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Teaching and Educational Methods

Facilitating Higher Order Learning: Examining Student Outcomes after a Course Redesign

Anna Josephson^a, Larry DeBoer^b, Dave Nelson^b, and Angelika Zissimopoulos^c

^aUniversity of Arizona

^bPurdue University

^cUniversity of Chicago

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Abstract

We study student learning outcomes following the redesign of an undergraduate macroeconomics course. Changes were made to focus students' learning efforts and time in-class on the application and analysis of key concepts. To evaluate changes to student learning outcomes, we use thirteen questions that appeared on final exams both before and after the redesign. The analysis shows that after the redesign student performance on application and analysis questions improved, while performance suffered on memorization and understanding questions. With this paper, we provide a description of our experience and method for others to use in assessing changes in performance after redesigning a large, introductory-level course.

1 Introduction

Despite research that suggests student learning and engagement outcomes improve with a variety of instruction styles, the majority of introductory economics courses are taught using a standard lecture format (Lage, Platt, and Treglia 2000). Surveys of academic economists teaching undergraduate courses at postsecondary institutions in the United States find that more than 80 percent of instructors use traditional chalk-and-talk lectures for instruction in introductory courses (Watts and Becker 2008; Watts and Schaur 2011; Goffe and Kauper 2014). This is a high percentage, particularly when compared with other disciplines where just over half of the instructors use the customary lecture format (Cashin 2010). Across fields, the evidence on the value of varying teaching styles and active learning is abundant, challenging traditional instructor-centered teaching-by-telling methods (Bonwell and Eison 1991; Prince 2004; Freeman et al. 2014). Considering nontraditional, nonlecture-based instructional methods, recent research finds evidence of improved student performance, measured by higher test scores and overall exam performance (DeNeve and Heppner 1997; Brooks and Khandker 2002; Nguyen and Trimarchi 2010; Caviglia-Harris 2016), as well as greater interest in the discipline (Johnston et al. 2000; Lage et al. 2000; Jensen and Owens 2001; Hawtrey 2007; Yamarik, 2007).

Little research has quantitatively evaluated active learning and similar methods within the agricultural and applied economics classroom. Investigation into these techniques is important, particularly for introductory and/or survey courses in the field. These courses often provide the opportunity to instruct students in their first (and sometimes only) economics course; this opportunity should influence the objectives of the course. In these contexts, specific attention must be paid to what we want students to learn, what we want students to understand and be able to apply, and what we want students to walk away with at the end of the course. In this paper, we work in this context to provide evidence on student learning as measured by exam performance. We contribute to the literature on applied economics instruction by examining changes in student learning outcomes from modifications to course

objectives and teaching styles to emphasize practice, learning-by-doing, application, and analysis. As such, we add to the conversation on pedagogy and related teaching effectiveness, and further comment on service instruction within the agricultural and applied economics profession. We also provide a description and method for assessing changes in performance after redesigning a large, introductory-level course for other instructors. This description is particularly relevant for courses that rely on often coarse, multiple-choice questions for evaluating student learning outcomes.

We examine “the redesign,” which we define as the changes made to a large-enrollment macroeconomics introductory course. The objective of the redesign was to shift learning outcomes toward the higher order taxonomic dimensions of application and analysis from lower order taxonomic dimensions of memorization and understanding (Anderson, Krathwohl, and Bloom 2001). This shift was motivated in part by the population taking the class: most students were neither agricultural economics nor economics majors, and likely would not take another economics class in their collegiate career. Therefore, the primary objective of the course was to help students develop economics application and analysis skills that could be later used in life, beyond the classroom. We rely on the revision of Bloom’s cognitive taxonomy by Anderson et al. (2001), which emphasizes knowledge across all cognitive levels: factual, conceptual, procedural, and metacognitive. In the redesigned course, we work across these cognitive levels and build within taxonomic domains; this not only relegated memorization as a skill, but also prioritized conceptual knowledge in analysis and application over factual knowledge (Allgood and Bayer 2017).

The redesign was completed for an introductory course, with a large number of enrolled students as nonmajors. Outside of this context, when teaching students within the major, instructors often perceive a curricular responsibility to teach disciplinary language and practice foundational concepts and skills. This helps students build field vocabulary and supports students’ ability to demonstrate elaborate thinking in upper-division economics courses. In an introductory course for nonmajors, a more flexible set of objectives is permitted focused on application and analysis of economic concepts and broad ideas (Sundberg and Dini 1993; Knight and Smith 2010; Hurney 2012).

To capitalize on the context, the course redesign modified both course objectives and presentation of course content. The redesigned course emphasizes “doing” instead of “knowing,” focusing on engaging students by encouraging them to practice using macroeconomic tools. This focus shifted course structure from twenty-eight 75-minute lectures to a four-module structure with fewer in-class professor-led meetings. Modules were composed of related context and include lectures, independent quizzes, group in-class projects, a brief essay, and module exams. This arrangement represented a partial “flip” of the course (Roach 2014). After the redesign, in-class lectures were shortened, and students were expected to take on independent learning. This involved learning the basics about data and models through textbook readings and short videos edited from past recorded lectures. Though the structure of the course changed, the topics presented and the associated learning objectives did not. Detailed information about the course, including specific examples of assignments, are presented in Josephson et al. (2019).

