomes have changed dramatically since a 1961 American Economic Association (AEA)-commissioned *Report of the National Task Force on Economic Education* used 40 pages to identify over 36 concepts and topics that high school students—mainly using college principles textbooks—need to know for a “minimal understanding ... for effective citizenship in the modern American economy” (Bach et al. 1961, 22).

The *Voluntary National Content Standards in Economics* (CEE 2010 [1997]) contains a more current list of 20 core concepts that economics students should know at grades 4, 8, and 12, as well as after a college principles course. Complementary assessments based on the *Voluntary National Content Standards* include the *Test of Economic Literacy* (TEL) for high school students and the *Test of Understanding in College Economics* (TUCE)—whose “main focus is on content areas in introductory microeconomics ... and introductory macroeconomics ...” (Allgood and Bayer 2016, 95).

Under the influence of the backward course design model (Wiggins and McTighe 2005; Fink 2013 [2003])—including its influence in economics (Allgood and Bayer 2016) and other disciplines documented in the Measuring College Learning project (Arum, Roska, and Cook 2016b)—learning outcomes are broadening from content and concepts to articulating what we want students to be able to do with the concepts they learn.

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I use the backward design model to survey attempts by economists at articulating what I want students to be able *to do*—after majoring in economics, but more specifically after completing a principles course. I then apply the *to do* lens of competencies to the literacy-targeted (LT) principles course. The LT approach argues that it is far more valuable for students to learn and be able to apply a few core economic concepts well than to be exposed to a wide range of concepts and techniques that the majority of students are unlikely to use again.

I will make the case for departments to offer LT principles courses, explain what students should be able *to do* after taking such courses, and clearly differentiate LT principles from existing “intro for non-majors” or introductory “survey” courses. This article, with surveys of the economic literatures of both competencies and literacy-targeted principles courses, is intended as a starting point for anyone interested in exploring, assessing, or implementing the LT approach.

Backward design starts with learning outcomes

For many of us, the conventional first stage in course planning is choosing the content to cover, comprising textbook chapters or journal articles. According to Wiggins and McTighe (2005), those choices should come *last*, not first. The logic behind backward course design is that you should know which competencies you want students to acquire before planning a course or choosing content. Wiggins and McTighe describe their model in language worthy of an economist—“Given a destination, what’s the most effective and efficient route?” (19). The three main stages of backward design are:

1. Identify desired course learning outcomes (goals)

Identify what we want students to “know, understand, and to be able to do” (17–18). Each learning outcome “is a single sentence that combines content a student should know with what they should be able to do with this content” (Allgood and Bayer 2017, 660). Content alone is not enough. The consensus in the education literature is that a one-semester, 3-credit course should have “4 - 8 learning outcomes ... in fact the fewer the better” (Keshavarz 2011, 4; Schoepp 2019).

2. Construct assessments and feedback

Students need feedback on how they are progressing towards course goals, both for gaining confidence and making adjustments to how they learn. Instructors need to evaluate student progress for grades and to make adjustments during the delivery of the course. How will instructors (and students) know if the desired outcomes are being achieved? Or “What will we accept as evidence of student understanding and proficiency?” (Wiggins and McTighe 2005, 17–18).

3. Plan teaching and learning activities

What will the instructor (and students) need to do for students to achieve the desired outcomes? According to Wiggins and McTighe, “the specifics of instructional planning—choices about teaching methods, sequence of lessons, and resource materials—can be successfully completed only after we identify desired goals [outcomes] and assessments... Teaching is a means to an end” (19). Choosing content (like chapters and articles to read) and choosing teaching techniques (like “active learning,” “flipped classroom,” and “meta-cognition exercises”) fall under this last stage. They are all means to an end, not ends in themselves.

What differentiates backward design from more traditional teaching models of what we want students *to know* is the focus on what we want students to be able *to do* with the knowledge they acquire. In the economics education literature, the synonyms of choice for *to do* are identifying the *proficiencies* or *competencies* we want students to have. We will use those terms synonymously.¹

Essential competencies—What economics students should be able *to do* and the role of writing assignments

The literature on student competencies in economics is relatively modest. Arum, Roska, and Cook (2016a, 18–19) note that compared to disciplines like physics and biology,

Economists ... have a disciplinary association, the American Economic Association (AEA), which as a whole has been less engaged in questions surrounding learning; instead, this conversation has been largely confined to the AEA's Committee on Economic Education (AEACEE).

The lack of broader AEA engagement is probably connected to economics' *relatively* low interest in teaching compared to most other disciplines, including physics (Walstad and Allgood 2005; Allgood and Walstad 2013; Goffe 2021).²

In recent literature, the shifting focus from *to know* to *to do* begins with Hansen's (1986, 2001) proficiencies—"what kinds of knowledge and skills our economics majors should master—what proficiencies they should be able to demonstrate—by the time they graduate." Before giving Hansen his due, it is worth noting that he cites Columbia University's Horace Taylor (1950), who chaired an AEA Committee on the teaching of undergraduate economics. Eighty-five members from 50 educational institutions met between 1944 and 1950 and produced a 230-page special issue of the *American Economic Review* (AER) in 1950. Two recommendations in the report "Elementary Courses in Economics" (Hewitt et al. 1950, 52–71) were:

The number of objectives and the content of the elementary course should be reduced....[T]he content of the elementary course has expanded beyond all possibility of adequate comprehension and assimilation by a student in one year of three class hours a week (56, italics in original).

Students should receive more training in the use of analytical tools....[T]he typical course in elementary economics tends to concentrate attention on the elucidation of economic principles, rather than on training the student to make effective use of the principles he has learned. Examination questions test the student's ability to explain, rather than his ability to use principles (59, italics in original).

Hansen (1986, 152) echoes the recommendation of the Taylor (1950) report—"adoption of the proficiency approach will lead to some restructuring of our teaching. The likely result is that students will be taught less, but will learn more, and learn what they do learn better than they do now." Table 1 reproduces Hansen's updated 2001 proficiencies.

