

Exploring Students' Language Awareness through Intercultural Communication in Computer-supported Collaborative Learning

Yu-Fen Yang

Graduate school of applied foreign languages, National Yunlin University of Science & Technology, Yunlin, Taiwan, R.O.C. // yangy@yuntech.edu.tw

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ABSTRACT

Students seldom think about language unless they are instructed to do so or are made to do so during learning activities. To arouse students' awareness while learning English for Specific Purposes (ESP), this study formed a computer-supported collaborative learning (CSCL) community to engage teachers and students from different domains and countries in intercultural communication. Participating were 208 students, including 83 international students from one of the eight vocational and technological universities which composed the CSCL community. Organized according to activity theory, the results indicate that students' language awareness is stimulated when students monitor the accuracy of their language usage (process-oriented) and assess their language performance (product-oriented) during intercultural communication with their peers from different backgrounds (across majors, colleges, and universities) and countries (China, Denmark, Indonesia, Malaysia, Netherlands, Thailand, and Vietnam). The intercultural characteristics of the CSCL community fostered students' language awareness as they acquired expressions from different cultures and contexts on the levels of lexical, syntactic, and textual organization. As a result of such intercultural communication, students' improvement of language awareness was further revealed by nine assessments examined by means of a repeated one-way analysis of variance. This study lays a foundation for promoting online intercultural interaction.

Keywords

Activity theory, Computer-supported collaborative learning (CSCL), English for Specific Purposes (ESP), Intercultural communication, Language awareness

Introduction

The potential of computer-supported collaborative learning (CSCL) has dominated the new discussions on second language (L2) learning in higher education over the past decade (Ayala & Yano, 1998; Cekaite, 2009; Dlasaka, 2002). The purpose of practicing CSCL for L2 learning is to generate peer communication in the target language for meaningful purposes in and out of the class (Liu & Sadler, 2003; Zeng & Takatsuka, 2009). From the socio-cultural constructivist perspective, language learning and acquisition are described as the construction of shared meanings through social interaction among students (Tannenbaum & Tahar, 2008; Vygotsky, 1978). Through the reciprocal and intensive interactions raised in CSCL, students from diverse backgrounds and countries engage in intercultural communication to discuss a specific topic for meaning negotiation (Osman & Herring, 2007; Solimeno, Mebane, Tomai, & Francescato, 2008).

Intercultural communication refers to "the symbolic exchange process whereby individuals from two (or more) different cultural communities negotiate shared meanings in an interactive situation" (Ting-Toomey & Chung, 2005, p. 39). In this study, the term "intercultural communication" refers to the communication among students from diverse backgrounds (majors, colleges, and universities) and countries (China, Denmark, Indonesia, Malaysia, the Netherlands, Thailand, Vietnam). In the CSCL environment, intercultural communication takes place when students engage in the task of learning English for Specific Purposes (ESP) that has its own culture such as an organizational culture or hospital culture. In the CSCL community where various contexts of ESP are discussed, students might become engaged with different cultures to raise their language awareness, exchange and share knowledge of ESP (de Laat, Lally, Lipponen, & Simons, 2007; Pifarre & Cobos, 2010).

Language awareness is accordingly stimulated through the intercultural communication in CSCL (Bull & Ma, 2001; Ho, Nelson, & Müller-Wittig, 2010; Phielix, Prins, & Kirschner, 2010; Wenger, 1998; Yang, 2010). Language awareness, which refers to learners' development of an enhanced consciousness of the forms and functions of language, helps students reflect on language in use (Callies & Keller, 2008; Lucas, 2005). Enhancement of language awareness can be process-oriented involving students' monitoring of explicit knowledge in analyzing and describing

language accurately, or product-oriented involving self-assessment of language performance (Kiely, 2009; Roberts, 1998). Some collaborative learning activities in the CSCL environment such as role-playing, task-based activities, or group discussions where students are engaged in context-based learning were designed to raise students' language awareness in ESP (Bosher & Smalkoski, 2002; Colomar & Guzmán, 2009; Hyland & Hyland, 1992; Jackson, 2005). In expanding language awareness through these activities, language learning is improved as well as the broad domain of pragmatics and more specifically intercultural communication (Hamilton & Woodward-Kron, 2010; Littlewood, 2001).