To examine how these course modifications changed student learning outcomes, we examine student performance on exams. We focus the analysis on thirteen questions that appeared on final exams both before and after the redesign. Of these thirteen questions, six were categorized as elements of lower-order taxonomic dimensions and seven were categorized as elements of higher-order taxonomic dimensions. Using these questions allows us to directly compare performance before and after the course redesign to evaluate how the course changes influence learning as mapped directly to course objectives within higher- and lower-order taxonomic dimensions.

In this paper, we provide evidence on how student learning outcomes change following modifications to an introductory course that created a new emphasis on higher-order learning. We also comment on what students may take away from applied economics courses. Though a course may use its resources well, the structure of the course including objectives and their presentation determines what students take from the class, as well as how they apply that evidence—beyond the classroom. In this paper, we hope to encourage instructors to evaluate what students learn from their courses. We also provide a

description and method for doing so. Evaluation and reflection can help instructors to determine if appropriate objectives have been set for their students and if their emphasis is in line with these objectives.

2 Data and Methodology

Our analysis relies on student-level data that were collected before and after the course redesign. Demographic information and student performance data are used from the following semesters: spring 2012, fall 2012, fall 2013, spring 2014, and fall 2014.¹ IRB approval was obtained for use of these data. The course redesign occurred during the spring of 2013 and was implemented in fall 2013. Data from the spring 2012 and fall 2012 semesters were coded as pre-redesign, and fall 2013, spring 2014, and fall 2014 data were coded as post-redesign. Importantly, despite the redesign, all courses were taught by the same professor, and so professor-level effects are likely to be the same across semesters.

2.1 Population and Demographics

Enrollment in the course ranges from 220 to 400 students per semester. A majority of students (72 percent) are in their first or second years of college. Very few students are agricultural and applied economics or even economics majors (9 percent). Only half are enrolled in the College of Agriculture. The course satisfies a social science requirement for most colleges at the university, and the majority of enrolled students take the course to fulfill this requirement. By and large, the course is the first and only economics course that students take at the college level.

Student demographics are presented in Table 1. Figures are presented for students' year in school (i.e., freshman vs. nonfreshman), major (i.e., economics or applies economics vs. all other majors), international status, and underrepresented minority (URM) status. Of the 1,413 students included in our sample, 596 were freshman (42.6 percent), 127 were economics or applied economics majors (8.99 percent), 132 were URM (9.4 percent), and 88 were international students (6.2 percent).

Table 1. Demographics of Total Sample (N = 1413)

Demographic	N (Percent of Sample)
Underrepresented minorities (URM)	132 (9.4%)
International students	88 (6.2%)
Freshman	596 (42.6%)
Agricultural, Applied, or General Economics Major	127 (8.99%)
Demographics not reported	13 (0.9%)

¹ To balance the amount of data from before and after the redesign and to avoid effects that may be created from long-term learning on the part of the instructor, teaching the course over multiple semesters and years, we only use data through the fall of 2014, though data collection continues.

2.2 Final Exams and Student Performance Data

Of interest in this paper are student performance data. We measure student performance through responses (a binary response: correct or incorrect) to final exam questions. Final exams both before and after the redesign were given during the university's finals week. The weight of the exam and number of questions on the exam shifted slightly: before the redesign, there were sixty questions on the exam, though after there are fifty questions on the final exam. Also, before the redesign, all exams in the semester were 60 percent of the grade, while after they are worth 50 percent. This includes the final exam, which was 30 percent of the grade before the redesign, and after is worth 20 percent. Although exams are potentially a high stakes tool for measuring student learning outcomes, most students would be familiar with the format and type of questions—as well as some of the specific questions themselves—because they appeared as part of the homework study questions.² These questions are intended to serve as a study tool and can be repeated and practiced many times by students. Thus, although the environment of the exam may be inherently a high stakes format, the questions should be familiar to most students, in both style and content.

The format of exams did not change; exams are composed of multiple-choice questions with questions progressing by order of topics within the course, although questions are not presented in a set order. To evaluate changes in student learning outcomes, as a result of the redesign, we began with an initial set of twenty-two questions, which were asked at least one semester before and one semester after the redesign. To ensure that the questions were coded appropriately, questions were distributed to three external content experts for evaluation in validity and mapping to a taxonomic dimension. Using formal classification (Rovinelli and Hambleton 1977), reviewers were asked to rate the face validity of each question on a 3-point rating scale (3 = item is valid and correctly classified, 2 = uncertain, 1 = item is invalid and incorrectly classified). Then, to determine alignment with the instructor's mapping of test questions to course outcomes, evaluators were also asked to assign each question to a dimension of Bloom's cognitive taxonomy, following the Anderson et al. (2001) redesign. The dimensions *remember* and *understand* are classified as lower-order; *apply*, *analyze*, *evaluate*, and *create* are considered higher-order classifications.