The proficiencies are ordered to move up the scale of Bloom's (1956) taxonomy. Hansen (1986) suggests that a principles course emphasize proficiencies 1–3—accessing, displaying command, and interpreting existing knowledge—with some attention to proficiencies 4 and 5—interpreting/manipulating data and applying existing knowledge. Consistent with the backward design approach, each proficiency (Stage 1) is accompanied by assessments (Stage 2) for evaluating the skills and abilities of what students should be able *to do* with the acquired knowledge.³

From Hansen's proficiency 2 (display command of existing knowledge) and higher, many assessments involve writing.⁴ Hansen credits the Writing Across the Curriculum (WAC) program with prompting him to emphasize assessments where students, instead of demonstrating what they *know*, demonstrate

Table 1. Hansen's proficiencies of what economics majors should be able *to do*.

Proficiencies	Selected Assessments
1. Access existing knowledge.	Retrieve information on economic topics/issues....Track down economic data, data sources.
2. Display command of existing knowledge.	Write precis of a published article. Summarize current condition, outlook of economy in 2-minute monologue or 500-word paper. State dimensions of a current economic policy issue.
3. Interpret existing knowledge.	Explain, evaluate economic concepts/principles used in economic analyses published in newspapers, magazines. Describe how the concepts aid in understanding the analyses.
4. Interpret and manipulate economic data.	Interpret data such as in <i>Economic Report of President</i> . Construct tables from available data to illustrate an economic issue. Explain how to perform/interpret regression analysis.
5. Apply existing knowledge.	Prepare 5-page analysis of current economic problem. Assess costs and benefits of an economic policy issue in a 4-page paper. Prepare 2-page memorandum recommending an economic policy.
6. Create new knowledge.	Formulate questions illuminating an economic issue that needs research. Prepare 5-page proposal for research project. Conduct research study, presenting results in 20-page paper.

Source: Hansen 2001, 232–33.

what they can *do* with knowledge. The Maier and Ruder (2024) article in this issue discusses the impact of WAC and contains numerous writing assignment ideas. Traditional, multiple choice assessments, like TUCE, which are designed to capture learning in a “conventionally taught” principles course “would not be appropriate” (Hansen 2001, 237) to assess higher-order proficiencies.⁵

To be fair, the developers of TUCE were well aware of its limitations in measuring “only one of the objectives of the elementary course.” They began conventionally by specifying “the content to be covered” (Stage 3) but wanted to test not only “recognition and understanding” but also simple and complex *applications* of concepts (Fels 1967, 664). The current (4th) edition of TUCE tests similar categories of recognition and understanding (RU), explicit application (EA), and implicit application (IA). While RU is content-focused on Bloom’s and Hansen’s lower-order categories, the EA and IA application questions aim to test higher-order categories of application, analysis, and evaluation (Walstad, Watts, and Rebeck 2007, 6).⁶ Current concerns about TUCE (Arum, Roska, and Cook 2016a, 26–27; Hansen 2001) center on whether multiple choice questions alone can adequately evaluate higher-order proficiencies.

Following Hansen’s (1986) seeding, multiple forces stimulated the growth of the proficiencies approach in the economics education literature. Just as the WAC program influenced Hansen, it prompted many disciplines to focus more on Stage 2 assessments of backward design and the ability *to do* than on the content *to know* (Bean 2011; INWAC 2014; Russell 2002). The *to do* focus was further reinforced by three waves of concern about the state of college education in the United States—first in the late 1980s to early 1990s, a late 1990s economics-specific college concern, and a liberal arts concern in the early 2000s. Hansen’s own growing prominence and leadership in the economics education community, through roles on leading organizations—the AEACEE, the editorial board of the *Journal of Economic Education* (*JEE*), and the National Conference of Economic Education (NCEE), among others—amplified the profile of his proficiencies approach.

The first wave of concerns about the quality of U.S. college education began with the Association of American Colleges (AAC) 1985 report, *Integrity in the College Curriculum*. It recommended more student experiences in developing abilities *to do*—inquiry, abstract logical thinking, critical analysis, understanding numerical data, and literacy in writing, reading, speaking, and listening. The Boyer (1987) report, *College: The Undergraduate Experience in America*, sponsored by the Carnegie Foundation for the Advancement of Teaching, quickly followed with similar recommendations.

Within economics, proficiencies acquired a much higher profile with the publication of the Siegfried et al. (1991) report, “The Status and Prospects of the Economics Major,” done for the Association of American Colleges (AAC). This report, together with other discipline-specific reports, grew out of the work by the AAC (1985) and Boyer (1987) on higher education generally and “attempted to shift the emphasis from fields, curricula, and courses to expanding the abilities, capacities, and achievement levels of students” (Siegfried et al. 1991, 197). As part of the emphasis on Hansen’s (1986) proficiencies (Hansen was a coauthor of Siegfried et al. [1991]), the 1991 article popularized the phrase of teaching students “to think like an economist.” For assessment, they advocated for more writing and speaking in the economics major because “Writing is clearly the acid test of thinking like an economist” (201). This raised the prominence of WAC among economists to help instructors “learn how to make writing integral to their advanced courses within a reasonable time commitment” (211).⁷

The *JEE* followed Siegfried et al. with a 1993 mini-symposium on writing, with articles by Hansen (1993), Cohen and Spencer (1993), Abdalla (1993), and Davidson and Gumnior (1993). The benefits of writing subsequently became a mainstay of the economics education literature (Petr 1998; McCloskey 2000; Walstad 2001; Greenlaw 2003, 2009; Smith, Broughton, and Copley 2005).

In 1999, Salemi and Siegfried published “The State of Economic Education,” a manifesto for reforming the undergraduate economics majors’ curriculum. Their call to action was prompted, in part, by the declines in undergraduate economics enrollments in the late 1990s. The recommendations focus on competencies and their assessments—Stages 1 and 2 of backward design. They advocated a redesign of the principles course to emphasize applications. Rather than covering

“the breadth of topics covered in a traditional course,” it will “instead teach students to use a limited number of central ideas like opportunity cost, incentives, and comparative advantage . . . [to] emphasize depth of understanding, and the application of abstract principles to the real world” (357).

The broader curricular revision aimed to enable majors to attain Hansen's proficiencies by developing new assessments "that permit us to measure the depth of students' understanding of economic concepts or their ability to combine economic concepts in a constructive way" (359).