Students seldom think about their language unless they are asked to do so explicitly or by way of learning activities (Hartley, 2001). Recent studies have suggested the development of CSCL to engage students in intercultural communication with the aim of raising their language awareness (Raybourn, Kings, & Davies, 2003; Schreiber & Engelmann, 2010; Wang & Chen, 2010). For example, Liaw (2006) presents the impact of the CSCL community on fostering EFL students' intercultural competence through reading articles on topics about their own culture and communicating their reflection with peers of another culture. Her findings demonstrate that students not only acquire different kinds of cultural meanings on the levels of lexical, syntactic, and textual organization, but also obtain knowledge about cultural differences. Deutschmann and Panichi (2009) utilized a CSCL community to engage students in intercultural communication with the support of a teacher to raise students' language awareness in ESP. Their findings indicate a change in students' linguistic behaviors among various topics from different themes. The findings of other studies (e.g., Mokhtari & Reichard, 2004; Yashima & Zenuk-Nishide, 2008) emphasize the importance of being aware of the differences between L1 and L2 in the terms languages use by exchanging perspectives in the target language with peers from different backgrounds in a specific context such as Engineering English or Medical English. This awareness leads to continuous intercultural communication and prevents misunderstandings. By concentrating on the lexical level of their conversations, students are trained to reflect on failed communication in order to correct misunderstandings and repair communicative breakdowns.

Background of this study

This study aimed to arouse college students' language awareness through intercultural communication in a CSCL community within ESP contexts. Students and teachers from eight technological and vocational universities in central Taiwan were recruited for intercultural communication in the CSCL community where five ESP contexts for knowledge sharing—Vocational, Business, Technical, Travel, and Medical English—were developed. Some important features of a CSCL community are revealed in this study: (a) It is a common ground for knowledge sharing among Taiwanese students as well as international students from various disciplines and domains; (b) It allows students to develop cross-domain awareness when they participate and involve themselves in intercultural communication for knowledge sharing; (c) It provides students with choices in terms of selecting topics related to their background knowledge or for their future goals; and (d) It assists teachers in co-teaching without being constrained by the limitations of time and space. While engaging in intercultural communication with peers from various backgrounds and countries in different contexts, students were expected to develop their language awareness in English.

In order to investigate how intercultural communication supports language awareness in the CSCL community within ESP contexts, activity theory has been employed in some studies (e.g., Basharina, 2007; Greenhow & Belbas, 2007; Thorne, 2003). Activity theory is relevant to learning in that it depends on people's construction of the world which is built through the interaction between the internal and external worlds of experience (Crooks, 2003). Jonassen, Peck, and Wilson (1999) explain that constructivist learning involves knowledge that is constructed and not transmitted and embedded in an activity. Activity theory has served as a useful framework for helping researchers examine an individual in a large activity system (Baran & Cagiltay, 2010; Engeström & Miettinen, 1999). It describes the relationships among the six components—subject, object, tool, community, rule, and division of labor—in a sociocultural context. In activity theory, the subject refers to the individual or group of individuals engaged in an activity; the object is the outcome of an activity; the tool is whatever is used by the subject for acting on the object; the community consists of those individuals or groups that focus on the object; rule refers to the regulations guiding the community; division of labor refers to the roles and relationships among the members of the community (Engeström, 1987). By identifying the relationships among these components, the dynamics of students' language awareness can be differentiated.

Figure 1 shows the theoretical framework of this study. In order to understand the development of students' language awareness during intercultural communication within ESP contexts, the CSCL community was structured based on activity theory, thus enabling the identification of the relationships in triangle sub-activities. The sub-activities of Subject-Tool-Object, Subject-Rule-Object, Subject-Community-Object, and Subject-Division of Labor-Object described how students' language awareness was supported by intercultural communication. Based on the research purpose, which was to foster and explore college students' language awareness through intercultural communication in an ESP CSCL community, two research questions were addressed in this study: (1) How is college students' language awareness identified according to activity theory in the CSCL community?; (2) How do college students develop language awareness in the CSCL community in different ESP contexts?