These evaluation criteria resulted in the exclusion of several questions from analysis.³ Inclusion required that no item receive a single invalid rating (2 questions eliminated), and all items received at least 2 valid ratings (1 question eliminated). As the authors classified questions into higher or lower-order dimensions of Bloom's taxonomy, inclusion also required agreement of at least two raters with author classification (6 questions eliminated). The remaining thirteen questions comprise the unit of analysis outcomes for student learning in the course. The appendix includes details on the thirteen questions considered in the analysis, including the question itself, the correct answer, the semesters in which it was included on the final, the taxonomic dimension, and the order (higher or lower) classification.

2.3 Methodology

To evaluate changes in student learning outcomes, we compare performance on the thirteen individual exam questions by measuring the number of students who answered the question correctly before and after the redesign. Because exams are multiple choice, students either answered the question correctly or incorrectly. To evaluate the impact of the redesign, we measure whether the number of students who answered the question correctly increased, decreased, or stayed the same.

² More information available in Josephson et al. (2019) about the specific assignments and relationships between questions across assignments.

³ All of the questions that were invalidated by this process (nine of twenty-two questions) were all macroeconomic questions. In the review process, reviewers disagreed on the typology, as well as on the validity of the questions. As a result, these questions are excluded from our analysis, making the course content to appear more of an introductory general economics course, though it is a macroeconomics course.

To evaluate the statistical differences, we use *t* tests and chi-squared tests, testing the change in mean performance after the redesign, compared with before the redesign (where μ represents the sample mean: $\mu_{\text{after}} - \mu_{\text{before}} = 0$ and $\mu_{\text{after}} = \mu_{\text{before}}$). These tests allow us to evaluate the changes in average student performance on final exams, before and after the course redesign.

3 Results

Of the thirteen questions, six were categorized as lower-order taxonomic dimension questions, while seven were categorized as higher-order taxonomic dimension questions. We find that students perform significantly worse on four out of six of the lower-order questions after the course redesign. Additionally, students did not perform significantly better on any lower-order questions post-redesign. We find that students perform significantly better on three out of seven of the higher-order questions, but significantly worse on one out of seven of the higher-order questions. Two lower-order and three higher-order questions showed no significant change. These changes are presented in Table 2 and Figure 1.

Discussing these results in more detail, we see that only the memorization and understanding questions showed a significant decrease in performance. Specifically, those questions that asked about events in history showed the greatest decline in student performance. This is attributable to the change in emphasis on higher-order learning and to the conceptual versus factual knowledge levels. As an example, consider question 11 (see the Appendix), which asked: “Among the causes of the ‘Great Moderation’ of the 1980s, 1990s and 2000s were...,” with four choices listing various causes. Before the redesign, a list was presented in lecture with the correct answer explicitly stated and thus the answer to this question could have been memorized. After the redesign, this information was not explicitly presented in the same way,

