Assessment Data
Fermanian School of Business (FSB)
General Education: Economics
Report, AY 2016-2017

Learning Outcome:

1d. Critical Thinking: Students will be able to examine, critique, and synthesize information in order to arrive at reasoned conclusions.

Outcome Measure:

The AACU Critical Thinking Value Rubric (an existing rubric) will be used to evaluate an essay placed on the final exam in each of the general education economics courses. Essays will differ for each course according to its content, but the same essay will be used across all sections of each of the three general education economics courses:

- ECO 100 Principles of Economics
- ECO 101 Principles of Macroeconomics
- ECO 102 Principles of Microeconomics

The five components of this outcome as measured by the AACU Critical Thinking Value Rubric were adapted to general education economics as follows:

- Component 1: Students will be able to clearly state the economic issue or problem
- Component 2: Students will be able to use proper information or evidence in considering the economic issue or problem
- Component 3: Students will be able to understand the influence of the context and assumptions in analyzing the information used
- Component 4: Students will be able to use information to formulate a position and clearly state it
- Component 5: Students will be able to identify consequences and draw logical conclusions by using evidence appropriately

Criteria for Success (if applicable):

The FSB continued to use the AACU Critical Thinking Value Rubric and scoring the data using two possible criteria for success during AY 2016-2017 (listed below). The FSB Assessment Committee, instructors of general education economics courses, and the FSB jury of evaluators will continue to consider whether the most appropriate criteria for success is being used.

Criteria for Success 1:
A random sample of students will score an average of 2.5 or higher for each component of the AACU Critical Thinking Value Rubric.

Criteria for Success 2:
70% of a random sample of students will score 3.0 or higher on each component of the AACU Critical Thinking Value Rubric.

Longitudinal Data:

This report for AY 2016-2017 adds data from Spring 2017 to the Mid-Year AY 2016-2017 Report, and it contains longitudinal data from Spring 2015, AY 2015-2016, and AY 2016-2017.

Note that for ECO 102, Summer 2016 has been added to the AY 2015-2016 data. This adds data for one term of a summer online course that has been taught three times, but the course ends around June 10-15 after assessment cycle reporting is due, so summer data cannot be included until the fall (mid-year) reporting cycle. Data was included for the online course for the first time during Summer 2016, which was the second time the online course was offered. Data for Summer 2017 is not available yet because the online course was still in session at the time this end-year report was submitted. The same assessment question was used in the online course during Summer 2016, and the evaluation was completed during the Fall 2016 mid-year reporting cycle using one evaluator, but not the instructor of the course.

AY 2016-2017

During Fall 2016 one section of ECO 100, two sections of ECO 101, and three sections of ECO 102 were offered. There were three instructors (including one adjunct). All six sections of the three courses were assessed, and the same question was used for multiple sections of the same course. However, the data on the third section of ECO 102 taught by an adjunct was determined to be invalid, so that data is not included in this report. Only one evaluator was used to assess Fall 2016 data, but not the instructor of the course.

During the Spring 2017 semester, three sections of ECO 101 and two sections of ECO102 were offered and assessed. All five sections of economics were included in the Spring 2017 data added to this AY 2016-2017 report. There were two instructors, and the same questions were used for the entire academic year and for multiple sections of the same course. A jury of two faculty members who were not the instructors of the course assessed was used to evaluate student work.

Data Collection Challenges

It is important to note that the requirement of a mid-year assessment report affects the data collection and potentially the results. The Fermanian School of Business (FSB) is able to conduct a two-day assessment intensive for jury evaluation at the end of the year (May), but not mid-year (December) due to the academic schedule and faculty capacity. The impact of the reporting requirements means that the data analyzed mid-year is completed by one juror (not two). Data that can be rolled into the end-of-year assessment two-day intensive is evaluated by two jurors with more effort given to calibration and reliability.

Conclusions Drawn from Data:

GE economics students consist of both business majors and non-majors in macroeconomics (ECO 101), microeconomics (ECO 102), and a combination macro and micro course (ECO 100). A key desired outcome for all of these students is that they become aware of and be able to critically examine the significant economic issues currently facing society. Using critical thinking to understand problems of importance, recognizing the information that is relevant, using information properly in context, analyzing the information appropriately, and drawing proper conclusions from the evidence are all important factors in this process. This is what the AACU critical thinking rubric applied to the general education economics courses attempts to assess.

