Testing the Effect of Asynchronous Discussions in a Language and Content-Integrated Hybrid Course

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Abstract: The method of teaching delivery has been found to have significant impact on students’ learning. “Hybrid” or “blended” courses that mix face-to-face and online instructional methods have gained popularity in education, including in the field of language learning and teaching. There is an increasing number of studies that have explored the methodology of constructing a hybrid class for English language teaching and its potential benefits for student learning. However, little has been studied with regard to using a hybrid course where English and content subjects are integrated. The purpose of the research described in this chapter was to test the effect of asynchronous discussions on learning outcomes of students within a hybrid course and to compare the effectiveness of the course with a more traditional one. In both types of courses, American economic history and English language were learnt simultaneously. A regression model was used to analyze the quantitative data obtained from investigating both types of course formats. The study finds that the incorporation of online discussion forums into an English and content-integrated course can help improve student academic performance.

Keywords: language across the curriculum, English and content integration, economics education, asynchronous discussion, hybrid course

The use of English as the medium of instruction at universities in non-English speaking countries has been growing, due in large part to the impact of globalization and the dominance of the English language generally (Altbach, 2004; Johnson, 2009). As a result, English language and content-integrated learning and teaching has been widely used at international univer-
sities to meet the needs of the modern market and economy (Arnó-Macià & Mancho-Bares, 2015; Coleman, 2006; Ljosland, 2005). English Across the Curriculum (EAC) focuses on a twin purpose: learning the target language and the content of a specific subject at the same time. “This dual character is a cognitive challenge for teachers as well as for students as it is substantiated by the combination of language teaching with the context” (Leshchenko et al., 2018, p.17). Elisabet Arnó-Macià & Guzman Mancho-Bares (2015) found that “the language proficiency of both lecturers and students was perceived as the main challenge to CLIL (Content and Language Integrated Learning) implementation” (p. 68). However, in this study, English language proficiency was not such a challenge for the lecturer since he had been a lecturer of English before he became a lecturer of economics. What made it difficult for the lecturer in this study was teaching the relevant English language and content of a specific subject within one semester. The 2015 study by Arnó-Macià and Mancho-Bares indicated that “it’s not so much that they [students] learn the language (although they learn technical vocabulary), but that they lose the fear of using the language, that they feel the need to use the language” (p. 68). Thus, it was seen as important to encourage the students to use English to study the subject content. In this study specifically, students were expected to use the technical English of history and economics to acquire knowledge of the specific subject—American economic history—as well as read and write specialized texts, and communicate in academic and professional situations.

The policy of the university where this study was conducted requires students to take several English language courses at university level, with the aim of students reaching level B1 after two years. Therefore, when the students took content subjects, they had already reached B1 level, which the university considers the minimum English level for students to pursue content subjects successfully. Hence, students were able to use English for general communication, but found that they did not have enough time to learn both English and the content of the specific subject in the classroom. The challenge therefore that both lecturers and students faced was how to achieve the dual focus on learning English and the content of a specific subject in the classroom.

Vocabulary learning is an essential part of the foreign language learning process, and it is a crucial concern of a language and content-integrated course, as Kara Warburton (2015) recognized when she noted that “one can-

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1 B1 level: “Intermediate,” the third level in the Common European Framework of Reference
not easily distinguish between general language and special language” (p. 362). Specialized vocabulary in economics is, however, different from vocabulary used in everyday language, and it acquires specific meanings when used in a particular academic or professional context. Many words with general meanings for everyday use, when combined together to form a concept concerned with economics and business, have a very abstract meaning: for instance, consumer price index (CPI) or gross domestic product (GDP). A single word that students are already familiar with may also have a very different meaning in economics and business: for instance, derivative, generally meaning “using or taken from other sources; not original,” in economics means “a contract between two parties which derives its value/price from an underlying asset.” Normally, students need to memorize the technical words and their meaning in English supported by the meaning in their mother tongue. In a typical lecture in this course, the focus was on the specific subject content together with the introduction of new technical English necessary for the students to understand and acquire the content from the specialized texts. This left inadequate time for students to use the new technical English that they had just learnt to improve their productive English skills and foster their autonomy in building their vocabulary knowledge during the class. Students, therefore, needed to spend more time to fulfil the dual purpose of this course—English and content integration—beyond the classroom and beyond the course. A platform for students to discuss what they had learnt during the class so that they could use the technical English to understand the content of the specific subject and improve their English skills appeared to have been needed.