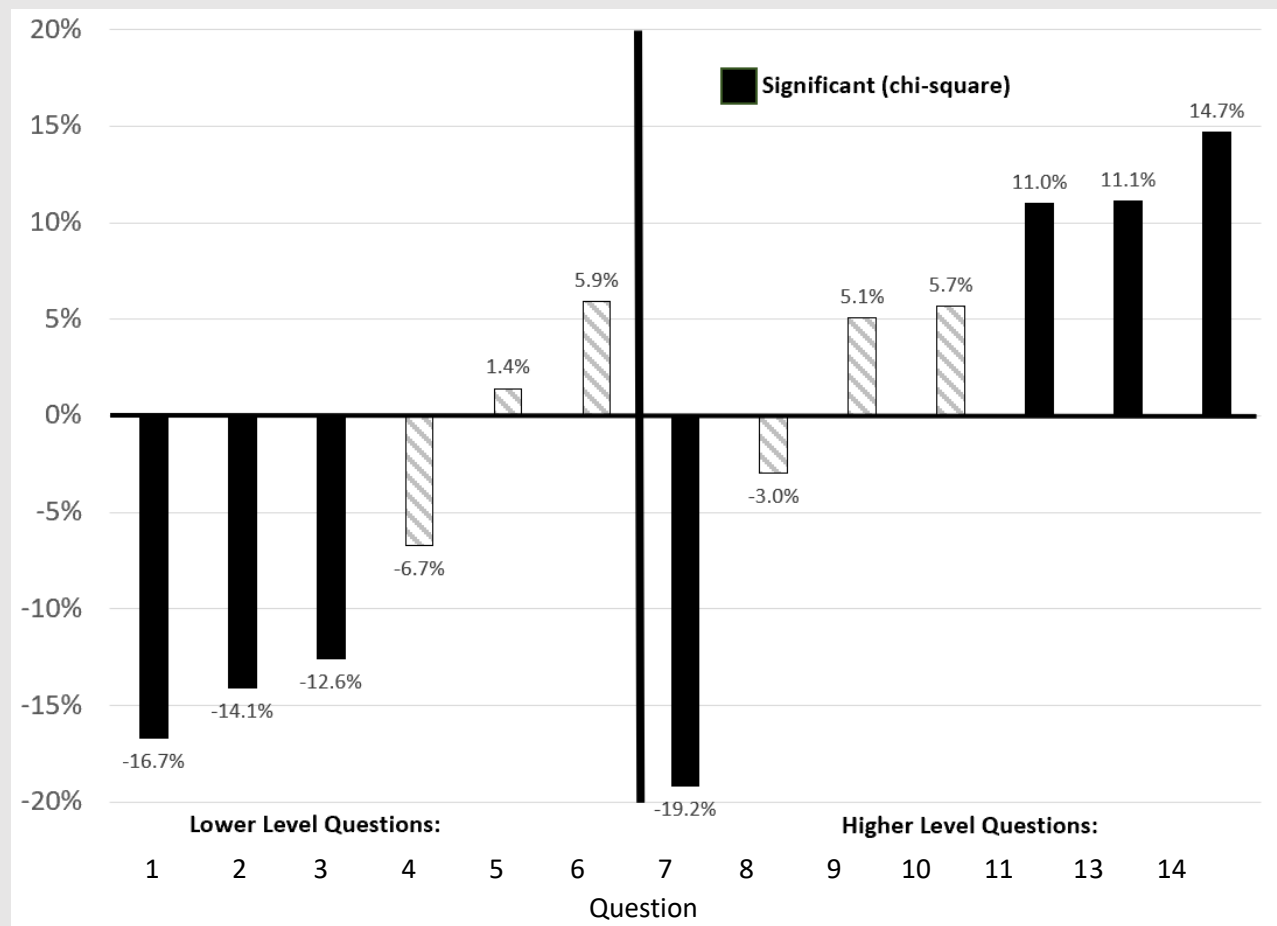


Figure 1: Change in Student Performance on Exam Questions Before and After Redesign

Table 2. Question-Level Change in Student Performance After the Redesign

Question ^a	Order Classification	Sample Size (N)	Chi-squared (p value)	t statistic (p value)	Marginal Change in Student performance ^b
10	low	532	22.4 (<.00001)	-4.59 (<.00001)	-16.7%***
11	low	1,192	25.4 (<.00001)	-5.00 (<.00001)	14.1%***
12	low	1,413	47.9 (<.00001)	-7.15 (<.00001)	-12.6%***
160	low	1,047	6.1 (.013)	-2.61 (.009)	-6.7%***
112	low	587	0.1 (.731)	0.34 (.731)	1.4%
75	low	570	2.2 (.142)	1.47 (.141)	5.9%
98	high	936	47.8 (<.00001)	-6.08 (<.00001)	-19.2%***
53	high	570	0.8 (.359)	-0.91 (.362)	-3.0%
100	high	1,047	2.3 (.127)	1.51 (.131)	5.1%
106	high	826	3.11 (.078)	1.74 (.082)	5.7%
34	high	826	11.5 (.0007)	3.32 (.0009)	11.0%***
156	high	826	11.5 (.0007)	3.32 (.0009)	11.1%***
101	high	1,047	41.0 (<.00001)	5.58 (<.00001)	14.7%***

^a See the appendix for question text and descriptions.

^b *** indicates statistical significance at the 1% level of significance.

but instead requiring outside reading or watching instructor-created videos. This change in presentation and new requirement of outside reading seems to have resulted in a decline in student performance, with the percentage of students answering this question correctly falling by 14.1 percentage points.

With this performance decline, a natural question arises: are students doing this work outside of class? We consider two additional questions that appeared on exams: the first whose answer is presented

both in an online video and in the textbook, and the second whose answer comes directly only from the textbook. We consider performance on these exam questions relative to the overall test average. This allows us to consider a measure of how students are dealing with different material, which is only presented outside of class, without our direct observation. The first question considered is about the functions of money.⁴ On average, 89 percent of the students answered this question correctly, while the average score on the exam was 75 percent. This question is not one which could be answered analytically. So, students either already knew the answer, guessed correctly, or they learned it from the reading or the video. The second question is about Social Security and again could not be answered analytically. In this case, 92 percent of the students answered correctly. Again, this suggests that students either knew the answer already, guessed correctly, or did the reading. These two questions anecdotally suggest that students do the assigned reading and interact with videos and other learning material outside of class. This indicates that there may be something in some questions, such that without additional instructor-led discussion, students have difficulty effectively using what they have read in an exam context.