There was a hiatus in the economics proficiencies literature until the third wave of concern prompted by the Teagle Report in 2009, which itself followed a wave of high-profile books questioning the meaning of a liberal arts education by Richard Light (2001), Derek Bok (2005), and Anthony Kronman (2007), among others. The Teagle Foundation funded an AEACEE study of how well the economics major's goals and objectives overlap with those of a liberal education. The report by Colander and McGoldrick (2009a) was a wide-ranging assessment of the economic major, written, in part, to stimulate reactions, which were collated in the edited volume *Educating Economists: The Teagle Discussion on Reevaluating the Undergraduate Economics Major* (Colander and McGoldrick 2009b).

Most relevant for our focus is their coined term, "big think questions" (Colander and McGoldrick 2009b, 614). That term is described as "open-ended questions that invite students and instructors to interrogate arguments, evaluate assumptions, and discover serendipitous connections across courses and disciplines" (Garnett and McGoldrick 2013, 390). Colander and McGoldrick (2009a, 615) also refer to "big think" questions as "teaching questions"—"for which there may be little likelihood of adding to our understanding, but which provide a base of understanding of past thinking."

The Teagle Report listed, as examples of big think questions, "whether capitalism or socialism is preferred, what the appropriate structure of the economy is, whether the market alienates individuals from their true selves, whether society should emphasize consumer sovereignty, or whether statistical significance tests appropriately measure 'significance'" (Colander and McGoldrick 2009a, 615). Many readers (see Colander and McGoldrick 2009b) narrowly interpreted "big think" questions as being about big philosophical questions.

Garnett and McGoldrick (2014) subsequently clarified the pedagogical dimensions of "big think":

[T]he efficacy of a big think question is measured not by its philosophical bigness but by the significance of learning it engenders. Hence, big think questions must be carefully framed: to pique students' interest while keeping the level of analysis within their reach so that students are willing to engage rather than opting for easier alternatives [such as] ... waiting for the instructor to do the big thinking (631, emphasis added).

Answering "big think" questions requires students to use Hansen's higher-order proficiencies but in a manageable context. Garnett and McGoldrick list four principles for creating "big think" questions—relevance to students, open-endedness, tractability for principles students, and distinctiveness from existing textbook problems (632). "Big think" questions have often been explored in the context of capstone courses designed to develop higher-order proficiencies on Hansen's scale (Hansen 2009; Siegfried 2009).

Some of the same late twentieth century U.S. concerns about higher education contributed to the UK's 1996 creation of "The Quality Assurance Agency (QAA) for Higher Education."⁸ The most recent (QAA 2019) Benchmark Statement for Economics is a revision of previous statements in 2015, 2006, and 2000. The QAA sets UK standards of what can be expected of a graduate in each discipline "in terms of what they might know, do and understand at the end of their studies ..." (1). Six "key intellectual features characterize the approach of economists" (4) listed in the first column of table 2. Notice that these features are all about proficiencies—the ability *to do* various tasks in Stage 1 of backward design.

The OECD created a similar set of desired learning outcomes for Economics—"Assessment of Higher Education Learning Outcomes" (AHELO)—using a feasibility study drawing heavily on the QAA benchmarks and the Tuning process in Europe (OECD 2011, 16). The learning outcomes—"what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning" (OECD 2011, 19)—were agreed upon by 46 countries and are described as "Similar, but not identical to Hansen's proficiencies" (OECD 2011, 28). There are five categories, each with multiple assessments. A selection of outcomes and assessments that parallel the QAA standards appears in the second column of table 2.⁹

The most recent comprehensive statements of proficiencies for undergraduate economics students by Allgood and Bayer (2016, 2017) were first published as part of the Measuring College Learning project (Arum, Roska, and Cook 2016b). Their reports, based on consultations with economics

Table 2. Expectations of an economics graduate.

UK Quality Assurance Agency	OECD Tuning-AHELO
The ability to:	The ability to:
Abstract and simplify in order to identify and model the essence of a problem.	Articulate critical features and shortcomings in a model or method of analysis.
Analyze and reason—both deductively and inductively.	Use economic reasoning to formulate and evaluate economic advice (to both private and public sectors) and policy.
Gather evidence and assimilate, structure, analyze, and evaluate qualitative and quantitative data.	Show considerable knowledge of the sources of economic and social data including an understanding of where and how to find them, as well as the methods used to create or collect such data.
Communicate results concisely to a variety of audiences, including those with no training in economics.	Communicate (orally and in writing) and explain effectively economic arguments both to those with disciplinary knowledge and to non-experts.
Think critically about the limits of one's analysis in a broader socioeconomic context.	Think strategically and critically about a range of issues in economics.
Draw economic policy inferences to recognize the potential constraints in their implementation and to evaluate policy outcomes in the light of stated policy objectives.	Raise and explore a specific issue in economics.

Source: OECD 2011, 28–29.

Table 3. Allgood and Bayer competencies for economics students at any level.

Competency	Learning Outcome
The ability to:	Students should:
Apply the scientific process to economic phenomena.	Be able to ask good questions about economic phenomena and have a sense of how to gather and organize information to answer them. Instruction in economics should develop students' ability to practice inquiry and to learn about the world.
Analyze and evaluate behavior and outcomes using economic concepts and models.	Be able to use economics to explain, predict, and evaluate choices made individually or in a group. As students advance so should their ability to use positive and normative analysis to examine and propose choices, allocations, and policies.
Use quantitative approaches in economics.	Be able to use mathematical reasoning and empirical methods. Beyond knowing how to take a derivative or run a regression, students should learn when it is appropriate to employ a given method and how to interpret results.
Think critically about economic methods and their applications.	Be able to choose appropriate models and empirical methods. They need to connect models to real events, identify assumptions, and explain how the choice of a model or method may influence results. Advanced students should develop an ability to evaluate and integrate the strengths of different approaches.
Communicate economic ideas in diverse collaborations.	Become fluent with economic terminology, including the mathematical representations used in economic discourse, and should be able to communicate with economists and others through writing, listening, and speech. Students with greater competency can discuss more complex ideas and methods and incorporate more nuance.

Source: Allgood and Bayer 2017, 661–62.

educators who had worked on TUCE, the *Voluntary National Content Standards*, AHELO, and AP Economics, represent a synthesis of these previous efforts. Their five categories of consolidated competencies for economics courses at any level are presented in [table 3](#), with assessments for economics majors in each category.

The specifics of these three tables of competencies—Hansen, QAA/AHELO, and Allgood and Bayer—are less important than identifying the shared goal of what graduating economics students should be able *to do*.