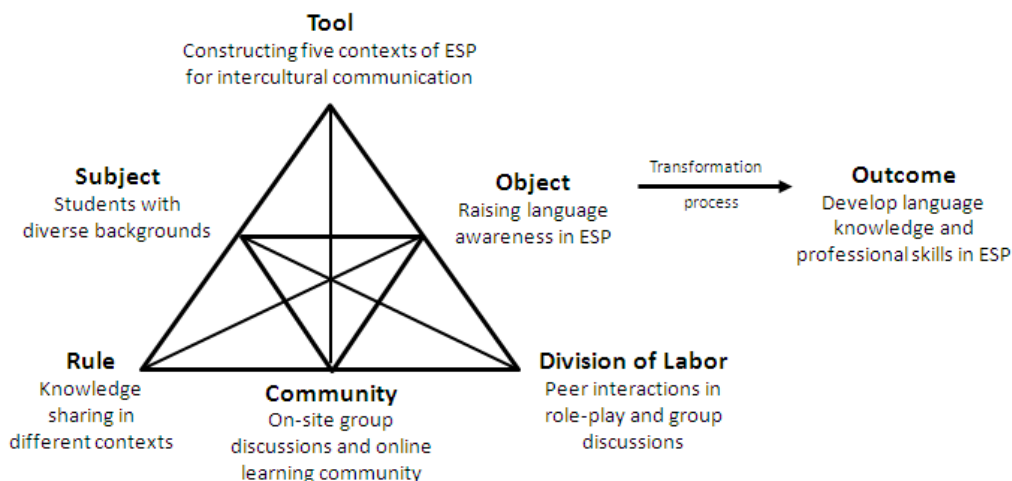


Figure 1. The research framework of this study

Method

This section describes the recruitment of the participants, the research design, as well as the procedures of data collection and analysis.

Participants

A total of 208 students from eight technological and vocational universities in central Taiwan voluntarily registered to participate in the CSCL community within ESP contexts. Demographic statistics reflected that 83 international students were from countries such as China, Denmark, Indonesia, Malaysia, the Netherlands, Thailand, and Vietnam (see Table 1). The sample was made up of 48.56% females, 50.69% undergraduates, and 49.31% postgraduates. Moreover, the students came from different majors: 47.59% from the College of Management; 38.46%, College of Engineering; 10.09%, College of Design; and 8.65%, College of Humanities and Applied Sciences.

Table 1. The demographic data of the participants

Nation	Number	Grade	Number	Grade	Number
Taiwanese	125	undergraduate	105	postgraduate	103
China	28	Major		Major	
Demark	4	College of Management	44	College of Management	45
Indonesia	5	College of Engineering	42	College of Engineering	38
Malaysia	10	College of Design	12	College of Design	9
Netherlands	6	College of Humanities and	7	College of Humanities and	11

	Applied Sciences	Applied Sciences
Thailand	5	
Vietnam	25	
Total	208	

Research design

A CSCL community with five ESP contexts was formed based on activity theory in order to engage students and teachers in intercultural communication. As shown in Table 2, each university constructed different ESP contexts and had different numbers of teachers prepare for the discussion topics. Teachers from each of the eight universities chose one or two ESP contexts to prepare the learning materials, discussion topics, and assessment. In total, there were 28 teachers specializing in different domains and 153 topics for various purposes with over 400 learning materials and 72 assessments. Under each topic were several topics for discussion.

Table 2. Knowledge sharing in the virtual learning community

School	No. of teachers	Focus	No. of Topics	Example of Topic
1	4	Business English Travel English	18	Financial Advice The Independent Traveler
2	5	Technical English Travel English	17	The Internet and Internet Language Moon Festival
3	2	Business English Travel English	18	Reports Directions
4	2	Medical English Travel English	18	The Hospital Team Space Tourism
5	2	Vocational English Travel English	18	The Job Interview Hotels and Transportation
6	3	Technical English Travel English	18	Computer Hardware Dining Out
7	5	Vocational English Travel English	18	Talking about Workplace Events Culture Shock
8	5	Vocational English Business English Technical English Travel English	28	Bring Copies of Your Resume Stock Market E-books and Kindle Immigration & Car Rental
Total	28		153	

Students were encouraged to join on-site group discussions which were held for two hours each, twice a week as well as to participate in the CSCL community at anytime and anywhere. There were several collaborative learning activities such as role-play or group discussions to raise students' language awareness in intercultural communication, and knowledge sharing or meaning negotiation in the online discussion forum (Chen, Looi, & Tan, 2010).