Given the course objectives, of particular interest is the finding that the application and analysis questions saw significant improvement. These questions generally asked about historic events, but the events were phrased as “natural experiments” so as to practice the application of the model. For example, question 34 (see Table 2) asked: “During the 1970s OPEC oil producers cut their crude oil exports, which increased oil prices. Which diagram shows the results of this restriction?” Students chose one of four aggregate demand and supply diagrams. To answer the question, students would have to know that aggregate supply depends on resource costs, and that a rise in resource costs would decrease aggregate supply. Then, they would have to recognize which of the diagrams showed a decrease in aggregate supply. This type of multiple step analysis was frequently undertaken in the redesigned course, as course resources were shifted to practice the use of the model for economic analysis. Students would spend time in class working through these types of problems. While before the redesign, practice would have been required outside of class, in the redesigned format, time was also allocated in class for explicit practice and student collaboration in this practice. It is therefore encouraging and suggests that these teaching methods were effective, as after the redesign the percentage of students answering this question correctly rose by 11 percentage points.

4 Discussion

To further understand these results and their implications for student learning and related outcomes, we turn to Bloom’s cognitive taxonomy and the common struggle between content curation and active learning. Bloom’s taxonomy is in frequent evolution, as in Anderson et al. (2001) who incorporates a knowledge dimension. The taxonomy represents a series of increasingly cognitively challenging skills for students and a workable framework for instructors when considering the type of thinking they wish students to model upon successful completion of their courses (Athanassiou, McNett, and Harvey 2003; Scully 2017). For this course redesign and for other instructors hoping to redesign their courses, the classification of learning outcomes on Bloom’s taxonomy provided transparency that helped the instructor incorporate active learning more frequently into the class (Winkelmes 2013).

Even as faculty and instructors desire greater critical thinking skills from their students (Myers 2008), many instructors remain reluctant, if not overtly resistant, to prioritizing class activities that would foster more cognitively demanding skills like those in the taxonomic dimensions of analysis, application, and evaluation. For some, eschewing lecture can reduce the rigor of the course (Calkins and Light 2008), while sometimes it is perceived that content is king, and time is simply not available for any active learning activity, regardless of the intended course outcomes (Onosko 1991; Henderson and Dancy 2007; Miller and Metz 2014). Unfortunately, this paradigm dominates in what has been labeled “The Cult of Content”

⁴ The video for this topic is fairly well watched, ranking seventeenth, among fifty-one videos, in number of plays.

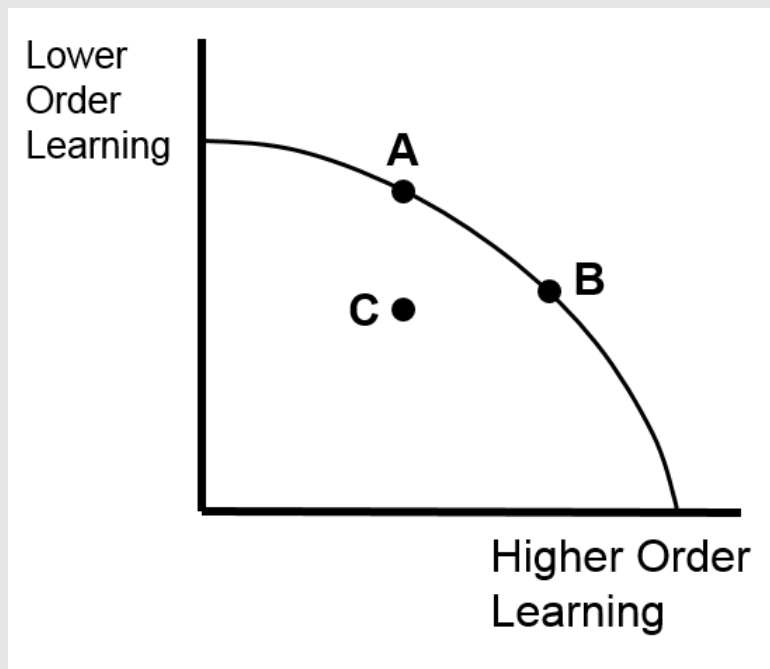


Figure 2: Production Possibility Frontier of Taxonomic Achievement

(Johnson and Swan 1961) and results in the assumption “that students will ‘magically’ obtain ... process skills somewhere during their four years of study” (Coil et al. 2010). One conception of this idea lies in the concept of a production possibility frontier, as presented in Figure 2. Axes show the level of student lower- and higher-order learning. The pre-redesign course is represented by point A, with more emphasis on lower-order learning. The redesign shifts resources from lower- to higher-order learning. Therefore, if lower-order learning were an absolute requirement for higher-order learning we would observe movement from point A to point C in Figure 2: there is a loss in lower-order learning, and there is no gain in high-order learning. Our results are better modeled as a shift from point A to point B, where the change in resource use reduced lower-order learning but led to an improvement in higher-order learning.

