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## How can learning efficiency be improved in teaching economics in English as a foreign language?

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**Abstract:** This study examines which teaching methods facilitate students' comprehension in economics courses where both the teacher and students are non-native speakers of English. A theoretical model of learning efficiency in such courses was developed in light of the economics of innovation, which identifies three determinants of learning efficiency: absorptive capacity, spillover pool and pedagogy. On the basis of this model, a questionnaire was designed and administered at an Italian business school. The results show that when the effect of students' English proficiency is controlled, teachers' effort to relate lesson contents to the real world by examples significantly improves learning efficiency. Students' linguistic skills negate the significance of teachers' language-specific efforts, such as slowing the speech rate and providing written materials complementary to oral presentations. Therefore, an emphasis should be placed on general pedagogical efforts, such as the mitigation of abstractness, rather than devising teaching practices idiosyncratic to English as a foreign language.

**Keywords:** EFL; English as a foreign language; teaching methods: pedagogy; learning efficiency; economics; absorptive capacity; knowledge spillover; concept maps; factor analysis; ordered probit.

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## **1 Introduction**

Globalisation in terms of both research and education has become one of the major factors in a world university ranking. Under the pressure of global competition to attract students from all over the world, research universities in non-English speaking countries have recently encouraged faculty to develop courses in English as a foreign language (EFL) rather than in local languages. In many cases, international students are non-native English speakers mainly from Asia, Latin America and Africa. Furthermore, faculty at host universities tend to be non-native speakers of English, too. This implies that it is necessary for globally competing research universities in non-English speaking countries to understand how to develop efficient courses by and for non-native English speakers.

Previous studies examined teaching methods that were generally conducive to improving students' comprehension of the contents of lecture, such as the use of concept maps (Marangos and Alley, 2007), simulation games (Seiver, 1983), collective learning (Stuart et al., 2007) and e-learning (OECD, 2005). Other research strands examined teaching methods that are important in courses taught in English. However, they chiefly focused on cases where English teachers did not retain expertise on the subject they taught, such as English for specific purposes (Dudley-Evans 1997), and cases where academics like economists whose native language is not English teach non-native speakers of English seem to be understudied. It seems reasonable that there would be idiosyncratic methods to make teaching efficient when the medium of communication is not a native language for both students and teachers. This study is to fill this research gap.

In light of such recognition about the current problem and previous research on education by and for non-native English speakers, this study aims to examine the following three research questions. Which teaching methods are conducive to efficient learning in courses given by and for non-native English speakers? Is there any commonality among teaching methods identified by answering the previous question? How do teaching methods identified by the first question affect students' learning efficiency in courses by and for non-native English speakers? To tackle these questions, I developed a model describing learning efficiency in such courses in light of the economics of innovation, which identified three determinants: absorptive capacity, spillover pool and pedagogy. I designed a questionnaire based on the model and previous studies on pedagogy and conducted a pilot survey at the graduate school of engineering where I taught. The questionnaire survey was conducted at an Italian business school where I taught economics as a visiting professor. Using information from the survey, I examined which teaching methods students considered helpful for learning in courses taught in their native language and English, and how those methods actually affected learning efficiency.

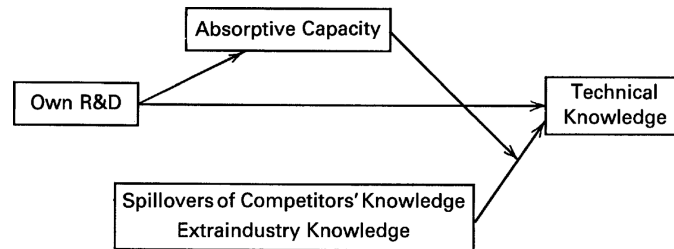
The remainder of this paper is organised as follows. Section 2 describes the details of the empirical methodology. Section 3 introduces the results of the questionnaire survey, and their implications are discussed in Section 4, which concludes the paper.