In the on-site group discussion, the teachers, including native speakers and non-native speakers, served as role models not only to guide students to have intercultural communication but also to share their cultural experiences to enlarge students' world view. In each on-site group discussion, 15 to 20 students were divided into four to five small groups and given a situation where they were asked to work out solutions to a specific problem. During the discussion, the teacher acted as a coach to monitor students' conversations and train them in metapragmatic and intercultural awareness. Then, students presented their group performance by doing a role-play.

In the CSCL community, students were provided with a culturally diverse context for knowledge sharing and intercultural communication across domains and universities. As a result, students were able to become aware of the differences in language use in various contexts. As shown in Figure 2, students participated in the CSCL community by clicking on one of the five contexts or selecting a university from the drop down menu. This engaged students in

intercultural communication as they were encouraged to learn English in different contexts and interact with peers from various backgrounds. For example, a student from an engineering college might discuss the topic of job interviews, business meetings, and hotel reservations with other students from the college of management or design. To further support the student discussions, the CSCL community offered users learning materials consisting of sample dialogues or case studies as shown in Figure 3.

To develop students' language awareness, the CSCL community not only provided learning materials that showed the features of language use in specific contexts, but also constructed assessments for evaluating the students' language awareness which they had gained through intercultural communication in each topic. There were nine assessments adapted from the Test of English for International Communication (TOEIC). The reliability of the TOEIC test is reported to be 0.90 (Chun Shin Limited, 2009). An example with 5 test items in an assessment is presented in Appendix A to show how language awareness was assessed in this study. The nine assessments were presented as multiple-choice test items for lexical, syntactic, and textual organization (see Figure 4). After students submitted their answers, the CSCL community gave instant feedback by highlighting correct answers in red. In addition to the assessments for each discussion topic, the CSCL community also provided a series of nine assessments to evaluate students' language performance in their topic. Each of the nine assessments involved 15 test items from all of the five ESP contexts.

In addition, log files were created to record the actions of the students and teachers in the virtual learning community. The details (types, frequencies, and duration) of their actions such as login and logout time, learning materials downloaded, questions answered or raised in the discussion forum, and scores for assessment were all recorded in log files.



Figure 2. The five ESP contexts in the eight universities

Corporate Annual Reports

Cut out and give one annual report for a corporate indicator to each student:

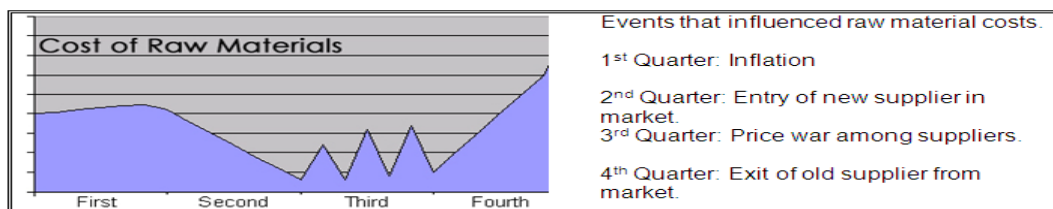


Figure 3. Shared learning materials in the virtual learning community

Question 1	Which of these is NOT associated with bank services?
	<input checked="" type="radio"/> A. Room reservations. <input type="radio"/> B. Cash withdrawals. <input type="radio"/> C. Investments. <input type="radio"/> D. Deposits.
Question 2	Which of these is NOT associated with finances?
	<input type="radio"/> A. Credit. <input type="radio"/> B. Loans. <input checked="" type="radio"/> C. Graphics. <input type="radio"/> D. Balance.