This literature review of essential competencies started with the AEA's 1961 long list of 36 concepts and topics that are important for students *to know*. We have arrived, via Hansen, at Allgood and Bayer's (2017) short list of five competencies students should be able *to do*, with each competency requiring higher-order-thinking assessments. The differences between *to know* and *to do* raise obvious opportunity cost questions. Subject to the constraints of a two-semester micro/macro principles sequence and limited instructor

time, what concepts do we exclude to allow more time-intensive development and assessment of competencies? How do we choose and design those assessments? How do we restructure principles courses overall in shifting learning objectives from *to know* to *to do*? The LT approach provides a set of answers to those questions and paths forward for developing principles courses based on these shared competencies.

History of the literacy-targeted approach for principles

Stock's (2024) article in this issue, "Who Does (and Does Not) Take Introductory Economics?," documents a key motivation for the LT approach to principles. Seventy-four percent of U.S. college students never take any economics. Why are they not interested? And for those who do, *between 80 and 98 percent never take another economics course! They are one-and-done.*¹⁰ The *economic literacy* or *literacy-targeted* (LT) approach argues that it is far more valuable for students to learn and be able to apply a few core economic concepts well—an application of *to do*—than to be exposed to a wide range of concepts and techniques that the majority of students are unlikely to use again. The LT approach seeks to equip students with the content (concepts) and competencies they need to make sense of and succeed in their world. Because almost all principles instructors aim to create "economically literate" students who learn to "think like an economist," those of us supporting an LT approach prefer to describe its distinctiveness as the answer to the question, "What should go into the only economics course students will ever take?" What do we want students in an LT principles course to know and to be able *to do*?

Just as Hansen initiated much of the literature on competencies, many articles about the LT approach to principles start with Stigler's (1963) critique of the 36 concepts and topics of the 1961 AEA-commissioned national task force report.¹¹ Stigler was the first to make what has become the LT argument for principles:

The watered-down encyclopedia which constitutes the present course in beginning college economics does not teach the student how to think on economic questions. The brief exposure to each of a vast array of techniques and problems leaves with the student no basic economic logic with which to analyze the economic questions he will face as a citizen. The student will memorize a few facts, diagrams, and policy recommendations, and ten years later will be as untutored in economics as the day he entered the class (657).

An introductory-terminal course in economics makes its greatest contribution to the education of students if it concentrates upon a few subjects which are developed in sufficient detail and applied to a sufficient variety of actual economic problems to cause the student to absorb the basic logic of the approach (658, emphasis added).

The "social issues" approach arose as an earlier reaction to Stigler's 1963 criticisms of encyclopedic principles courses long before the LT approach was defined. Developed in the early 1970s at Oklahoma State University (OSU), Richard Leftwich and Ansel Sharp believed that

students learn more when the subject matter is interesting and relevant and when what they are supposed to learn is repeated by means of a learning process involving contemporary social issues....[A] set of concepts and principles would be selected that would be used over and over again in a set of issues until its elements were firmly established in students' minds (Leftwich and Sharp 1974, 3).

This approach never gained much traction in principles courses, surviving primarily in "intro for non-majors" courses or one-semester survey courses.¹² We will later return to the social issues approach briefly because it sheds light on challenges in evaluating the efficacy of approaches that prioritize students' ability *to do* over what we want them *to know*.

All LT advocates want to restructure principles courses. Three shared restructuring priorities are reduced content coverage, increased applications of core concepts, and increased student engagement through a narrative approach that connects to familiar student experiences in the world they inhabit.

Robert Frank explicated the case for reducing the number of topics covered and using the freed class time for repeated applications of the remaining core concepts:

The best way to teach introductory microeconomics ... is to expose students to repeated applications of a short list of the core ideas of the discipline....[B]egin with a well-articulated short list of *some* sort, and then doggedly hammer away at it, illustrating and applying each principle in context after context (Frank 1998, 13–14).

Frank reiterates this LT approach in multiple publications (2002, 2006, 2012).

Salemi and Siegfried (1999) recommend that “*Academic Institutions Should Place Greater Emphasis on Economics as General Education*,” starting with the redesign of the principles course to emphasize application of core concepts and “teach students to use a limited number of central ideas like opportunity cost, incentives, and comparative advantage ... [and] emphasize depth of understanding, and the application of abstract principles to the real world” (Salemi and Siegfried 1999, 357, emphasis in original).

Hansen, Salemi, and Siegfried (2002, 466) are then the first to explicitly label this approach as literacy-targeted—“A Principles course targeted to literacy must focus more on basic concepts than today’s courses and texts do. Educational resources released by limiting the number of topics must be used to deepen student understanding of core ideas.” Salemi provides the most complete explanation of the literacy-targeted approach:

An alternative goal for the first course is to provide students with ... a deeper understanding and working knowledge of a short list of economics concepts. In a short-list course, students apply concepts to decisions like those they will make at home and at work, and use them to interpret national and international economic news and policy (Salemi 2005, 47).

Frank (2002, 461) adds one more shared priority to restructuring—engagement. “Even a less-is-more strategy will not succeed ... unless students become actively involved in the process.” If students are to retain and later apply what they have learned in principles, the course must engage them to want to learn more and convince them that they will better understand and succeed in the world around them.

One-and-done students do not have the extrinsic motivation of better preparing themselves for upper-level economics courses. To become engaged, they must see and understand the relevance of what they are learning. Hansen, Salemi, and Siegfried (2002, 468) want LT instructors

to show how fundamental economic concepts can help explain issues covered by the *Economist*, *Wall Street Journal*, *New York Times*, and local and campus newspapers. They should help students learn which concepts and what kinds of evidence can be used to understand what they read and observe.

Frank’s (2002, 2006) “economic naturalist” approach guides students to encounter economic principles “in ecologically familiar examples [rather] than in the more formal abstract form in which they are often presented” (Frank 2012, 194–95). He poses curiosity-inducing questions about the student’s world that economic principles can answer, such as “Why do brides spend so much money on wedding dresses, whereas grooms often rent cheap tuxedos, even though grooms could potentially wear their tuxedos on many other occasions and brides will never wear their dresses again?” (see Frank 2006, 62–63, for the economic reasoning).