## **2 Method**

From the perspective of the economics of innovation, teaching can be understood as the process of spillover which is an economics term to represent knowledge dissemination. Unlike physical assets, knowledge is hard to appropriate and easily diffused in the

economy through various channels. Figure 1 shows how spillover from other firms occurs and what is needed for the user of knowledge (i.e., a firm that attempts to innovate) to utilise spillover. According to Cohen and Levinthal (1990), the user of knowledge cannot benefit from spillover from the provider of knowledge for free. What is critical is absorptive capacity, which refers to the user's internal resources to identify, value, assimilate and exploit external sources of knowledge. For the users to make the most of external knowledge, they need to accumulate absorptive capacity through their 'own R&D' in Figure 1. No matter how large the spillover pool is, it does not make sense if the user has no absorptive capacity. That is to say, spillover is not a manna from heaven. This is the central message of Cohen and Levinthal (1990) in the context of the creation and dissemination of knowledge.

**Figure 1** Absorptive capacity as prerequisite for receiving knowledge spillover



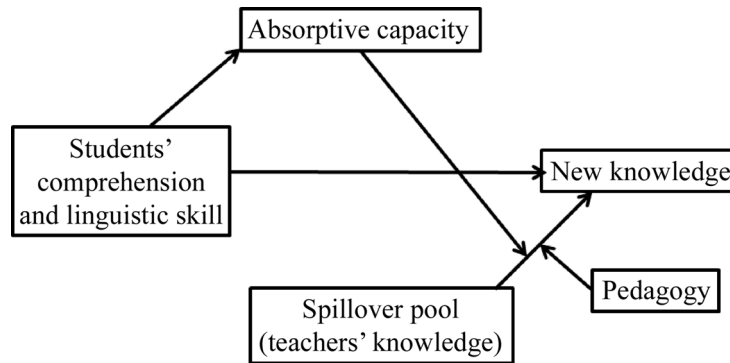
Source: Cohen and Levinthal (1990, p.141)

Suppose that a lecture is a mode of knowledge transfer. Figure 2 shows how the concept of absorptive capacity can be applied to teaching in English as a spillover channel. Students are supposed to retain a certain level of absorptive capacity through intellectual and linguistic skills which constitute their 'absorptive capacity' and enable them to acquire 'new knowledge' from 'spillover pool'. How students can efficiently learn is represented as the arrow from 'spillover pool' to 'new knowledge'. Learning efficiency refers to the amount of knowledge students acquire through courses in relation to their efforts invested in learning, such as preview and review. Assuming the quality and quantity of knowledge teachers retain to be constant, learning efficiency is contingent not only on students' absorptive capacity but also on the teaching methods employed in the course ('pedagogy').

Consider an example of a class where a native language is used as a means of communication for both students and teachers. Assuming each teacher retains sufficient knowledge on each subject (i.e., the quality of the spillover pool is invariant across subjects and teachers), learning efficiency is determined through pedagogy and absorptive capacity. The idea here is that if a teacher employs a poor teaching method, or if a student has poor comprehension, little knowledge can be transferred via such classes even though the spillover pool is large. In classes by and for non-native speakers of English, however, students' linguistic skill also needs to be incorporated as absorptive capacity. It is possible that, in courses by and for non-native English speakers, some pedagogy can be particularly important in the improvement of learning efficiency because teachers need to mitigate difficulty in learning stemming not from students' comprehension but from linguistic skills. In light of such insights from the economics of innovation, this study examines how teaching methods affect learning efficiency after

controlling for students' English proficiency, with students' comprehension assumed to be constant.

**Figure 2** Application of absorptive capacity to teaching in English as a spillover channel



Source: Author's elaboration

The challenging issue in this study is how to identify pedagogical methods that non-native English speaking students find helpful when they attempt to understand the contents explained in English. Previous studies suggest that teachers' efforts to relate abstract concepts to real world examples help students acquire knowledge efficiently in classes taught in English (Dudley-Evans and St John, 1998; Herrnstadt et al., 1965; Kourilsky and Wittrock, 1987). Therefore, in the questionnaire, I added the answer choice "The teacher relates the contents to the real world by examples and evidence" as an option in response to the question, "How important do you think the following items are in efficiently learning in classes given in your native language(s) and English?" Another strand of research highlights the importance of written information complementary to oral presentation. For instance, using a concept map, students can integrate individual concepts and see the whole picture of the contents of the lecture by filling out the web-like diagram (Marangos and Alley, 2007). Therefore, I added another choice, "The teacher shows charts and diagrams complementary to oral presentations", as an option to the same question.