Figure. 4 Assessment with instant feedback from the system

Procedures of data collection

This study was conducted in 2010 from September 23rd to December 2nd. First, students filled in their background information when registering for the membership in the CSCL community. Second, students set their ESP learning goals in the system based on their future career and English language proficiency. Third, students' on-site discussions with peers were video-recorded to reflect on their language use in a specific context. Fourth, log files were employed to record students' online discussions, engagement in intercultural communication, and performance on assessments. Finally, students took the nine assessments for evaluating their language awareness in their chosen subject. All of the data regarding students' background information, learning goals, group discussions, and language performances were recorded in the log files for further investigation.

Procedures of data analysis

Students' performance in language awareness across different domains, countries, and ESP contexts was examined by evaluating the nine assessments in the CSCL community. The difficulty levels of the assessments were differentiated at less than .05. In order to investigate the differences among the scores in the assessments, repeated one-way analyses of variance (ANOVA) were conducted. Students' actions in relation to intercultural communication were revealed by the log files. Conversations among students and between students and teachers in on-site and online discussions were analyzed by means of critical discourse analysis (Onrubia & Engel, 2009). Critical discourse analysis is one of the main approaches in analyzing students' language awareness gained during intercultural communication, and it enables the researcher to study the objectives of the discourse in the social context (Belz, 2002; Rogers, 2004). Data interpretation driven by these research methods is further explained in the following sections.

Results

This section will report college students' language awareness gained through intercultural communication in an ESP CSCL community as revealed by the log files. Data presentation is based on activity theory to show four sub-activity triads: (1) Subject-Tool-Object; (2) Subject-Rule-Object; (3) Subject-Community-Object; (4) Subject-Division of Labor-Object (Baran & Cagiltay, 2010; Greenhow & Belbas, 2007). The students' progress in language awareness was also revealed by their scores in the nine assessments.

Subject-Tool-Object

The Subject-Tool-Object refers to the use of the CSCL community within ESP contexts to develop students' language awareness. One of the participants, herein referred to by the pseudonym Brian, was randomly selected to represent a Taiwanese student's intercultural communication in the CSCL community within ESP contexts. As shown in Table 3, the system recorded his 153 texts posted across the online discussion forums of six universities.

His texts were especially high in number for universities 1 and 2, where he posted 91 and 40 texts respectively. The system also reported that he had raised 27 questions, thereby inviting peer discussion, and answered 126 questions from teachers and peers. This indicated the numerous opportunities afforded to him in the CSCL community to communicate with peers and teachers in different ESP contexts.

Table 3. Numbers of Brian’s statements in different universities’ online discussion forums

University	No. of statements
University 1	91
University 2	40
University 3	8
University 4	6
University 5	0
University 6	3
University 7	0
University 8	5
Total	153

In order to understand the ESP contexts he had engaged in, Table 4 shows that Brian had participated in 62 online discussion forums among each of the five ESP contexts. More than half of his participation was in the context of Travel English. His language awareness was raised by focusing on Travel English and revealed from his registering as an undergraduate student in the College of Management and setting his future career goal in the recreational field. This gave evidence of the student’s language awareness in acquiring ESP associated with his future needs.

Table 4. Frequencies of Brian’s joining online discussion forums in different contexts

Context	Frequency	Percentage
Travel English	33	53.23%
Vocational English	13	20.97%
Business English	11	17.74%
Technical English	4	6.45%
Medical English	1	1.61%
Total	62	100%

Subject-Rule-Object

The Subject-Rule-Object refers to the regulations in the CSCL community. Brian’s log file of a specific date was randomly selected to show his knowledge sharing with students from various universities and in different ESP contexts in the CSCL community. Through intercultural communication with different peers, Brian raised his language awareness while acquiring Travel and Vocational English expressions in different contexts.