Frank’s “familiar examples” often involve storytelling, and Frank (2012, 194) wants LT principles courses to “make more extensive use of narrative structure in presenting ideas.” The economic naturalist assignments are designed to get students to tell stories that apply economic principles to answer questions like the one above. Similarly, Cohen and Wolla (2024, xiv) describe their LT textbook approach as

designed to get students interested in economics as a way of thinking that will help them make smarter choices in their lives. Concepts are not presented as theoretical ideas that must be learned in isolation, or as formulas for a set of problems. Instead, each chapter begins with a scenario, and the concepts emerge logically as the narrative unfolds.

The emphasis on narrative brings to mind Ariel Rubenstein’s (2012) *Economic Fables*. In reading this passage emphasizing stories as opposed to models, keep in mind that Rubenstein is one of the foremost mathematical game theorists.

Economic theory formulates thoughts via what we call “models.” The word model sounds more scientific than the word fable or tale, but I think we are talking about the same thing.

The author of a tale seeks to impart a lesson about life to his readers. He does this by creating a story that hovers between fantasy and reality. It is possible to dismiss any tale on the grounds that it is unrealistic, or that it is too simplistic. But this is also its advantage. The fact that it hovers between fantasy and reality means that it can be free from irrelevant details and unnecessary diversions. This freedom can enable us to broaden our outlook, make us

aware of a repressed emotion and help us learn a lesson from the story. We will take the tale's message with us when we return from the world of fantasy to the real world, and apply it judiciously when we encounter situations similar to those portrayed in the tale.

In economic theory, as in Harry Potter, the *Emperor's New Clothes* or the tales of King Solomon, we amuse ourselves in imaginary worlds. *Economic theory spins tales and calls them models* (Rubenstein, 2012, 16, emphasis added).

Storytelling, one of the most basic forms of human communication, makes economic principles more accessible. According to Frank (Endresen 2020), “Most people can absorb ideas most readily and efficiently if ideas are couched in a narrative, where there are actors, people with interests, a problem, a question to be answered, and a resolution.” Given the LT restructuring priorities of reduced content coverage, increased applications of core concepts, and narrative approaches to student engagement, what does a literacy-targeted principles course look like?

Examples of (backward) designed literacy-targeted principles courses

Following the backward design stages, let's start with course learning outcomes (Stage 1), associated assessments (Stage 2), and, for Stage 3, focus only on content selection. Like Hansen (2001), we omit other teaching and learning activities, which Goffe and Wolla (2024) discuss in this issue.

Allgood and Bayer (2017, 662) provide five learning outcomes for any microeconomics principles courses but none for macroeconomics. Cohen and Williams (2019) list ten outcomes for Cohen's LT two-semester micro/macro principles sequence. Gilleskie and Salemi (2012) describe learning outcomes for Salemi's LT one-semester micro/macro principles course.¹³ Table 4 identifies how all of the Allgood and Bayer outcomes (AB) map onto Cohen's LT course outcomes (C). The purpose of these comparisons is to show how disciplinary expectations, as articulated by Allgood and Bayer, can be met by an LT principles course.

Salemi's LT principles course at the University of North Carolina Chapel Hill (UNCC) describes students' overall course goals rather than specific learning outcomes:

The purpose of this course is to change the way you look at the world. The course focuses on core economic concepts and provides opportunities to practice using them in contexts like you will encounter throughout your lives. Your success in this course will be determined later in your life when you understand what economics has to say about taxes, environmental rules, trade agreements, free markets, unintended consequences of well-intended policies, and many other issues. The goal of the course is to help you think like an economist in ways that will help you make better decisions. It is up to you to decide how valuable the economist's perspective is (Gilleskie and Salemi 2012, appendix A).

Referring to table 4, Salemi's stated goals can be tied to Allgood and Bayer outcomes AB1, AB2, and AB5. Although not stated explicitly as goals, appendix A to Gilleskie and Salemi (2012) contains detailed course content and assessments (see below) that tie to Allgood and Bayer's other outcomes (AB3, AB4). These are two examples of how LT principles courses can meet the disciplinary expectations (as articulated by Allgood and Bayer) for the learning outcomes of a microeconomic principles course. No doubt there are other examples of course learning outcomes for LT principles, but they have yet to appear in the literature.

Given these course learning outcomes, what assessments (Stage 2) will demonstrate student competencies for each? Assessing student capacities *to do* requires a different form of assessment than multiple choice questions that largely measure what students *know*.¹⁴ Many such assessments involve writing assignments. A key tenet of the WAC program that inspired Hansen is that writing assignments closely align with course goals through backward design. Both Cohen's and Salemi's LT courses contain many capacity-*to-do*-driven assessments, including multiple writing assignments where students must find news articles and interpret them using core economic concepts.

Cohen's course assessments, many designed in collaboration with a WAC instructor (see Cohen and Williams 2019), include drafting and revising an abstract of an *Economist* article and both a micro and a macro op-ed with a convincing economic argument for a general audience. These assessments are directly related to course outcomes C2, C6, C9, and C10 in table 4.

Table 4. Mapping course-level learning outcomes—Allgood and Bayer for introductory microeconomics and Cohen for LT micro/macro principles.

Course Objectives <i>Upon completion of this course, students should be able to:</i>	
Allgood and Bayer: One Semester Micro Principles	Cohen: Two Semester LT Micro/Macro Principles
AB1. Explain how economists use the scientific process to expand understanding of individual decision-making, market outcomes, & government policies, & apply the process by practicing curiosity and hypothesis testing.	C1. Understand the concept of economic equilibrium & its role in economists' use of simple models to approximate controlled experiments in the natural sciences. C2. Proficiently apply the economic way of thinking to explain economic and non-economic events using simple models that focus on important variables while setting aside unnecessary complications. C6. Explain the objectives, successes, and failures of government policies such as minimum wages, rent controls, competition policy, environmental policy, trade policy, and tax and income redistribution policy.
AB2. Choose and use appropriate concepts & models to analyze and evaluate choices, outcomes, & policies in diverse settings.	C5. Use cost/benefit analysis to identify trade-offs, including intended and unintended consequences, of all choices. C3. Distinguish positive from normative claims about economic events and policies.
AB3. Develop quantitative reasoning skills by working with equations and graphs & by explaining the need for empirical methods that distinguish causation from correlation.	C7. Find data measuring macroeconomic outcomes including GDP, economic growth, unemployment, inflation, and understand the limitations of each measure.
AB4. Identify the assumptions underlying models & connect the assumptions to particular theoretical results and/or observed conditions.	C4. Appreciate the limitations of economic models for explaining economic and non-economic events.
AB5. Discuss economic issues in ways that promote mutual understanding and inquiry, demonstrate fluency in basic economic terminology and tools, & explain economic reasoning to and incorporate insights from non-economists.	C10. Write persuasive, informed opinion pieces about microeconomic and macroeconomic policy issues for a general audience. C8. Describe the fundamental macroeconomic question of whether markets quickly self-adjust, and explain both the hands-off and hands-on positions on the role of government fiscal and monetary policy. C9. Come to an informed personal opinion about the appropriate role of government in macroeconomic policy.