As well as making questionnaire items based on previous studies on pedagogy, I conducted a pilot study in 2012 to acquire practical ideas for teachers to facilitate students' understanding in courses taught in English. I have been teaching the economics of innovation at the Graduate School of Engineering, Tohoku University. Almost all the students in my classes are non-native speakers of English, mainly from Latin America and Asia. The proportion of international students in my classes has been approximately 60%. I asked students which pedagogical methods they particularly considered helpful to improve learning efficiency in courses taught in English. Information obtained from the pilot study was incorporated into the answer choices on the questionnaire, such as "The teacher is responsive to students' ideas and questions". A preliminary version of the questionnaire was distributed to my students to understand the questionnaire length that respondents would not find onerous in terms of response time (some 10 minutes) and which formats of questions respondents would find bothersome to answer, which would lead to a lower response rate. On the basis of insights obtained from the pilot survey, the questionnaire was designed to be minimal with the essential items included. I considered

that administering the questionnaire as an online survey could reach more potential respondents, but the pilot survey both online and onsite made it clear that the online survey was very inefficient in terms of response rate. To increase the response rate, the survey was given onsite, and the answer sheets were collected immediately after the students had answered the questions. Appendix 1 shows the questionnaire items used in the survey.

As a result of the literature review and pilot survey, 11 items were included about pedagogical methods to make teaching efficient in classes given by and for non-native English speakers. Items 1 and 2 are meant to represent teachers' effort to make oral presentation more transparent. Items 3, 5 and 6 are meant to represent the arrangement of written materials complementary to oral presentation. These items are deemed as important in helping students understand the contents explained by non-native language. Other items represent teaching methods that generally improve learning efficiency regardless of the language of instruction, such as teachers' being responsive to students' ideas and questions. Such commonality among teaching methods will be explored later by factor analysis.

The onsite questionnaire survey was conducted at an Italian business school where I taught economics as a visiting professor. The reason for this choice was that the language of instruction was not English at the business school, and students majoring in administrative science were supposed to be more familiar with economics than were students majoring in engineering (students whom I teach in Japan), making it possible to compare the results with those from surveys which will be conducted at other foreign economics departments. The examinees were students in their first year of the Master's course who took my class in economics in March 2013. Note that I asked them to evaluate, not my class, but classes they had ever taken at that business school.

The questionnaire was designed as follows. Questions 1 and 2 are to investigate respondents' native language and English proficiency. To measure English proficiency, I had the students select one out of five items for the following statement on their English proficiency level: "I can comprehend the contents of classes in my major taught in English by a native speaker of English". Ordinal choices for the respondents were '1. Strongly disagree'; '2. Disagree'; '3. Neither agree nor disagree'; '4. Agree' and '5. Strongly agree'. Here subjective evaluation was used since the students did not necessarily remember their recent scores on English proficiency tests like TOEFL nor take such tests. Furthermore, there are several tests to measure English proficiency from different perspectives like TOEIC and IELTS, which makes it difficult to convert the scores of each test to make them comparable.

Question 3 is to investigate the first research question regarding teaching methods conducive to efficient learning according to the language of instruction. I had the students value each teaching method by the language of instruction used in the class. They were asked to use a five-point Likert scale to evaluate the importance of each teaching method. In having students answer this question, I noted that teachers' knowledge of the subject and students' comprehension were identical in all the classes because these items cannot be measured or are difficult to measure in the present survey. Information obtained through this question was used for a test of difference, which enabled an analysis of which teaching methods were particularly important in teaching by and for non-native English speakers.