As shown in Table 5, Brian raised 6 questions to invite peer discussion and answered 9 questions from teachers and students on October 22, 2010. On that day, he participated in online discussion forums in three universities (universities 1, 2, and 4) and three contexts (Vocational, Travel, and Medical English). First, Brian presented his language knowledge of “flight attendants” regarding their duty to serve passengers’ needs on the plane in the context of Travel English in his own university. Then, continuing in the context of Travel English, he joined two discussions in university 4 (action No. 2-5) and raised four questions such as “When it comes to Halloween, what will come to your mind?” Some feedback from an international peer (Netherlands) was “Halloween activities include trick-or-treating, wearing costumes and attending costume parties, carving jack-o'-lanterns, ghost tours, bonfires, visiting haunted attractions, pranks, telling scary stories, and watching horror films will come to my mind.” He raised a good question to engage his Taiwanese as well as international peers in the discussion concerning a holiday from other cultures. Finally, he participated in two other discussions, but these were in the context of Vocational English. One was associated with the topic of “Job Interview Practice for ESL Students” and another with “Preparing a Job Application Package” (action No. 6-8 & 11-14). He not only responded to teachers’ questions but also provided feedback to his international peers’ doubts about doing business. This engaged more students in the extended

discussions. From Brian's log file, which shows his consciousness of language uses, it was noticed that he had presented his language awareness in the contexts of Travel and Vocational English.

In addition to his understanding of language uses in different contexts, Brian also presented himself for evaluation of language awareness by taking 72 assessments for some specific topics. Since Brian repeatedly took each assessment, the total number of assessments he completed was 237. As reported in the system, his average frequency of taking a single assessment was 3.29 times and his average score was 93.37. Table 6 shows how Brian repeatedly took an assessment in order to improve his language awareness in the ESP virtual learning community. For example, according to actions 226 to 228, he took the same assessment three times and achieved scores of 57, 80, and 100 respectively. The same situation of having repeatedly taken an assessment can be found for other actions such as 1-2, 3-4, and 123-124. This gives evidence of Brian's consciousness of needing to improve his language awareness in some specific contexts.

Table 5. Brian's log file on October 22, 2010

No.	Time	Questions/Answers	Topic	School	Context
1	01:47:40	Who serves the passengers' needs on the plane? Flight attendances do serves the passengers' needs on the plane.	Conversation on the Plane	1	4
2	01:52:32	When it comes to Halloween, what will come to your mind?	October Holidays	4	4
3	01:54:39	Do you have some special experiences of Halloween?	October Holidays	4	4
4	01:57:56	What is Ecotourism?	Ecotourism	4	4
5	02:00:08	List some examples of the Ecotourism.	Ecotourism	4	4
6	13:06:18	What kind of work do you want to do in the future? Tax consultant.	Job Interview Practice for ESL Students	1	1
7	13:14:01	Would you be upset if your boss was a woman? No, I would not. I think the ability and the talent of the boss are more important than what their gender are. Besides, it shouldn't have that kind of gender discrimination.	Job Interview Practice for ESL Students	1	1
8	13:16:39	When you were a child, what job did you want to have when you grew up? In my childhood, I wanted to be a teacher when I grew up.	Job Interview Practice for ESL Students	1	1
9	13:27:48	Have you ever been to the British Museum, which is one of the famous museums in the world? Can you share the experience with us?	Cultural Visiting: Museums	2	4
10	14:00:32	What is your opinion about euthanasia? Do agree with it? Or disagree with it? Why?	Pain Assessment	4	5
11	14:05:05	Would you like to have your own business? No, I think it is too risky to have my own business, since I don't have strong capital to backup.	Preparing a Job Application Package	1	1
12	14:08:14	Who would be your business hero? I regard Wang Yung-Ching as my business hero.	Preparing a Job Application Package	1	1

13	14:11:04	How would you define business? Business is a legally recognized organization designed to provide goods, services, or both to consumers in exchange for money	Preparing a Job Application Package	1	1
14	14:12:37	What are the dangers of having your own business? Shortage of money.	Preparing a Job Application Package	1	1
15	21:15:30	Do you prefer to shop in stores or on the Internet? Why? I prefer to shop on the Internet because of convenience.	Shopping	1	4