Assessment of ECO 101 and 102 started in the Spring 2015 semester, and based on recommendations made following the Spring 2015 assessment, the question for ECO 102

remained the same, the question for ECO 101 was redesigned, and a new (initial) assessment question was created for ECO 100. During AY 2015-2016 and AY 2016-2017 the questions used to assess critical thinking in ECO 100, ECO 101 and ECO 102 remained the same.

The scope of the data that was collected for AY 2016-2017 appears in Table 1. Students were grouped according to the three courses, and either the entire student population in the course was evaluated (ECO 100), or a random sample of at least 25% of the student population was evaluated (ECO 101 and ECO 102). In all, 100 general education economics students were evaluated out of a population of 313 students (31.9%).

Longitudinal data on the assessment scores for Criteria 1 and 2 appears in Tables 2 and 3, respectively, including the initial assessment results from Fall 2015 (with a different question for ECO 101) and results from the last two academic years: AY 2015-2016 (Fall 2015, Spring 2016, and Summer 2016) and AY 2016-2017 (Fall 2016 and Spring 2017). A mid-year report was filed with longitudinal data for all semesters except Spring 2017. This end-of-year AY 2016-2017 report adds data from the Spring 2017 semester.

During AY 2015-2016 a jury of two evaluators was instituted at the end of the year, a practice continued for the AY 2016-2017 end-of-year evaluation. During the mid-year evaluation a single evaluator was used, but not the instructor of the course being evaluated.

Assessment Design, Evaluation Methods and Interpretation of Results

Interpretation of the longitudinal data should be made while keeping in mind the following features of the evaluation methods:

- The assessment question for ECO 101 was changed after Spring 2015.
- The GE instructors evaluated their own students in the first assessment cycle (Spring 2015).
- A jury of two faculty who do not teach any of the GE courses was instituted as the desired standard for the AY 2015-2016 end-of-year report.
- Mid-year evaluations were performed by a single evaluator, and occasionally one of the economics GE faculty evaluated a course (but not their own course).
- Calibration and no more than one point difference on each score were standardized to improve the reliability of the assessment results. A third evaluator is used to break the tie if greater than one point difference in scoring occurs.
- Informal but direct observation reveals that the evaluators often perceived and scored student responses to the same question in a very different way, one giving a high mark and the other giving a low mark. This seemed to happen more often when the assessment questions were quantitative or short answer. In that case there was not as much text to base conclusions about student intent or critical thinking. This observation illustrates the importance of calibration.

Given these cautionary notes on interpreting the data, results of the scoring appear in Tables 2 and 3. Each of the GE courses will be discussed in turn.

Combined Economics (ECO 100)

For the combined macro and micro course (ECO 100), results show that for Criteria 1 (average score 2.5 or higher) two of the components were not met in Fall 2015, and four of the five components were not met in Fall 2016. For Criteria 2 (70% of students score 3.0 or higher), one of the components was not met in Fall 2015 and none of the components were met in Fall 2016. So there is a decline (less success) in Fall 2016 compared to Fall 2015. It seems apparent that

improvements need to be made. Stating the problem is the one component that meets the success criteria, so the other components should be reviewed in terms of the course instruction and the exam itself.

Macroeconomics (ECO 101)

With the exception of Spring 2015 (the initial evaluation) which occurred prior to the question redesign, critical thinking components using Criteria 1 (average score 2.5 or higher) are met successfully in almost every case in the macroeconomics course (ECO 101). The one exception is Spring 2016 and component four (use information to formulate and state a position clearly).

Using Criteria 2 (70% of students score 3.0 or higher), critical thinking components are not met as successfully. In Fall 2015 the third component of critical thinking (understanding context) was not met. In Spring 2016 three components were not satisfactory. In Fall 2016 and Spring 2017 the same two components are not met successfully: component two (using proper evidence) and component five (drawing logical conclusions).

Therefore, the overall results for ECO 101 are satisfactory for Criteria 1 and mixed for Criteria 2.

For Criteria 2, with the possible exception of component five (draw logical conclusions), there does not seem to be a consistent pattern in which components are falling below satisfactory standards, so it is hard to come up with specific suggestions for improvement. The fact that different components fail to meet standards depending on the semester could be due to differences in evaluators, or calibration problems. Another observation is that the exam questions are either quantitative or short answer, resulting in the possibility that it is more difficult to interpret how well students are using critical thinking skills without an essay to understand the basis of their thinking.