This production-possibility-frontier-style change can be further examined with an example: real gross domestic product (GDP) growth. One of the specific learning objectives of the course is for students to learn how to use real GDP to describe the condition of the economy as well as to analyze issues and policy proposals related to that concept. Learning that during recent expansions real GDP has grown by about 2 percent per year will be useful to students so that in life they can, for example, analyze the economic proposals of political candidates that promise higher growth rates. Considering this specific concept: some knowledge of how GDP is measured is necessary for applying real GDP growth to current issues. This knowledge likely includes the main components of GDP, how a price deflator is used to address the influence of inflation, and how to calculate a percentage change from one year to the next. Many of the details of GDP accounting are not needed for this analytical purpose. The treatment of criminal activity, the value-added approach to avoiding double-counting, and the various ways of measuring a price deflator are interesting and important, but are not necessary in order to interpret falling real GDP as a possible recession, or that 5 percent annual growth would be extraordinarily fast in the United States. Students can fail to remember these details and still succeed in applying their conceptual knowledge of real GDP growth. This type of learning is essential for student success in higher-order learning (and thus the course goal to apply and analyze material) but requires very little lower-order learning (in particular, no memorization of the specifics of GDP).

Of course, this is not to say that memorization and other lower-order learning are wholly unnecessary. Some memorization is foundational. Students did significantly worse on one higher-order question after the redesign. The question asked: “Suppose in a market, supply increases and the quantity demanded increases. Which of the following could be true?” The answers listed changes that would shift demand and supply curves. The correct answer was “Technology improved, so equilibrium price fell and equilibrium quantity increased.” But success on this question fell by 19.2 percentage points after the redesign. We believe the reason was the concept of quantity demanded. Students had to know that an increase in quantity demanded was indicated by a movement along the demand curve. However, many students did not recognize this term and interpreted it as a movement of the demand curve itself. Before the redesign, this terminological difference was covered in lecture repeatedly. After the redesign, it was covered in the textbook, shown in video clips, asked about in assignments, and demonstrated in class a couple of times. However, compared with the emphasis in the pre-redesign, the focus in the redesign was not sufficient to solidify student understanding. This suggests that memorization and understanding, in some cases, are foundations for application and analysis. For these concepts, attention and time may continue to be necessary to ensure student success and learning; in this case, it is not possible to simply move to application and analysis of ideas—memorization and understanding are fundamental to doing so.

These findings speak directly to the reality that many students take a single economics class in their university career. What students learn depends directly on the objective of the course and how the information, which will lead students to that objective, is presented. Course design and goals should acknowledge these circumstances. In the case of this course, emphasis on these higher-order outcomes is appropriate. In their lives outside of college, students will likely not be called on to define the specific points of GDP or to indicate the causes of the Great Moderation. However, they will benefit from the ability to appreciate and understand the outcomes associated with falling home prices, stock market values, lending, inflation, and even real GDP growth; these macroeconomic figures are those which non-economists are likely to see each month. These numbers can be useful for personal planning and are often cited by politicians and pundits. An understanding of these topics will thus serve them well in life in a way that memorization and specific definitions are unlikely to. Were this a first course to be taken by economics majors, more emphasis on foundational material might be appropriate and/or necessary for building field-specific vocabulary and creating security and understanding of foundational concepts. But, for this course and others in applied economics, redesigning the class to focus on higher-order, conceptual learning helps to serve students by building skills that they can apply throughout their lives.

Future work should consider exploring these ideas and specifically the outcomes of course redesigns in different classes, as well as in the context in which more students are in-major, with more economics and applied economics courses ahead of them. Additionally, greater exploration of student learning outcomes in multimodal, active learning courses in agricultural and applied economics generally, would be interesting to instructors in the field.

5 Conclusion

In the fall of 2013, a large enrollment introductory macroeconomic course was redesigned, moving away from the standard chalk-and-talk lectures toward higher-order thinking and active learning methods. The course emphasis shifted from memorization and understanding of concepts to application and analysis of ideas using the macroeconomic model and data. In this paper, we examine student performance on lower- and higher-order final exam questions, based on an analysis of thirteen questions that appeared on final exams before and after the redesign. We find that student learning outcomes shifted: students performed significantly worse on four out of six of the lower-order questions but performed significantly better on three out of seven of the higher-order questions.

In this paper, we provided evidence on student learning as measured by exam performance, after a redesign to a large enrollment, introductory course. We examined changes in student learning outcomes from modifications to course objective and teaching style to emphasize practice, learning-by-doing,

application, and analysis. For others who may be interested in doing the same, we provide a description and method for assessing changes in performance after redesigning a large, introductory-level course. These methods are particularly appropriate for courses that rely on often coarse, multiple-choice questions for evaluating student learning outcomes.

Introductory courses often provide the opportunity to instruct students in their first economics course; this opportunity influences the objectives of the course. Careful attention must be paid to what we want students to learn, what we want students to understand and be able to apply, and what we want students to walk away with at the end of the course.