Question 4 is introduced to analyse the gap between the potential demand of students for classes in English and actual supply of classes given in English at the business school.

The idea is that if students' evaluation of each teaching method in classes in English in Question 3 falls greatly below the answers to this question, it means that there is a gap to be improved through teachers' effort to strengthen specific teaching methods. As this item is included for a practical purpose, that is, the improvement of learning efficiency by identifying the weakness of teaching at the business school, the analysis using the data obtained from this question is not reported in this paper. The result is available from the author upon request.

Questions 5 and 6 are to address the third research question, which pertains to the determinants of learning efficiency. As stated in Section 2, learning efficiency is determined through absorptive capacity (students' comprehension), spillover pool (teachers' knowledge) and the teaching methods employed in the course (pedagogy). In the evaluation of learning efficiency in courses taught in a second language, absorptive capacity encompasses students' linguistic skills as well as comprehension. I had to assume students' comprehension and the quality of teachers' knowledge on the subject to be constant because I had students evaluate, not my class, but classes they had ever taken at that business school, which made it difficult to know students' comprehension and the quality of teachers' knowledge in each class. As the aim here is to identify teaching methods conducive to learning efficiency in courses taught by and for non-native speakers of English, it is necessary to control for other factors that could affect learning efficiency. To deal with this problem, I employed a regression model as follows.

$$\begin{aligned} \text{Learning\_efficiency} = & \alpha + \beta_1 \text{pedagogy} + \beta_2 \text{absorptive\_capacity} \\ & + \beta_3 \text{spillover\_pool} + \varepsilon \end{aligned} \quad (1)$$

For a dependent variable, I found operationalised learning efficiency in terms of the actual amount of knowledge students have acquired through courses taught in English *relative to* the predicted amount of knowledge they thought before enrolment they would be able to acquire through such courses. In Question 6, students estimated the qualitative evaluation of courses in English at the business school from this viewpoint. The larger this variable is, the more efficiently students were able to learn from courses in English for some reason. The information collected here is subjective evaluation of actual status in comparison to some benchmark because an objective measure was hard to develop.

The key independent variable is the *relative importance* of each teaching method (importance of pedagogy in courses taught in English relative to a native language) available at the business school identified by Question 4. To operationalise this concept, I calculated the differences of average between English and the native language with regard to Question 3. Note that the subjective evaluation of each pedagogy is based on the same ordinal choices, which means that the two are comparable. The idea is that if specific pedagogy improves learning efficiency particularly in courses taught in English, the coefficient of that variable will be significantly positive, even after controlling for students' English proficiency and the number of courses available in English.

Other than pedagogy, learning efficiency is affected by absorptive capacity and spillover pool, which are included as control variables in the regression model. Absorptive capacity is captured by students' English proficiency. It seems reasonable that students with higher linguistic skills will exhibit higher learning efficiency when a lecture is delivered in a second language, with comprehension kept constant. Thus, the coefficient of *absorptive\_capacity* is predicted to be positive. As stated earlier, the quality of teachers' knowledge has to be assumed as constant for an empirical reason.

The quantitative aspect of spillover pool can be proxied by the number of courses available in English. It is difficult to know the precise number of courses taught in English at the business school. In Question 5, I had students estimate their satisfaction with the actual number of classes available in English at the business school *relative to* the number of classes they thought before enrolment there would be available in English. The idea is that if students consider they have found a greater spillover pool as represented by more courses available in English at the business school than they had expected, it is likely they consider themselves to have acquired more knowledge through such courses than they had expected.

### 3 Results

Appendix Table A1 shows the descriptive statistics of variables used in the questionnaire. The number of observations was 43, and the response rate was approximately two-thirds, which was even higher than that in the online survey I conducted in Japan. All of the respondents were non-native speakers of English. For 88% of the respondents, their native language was Italian, followed by various languages used in European countries. According to the answer to Question 2, participants consider themselves fluent in English, which seems to be reasonable since students took this class having known that the language of instruction was English. Although it is not possible to check representativeness of the sample in terms of linguistic skills, it is likely that the sample is biased in that students with relatively high English proficiency enrolled in the class. On the other hand, the response bias that students who were unable to understand the questions did not respond is not deemed as serious.