Sources: Allgood and Bayer 2017, 662; Cohen and Williams 2019, Appendix A.

Salemi's course assessments

... included assignments that helped students transfer their economic understanding to contexts and tasks they will encounter throughout their lives. The course required students to make five postings to an economics journal. For each posting, students were required to find a news article and write a 100–200 word essay in which they used the concept-of-the-day to interpret the reading. In their first posting students used “opportunity cost” and the “benefit-cost principle” to interpret an article about scarcity. In the second, students used demand and supply to interpret an article about allocation. For the third, students found an article that explained a comparative advantage of the United States and explained how exploiting that advantage would lead to the creation of jobs and wealth. For the fourth posting, students found an article about a macro policy issue and explained why the policy issue was important. For the fifth posting, students found an article that described the current state of monetary policy and explained why the Fed was more likely to raise or lower interest rates (Gilleskie and Salemi 2012, 131).

These are illustrative examples of writing assessments based on “big think” questions. The Maier and Ruder (2024) article in this issue provides many more examples and specifically addresses the role and challenges of assessments in meeting course learning outcomes for LT principles.

In providing examples of LT courses, let’s move from Stage 2 of backward design to Stage 3, which includes choosing what content to cover. The LT approach argues for students learning to apply a few core economic concepts well rather than being exposed to a wide range of concepts and techniques most are unlikely to use again. So which core concepts should be included as content, and, more controversially, which do we exclude?

There is agreement in the LT literature that included content for LT principles should come from the 20 concepts in the *Voluntary National Content Standards in Economics* (CEE 2010). The agreement is not surprising as key LT proponents (Siegfried, Frank) were on the committee choosing those standards, using these criteria:

Understanding each standard should be necessary for citizenship, employment, and life-long learning of economics and help a typical high school graduate grapple with the ordinary business of life. When the committee could not explain satisfactorily why the concept was essential ... especially when the concept is difficult to convey, the concept was excluded (CEE 2010, vi).

But with limited class time, some concepts must be excluded to make way for repeated applications and more challenging assessments to enable deeper learning. The opportunity cost of more time devoted to *to do* is covering fewer concepts *to know*. This is where disagreements arise.

The list below of possible topics to exclude is an amalgam of partially overlapping lists in Frank (1998), Hansen, Salemi, and Siegfried (2002), and Salemi (2005).¹⁵

- Drop cost curves
- Drop comparisons of imperfectly competitive industries
- Drop formulas for elasticities (beyond, for example, % change quantity/% change price)
- Drop national income accounting (keep aggregate expenditure)
- Drop formulas for fiscal and money multipliers (beyond, for example, 1/% leakages from circular flow)
- Limit graphs

Given the LT focus on competencies *to do*, resolving disagreements about the specifics of what to exclude from the *to know* list is not a priority. Salemi (2005, 50) argues that “commitment to a short list is more important than the specific list.” Frank (2012, 194) concurs:

The good news is that there are really only a handful of basic principles that underlie most of what economists have discovered about the world. If we asked a thousand different economists what those principles were, we’d get a thousand different lists, but there would be substantial overlap among them. In any event, it is less important that everyone agree on what constitutes the best possible short list of principles than that instructors begin with a plausible short list, and then hammer away at each of its items repeatedly.¹⁶

The elephants and efficacy of the LT approach

There are two elephants in the room for any discussion of the LT principles approach. The first is the perception that such courses are “dumbed-down” compared to a traditional principles course. Unquestionably, LT principles courses will have less math and graphs and cover fewer technical concepts. But those are not the only forms of theory, of disciplined “thinking like an economist.” More emphasis on applying core theoretical concepts, and less emphasis on mathematical techniques, can deepen understanding without sacrificing rigor. You will never see an equation or abstract graph in *The Economist*, *The Wall Street Journal*, or *The New York Times*, yet these publications present sophisticated economic analysis. To treat rigor and mathematics as identical would be to suggest, for example, that disciplined philosophical thinking cannot be rigorous. The rigor of economic thinking comes from learning to analyze events like an economist, emulating the practice of controlled experiments using assumptions,

even simple demand-and-supply models, and data. Models can take the form of narratives, as well as mathematics. Recall the words of Rubenstein (2012, 16)—an expert in game theory and mathematical modeling—“Economic theory spins tales and call them models.”

The second elephant is the concern that restructuring principles courses to serve the majority interests of *one-and-done* students and attract more of the 74 percent of college students who never take principles will disadvantage students who go on to upper-level courses and major in economics. Empirical appraisals of the LT approach, as well as of the earlier social issues approach, address both of those concerns.

The social issues approach is “similar to the ‘literacy-targeted’ (LT) approach in that the focus is on higher-level mastery of a shorter list of concepts that students can apply throughout their lives, *although the LT approach need not center around a set of issues*” (Stock 2022, 72, emphasis added). Grimes and Nelson (1998) report on two studies comparing TUCE scores of students taking a social issues course—focused on selected concepts, repeated application, and issues relevant to students—with national norms for traditional principles courses. The positive result in both micro and macro was greater student retention than in the traditional principles course—fewer *one-and-done* students. Social issues students, however, “scored significantly below the Principles students on the micro version of the TUCE, *ceteris paribus*” (Grimes and Nelson 1998, 57), while macro post-TUCE scores were not significantly different.

