

Report on the use of the Affordable Learning Implementation Grant for Intermediate Microeconomics (ECO 361) in Fall 2023

Satyajit Ghosh

I received an Affordable Learning Implementation Grant for teaching my Intermediate Microeconomics course (ECO 361) in Fall 2023. Although the goal of the grant is to “reduce the financial burden on students by eliminating expensive for-cost textbooks and course materials” with Open Educational Resources, I never found any open-source material to be ideal for my class, so I decided to write up my own lecture modules and prepared other resources such as slides or Excel based examples for the course. Commercial textbooks contain more materials than what can be taught in a class. So, the instructors end up covering only a small part of the text in their class. When I decided to use my own lecture notes as the basis for my lecture modules, my goal was to prepare course material that I would be able to and also like to cover in my class. In other words, students will use all the lecture modules along with all supplements in their entirety in the course.

I have been using my own lecture notes as the foundation for the course for many years but the grant encouraged me to expand my own lecture notes and develop resources for a self-contained course without using any copyrighted materials.

Since the purpose of the assessment was to assess the efficacy of the use of this alternative learning approach, I designed the following survey as the instrument for an indirect assessment. At the end of the semester students were given a questionnaire to be returned before the final exam. There was no place to put their name on the questionnaire so that students could provide their answers anonymously. As the assessment data below demonstrate student responses were very encouraging. But unfortunately, in Fall 2023 due to some departmental scheduling issues only eight students were enrolled in the class. While it gave us the opportunity for a rather intimate setting for this experiment, the assessment data may not be statistically robust.

**Survey for the Assessment of the use of lecture modules and supplementary materials in
ECO 361 (Fall 2023)**

1. How frequently did you use the lecture modules (pdfs)?

(a) Frequently

(b) Occasionally

(c) Rarely/ or Not at all

2. How did you use the lecture modules (if you used them)? Did you pre-read the modules? Did you use the modules to clarify the topics covered in the lectures? Did you do both? Did the modules help you to meet your goals for which you decided to use the modules? Explain.

3. Were the lectures and the modules well integrated? Explain.

4. If you read the modules, did you need to attend the lectures? Conversely, if you regularly attended the lectures, did you still need to read the modules and the supplementary materials?

5. Study of Economics , particularly at the intermediate level, requires graphical as well as quantitative analysis. The following questions address those issues.

(i) Clarity of graphs: Were the graphs in the module clear and helpful to analyze relevant concepts? Explain. If possible, Give examples.

(ii) Clarity of numerical examples and/or calculus-based analysis. Were they clear and helpful to analyze the concepts? Explain. If possible, Give examples.

6. Were the supplementary materials: slides, Excel models helpful?
7. Did you have access to practice problems? Were they helpful to clarify your understanding?
8. What were the strengths and weaknesses of the lecture modules (and supplements)? How can they be improved?
9. Was it a positive learning experience? If so, why? If not, why not?
10. In light of this experience would you prefer to have more courses adopt this type of approach or would you prefer to have conventional textbooks? Explain.

Table 1
Assessment of ECO 361, Fall 2023
Rubric and Ratings for Student Survey*

Criteria	Unsatisfactory (below expectations) 1	Satisfactory (meeting expectations) 2	Excellent (exceeding expectations) 3	Total Ratings
1.Frequency of the use of the modules (PDF)	Used rarely or not at all (0)	Used occasionally (2)	Used frequently (6)	22
2.Use of the modules	Used as a supplement if needed. (0)	Used as a textbook—reading it occasionally. (3)	Used as a textbook—reading it often before and after a lecture and for preparing for exams. (5)	21
3.Integration of the lectures and modules	They were not integrated—often covered different materials. (0)	They were somewhat integrated, but often the lectures were more detailed than the modules. (0)	They were well integrated—one reinforced the other. The examples—although not identical—were similar. (8)	24
4.Need to attend the lectures (or read the modules)	Modules and lectures were substitutes—there was no need for attending the lectures as well as reading the modules and supplementary materials. (0)	Since the modules were very comprehensive and written clearly, it was possible to miss a few classes and still catch up. (1)	Lectures and modules (and supplementary materials) were both essential for a comprehensive understanding of the concepts, which were often rather difficult. (7)	23
5(a).Clarity of the graphs in the modules	Graphs were very confusing—often	Graphs were mostly clear but	Graphs were clearly drawn	21