Which teaching methods were more conducive to better understanding by students, particularly in courses taught in English? Table 1 shows the results of a *t*-test. I tested whether there were significant differences in the importance of each teaching method according to the language of instruction. The questionnaire items that show a statistically significant difference by a language of instruction are “The teacher speaks slowly”, “The teacher speaks correctly in terms of pronunciation”, “Oral presentations are firmly based on a textbook”, “The teacher distributes handouts complementary to oral presentations”, “The teacher reviews the previous class at the beginning of a class” and “The teacher shows the main points and keywords of each class”. Among them, the highest *t*-values were observed for “the rate of speech” ( $t = 6.1$ ), “textbook-based teaching” ( $t = 3.7$ ) and “the indication of the keywords and points in each class” ( $t = 3.6$ ).

Is there any commonality among 11 teaching methods that improve learning efficiency in courses taught in English? To tackle this question, I conducted factor analysis using the answers to Question 3, specifically, answers for courses taught in English. Table 2 shows the results of the exploratory factor analysis. As the maximum likelihood method yielded a Heywood case, the principal factor method was employed to extract the factors. According to the scree plot, the data on teaching methods can be reduced to Factor 1 and Factor 2. Table 3 shows factor loadings after oblique promax rotation. Factor 1 is exclusively correlated with teaching methods such as Method 5 (use of handouts) and Method 6 (use of diagrams), which suggests that Factor 1 represents the “use of written documents complementary to oral presentation”. Factor 2 is exclusively correlated with methods such as Method 4 (relating concepts to examples)

and Method 11 (being responsive to students' ideas), which suggests that Factor 2 represents "general efforts to make a lecture interactive and transparent for students".

**Table 1** Importance of pedagogy employed in classes given in English and the native language

<i>Pedagogical method</i>	<i>English</i>	<i>Native language</i>	<i>t-value</i>	<i>Significance</i>
1. The teacher speaks slowly.	3.3	2.4	6.1	**
2. The teacher speaks correctly in terms of pronunciation.	4.0	3.1	3.3	**
3. Oral presentations are firmly based on a textbook.	3.2	2.7	3.7	**
4. The teacher relates the contents to the real world by examples and evidence.	4.1	4.1	0.0	
5. The teacher distributes handouts complementary to oral presentations.	3.7	3.4	2.6	*
6. The teacher shows charts and diagrams complementary to oral presentations.	3.7	3.6	2.0	
7. The teacher reviews the previous class at the beginning of a class.	3.3	3.1	2.8	**
8. The teacher previews the contents of the next class at the end of a class.	2.8	2.7	1.6	
9. The teacher shows the main points and keywords of each class.	4.0	3.7	3.6	**
10. The class develops as scheduled in the beginning.	3.7	3.6	1.7	
11. The teacher is responsive to students' ideas and questions.	4.3	4.3	1.1	

1.  $N = 43$ .

2. The level of statistical significance: \* $p < 0.05$ ; \*\* $p < 0.01$ .

**Table 2** Exploratory factor analysis

<i>Factor</i>	<i>Eigenvalue</i>	<i>Difference</i>	<i>Proportion</i>	<i>Cumulative</i>
Factor 1	1.938	0.565	0.483	0.483
Factor 2	1.372	0.635	0.342	0.825
Factor 3	0.737	0.255	0.184	1.008
Factor 4	0.482	0.141	0.120	1.129
Factor 5	0.341	0.191	0.085	1.214
Factor 6	0.151	0.192	0.038	1.251
Factor 7	-0.042	0.081	-0.010	1.241
Factor 8	-0.123	0.099	-0.031	1.210
Factor 9	-0.222	0.054	-0.055	1.155
Factor 10	-0.276	0.070	-0.069	1.086
Factor 11	-0.346	.	-0.086	1.000

1.  $N = 43$ .