Technology has changed our approaches to teaching and learning in general and foreign language teaching and learning in particular, and much has been written about the practice of using technology in the classroom (Lin, 2007; Martyn, 2003; Massoud et al., 2011). Although online instruction in a hybrid course, which incorporates face-to-face and online instructional methods, has potential drawbacks, such as less direct interaction with instructors and other students and a difficulty in maintaining academic standards, studies have demonstrated that students can learn effectively in the hybrid course format (Gratton-Lavoie & Stanley, 2009; McGee & Reis, 2012; Vignare, 2007). Regarding the academic performance of students in the hybrid course, there have been studies that found test scores to be higher or slightly higher for hybrid students than students enrolled in the same course in a face-to-face format in the fields of, for example, microeconomics (Gratton-Lavoie

2 Yourdictionary.com
3 http://Investopedia.com
Dang & Stanley, 2009), biology (Riffell, & Sibley, 2005), and language (Chenoweth & Murday, 2003). For language across the curriculum courses, little or no research has been conducted to compare the effectiveness of hybrid and face-to-face courses.

This study is an attempt to investigate the effect of using a hybrid format in an EAC course. In this study, a “hybrid course” is one that combines face-to-face with asynchronous online discussion. Asynchronous discussion is online discussion progressing at students’ own pace when they post to a forum or a discussion board. This is also referred to as “asynchronous learning.” With asynchronous online discussion, students can engage in discussions with each other online, while also reviewing and participating in discussions with others at times convenient to them. Asynchronous online discussion can be used as a tool for fostering critical thinking skills and for including different learning styles and personalities, as well as helping to improve the potential for student learning and knowledge sharing (Brewer & Brewer, 2010; Brookfield, 2005; Kienle, 2009). For the course in this study, the purpose of the integration of asynchronous online discussion forums with traditional face-to-face instruction is to assist students in the integration of complex course materials with English language resources to broaden students’ knowledge of a specific subject content while, at the same time, improving their English skills beyond the classroom and beyond the course.

Aims of the Research

There has been substantial research on hybrid/online course formats in education in general and in English language teaching in particular (Allen & Seaman, 2011; Bonk, 2011; DePraeter, 2014; Hammer, 2012; Harris et al., 2009; Jochum, 2011; Klimova & Kacetl, 2015; McNeil, 2016; Rubio & Thoms, 2012; Willekens & Gibson, 2010). However, what these studies lack is a method to statistically test the effect of employing a hybrid course model on student learning outcomes. Moreover, little or no research has been conducted on using a hybrid course where English and content subjects are integrated. To address these gaps, this study constructs a regression model to measure the effect of asynchronous discussions on learning outcomes within a hybrid course in which American economic history and English language were learnt simultaneously. This chapter, therefore, contributes to the literature by testing whether or not online asynchronous discussions in a course which integrates disciplinary content and English can truly further students’ learning of the specific subject content while also improving their English language skills.
Research Design and Empirical Analysis

Data and Methodology

Following a quantitative approach, the study was conducted using data collected from 110 students taking an American economic history course integrated with English learning. The students specialize in international studies and foreign trade, and they are required to take most content subjects in English after they have reached B1 level of English. The course in this study is designed in such a way that students receive face-to-face instruction for three hours a week, but also use online resources beyond the classroom that they can access via a webpage prepared by the author. The study investigated four classes, with 25 to 35 students in each class. Student populations were self-selected, and the instructor randomly determined which classes would be taught in hybrid mode. Two hybrid classes comprised 56 students, while 54 students were enrolled in the two traditional classes. The two student populations comprised full-time students, and they did not differ much in the ratio of males to females. All students were in their third year at the university, and all of them owned a computer and had Wi-Fi internet access at home and at the university. They could also complete work in a campus computer lab or in other facilities that have computers, such as the university library. All four classes, which were assumed to be of the same English level since students had reached B1 level, were taught in English by the same instructor with the same content, texts, and assignments but using two different modes of delivery: traditional and hybrid.