7.Practice problems: availability and usefulness	There were very few practice problems. They were not closely related to the modules or lectures. Not helpful for exams.	Practice problems helped to test understanding and were useful for preparing for exams. They were integrated with the modules and lectures. There could be more practice problems.	There were sufficient number of practice problems. They were integrated with the modules and lectures. They were often challenging. They helped to test understanding of the materials and were very useful for homework and preparing for exams.	23
8.Strengths/weaknesses of the modules (and supplements)	The modules were free but they did not help with the lectures or understand the materials. They were confusing and difficult.	The modules explained the concepts well. They were well integrated with the lectures. The numerical examples and calculus-based analysis could be expanded.	The main strengths of the modules were the clarity of explanations of the concepts, graphs as well as numerical examples and calculus-based analysis. They were very detailed and well-integrated with the lectures. Not much weakness was observed in the content of the modules.	20
9.Quality of the learning experience	Not a positive experience. Did not learn much from the class.	Mostly a positive experience, but the course was	It was a positive experience. Although it was a difficult	21

		very challenging. The modules provided a lot of materials which were useful to understand the concepts.	course, learned a lot In the course. The structure of the modules were very helpful. They always focused on the important concepts and methodologies that were essential for the course.	
	(1)	(1)	(6)	
10.Preference for this type of approach in other courses	Prefers traditional textbooks since they provide more examples and more materials in general.	Prefers this approach. Conventional textbooks are very costly. In most classes only a small part of a textbook is covered.	Prefers this approach which is very cost effective. Commercial textbooks are very costly. In most classes only a small part of a textbook is covered. Since the modules were created for the lectures there is no redundancy of the materials But for this type of approach to work in other classes, the modules need to be clearly written and organized as these modules and they need to be comprehensive	23

	(0)	(1)	yet closely integrated with the lectures as they were in this class. (7)	
--	-----	-----	---	--

* Numbers in each cell denote the number of responses that are classified for the specific ratings.

** There were 7 responses for this question.

Table 2
Assessment of ECO 361, Fall 2023
Numerical Results of Student Survey

Criteria	Average Rating	Percentage meeting or exceeding expectations	Percentage exceeding expectations
1.Frequency of the use of the modules (PDF)	2.75	100%	75%
2.Use of the modules	2.625	100%	62.5%
3.Integration of the lectures and modules	3	100%	100%
4.Need to attend the lectures (or read the modules)	2.875	100%	87.5%
5(a).Clarity of the graphs in the modules	3*	100%*	100%*
5(b).Clarity of numerical examples and/or calculus- based analysis in the modules	2.75	100%	75%
6.Quality and usefulness of the supplementary materials (slides and Excel Models)	3	100%	100%
7.Practice problems: availability and usefulness	2.875	100%	87.5%
8.Strengths/weaknesses of the modules (and supplements)	2.5	100%	50%
9.Quality of the learning experience	2.625	87.5%	75%
10.Preference for this type of approach in other courses	2.875	100%	87.5%

* There were only 7 responses for this criterion.

Analysis of the assessment data and future plans (“closing the loop”)

The criteria used in the rubric are linked to the respective questions on the survey. The questions or the criteria can be divided into four categories: criteria 1,2 and 4 refer to students’ study behaviors; criteria 3,5,6,7 and 8 deal with the quality of the materials developed for the course with 8 being a summary assessment of quality; criterion 9 relates to the overall learning

experience and finally, criterion 10 focuses on students' preference for this type of alternative learning approach.

The **benchmark** used for the assessment is that **75% of students are expected to “meet or exceed expectations”** as defined in the rubric.

Table 2 shows the very encouraging results that in all but one criterion, (no.9), 100% of students met or exceeded expectations for each criterion and in all criteria at least 50% of students exceeded expectations.

It is useful to consider the assessment ratings for the four categories mentioned above.

Study Behavior:

Students often state that they do not always read their textbooks. The results for criteria 1 and 2 are particularly encouraging because all students used the lecture modules and a clear majority used them frequently and ideally as a textbook needs to be used. There is always a possibility that since the modules are concise and covers all the course materials, students may not feel the need to attend classes. Answer to question 4 of the survey shows that there was no drop of class attendance since 87.5% of students felt that attending classes along with reading the lecture modules was essential.

Quality of the course materials:

All the quality indicators: 3,5,6,7 were very strong—often (for 3, 5(a), 7) exceeding expectations. The responses for question 8 (criterion 8) on strengths and weaknesses of the modules (and supplements) were more open ended. Although 100% of student responses met or exceeded expectations, only 50% of the responses exceeded expectations—this was the lowest rating for any criterion. Some explanations of the ratings are needed. It should be noted that there are obviously some value- judgements involved in rating the open-ended answers.

In general, the responses were positive. Students liked the detailed explanations of the concepts. A few examples are provided below.

“In my opinion, I did not see any weaknesses regarding the modules and supplements, I would say they were extremely helpful. They allowed me to read ahead on material, use notes to help me solve homework and practice problems, and prepare me for exams.”

Some focused on convenience and cost. “ I think the strengths included are cost effective (compared to a textbook), easily accessible and convenient. I did not notice any prominent weaknesses.”

Both responses were rated 3.