2. Method: principal factors.



**Table 3** Factor loadings

<i>Variable</i>	<i>Factor 1</i>	<i>Factor 2</i>	<i>Uniqueness</i>
1. The teacher speaks slowly.	0.144	-0.138	0.681
2. The teacher speaks correctly in terms of pronunciation.	-0.046	-0.084	0.581
3. Oral presentations are firmly based on a textbook.	-0.242	0.044	0.619
4. The teacher relates the contents to the real world by examples and evidence.	0.060	0.637	0.505
5. The teacher distributes handouts complementary to oral presentations.	0.763	0.175	0.352
6. The teacher shows charts and diagrams complementary to oral presentations.	0.799	-0.117	0.372
7. The teacher reviews the previous class at the beginning of a class.	-0.020	-0.009	0.525
8. The teacher previews the contents of the next class at the end of a class.	0.128	-0.143	0.511
9. The teacher shows the main points and keywords of each class.	0.169	0.180	0.633
10. The class develops as scheduled in the beginning.	0.073	0.183	0.538
11. The teacher is responsive to students' ideas and questions.	-0.007	0.526	0.665

1. The results of factors other than Factor 1 and Factor 2 are unreported.
2. Variables represent answers to Question 3 for courses in English. See Appendix Table A1.

Table 4 shows estimation results regarding the third research question. As a dependent variable is an ordinal variable, an ordered probit model was employed for estimation. The results show that, other things being equal, teachers can improve the efficiency of teaching in courses taught in English by relating the contents to the real world by showing examples and letting the course progress as it was scheduled in the first place. Teachers' previewing the next class has a negative effect on learning efficiency. As predicted, control variables, such as students' English proficiency and the quantitative evaluation of courses taught in English, have significantly positive effects on learning efficiency in courses taught in English.

**Table 4** Ordered probit estimation (dependent variable = learning efficiency)

<i>Independent variables</i>	<i>Coefficients</i>	<i>Standard errors</i>	<i>Significance</i>
English proficiency	0.660	0.294	*
Quantitative evaluation by students of courses taught in English	0.657	0.292	*
1. The teacher speaks slowly.	-0.308	0.260	
2. The teacher speaks correctly in terms of pronunciation.	-0.209	0.209	
3. Oral presentations are firmly based on a textbook.	0.452	0.373	
4. The teacher relates the contents to the real world by examples and evidence.	1.690	0.787	*

**Table 4** Ordered probit estimation (dependent variable = learning efficiency) (continued)

<i>Independent variables</i>	<i>Coefficients</i>	<i>Standard errors</i>	<i>Significance</i>
5. The teacher distributes handouts complementary to oral presentations.	0.207	0.365	
6. The teacher shows charts and diagrams complementary to oral presentations.	0.811	0.469	
7. The teacher reviews the previous class at the beginning of a class.	-0.286	0.472	
8. The teacher previews the contents of the next class at the end of a class.	-2.008	0.950	*
9. The teacher shows the main points and keywords of each class.	0.204	0.505	
10. The class develops as scheduled in the beginning.	0.926	0.421	*
11. The teacher is responsive to students' ideas and questions.	0.262	0.559	

1.  $N = 43$ .

2. The level of statistical significance: \* $p < 0.05$ ; \*\* $p < 0.01$ .

#### 4 Discussion

The results of Table 1 imply that when comparing classes given in English for non-native English speakers to those given in a native language, learning efficiency can be improved through teachers' effort to make oral presentation more understandable (Method 1), to arrange written material complementary to oral presentation (Method 5) and to provide students with a guide to see the whole picture of the contents of each class (Methods 7 and 9). Table 1 also sheds light on the teaching methods that are conducive to students' understanding about the contents in general. Regardless of the language used for teaching (i.e., no significant differences between English and native language), teachers' effort to relate the contents to the real world by examples and evidence (Method 4) and to provide timely feedback to students' questions and ideas (Method 11) helps students learn efficiently.