To test the effect of asynchronous discussion on learning outcomes, both traditional and hybrid classes were taught simultaneously and received the same active-learning activities in class, which included lectures, discussions in pairs or groups, and student presentations on chosen topics related to the subject materials. The only difference was that with the hybrid classes asynchronous discussions were conducted online, while with the traditional classes the students met outside the classroom in groups and conducted discussion face to face—or in any other manner since it was impossible for the instructor to supervise their discussions outside the classroom. The instructor divided the traditional class students into separate discussion groups and asked them to inform him of the time and place they met for discussions. Students in the classes which were chosen for asynchronous discussions were added to the webpage prepared by the instructor in such a way that students of the traditional classes could not access it.

4 In each class, males accounted for around 10 percent of the students.
The course was designed around a specific set of materials in a standard format and was conducted over a 15-week semester. There was a required textbook for the course and PowerPoint lecture presentations with accompanying lecture notes, all of which were in English and available to students. These materials constituted the course content, and English was taught and learnt simultaneously with those course materials. For the hybrid classes, the blog of online resources and the Facebook page were used to complement course readings with links to various news articles, podcasts, and videos relevant to the materials being discussed. Questions for discussions prepared by the instructor were posted to the blog. Students were also free to post questions regarding course materials, and both the instructor and other students would respond to these questions. The language used for the asynchronous online discussions had to be English. For the traditional classes, the students were provided with the same complementary materials and questions for discussion. The advantage of asynchronous discussions in a hybrid class over face-to-face discussions in a traditional class is that students of the hybrid class can study and review the complementary materials and participate in discussions with others at times convenient to them. It is also possible for the instructor to track the discussions of all students in the hybrid class.

One student post often encouraged other students to give comments as in the following example:

**Task:** The picture on page 429 of the textbook we are using is a scene from the movie “It’s a Wonderful Life”. The authors say that Mary Bailey (Donna Reed) turns over the money she has saved for a second honeymoon to George Bailey (Jimmy Stewart), so he can end the run on his savings bank. The Federal Reserve should have handled the crisis (the Great Depression) the way Mary did. Explain the reasons why the authors of the textbook say so.

**Student A:** The author mentioned the Federal Reserve should have handle the crisis by spending more instead of holding more reserves. The reason is that by spending more on public works such as building schools, road construction, etc. will create more jobs while also facilitate the flow of money in the economy.

**Student B:** The reason is that by spending more on public works such as building schools, road construction, etc. will create more jobs while also facilitate the flow of money in the
economy. This is fiscal policy - the work of the government. The Fed enacts the monetary policy.

In this way, students were given the time and an online learning environment where they could use the concepts of the specific subject and technical English they had learnt during the class to read, listen, or watch, and write. This appears to have helped both the instructor and students to fulfil the dual purpose of the course: learning the subject content and English at the same time.

In both the hybrid and traditional classes, students were given various homework assignments for which they were given a limited timeframe for completion. There were also four quizzes and two tests,\(^5\) which were graded and used as data for this study. The same quizzes and tests given to both types of students were based on tests from textbooks and/or the College Board.\(^6\) For economics, the test questions were taken from textbooks purchased by the instructor. The economics textbooks included a CD with test questions and a webpage for online access to the test question banks. For history, test questions were taken from American economic history textbooks and the standardized history tests designed by the College Board. In order to motivate students to follow the discussions on the blog for the hybrid classes and discussions outside the classroom for the traditional classes, students of both types of class were given a quiz on the materials provided by the instructor every two weeks. All the quizzes and tests were closed-book, and no outside help of any sort was allowed. Tests and quizzes were monitored strictly by the instructor face-to-face in the classroom with supervision from a non-academic colleague. For the quizzes and tests, the instructor wanted to assess not only basic knowledge gains from the content subject, but also students’ ability to comprehend the concepts in English. The content of all quizzes and tests was based directly on the objectives and assessment requirements stated in the course syllabus (sample test questions can be found in the appendix). The students’ oral presentations and essays were graded based on a rubric for assessment which has two