Microeconomics (ECO 102)

For the most part, microeconomics students meet Criteria 1 (average 2.5 or higher) for all components. There are only two exceptions in the six semesters evaluated. In Fall 2015 component five (draw logical conclusions) is not met, and in Fall 2016 component four (use information to formulate and state a position clearly) is not met. Otherwise, success standards for all other components are met.

It is too soon to make any meaningful comparisons between student performance in the online and face-to-face versions of the microeconomics course, since this report contains only one data point for the online course. However, the first data available reveals that students in the online microeconomics course meet the success standards of Criteria 1 (average 2.5 or higher) for all components. One consideration in interpreting the results is that there was a single juror evaluating the online course data because it was evaluated during the mid-year (December) cycle. However, that same juror evaluated the Fall 2016 data as well. So preliminary results indicate that the online students are achieving an acceptable level of performance critical thinking.

Microeconomics students generally do satisfactorily meet the critical thinking learning outcome when using Criteria 1 (2.5 or higher on each component).

Just like macroeconomics students, microeconomics students perform less satisfactorily on Criteria 2 (70% of students score 3.0 or higher). And although microeconomics students meet Criteria 2 most of the time, some patterns emerge when the longitudinal data is considered. There are three components for which students occasionally perform unsatisfactorily:

component two (using proper evidence), component four (use information to formulate and state a position clearly), and component five (draw logical conclusions). Component five (draw logical conclusions) seems to be the most challenging for microeconomics students, with data revealing that they perform unsatisfactorily in four out of the six semesters; whereas microeconomics students perform unsatisfactorily in two out of six semesters for the other two components.

So performance on the critical thinking learning outcome shows mixed results when Criteria 2 is used. The overall results for ECO 102 are satisfactory for Criteria 1 and mixed for Criteria 2.

General Results

The following summary chart gives a basic overview of performance and whether the different GE economics student groups perform satisfactorily on the five components of critical thinking from the AACU rubric. A "yes" signifies satisfactory performance; a "no" signifies unsatisfactory performance; and a "mixed" implies that the results are sometimes satisfactory and sometimes unsatisfactory so that it is impossible to make a judgment one way or the other.

GE Economics Courses
Summary of Satisfactory Performance on Critical Thinking Components

Critical Thinking Components	**Combined Macro & Micro: ECO100**		**Macroeconomics ECO 101**		**Microeconomics ECO 102**	
Data	2 semesters		5 semesters		6 semesters	
Components	***Criteria 1***	***Criteria 2***	***Criteria 1***	***Criteria 2***	***Criteria 1***	***Criteria 2***
• State problem	Yes	Mixed	Yes	Yes	Yes	Yes
• Use evidence	Mixed	Mixed	Yes	Mixed	Yes	Yes
• Understand context	No	No	Yes	Mixed	Yes	Yes
• Formulate clear position	No	Mixed	Yes	Yes	Yes	Yes
• Draw logical conclusions	Mixed	Mixed	Yes	No	Yes	No

The longitudinal data show that GE economics students in the combined class (ECO 100) have the least satisfactory performance on the five components of critical thinking assessed by the AACU rubric. These students only clearly succeed on stating the economic problem. Their success on the other four components is questionable.

Macroeconomics students are clearly successful on two components using either measure (Criteria 1 and Criteria 2), that of stating the problem ad formulating a clear position. Their performance on the other three measures is successful if Criteria 1 is used, and either mixed or not successful if Criteria 2 is used. The components that are questionable are use of evidence, understanding context, and drawing logical conclusions. These would be the higher order thinking skills.

Microeconomics students are clearly successful for all components using either Criteria 1 or Criteria 2, with the exception of drawing logical conclusions if Criteria 2 is used.

Recommendations

Overall, the instructional methods in the ECO 100 course should be reviewed to improve critical thinking development. In addition, the exam should be reviewed to consider whether it is unable to assess critical thinking for this group of students given its quantitative and short answer format.

For ECO 101, it is possible that the evaluation instrument which is quantitative and short answer, needs to add some written explanations (essay) in order for evaluators to understand the basis for student thinking going into their answers. This may improve the consistency of scores and provide more consistency in the trend data. An alternative is to continue using the same assessment instrument, monitor calibration, and continue watching the trends.