Factor analysis extracts the latent students' demand for courses taught in English. The questionnaire survey reveals that there are two ways, as represented by Factor 1 and Factor 2, for the business school to allocate their resources to strengthen teaching in English. The results of factor analysis are consistent with the finding from Table 1 in that arranging written materials complementary to oral presentations is important in courses given in English, as represented by Factor 1. The advantage of this type of effort seems particularly salient in courses for non-native English speakers as it enables them to preview and review oral presentations. In contrast to teaching practices that argument comprehension of oral presentations, learning efficiency in courses given in English could be improved from a more general approach, as represented by Factor 2. Through multivariate analysis, I will show how these factors are conducive to students' understanding about the contents in courses given in English, even after controlling for students' linguistic skills.

In Table 4 indicating the results of multivariate analysis, factors that are found significant from univariate analysis in Table 1, such as making oral presentations more understandable, arranging materials complementary to oral presentations and providing a guide to see the whole picture of the class, lose their explanatory power when students' English proficiency is taken into account. This indicates that high linguistic skills negate the importance of some practices to improve learning efficiency in courses taught in English. Actually, what turns out to be important is teaching practice which is found general in terms of the learning efficiency effect. The results of regression analysis indicate that teachers' effort to relate abstract concepts to actual cases is critical to improve learning efficiency in classes given in English, even after controlling for the effect of linguistic skill of students. This may reflect the nature of economics as a subject. As the survey was conducted at a business school, courses that the students evaluated in the survey were related to business administration and economics. Economics is regarded as difficult to learn, even in a native language, because of its abstractness. Although this study assumed a lecture like chalk and talk as a mode of knowledge transfer (Herrnstadt et al., 1965; Marangos and Alley, 2007), previous studies discussed alternative methods to mitigate the abstractness of economics through the use of concept maps and engagement of students in cooperative group activities (Marangos, 2003; Roth and Roychoudhury, 1992). The results suggest, as far as the development of economics courses in English is concerned, that an emphasis be placed on general pedagogical efforts as shown above, rather than devising teaching methods idiosyncratic to specific language of instruction.

In conclusion, I answer research questions proposed in Section 1 in order. First, some methods have idiosyncratic effects on learning efficiency in the courses taught in English, such as teachers' slowing the rate of speech and showing the keywords and points in each class, while others, such as relating concepts to real world examples, have general implications on learning efficiency. Second, students' demand for teaching practices in courses taught in English can be characterised as those which complement oral presentations and those which make learning efficient in a general context. Third, other things being equal, teachers' effort to relate the contents to the real world by examples and evidence improves the efficiency of teaching in courses taught in English. Future study should conduct international comparison because it is necessary to confirm whether the results hold true of other language families, such as non-Indo-European languages.

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## Appendix 1: Questionnaire used in the survey

### Question 1

Please indicate your native language(s).

- Italian       English       French       German       Portuguese  
 Russian       Spanish       Arabic       Chinese       Korean

Other (Please specify)

### Question 2

Please select one out of the following five statements about your English proficiency level.

"I can comprehend the contents of classes in my major taught in English by a native speaker of English".

*Note:* A class in English in this survey means a class taught in English, not a class of the English language.

- 1 Strongly disagree
- 2 Disagree
- 3 Neither agree nor disagree
- 4 Agree
- 5 Strongly agree

*Question 3*

How important do you think the following teaching methods are in efficiently learning in classes in your native language(s) and English? Please select one out of the following five statements for each teaching method.

*Note:* The teachers' knowledge of the subject and students' comprehension are assumed to be identical in all the classes. If English is your native language, please skip 'Classes taught in English'.

- 1 Unimportant
- 2 Of little importance
- 3 Moderately important
- 4 Important
- 5 Very important

1. The teacher speaks slowly.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

2. The teacher speaks correctly in terms of pronunciation.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

3. Oral presentations are firmly based on a textbook.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

4. The teacher relates the contents to the real world by examples and evidence.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

5. The teacher distributes handouts complementary to oral presentations.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

6. The teacher shows charts and diagrams complementary to oral presentations.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

7. The teacher reviews the previous class at the beginning of a class.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

8. The teacher previews the contents of the next class at the end of a class.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

9. The teacher shows the main points and keywords of each class.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

10. The class develops as scheduled in the beginning.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

11. The teacher is responsive to students' ideas and questions.

Classes taught in English \_\_\_\_\_

Classes taught in your native language(s) \_\_\_\_\_

Please specify, if any, other teaching methods which you find very important.