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5 The four quizzes consisted of multiple-choice questions and short reading comprehension texts. Each quiz checked the students’ understanding of one or two chapters in the textbook. The two tests included a mid-term test which was the oral presentation and a final test which consisted of different types of questions: multiple-choice, short-answer, and essay-writing questions.

6 The College Board is an American not-for-profit organization that was formed in December 1899 as the College Entrance Examination Board to expand access to higher education. The College Board develops standardized tests and curricula used by K–12 and post-secondary education institutions.
Dang

parts: part one measures the integrated language-content knowledge and part two measures the English speaking and writing proficiency. The content-language integrated results of these two tests were then combined with the results of the quizzes to create a set of data. The separate speaking and writing results were combined to create another set of data. Following the Vietnamese grading system, the grade scale of the quizzes and tests is from 1 to 10. For example, if the test consisted of ten multiple-choice questions, each correct answer would be given one point. Therefore, if a student answered all ten questions correctly, he or she would get a full grade of ten points, which is equivalent to 100 percent (4 point-scale) in the U.S. grading system. If a student made no attempt to complete the test or answered all questions incorrectly, he or she would receive a zero. As a measurement of attainment, students’ scores from all the quizzes and tests were averaged to produce an overall score out of 10, and this score was used as data for the regression. The speaking and writing scores, from the students’ oral presentations and essay writing, were also averaged to produce another overall score for the purpose of measuring the students’ English speaking and writing proficiency in this study.

Regression Model and Empirical Analysis

It is assumed that the greater the number of online interactions and discussions of the course materials, the higher the average score each student should receive. To test this hypothesis, the following linear regression model was adopted:

\[ \text{Grade}_t = \beta_0 + \beta_1 \text{hybrid}_t + \beta_3 \text{asynch}_t + \beta_3 \text{attend}_t + \beta_4 \text{male}_t + \varepsilon_t, \]

where \( \text{Grade} \) is the student’s average test score, \( \text{asynch} \) is the variable that measures the number of discussions and comments to articles or questions that the student made, and \( \text{attend} \) is a variable measuring the students’ attendance percentage. \( \beta \) is the coefficient and \( \varepsilon \) denotes the error term. Two dummy variables are added to the model: \( \text{hybrid} \) is a dummy variable measuring if the class is the hybrid one, and \( \text{male} \) is a dummy variable measuring if the student is male. A dummy variable (or an indicator variable) is a numeric variable that represents categorical data, such as gender, race, age, or another particular grouping. Regression results are easiest to interpret when dummy variables take the values of 0 and 1. A person is given a value of 0 if they are in the control group (the reference group) or a 1 if they are in the treated group. Once a categorical variable has been recoded as a dummy variable, the dum-

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my variable can be used in regression analysis just like any other quantitative variable. For example, in this study, the variable *hybrid* represented the treated group where students were in the hybrid classes, while the reference group consisted of students in traditional face-to-face classes. In the analysis, each dummy variable of the treated group is compared with the reference group. In this study, a positive regression coefficient means that the grade is higher for the treated group than for the reference group; a negative regression coefficient means that the grade is lower. The following table (Table 9.1) presents the summary statistics for all variables.