Table 6. Brian's repeated actions of taking an assessment

Action No.	School	Context	Topic	Time	Score
1	7	1	Meeting and Greeting Colleagues	2010-10-20 15:48:36	80
2	7	1	Meeting and Greeting Colleagues	2010-10-20 15:49:17	100
3	7	2	Engaging in Small Talk	2010-10-20 15:56:49	60
4	7	2	Engaging in Small Talk	2010-10-20 15:57:21	100
123	1	2	Rumors and Headlines in Business	2010-10-22 15:02:08	53
124	1	2	Rumors and Headlines in Business	2010-10-22 19:07:53	93
226	5	1	Job Hunting	2010-10-26 12:55:19	57
227	5	1	Job Hunting	2010-10-26 12:56:07	80
228	5	1	Job Hunting	2010-10-26 12:56:44	100

Subject-Community-Object

The Subject-Community-Object refers to the CSCL community and on-site discussion groups formed by 125 domestic students and 83 international students with the objective to enhance their language awareness in five different ESP contexts. As shown in Table 7, there were 153 ESP discussion groups in total with more than 3,000 instances of participation across the eight universities. Among these discussion groups, Travel English was the most popular context, raising 63 discussion topics and 1,094 instances of participation. That is, on average, each individual student participated approximately five times on or off campus in the context of Travel English. A further investigation into the log file of the 208 students indicated that each student participated in more than one context. This means that they were engaging in intercultural communication with peers on or off campus in various contexts. However, students had the fewest discussions in the context of Technical English, even though 38.31% of them were from the College of Engineering. This implies that students' interests might be different from their majors, and their learning needs might vary for multiple purposes.

From the CSCL community, the log files of university 1 were retrieved as an example to reveal students' actions for language awareness. As shown in Table 8, it can be seen how students in university 1 participated in the various learning activities, such as 5,992 viewings of course information, 1,241 reviews of photos, 1,664 downloads of learning materials, 776 instances of participation in online discussion, 20 raised questions, and 251 answered questions. Except for taking the assessments, these other action frequencies were much higher than at other

universities. There were 259 students who took assessments in their own university while 502 took assessments in university 7 and 469 in university 5. Both universities 5 and 7 placed an emphasis on the ESP contexts of Vocational English and Travel English. This suggests that students consciously evaluated their language awareness in the collaborative learning activities.

Table 7. Students' participation in the five contexts

Context	No. of discussion groups	No. of participation
Travel English	63	1,094
Business English	27	618
Vocational English	28	607
Medical English	6	361
Technical English	29	326
Total	153	3,006

Table 8. Participation of the students in university 1 among the eight universities

Action No.	School	Context	Topic	Time	Score
1	7	1	Meeting and Greeting Colleagues	2010-10-20 15:48:36	80
2	7	1	Meeting and Greeting Colleagues	2010-10-20 15:49:17	100
3	7	2	Engaging in Small Talk	2010-10-20 15:56:49	60
4	7	2	Engaging in Small Talk	2010-10-20 15:57:21	100
123	1	2	Rumors and Headlines in Business	2010-10-22 15:02:08	53
124	1	2	Rumors and Headlines in Business	2010-10-22 19:07:53	93
226	5	1	Job Hunting	2010-10-26 12:55:19	57
227	5	1	Job Hunting	2010-10-26 12:56:07	80
228	5	1	Job Hunting	2010-10-26 12:56:44	100

The on-site group discussion, "Financial Advice", has been randomly selected to be the example to show students' intercultural communication with peers from diverse backgrounds. As shown in Table 9, the descriptive data presents 9 undergraduate students and 11 graduate students from different departments and nations. Most of them were from the Colleges of Engineering and Management. Three of them were from China, two from Malaysia, two from Indonesia, and one from Vietnam. Although they were from diverse backgrounds and different countries, the students were given a common discussion issue, "Making Money", after practicing the role-play—a meeting between a bank manager and an entrepreneur asking for a loan to develop and market a new invention.

Table 10 shows students' newly acquired vocabulary and sentences from the on-site discussion. Some students acquired common language knowledge such as flea market (4 students), tuition fee (3 students), and "What amount of loan do you want to apply for?" (3 students). This implied that students from different backgrounds could share common understanding in intercultural communication aimed at building language awareness.