The negative micro result did not surprise the authors because “The Social Issues approach does not include the extensive development of the microeconomic tools common to most Principles of Economics textbooks (e.g., cost curves)” (61–62). This use of TUCE multiple choice scores to assess what students learn (especially learn *to do*) is problematic, as Hansen (2001) argues, when course learning objectives—whether in a Social Issues or LT principles course—shift away from the range of economic concepts for students *to know* toward the *to do* competencies students develop in using core concepts. This is why, in backward design, assessments must be aligned with course learning objectives for there to be accurate measures of learning. Possible mismatches between objectives and assessments must be considered in evaluating LT courses’ efficacy.

Our main efficacy focus is on LT courses. Gilleskie and Salemi (2012) test whether LT principles students who go on to major in economics are disadvantaged in upper-level courses. Their study at the University of North Carolina Chapel Hill (UNCCH)—with 7,000 students over three years—compared the performance in upper-level economics courses of students who took a traditional principles course with students who took an LT course. They found that “students who complete an LT principles course earn grades as high in intermediate microeconomics and intermediate macroeconomics as those of students who complete a traditional principles course” (124).

Benjamin, Cohen, and Hamilton (2020) compare the performance in intermediate economics courses of students taking traditional two-semester micro/macro principles courses with students taking LT two-semester micro/macro principles courses with the course learning objectives listed in column 2 of table 4. The results, based on an 11-year dataset with over 13,000 students at the University of Toronto, show that there is no disadvantage to taking LT principles courses for student performance in intermediate microeconomic theory, macroeconomic theory, and statistics courses. They conclude that “departments can offer LT principles courses while preserving subsequent disciplinary rigor. Students can take such courses without disadvantage should they change their minds and pursue further studies in economics. The vast majority of ‘one and done’ principles students will be better off with LT courses better suited to their interests and abilities” (302–3).

They also find that “women are disproportionately represented in the LT course. [So] offering an LT approach may improve the chances that female students progress in economics” (299). The article by Hoover and Washington (2024) in this issue—“How LT Principles Can Improve Diversity, Inclusiveness, and Student Interest”—further explores these issues. Bayer and Wilcox (2019, 311) implicitly argue for an LT approach to help remedy the underrepresentation of women and minorities in economics when they suggest that principles courses should emphasize “skills over laundry lists of concepts and content” to “generate and sustain broader appeal.”

The studies at UNCC and the University of Toronto both attribute the empirical results to the extra course time devoted to better mastering fewer concepts through repeated applications and assessments (aligned with course learning outcomes) that create deeper and more durable learning.¹⁷ The article by

Goffe and Wolla (2024) in this issue supports that explanation by showing how the repeated use of simple models of the circular flow and production possibilities frontiers allows more application of evidence-based cognitive learning practices that improve student learning.

Moving LT principles forward through backward design

In economics, Lee Hansen pioneered a shift in learning objectives away from content—what students should know—to competencies—what students should be able *to do* with that content. The competencies focus aligns well with the LT approach to restructuring principles of economics, which focuses on fewer economic concepts and uses freed-up course time to enable students to better apply (*to do*) core concepts like opportunity cost, comparative advantage, comparing marginal benefits and costs “years later, in situations relevant to their lives and different from those encountered in the classroom” (Salemi 2005, 47).

This description of the LT approach is a reminder of why most “intro for non-majors” and “survey” courses are *not* LT courses. Many such courses use “*Foundations of ...*” or “*Essentials of ...*” textbooks. These are “stripped down” versions of traditional principles courses and textbooks, differentiated by reducing the *to know* content. An LT approach using backward design starts with outcomes we want students to be able *to do*, with assessments aligned with those outcomes, and narrative (as well as graphical) relevant content that better engages students. Another drawback of stripped-down courses is that many are dead ends. If the courses succeed in getting students interested in economics, they often must then take the traditional principles courses and lose credits.

There are multiple possible paths forward for implementing LT principles courses in a department’s curriculum. At UNCC, only one out of multiple sections of principles adopted the LT approach. At the University of Toronto, there was a separate, two-semester LT micro/macro sequence in addition to the multiple sections of a more traditional (and mathematical) two-semester micro/macro sequence. To avoid the dead-end problem, there were differential grade requirements to go on to the second year and become a major. Students in the traditional courses were required to achieve a 63 percent average (C), while students in the LT courses required an 80 percent (A–). In all first-year courses, averages were between 68 percent and 70 percent.

Math prerequisites for second-year courses also can play an important role in supporting LT principles courses. At the University of Toronto, all continuing economics students from either principles sequence are required to achieve 63 percent in a two-semester calculus/linear algebra sequence. Departments concerned about preserving upper-level disciplinary rigor with an LT principles course can use a math prerequisite threshold as the mathematical barrier to entry for majors instead of a mathematically demanding principles course.

With math prerequisites in place for second-year courses, a more radical option would be for a department to offer only LT principles courses, with a higher grade threshold if students want to go on to major or minor in economics. Given the potential to significantly increase enrollments and diversity, with the resource simplicity of a single principles sequence, there is a cost/benefit analysis to consider. Just as LT advocates argue that commitment to a short content list is more important than the specifics of the list, commitment to an LT approach is more important than the specific institutional structure of the principles course.

There are substantial disciplinary and institutional barriers to LT transformations of principles courses—inertia, costs of change, state and AP curriculum requirements, time and resource costs of assessment, and suitable available textbook resources, among others. The article in this issue by Ihrig, Peate, and Wolla (2024)—“Curriculum Lag Challenges and Strategies for LT Principles”—is a cautionary tale of resistance to any changes in principles courses. If these barriers cannot be overcome, the LT approach might suffer the same fate as the social issues approach.

But there are also new encouraging forces at work that were not present during the social issues era. The LT approach is supported by the rise of backward design, research on cognitive science and student learning (Goffe and Wolla 2024), concerns about diminishing enrollments in economics, and the push to apply economic analysis to problems students are interested in to improve the disappointing state of economics on diversity, equity, and inclusion measures (Hoover and Washington 2024).

For those interested in experimenting with the LT approach in their principles courses, Gilleskie and Salemi (2012) and Cohen and Williams (2019) provide examples and roadmaps, especially in the appendices. The other articles in this special issue are also intended to improve understanding of the LT approach, provide applications, and increase interest among more principles instructors and economics departments. While these few resources are a good place to start, clearly more research is needed about applications and the efficacy of the LT approach.