### Table 9.1. Summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observation</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>grade</td>
<td>110</td>
<td>6.62</td>
<td>1.64</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>hybrid</td>
<td>110</td>
<td>0.49</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>asynch</td>
<td>110</td>
<td>4.25</td>
<td>3.76</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>absent</td>
<td>110</td>
<td>8.08</td>
<td>2.94</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>male</td>
<td>110</td>
<td>0.15</td>
<td>0.36</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

A regression analysis is a form of predictive modelling technique estimating the relationships between a dependent and one or more independent variables. The regression model in this study includes *grade* as the dependent variable to measure the effect of asynchronous online discussions in an English language and content-integrated hybrid course. *Hybrid* was used to measure whether in a hybrid course the students could earn higher grades on the tests. Whether or not the asynchronous online discussion is beneficial to the student was not confirmed through previous studies when considering courses that serve the dual purpose of learning subject content and enhancing English language skills. Therefore, the *asynch* variable was included in the model to denote the extent of students’ participation in asynchronous online discussions. It is assumed that such discussions can help students further their knowledge of the course content and improve their English language skills at the same time, and as such, this variable was expected to be positive. The variable for attendance (*attend*) was also included to proxy for student motivation: the higher the attendance, the higher the grade. The variable for gender (*male*) was added in the final analysis. In another study, it had been found that male students perform on average 7.5 points better than their female classmates in a microeconomics hybrid class (Gratton-Lavoie & Stanley, 2009).

To estimate the linear model proposed above, the method of ordinary least squares (OLS) was used. OLS is widely used in many scientific fields, and it can be utilized for estimating the unknown parameters in a linear regression.
model. The results from the OLS model are presented in three tables: Table 9.2 shows the effect of a hybrid class in a content and English-integrated course, Table 9.3 presents the effect of asynchronous online discussions within the hybrid class, and Table 9.4 shows the effect of asynchronous online discussion on English proficiency.

The analysis of the results is based on the regression coefficient (Tables 9.2, 9.3, and 9.4, column 2) since it provides the expected change in the dependent variable (here: grade) for a one-unit increase in the independent variables (all other variables in the regression model). P-value is also used in the analysis for the statistical significance. The p-value is the probability of finding the observed results when the null hypothesis of a study question is true: \( p < 0.05 \) (5%) means less than one in 20 chance of being wrong, and \( p < 0.001 \) (0.1%) means less than one in 1,000 chance of being wrong (see Tables 9.2, 9.3, and 9.4, column 5). Conventionally 5%, 1%, and 0.1% levels for the statistical significance are used, and if the p-value is greater than 5%, it is considered statistically non-significant due to weak evidence.

According to the estimates, the hybrid variable is positive and significant at p-value of less than one percent on the content and English-integrated learning. It is obvious that students in the hybrid class performed better and received grades approximately 1.2 points higher than students of the traditional class (see Table 9.2, column 2, row 2). As all quizzes and tests were graded following the scale from 1 to 10, this means that the test results of students in the hybrid classes were on average 1.2 out of 10 points (or 12 out of 100 percent) higher than those of students in the purely face-to-face ones. When the results on the English proficiency test are separated from the grades on the integrated tests, the hybrid variable becomes insignificant (see Table 9.4, row 2), perhaps due to weak evidence.

Table 9.2. The effect of a hybrid class in a content and English-integrated course

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T-Ratio</th>
<th>P-Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>hybrid</td>
<td>1.18</td>
<td>0.24</td>
<td>4.91</td>
<td>0.000</td>
<td>***</td>
</tr>
<tr>
<td>attend</td>
<td>0.26</td>
<td>0.04</td>
<td>6.46</td>
<td>0.000</td>
<td>***</td>
</tr>
<tr>
<td>male</td>
<td>-0.07</td>
<td>0.33</td>
<td>-0.22</td>
<td>0.825</td>
<td></td>
</tr>
<tr>
<td>_cons</td>
<td>3.92</td>
<td>0.37</td>
<td>10.63</td>
<td>0.000</td>
<td>***</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.3677</td>
<td>Adjusted</td>
<td>0.3615</td>
<td>Number of Observations</td>
<td>110</td>
</tr>
<tr>
<td>F (3, 116)</td>
<td>23.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *** p<0.01, ** p<0.05, * p<0.1
Testing the Effect of Asynchronous Discussions