About the Authors: Anna Josephson is an Assistant Professor in the Department of Agricultural and Resource Economics at the University of Arizona (Corresponding Author: aljosephson@email.arizona.edu). Larry DeBoer is a Professor in the Department of Agricultural Economics at Purdue University. Dave Nelson is the Associate Director in the Center for Instructional Excellence at Purdue University. Angelika Zissimopoulos is the Director for Initiatives in STEM Teaching and Learning at the Chicago Center for Teaching in the University of Chicago.

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Appendix: Questions Used in Analysis

Table A1: Questions used in Analysis

Question	Semester Included	Taxonomic Dimension	Order Classification	Question Wording
10	F12, F14	Understand	Low	<p>After World War II, the U.S. Treasury effectively controlled monetary policy. They did this by:</p> <ol style="list-style-type: none"> setting the interest rates on Treasury bonds, then requiring the Federal Reserve to adjust the money supply to reach those interest rates. setting income tax rates, then requiring the Federal Reserve to adjust the money supply to reach income tax revenue targets. setting the exchange rate of the dollar, then requiring the Federal Reserve to adjust the supply of the dollar in exchange markets to reach that exchange rate. assigning General Patton and the Third Armored Division to surround the Federal Reserve’s headquarters with tanks. <p>CORRECT ANSWER: A</p>
11	S12, F12, F13, S14	Understand	Low	<p>Among the causes of the “Great Moderation” of the 1980s, 1990s and 2000s were:</p> <ol style="list-style-type: none"> the stimulating effect of the Vietnam, Gulf, and Iraq wars, the collapse of savings and loans, and the pro-cyclical monetary policy of the Federal Reserve. the Plaza Accord, which stabilized exchange rates, the absence of major stock market fluctuations, and the pro-cyclical fiscal policy of the U.S. Congress. the absence of big wars or supply shocks, improved inventory control by businesses, and counter-cyclical monetary policy by the Federal Reserve. the widespread adoption of beige for interior decorating, the invention of the minivan, and the daily broadcast of the Mr. Rogers television show. <p>CORRECT ANSWER: C</p>
12	S12, F12, F13, S14, F14	Memorize	Low	<p>Among the causes of the Great Depression were:</p> <ol style="list-style-type: none"> uncertainty surrounding World War II, crowding out of private investment and increased welfare spending. the United States abandoned the gold standard, banks depleted the deposit insurance fund, and big interest rate cuts by the Federal Reserve. a large tax hike, bank failures, and the Federal Reserve’s failure to cut interest rates substantially. counter-cyclical monetary policy, big defense spending increases, and the death of Herbert Hoover. <p>CORRECT ANSWER: C</p>

Table A1 continued.

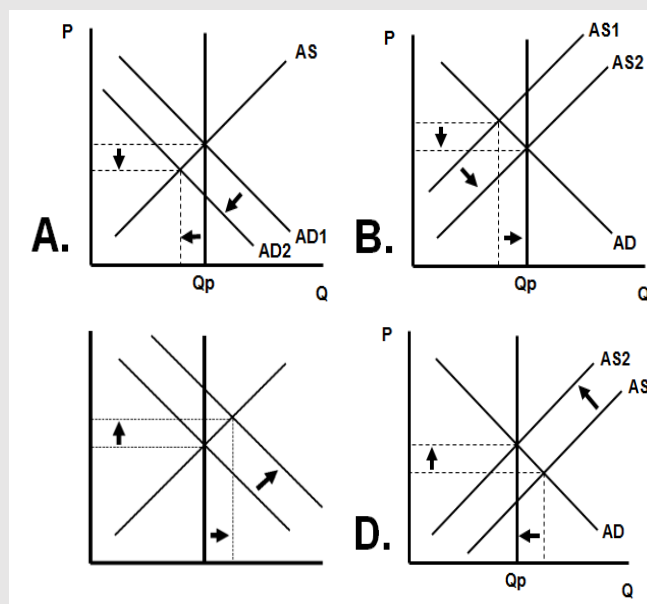
34	F12, F13, F14	Analyze	High	<p>During the 1970s, OPEC oil producers cut their crude oil exports, which increased oil prices. Which diagram shows the results of this restriction?</p> <p>SEE GOODS MARKET DIAGRAM</p> <p>CORRECT ANSWER: D</p>
53	F12, F13	Apply	High	<p>If the opportunity cost of butter in Argentina is 2 guns, and the opportunity cost of butter in Zambia is 4 guns, then:</p> <ol style="list-style-type: none"> world resources are allocated more efficiently if Zambia exports butter to Argentina and Argentina exports guns to Zambia. world resources are allocated more efficiently if Zambia exports guns to Argentina and Argentina exports butter to Zambia. world resources are allocated more efficiently if Zambia exports guns and butter to Argentina, and Argentina does not export to Zambia. world resources are allocated more efficiently if Zambia does not export to Argentina, and Argentina exports guns and butter to Zambia. <p>CORRECT ANSWER: A</p>
75	F12, F13	Understand	Low	<p>In the Plaza Accord of 1985, representatives of five countries with large economies decided to:</p> <ol style="list-style-type: none"> prevent their central banks from making monetary policy, so their Treasury Departments could fix interest rates on government bonds. sell dollars in exchange markets, to bring down the exchange value of the dollar and help reduce the U.S. trade deficit. buy dollars in exchange markets, to support the exchange value of the dollar and help reduce the U.S. trade deficit. allow their central banks to make monetary policy, by forcing their Treasury Departments to stop fixing interest rates on government bonds. <p>CORRECT ANSWER: B</p>
98	S12, F12, F13	Apply	High	<p>Suppose in a market, supply increases and the quantity demanded increases. Which of the following could be true?</p> <ol style="list-style-type: none"> The price of a substitute increased, so equilibrium price fell and equilibrium quantity increased. Consumer incomes increased, so equilibrium price and quantity increased. Technology improved, so equilibrium price fell and equilibrium quantity increased. Input costs increased, so equilibrium price increased and equilibrium quantity decreased. <p>CORRECT ANSWER: C</p>