Some responses perceived some weaknesses. The following responses were all rated 2.

“They were very detailed but sometimes it was hard to find what I was looking for when I needed clarification because of the uniform formatting.”

“They had a lot of information, but it was sometimes hard to know what to focus on for the exam.”

“Strengths included how detailed they were in explaining some of the material such as definitions, and concepts however a weakness was application. I think having an example and walking through solving it would be beneficial.”

(Note: There were multiple problems that were solved in detail throughout the modules. But clearly the student perceived greater need for them.)

Learning Experience:

The responses to the question, “ Was it a positive learning experience? If so, why? If not, why not” were very positive albeit often brief. Most students focused on what they learned and how concise yet comprehensive the modules and the supplements were.

In response to the question, a student responded, ” Yes, because the teacher was more familiar with the material than most due to his hand-curation of what to learn.” Another student wrote, “Yes, despite not performing my best I have gotten a lot from this course.” One student noted that in spite of this being a difficult course, the modules helped them to learn: “ Yes, this was one of my more difficult classes this semester and I felt well-equipped throughout the semester, especially as someone who isn 't in the business school.” Another student explained in detail how the lecture modules and the supplements helped them learn: “My learning experience was positive from the use of lecture modules and supplementary materials. For me, math is not necessarily a strong point, however, modules allowed me to gain a full understanding of how to complete calculations and graphs. I was able to follow the steps in the modules when it came to practice problems and was able to remember these steps when it came to the exams. I was also able to see mistakes I made on assignments and exams using the modules.” These responses were all rated 3.

But not all responses were unqualified positive. In answering the question, one student responded, “ Yes, however, it would have been better if there were more practice questions to review with. While all information was provided, it let as though I was going into exams semi-blind not knowing how the questions would be asked.” This response was rated 2. This was the only criterion where one response did not meet expectations. The student wrote, “This course was extremely difficult but I would say that I did learn a great deal about microeconomics. I would say that it was a learning experience, but not necessarily a positive one.” Although the student admitted that they learned a great deal, because of their hesitation about the learning experience the response was rated 1.

For this criterion 87.5% students met or exceeded expectations and 75% students exceeded expectations.

Preference for this type of approach in other courses:

The most important question of the survey was the last question where students were asked to express their preference for the conventional textbook- based learning approach or for the alternative approach used in my course. The responses to the question, “In light of this experience would you prefer to have more courses adopt this type of approach or would you prefer to have conventional textbooks?”, were overwhelmingly in favor of this approach where instead of using a commercial textbook, all the materials used in this class were specially developed for this specific course. 100% of the responses met or exceeded expectations and 87.5% of the responses exceeded responses.

A typical response stated, “I would prefer more courses to be taught like this. It made me feel as though the professor was teaching the class rather than just reading information from a book.”

While students liked the fact that the materials were specially designed for their course so that there was no redundancy, they were also mindful about the cost-savings. For example, one student wrote they preferred, “(t)his type for the cost and because the teacher personally hand-curated the material.” A student reflected in general about the approach that I used in this course

by drawing from their experience in my Intermediate Macroeconomics class where I use my own lecture modules but also use a textbook. The student wrote, "I would say having a conventional textbooks would not be beneficial for students taking the intermediate level classes. I have taken both macro and micro at this level, macro offered a textbook and micro did not. In macro, I found myself rarely using the textbook since lecture modules explained course materials perfectly. Textbook material was only somewhat helpful when it came to certain aspects like definitions of terms, however, definitions were located in the modules, which made the textbook obsolete. Having just lecture modules is more than enough to succeed in these classes, and cost effective as well given textbooks can cost up to \$200."

A student emphasized that they preferred the approach used in this class instead of using a commercial textbook since often very little of a textbook is used in the course. The student wrote, "Yes, I'm a psych major and often have many textbook readings, and a lot of the time out of a 25-page reading only 5% is lectured in class and on the exam, but I don't know that until I complete the reading.It feels pointless spending so much money on a textbook and having it only apply to my class some of the time." The same sentiment was echoed in another student's response: "I prefer more courses to adopt this type of approach. I find that in many of my other courses I rarely refer to the textbook, especially if the instructor provides lecture slideshows." It is worth noting that this student, who admitted that they rarely referred to a textbook, actually used—as noted in response to question 1—the lecture modules for this class frequently.

Conclusion and future plans

Based on the data in tables 1 and 2 and the above analysis, I have concluded that the approach that I used in this class exceeded my expectations. It reduced financial burden for students in this course since I did not use any commercial text book and developed all course materials which I distributed to them free of cost; improved students' study habits by encouraging them to read the course materials and supplements and helped them learn the subject matter. I have decided to use this approach and not use a textbook in fall 2024 when I will again teach the

course. However, in response to some comments in the survey, I plan to include more applications, examples and practice problems.