Table 9.3. The effect of asynchronous online discussion within the hybrid class

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T - Ratio</th>
<th>P - Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>asynch</td>
<td>0.11</td>
<td>0.03</td>
<td>3.37</td>
<td>0.00</td>
<td>***</td>
</tr>
<tr>
<td>attend</td>
<td>0.26</td>
<td>0.04</td>
<td>5.93</td>
<td>0.00</td>
<td>***</td>
</tr>
<tr>
<td>male</td>
<td>-0.17</td>
<td>0.35</td>
<td>-0.48</td>
<td>0.64</td>
<td>_</td>
</tr>
<tr>
<td>_cons</td>
<td>4.09</td>
<td>0.38</td>
<td>10.65</td>
<td>0.00</td>
<td>***</td>
</tr>
</tbody>
</table>

R-Squared: 0.31  Adjusted R-squared: 0.30  Number of Observations: 110

F (3, 116) = 17.82

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 9.4. The effect of asynchronous online discussion on English proficiency

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T - Ratio</th>
<th>P - Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>hybrid</td>
<td>0.00</td>
<td>0.13</td>
<td>0.00</td>
<td>0.99</td>
<td>_</td>
</tr>
<tr>
<td>asynch</td>
<td>0.20</td>
<td>0.18</td>
<td>2.77</td>
<td>0.00</td>
<td>***</td>
</tr>
<tr>
<td>attend</td>
<td>0.21</td>
<td>0.15</td>
<td>1.44</td>
<td>0.05</td>
<td>**</td>
</tr>
<tr>
<td>male</td>
<td>-0.01</td>
<td>0.33</td>
<td>-0.22</td>
<td>0.39</td>
<td>_</td>
</tr>
<tr>
<td>_cons</td>
<td>8.03</td>
<td>0.13</td>
<td>61.46</td>
<td>0.00</td>
<td>***</td>
</tr>
</tbody>
</table>

R-Squared: 0.37  Adjusted R-squared: 0.3615  Number of Observations: 110

F (3, 116) = 23.46

Note: *** p<0.01, ** p<0.05, * p<0.1

Another variable, which is the main variable of interest, together with the hybrid variable, is asynch. This variable is both positive and significant at p-value of less than one percent. The estimates show that for each additional discussion on the blog, a student raised their grade by more than 0.1 point on the English and content-integrated tests (see Table 9.3, column 2, row 2) and by around 0.2 point on the English proficiency test (see Table 9.4, column 2, row 3). This means that between two students, the one that was more involved in the asynchronous online discussions would perform slightly better in the course. They would achieve approximately 0.1 out of 10 points on the English and content-integrated tests and 0.2 out of 10 points on the English proficiency test higher than the grade earned by the student who was less involved in the asynchronous online discussions. This estimate seems to be insubstantial if a student only contributed to one or two discussions. This is probably
due to the fact that those students who were not actively involved in the asyn-
chronous online discussions could still observe and read the discussions from
other students who were more involved and hence could improve their un-
derstanding of the subject content and improve their English. However, the
greater the contribution a student made to discussions, the higher the grade
they could earn compared with the grades of students who were inactive.

Also, as expected, the attendance rate was very significant in determining
a student’s grade, with $p$-value of less than one-percent level. All else con-
stant, the estimates show that the more frequently a student attended class,
the higher the grade they could earn from the course. If a student increased
their attendance by ten percent, their test grade would increase by about 2.6
out of 10 points for both types of classes (see Tables 9.2 and 9.3, column 2,
row 3). For the English proficiency test, attendance was also significant at the
five-percent level, and students could raise their grade by around 0.2 point
(see Table 9.4, column 2, row 4).