Table A1 continued.

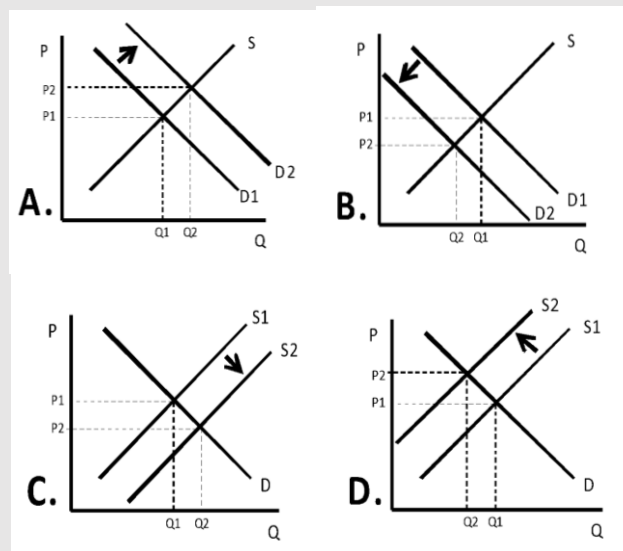
100	F12, F13, S14, F14	Apply	High	<p>Suppose property taxes are one of the costs of providing rental housing. Which of the above diagrams describes what will happen in the market for rental housing?</p> <p>SEE SUPPLY AND DEMAND DIAGRAM</p> <p>CORRECT ANSWER: D</p>
101	F12, F13, S14, F14	Apply	High	<p>Suppose recovery raises the incomes of consumers. Which of the above diagrams describes what will happen in the market for ramen noodles, which is an inferior good.</p> <p>SEE SUPPLY AND DEMAND DIAGRAM</p> <p>CORRECT ANSWER: B</p>
106	F12, F13, S14	Analyze	High	<p>Suppose the price of crude oil decreases. Which of the above diagrams shows what is likely to happen in the market for gasoline?</p> <p>SEE SUPPLY AND DEMAND DIAGRAM</p> <p>CORRECT ANSWER: C</p>
112	S12, F14	Understand	Low	<p>The “Great Inflation” of the 1960s and 1970s got its start when:</p> <ol style="list-style-type: none"> President Dwight Eisenhower refused to let his Vice President, Richard Nixon, push for tax cuts to head off a recession in 1960. President John Kennedy and Defense Secretary Robert McNamara increased taxes to pay for added military spending during the Berlin crisis in 1961. President Lyndon Johnson made a deal with Federal Reserve Chair William McChesney Martin to keep interest rates low but failed to get a tax hike through Congress until 1968. President Richard Nixon and Federal Reserve Chair Arthur Burns dismantled the price controls that the Johnson administration had imposed to stop Vietnam-era inflation. <p>CORRECT ANSWER: C</p>
156	F12, F13, S14	Apply	High	<p>The year 2008 saw falling home prices, falling stock market values, reduced lending by banks, and a higher value of the dollar. Which diagram best represents this:</p> <p>SEE GOODS MARKET DIAGRAM</p> <p>CORRECT ANSWER: A</p>

Table A1 continued.

160	F12, F13, S14, F14	Memorize	Low	<p>Three ways to equilibrate the exchange market are:</p> <ol style="list-style-type: none"> adjustments to the price of gold, the price of silver, and the ratio between the two. changes in tariffs, changes in quotas, and changes in administrative procedures at ports. adjustments in fiscal and monetary policy, capital controls, and flexible exchange rates. changes in open market operations, the discount rate, and the required reserve ratio. <p>CORRECT ANSWER: C</p>
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GOODS MARKET DIAGRAM



SUPPLY AND DEMAND DIAGRAM