*Question 4*

How do you assess classes taught in English at this university regarding the following teaching methods? Please select one out of the five items for each teaching method.

*Note:* If you took more than one class, please estimate an average.

- 1 Strongly disagree
- 2 Disagree
- 3 Neither agree nor disagree
- 4 Agree
- 5 Strongly agree

1. The teacher speaks slowly.
2. The teacher speaks correctly in terms of pronunciation.
3. Oral presentations are firmly based on a textbook.
4. The teacher relates the contents to the real world by examples and evidence.
5. The teacher distributes handouts complementary to oral presentations.
6. The teacher shows charts and diagrams complementary to oral presentations.
7. The teacher reviews the previous class at the beginning of a class.
8. The teacher previews the contents of the next class at the end of a class.
9. The teacher shows the main points and keywords of each class.
10. The class develops as scheduled in the beginning.
11. The teacher is responsive to students' ideas and questions.

*Question 5*

Please rate your satisfaction with classes taught in English at this university in terms of the actual number of classes in English that were available for you relative to the number of classes in English you expected to be available before you entered this university. Please select one out of the five items.

- 1 Much less than expected
- 2 Less than expected
- 3 The same as expected
- 4 More than expected
- 5 Much more than expected

*Question 6*

Please rate your satisfaction with classes taught in English at this university in terms of the amount of knowledge that you acquired relative to the knowledge you expected to acquire before you entered this university. Please select one out of the five items.

*Note:* If you took more than one class, please estimate an average.

- 1 Much less than expected
- 2 Less than expected
- 3 The same as expected
- 4 More than expected
- 5 Much more than expected

**Table A1** Descriptive statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>Min</i>	<i>Max</i>
Q2	43	4.000	0.845	1	5
Q3-1E	43	3.372	1.070	1	5
Q3-1N	42	2.452	0.942	1	4
Q3-2E	43	4.023	1.012	1	5
Q3-2N	43	3.419	1.159	1	5
Q3-3E	43	3.233	1.109	1	5
Q3-3N	41	2.707	0.901	1	4
Q3-4E	43	4.140	0.941	1	5
Q3-4N	42	4.119	0.861	2	5
Q3-5E	43	3.721	1.076	1	5
Q3-5N	43	3.442	1.076	1	5
Q3-6E	43	3.767	0.947	2	5
Q3-6N	43	3.605	0.929	2	5
Q3-7E	43	3.395	1.003	1	5
Q3-7N	43	3.140	1.082	1	5
Q3-8E	43	2.837	1.090	1	5
Q3-8N	43	2.744	1.157	1	5
Q3-9E	43	4.070	0.704	2	5
Q3-9N	43	3.767	0.841	2	5
Q3-10E	43	3.767	1.109	2	5
Q3-10N	43	3.605	1.198	1	5
Q3-11E	43	4.372	0.787	2	5
Q3-11N	43	4.302	0.708	3	5
Q4-1	43	3.419	0.587	2	4
Q4-2	43	3.186	0.932	1	5
Q4-3	43	3.023	0.988	1	5
Q4-4	43	3.988	0.744	2	5
Q4-5	43	3.605	1.027	1	5
Q4-6	43	4.047	0.653	2	5
Q4-7	43	2.791	1.013	1	5
Q4-8	43	2.930	0.961	1	5
Q4-9	43	3.116	0.956	2	5
Q4-10	43	3.465	0.909	2	5
Q4-11	43	4.233	0.751	2	5
Q5	43	2.837	0.785	1	4
Q6	42	2.929	0.808	1	4

'Q3-1E' represents answers to Item 1 of Question 3 for courses taught in English while 'Q3-1N' represents those taught in a native language. See Appendix I.