For the gender variable (male), in contrast to Chiara Gratton-Lavoie
and Denise Stanley’s (2009) findings, male students in this study performed
on average about 0.1 point lower than their female classmates in both class
types (see Tables 9.2 and 9.3, column 2, row 4). However, this variable was
non-significant ($p$-value > 5%; see Tables 9.2, 9.3, and 9.4, column 5, row 4).
The non-significance of the male variable was probably because the ratio of
male and female students in this study was low, males accounting for only
around ten percent of the students.

The $R$-squared statistic for the OLS model in this study is approximately
0.38, which is on the low side of acceptable, but this study showed other sta-
tistically significant predictors (e.g., the $p$-value). The significance coefficients
are, therefore, still valuable.

Conclusions

Teaching and learning in a course where English and content subjects are
being taught simultaneously is challenging. One of the challenges is that
the technical English of the course may impede students’ comprehending of
the course materials. This chapter has shown that a hybrid class in an EAC
course, where face-to-face instruction is combined with asynchronous online
discussions of course-related materials, has in fact helped to improve student
academic performance in the subject. This is likely due to increasing involve-
ment and motivation of students in the hybrid course, where self-regulatory
cognition, learner autonomy, learning community, and critical thinking skills
play important roles in the development of hybrid classes.
Overall, conclusions from the above estimates indicate that asynchronous online discussions helped students in an EAC course receive higher grades than those in the traditional class with regard to both the content subject and English proficiency. Within the hybrid class, students also improved their test performance when they were actively involved in the asynchronous online discussions when compared to those who were inactive.

What this research disregarded but which can be considered for further research is the relationship between students’ technological skills and success in hybrid courses. Other important factors to be considered when conducting asynchronous online discussion in hybrid classes are the ways to choose the complementary course materials for students to review online and the types of questions to post to the blog for students’ asynchronous discussions. It is also crucial to ensure that students read, listen, or watch the complementary course materials posted by the instructor and participate in the online discussions. This chapter hopefully contributes to the efforts of the language across the curriculum movement in fulfilling the dual focus of content and language learning.

Acknowledgments

I would like to thank my students for their participation in the study, and the anonymous reviewers for their generous and thoughtful feedback.

References


**Appendix: Sample Test Questions**

Choose the best answer:

**Question 1:** Classical economics is a school of thought in economics that flourished, primarily in Britain, in the late 18th and early-to-mid 19th century. Its main thinkers are held to be Adam Smith, Jean-Baptiste Say, David Ricardo, and Thomas Robert Malthus…

If you are a classical economist, which statement would you support?

a. Let the economy work out its own problems
b. The more the government spends to improve the economy, the better
c. The government should be involved to help during recessions
d. The government is the key to economic success

**Questions 2, 3, 4:**

“Wherefore, security being the true design and end of government, it unanswerably follows that whatever form thereof appears most likely to ensure it to us, with the least expense and greatest benefit, is preferable to all others ... Here too is the design and end of government, Freedom and Security.”

– Thomas Paine, *Common Sense*, 1776

“Governments are instituted among Men, deriving their just powers from the consent of the governed. That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and orga-
nizing its powers in such form, as to them shall seem most likely to affect their Safety and Happiness.”

– Thomas Jefferson, Declaration of Independence, 1776

Question 2. The excerpts were written in response to the

a. British government’s attempt to assert greater control over the North American colonies.
b. British government’s failure to protect colonists from attacks by American Indians.
c. Failure of colonial governments to implement mercantilist policies.
d. Failure of colonial governments to extend political rights to new groups.

Question 3. The ideas about government expressed by Paine and Jefferson are most consistent with which of the following?

a. The concept of hereditary rights and privileges
b. The belief in Manifest Destiny
c. The principle of religious freedom
d. The ideas of the Enlightenment

Question 4. The principles expressed by Paine and Jefferson best account for which of the following features of the United States during and immediately after the American Revolution?

a. The development of factions and nascent political parties
b. The rapid expansion of frontier settlements
c. The relatively limited powers of the Articles of Confederation
d. The growth of conflict between wealthy elites and poor farmers and laborers

Essay question: Explain the various theories of what caused the Great Depression. Why did it last so long?