For ECO 102, it seems that the assessment instrument is working adequately. Students are performing satisfactorily for the most part, and so it is recommended that instruction and assessment methods continue as is, and that data is monitored to see if trends change

Rubric Used:

AACU Critical Thinking Value Rubric (existing and attached in a separate pdf document)

Table 1: Data Collected and Sample Size, AY 2016-2017

GE Economics: Fall 2016					GE Economics: Spring 2017				
Class	Semester	Enrollment	Sample size	Sample percent	Class	Semester	Enrollment	Sample size	Sample percent
ECO 100	Fall 2016	18	18	100.0%	ECO 100	N/A	N/A	N/A	N/A
ECO 101	Fall 2016	74	20	27.0%	ECO 101	Spring 2017	87	22	25.3%
ECO 102	Fall 2016	71	20	28.2%	ECO 102	Spring 2017	63	20	31.7%

Table 2: Longitudinal Data
GE Economics Courses: Average Scores

AACU Critical Thinking Value Rubric (adapted to economics GE)							
Class	Semester	Students will be able to clearly state the economic issue or problem	Students will be able to use proper information or evidence in considering the economic issue or problem	Students will be able to understand the influence of the context and assumptions in analyzing the information used	Students will be able to use information to formulate a position and clearly state it	Students will be able to identify consequences and draw logical conclusions by using evidence appropriately	**average score**
ECO 100	Fall 2015	3.3	2.6	2.4	2.4	3.3	**2.8**
ECO 100	Fall 2016	2.5	1.6	1.6	1.9	2.3	**2.8**
ECO 101	Spring 2015	2.2	2.1	2.1	2.9	2.6	**2.4**
ECO 101	Fall 2015	3.7	3.0	2.7	2.9	3.0	**3.0**
ECO 101	Spring 2016	3.7	3.3	2.8	2.3	2.7	**3.0**
ECO 101	Fall 2016	3.6	2.9	3.2	3.5	2.5	**3.1**
ECO 101	Spring 2017	3.5	2.8	3.0	2.8	2.7	**3.0**
ECO 102	Spring 2015	3.8	3.7	3.7	3.1	2.9	**3.4**
ECO 102	Fall 2015	3.7	3.9	3.9	2.5	2.0	**3.2**
ECO 102	Spring 2016	3.2	2.7	3.2	3.0	2.8	**3.0**
ECO 102	Summer 2016	2.85	2.85	3.8	2.95	3.15	**3.1**
ECO 102	Fall 2016	3.18	2.65	3.18	2.33	2.75	**2.8**
ECO 102	Spring 2017	3.55	2.82	2.95	2.84	2.68	**3.0**

Table 3: Longitudinal Data
GE Economics Courses: Percent with Scores above 3.0

AACU Critical Thinking Value Rubric (adapted to economics GE)							
Class	Semester	Students will be able to clearly state the economic issue or problem	Students will be able to use proper information or evidence in considering the economic issue or problem	Students will be able to understand the influence of the context and assumptions in analyzing the information used	Students will be able to use information to formulate a position and clearly state it	Students will be able to identify consequences and draw logical conclusions by using evidence appropriately	**average score**
ECO 100	Fall 2015	90.0%	75.0%	65.0%	85.0%	75.0%	**78.0%**
ECO 100	Fall 2016	38.9%	5.6%	5.6%	22.2%	27.8%	**78.0%**
ECO 101	Spring 2015	33.3%	44.4%	33.3%	55.6%	44.4%	**42.2%**
ECO 101	Fall 2015	90.0%	75.0%	65.0%	85.0%	75.0%	**78.0%**
ECO 101	Spring 2016	86.4%	72.5%	47.7%	29.5%	54.6%	**58.1%**
ECO 101	Fall 2016	90.0%	55.0%	80.0%	85.0%	40.0%	**70.0%**
ECO 101	Spring 2017	81.5%	47.5%	77.0%	70.5%	50.0%	**65.3%**
ECO 102	Spring 2015	94.1%	100.0%	94.1%	82.4%	64.7%	**94.1%**
ECO 102	Fall 2015	100.0%	96.3%	100.0%	48.1%	22.2%	**81.5%**
ECO 102	Spring 2016	92.5%	62.5%	95.0%	87.5%	67.5%	**55.0%**
ECO 102	Summer 2016	80.0%	80.0%	95.0%	70.0%	70.0%	**79.0%**
ECO 102	Fall 2016	80.0%	45.0%	80.0%	20.0%	50.0%	**55.0%**
ECO 102	Spring 2017	100.0%	72.5%	87.5%	87.5%	85.0%	**86.5%**

Note: “red flagged” (red highlighted) cells do not meet the criteria for success.