

# Second language learning in knowledge forums: an analysis of L2 acquisition of students participating in the knowledge building international project

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**Abstract.** This study presents the results of an experiment designed to determine whether knowledge building can facilitate foreign language acquisition. We examined how groups of Catalan students in secondary schools worked together on collaborative writing tasks in English, their foreign language. The students were participating in the Knowledge Building International Project (KBIP), which is based on the concept that students can learn while working together in computer-assisted learning environments. The quantitative data was collected through a pre-test and post-test. The pre- and post-tests were divided into four sections, which were grammar, vocabulary, long answer, and multiple-choice. The results show an increase overall in the performance of the foreign language, English. In particular, the analysis determined that the comprehension of the subject matter and writing abilities in the L2 showed an increase at high confidence levels, however, there are challenges in determining whether the students have acquired new vocabulary or developed a better understanding of grammatical rules, since it is difficult to predict which words and sentence structures they will use when participating in this project.

**Keywords:** collaborative writing, computer-assisted language learning, online language learning, knowledge building.

## 1. Introduction

This study has been designed to analyze and address foreign language acquisition in online collaborative learning environments. An analysis has been done on the

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use of English as a foreign language among secondary students using a knowledge forum as part of the KBIP. More specifically, do the students' performances show evidence of increased knowledge of vocabulary acquisition, grammar rules, syntactic structure, and basic comprehension of the topic in the foreign language?

Knowledge building occurs when students collaborate by sharing their ideas and creating expertise collectively (Bereiter & Scardamalia, 2010, 2014; Bielaczyc & Collins, 2005). It is the creation of knowledge through building ideas out of ideas (Bereiter & Scardamalia, 2014). Students can create knowledge when they work together (Bereiter & Scardamalia, 2010), and they do so while addressing problems in various topics, including when conversing in a foreign language. The KBIP allows for international collaboration online where students ask questions and share their ideas in a forum. Their classmates contribute to the ideas by researching the questions, adding information, and participating in discussions until they collectively reach a conclusion that answers the initial questions posed. Further information on the KBIP can be found on the Learning Exchange website<sup>3</sup>.

Students create knowledge unintentionally when they participate in digital collaborative activities (Thorne, Black, & Sykes, 2009). Not only do the students show gains in literacy, but they also show evidence of stronger collaborative writing skills with enhanced content and organization, especially in foreign language contexts (Yim & Warschauer, 2017). These findings suggest that knowledge forums would assist in second language acquisition.

## **2. Method**

### **2.1. Participants**

Two classes of grade nine students in a Catalan secondary school participated in this study. There were 30 students in each class (N=60). The students were all 14-years-old and at an A2-B1 level of English when they participated.

### **2.2. Procedure**

At the onset of the study, the students were given a pre-test. The students then participated in the KBIP where they worked in groups to create questions they

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3. <https://thelearningexchange.ca/itl-project-home/itl-project-knowledge-building/>

wanted to be answered. Once the questions were determined, they were posted in the forum using the scaffold *I need to understand*. They then worked in groups to respond to and answer the questions using scaffolding to provide an opinion (*My theory or This theory cannot explain*), explain the answer based on research (*New information*), then summarize what they had learned (*Putting our knowledge together*). Upon completion of the writing task, the students then took a post-test.

The pre- and post-tests are divided into four sections: grammar, long answer, vocabulary, and multiple-choice. The grammar, vocabulary, and multiple-choice sections followed a forced-choice paradigm where the long answer follows a free answer paradigm. The forced-choice sections only had one possible answer for each question and were graded based on whether the correct answer was provided. The grammar section measured their understanding of modal verbs, and the vocabulary section included words typically taught in L2 texts relating to the topic. The multiple-choice section measured comprehension. The long answer section was graded based on whether the syntax was correct and whether the students understood the question and responded appropriately in the L2. The tests followed relevant common European framework of reference for languages texts for B1 English related to the topic of discussion, which was the United Nations Sustainable Goal of Climate Action.

### 3. Results

Through in-class observation, it was noted that the students in the two classes had different levels of engagement when participating in this task. While the students in Class B appeared to be more distracted throughout the semester, they also posted less in the forum. For this reason, the two classes were analyzed separately to see whether the amount of engagement within the forums influenced the results (see [Table 1](#)).

The pre- and post-test results were compared using a t-test. The results of the test show the alternative hypothesis to be effective at a 95% confidence level for both classes (see [Table 2](#)).

Table 1. Engagement levels of Class A and Class B

Class	# of Posts	% of Posts	Classroom Observations
Class A	142	61 %	Higher Engagement
Class B	90	39 %	Lower Engagement

Table 2. Overall results

Class	Tstat	Tcrit
Class A	-4.74	-2.045
Class B	-2.595	-2.045

When looking at the sections of the test, for Class A, two of the sections reject the null hypothesis in favor of the alternative hypothesis, while the other two sections are in favor of the null hypothesis. For Class B, only one section, the long answer section, rejected the null hypothesis in favor of the alternative hypothesis, while three of the sections reject the alternative hypothesis in favor of the null hypothesis (see Table 3 and Table 4).

Table 3. Class A results

Section	Tstat	Tcrit	Cohen's D
Total Test	-4.74	-2.045	Medium (0.364)
Grammar	-0.163	-2.045	Low
Long Answer	-5.375	-2.045	High (0.7924)
Vocabulary	-0.188	-2.045	Low
Multiple-Choice	-2.23	-2.045	Medium (0.2683)

Table 4. Class B results

Section	Tstat	Tcrit	Cohen's D
Total Test	-2.595	-2.045	Medium (0.3033)
Grammar	-0.8063	-2.045	Low
Long Answer	-4.821	-2.045	High (0.5791)
Vocabulary	-0.66	-2.045	Low
Multiple-Choice	-1.688	-2.045	Medium (0.3382)

## 4. Discussion

From this study, the analysis has determined that participating in the KBIP is effective for foreign language acquisition. However, when looking at the specific sections of the tests, we can conclude that participating in forums is useful for developing writing skills in the foreign language and for comprehension of the material in the foreign language. However, our testing does not show that this method of instruction is effective for grammar or vocabulary acquisition. When looking at the vocabulary words tested, very few of these words were used in the forums. The students are likely acquiring vocabulary in their foreign language; however, the challenge is that it is difficult to predict which words the students will

use. The interesting findings with these tests are the responses for the long answer section. Class A was more engaged throughout the process and posted 50% more responses in the forum than Class B. Class A showed a mean increase in the long answer section by 26.9%, while Class B showed a mean increase of 17.3%.

## 5. Conclusions

The present study analyzed foreign language acquisition, where the participants were writing and collaborating using their L2. We were able to determine that using collaborative writing tasks in a foreign language classroom is effective in developing the comprehension of the subject matter and improving L2 writing skills.

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