The LT literature and these efficacy studies constitute a challenge to the economics discipline. If an LT approach to principles leaves majors no worse off, is more engaging and accessible to a much broader audience, potentially attracting more of the 74 percent of college students—including women and minorities—who never take any economics, while better serving the needs of the 80 to 98 percent of principles students who never take another economics course, why aren't more economics departments exploring Pareto-improving LT principles alternatives?

Notes

1. The course design literature is full of paired synonyms for the contrasting goals of *to know* versus *to do*—explain/use, theory/application, ideas/practice, knowledge/proficiencies, understand/capacities, and concepts/competencies.
2. Using survey data, Walstad and Allgood (2005, 181) find

that greater opportunity to teach was viewed by economics professors as an inconsequential reason to change a job. Almost seven in 10 economics professors rated it as not important. This response was greater than for any other group of professors. The disparity was greatest (29–35 percentage points) when economists' responses are compared with those of professors in computer science, engineering, or business. The rating differences were less, but still substantial (14–19 percentage points) when compared with professors in the social, biological, or physical sciences, or mathematics and statistics. The results ... suggest that economics professors have the least interest in teaching among professors in all science disciplines.

In contrast to economics, Goffe (2021, 1) highlights the prominence of education research throughout the discipline of physics: 92 U.S. physics departments have a physics education research group; 516 physicists at PhD-granting schools are active in physics education and have 156 PhD students; the summer program of the 2019 conference of the American Association of Physics Teachers lists 900 physicists and 144 advertised postdoc positions in physics education research between 2008 and 2015.

3. Hansen did not complete Stage 3—teaching and learning activities—of the backward design process. The Goffe and Wolla (2024) article in this issue, “Cognitive Science Teaching Strategies and Literacy-Targeted Economics Complexities,” discusses the Stage 3 literature.
4. Hansen's first proficiency—access existing knowledge—is mostly about what students should *know*, rather than be able *to do*.
5. Hansen's concerns about TUCE inadequately assessing higher-order thinking skills were preceded by Yates (1978), who was among the first to question whether concept testing—what students *know*—captures the higher-order proficiencies of what we want students to be able *to do*.
6. For more on TUCE, see Siegfried and Fels (1979), Walstad and Rebeck (2008), and Welsh and Fels (1969).
7. Siegfried et al. (1991, 201–2) promoted the goal (shared with other disciplines) of the economics major “to empower students with a self-sustaining capacity to think and learn, and to take an active role in their education. They should know how to pose questions, collect information, identify and use an appropriate framework to analyze that information, and come to some conclusion. The end result is to qualify students to make informed decisions about their lives and communities long after their college experience.”

“[T]o evaluate our success in educating majors to better understand how to think like economists, we need to identify how to measure the proficiencies of students in doing such thinking” (Siegfried et. al. 1991, 214).

8. <https://www.qaa.ac.uk/quality-code/higher-education-credit-framework-for-england#>
9. The five AHELO general learning outcomes are not identical to the six QAA proficiencies, and three of the five outcomes are paired with multiple (2 to 5) assessments. Where there was choice, we selected the AHELO assessment that most closely matched the QAA proficiency. The complete AHELO list is on pp. 28–29 in OECD (2011).
10. The phrase *one-and-done* is shorthand for those principles students who do not take any economics courses beyond a survey, principles, or other introductory economics course. Estimates of the percentage of principles students becoming economics majors at four-year colleges range between 2 and 20 percent (Hansen, Salemi, and Siegfried 2002; Colander and McGoldrick 2009a; Allgood, Walstad, and Siegfried 2015). Stock (2024) finds that when community college students, who account for 50 percent of all college student enrollments in principles, are included, 74 percent of all students never take any economics. Of those who take at least one economics course, only 2.2 percent become majors, while 11.8 percent (including majors) take four or more economics courses.

11. Saunders (1980), Salemi and Siegfried (1999) and Hansen, Salemi and Siegfried (2002) all quote Stigler (1963). Fels (1967, 660) reports that the development of TUCE was motivated, in part, by Stigler's comments.
12. Recent examples of social issues survey textbooks include Stock (2013) and Register and Grimes (2016).
13. Cohen's courses had 34 contact hours over 12 weeks each semester, for a total of 68 hours. Salemi's one-semester course had a total of 58 contact hours over 14 weeks.
14. "Requiring students to answer a battery of largely single-dimensional, multiple-choice questions, as occurs in most principles courses ... neither challenges students to begin thinking like economists nor builds their ability to use what they are learning" (Hansen 2001, 232).
15. Hoyt (2023) has a thoughtful discussion of which concepts to include, with connections to all three stages of backward design.

Salemi (2005, 50) says, "I drop from the first course concepts that students are unlikely to use later in life, especially when those concepts are technically demanding." He goes on to say that

Although the reader's list is likely to be different, my first-course students do not study cost curves (ATC, MC, AVC and AFC). The only graphs they encounter are demand and supply graphs and the production possibilities frontier. They learn the difference between price-taking and non-competitive behavior but not noncompetitive industry structures. They do not study elasticity formulas but do know the revenue test for elasticity. They do not study national income accounts or multiplier formulas. They learn that monetary policy takes the form of an interest rate rule but do not worry about the mechanics of money creation. ...I retain comparison of marginal costs and marginal benefits because that is an essential feature of the economic approach to decision making. ...Students use the idea that firms try to enter profitable industries and exit unprofitable ones. But they will not use the fact that the MC curve cuts the ATC curve at its minimum.

While Salemi's exclusions may seem extreme to someone not familiar with the LT approach, note that he was the longstanding chair of the AEA Committee on Economic Education, and not an instructor on the fringe of the discipline.

16. Colander and McGoldrick (2009a, 617) make a slightly different argument for letting individual instructors choose their own short list. "Education is a personal process, involving a connection between the professor and the student. That connection comes about best when the professor is teaching about that which he or she is passionate. Thus, professors should retain their property rights over what is taught and how it is taught." While advocating for much of the LT approach, they go on to say that "In our view, it is better to have what we might consider the 'wrong, more technical' content taught passionately than the 'right' content taught perfunctorily. It is this perspective that has driven so much of [the Teagle] report and its focus on broader questions of institutional structure"
17. Both studies acknowledge that the difficult question of how to directly measure improved economic literacy remains unanswered—"[...] whether completing a literacy-targeted principles course has a detectable and positive impact on economic literacy. We leave that work for the future" (Gilleskie and Salemi 2012, 128).

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