Subject-Division of Labor-Object

The Subject-Division of Labor-Object involves the role of students and their relationship with peers and teachers in the on-site group discussion and the CSCL community. The students' role-plays during the on-site discussions were video-recorded to show their language awareness gained through intercultural communication in an ESP context. Extract 1 shows the conversations between student 1 (S1) and student 2 (S2) regarding the topic "Rumors and

Headlines in Business.” S1 was an international student from Denmark and S2 was a Taiwanese student. Acting in the role of employees, they followed the teacher’s direction to exchange greetings first and then talk about the rumors in the company by asking such questions as “Did you hear that...?” and “How are things going with...?” Afterward, good news and bad news of the company were discussed. In the realistic role-play, the students acting as employees were engaged in intercultural communication as they discussed such things as delayed construction and cheaper raw materials.

Table 9. Descriptive data of the students in a discussion group

College	Undergraduate	Graduate
College of Engineering	6	4
College of Management	2	7
College of Humanities and Applied Sciences	1	0
College of Design	0	0
Total	9	11

Table 10. Students’ shared understanding in building language awareness

Vocabulary	Sentence
date of product launch	Is there any time when you were strapped for cash?
flea market (4)	What amount of loan do you want to apply for? (3)
strapped	How many products do you aim to sell in a year?
tuition fee (3)	How much personal investment are you prepared to make?
apply a bank loan	When do you expect to launch the product?
ethical	How much do you expect production costs to be?
tuition amounted to	How much are all the other operating costs?
euros	What will the selling price be?
inherit	What sales channel do you expect to use?

Extract 1

S1: Good morning. (-) How=How was your weekend?

S2: Relaxing. (-) I spent the weekend (.) at home. (-) Hey, uh:: (---) did you hear : (.) that the BOSS go back=get back from CHIna (-) on Saturday?

S1: [He did?] Good. (2.0) How (-) are (-) things (-) going with the new FACtory?

S2: Well, (.) do=you=want the GOOD NEWS (-) or the BAD NEWS first?

S1: Give me (.) the BAD news first.

S2: The bad news is that (-) construction is behind : schedule. (-) He said that (-) they were having PROblems (.) get=getting building (.) permits (-) from the local government (.) officials.

S1: I see. (.) So :: what is the GOOD news?

S2: Well, (-) the good news is that (-) costs were LOWer than expected. (---) He told me that (-) they ma=managed to (.) get a good deal (-) on raw materials.

Transcription conventions adapted from Knapp’s (2010) transcription notation:

[.] Overlap and simultaneous speaking

= Quick, immediate connection of new turns or single units

: Lengthening (: or:: or::: according to its duration)

(.) Micro-pause

(-) Pause of approximately 0.25–1 s ((-) or (- -) or (- - -) according to its duration)

(2.0) Estimated length of pause (more than 1 s)

ACcent Primary or main accent

In the CSCL community, students were also involved in meaning negotiation with the teacher during extended interactions. The teacher-student and the student-student interactions in the CSCL community raise students’ language awareness on the levels of lexical, syntactic, and textual organization. With respect to the interaction between teachers and students, Table 11 shows an example of a teacher’s feedback to a student’s responses. In their messages, the student first explained his difficulty in understanding the first question. In answering the second question, the student believed that economic health was not the only way to determine how healthy a country was

and he provided his arguments and reasons. The teacher first expressed appreciation for his efforts in answering the questions and then corrected some grammatical errors in the student's text. In the end, the teacher explained the first question and encouraged more discussion from the student. A comparison between the student's response and the teacher's revision is presented in Table 12. With the comparison, the student was provided with the opportunity to raise his language awareness by reflecting upon appropriate words and statements in reconstructing his manner of expression.

Table 11. Meaning negotiation between a Taiwanese student and a teacher

Topic	Financial Advice
Questions	<p>1. "Academic qualifications are important and so is financial education. They're both important and schools are forgetting one of them." (Robert Kiyosaki). Do you agree or disagree with this? Why?</p> <p>2. "We can tell how healthy a country is by looking at its economic health." Do you agree or disagree with this? Why?</p>
Student's response	<p>I want to answer the second question cause I don't really understand what the first question means in Chinese.</p> <p>And I wanna to say is economic is not the only one way to show the how healthy the country would be. Including policy, freedom of public, national consciousness...etc. Especially environment issue is the most important thing to attract me to know the country's system of organization, so i don't agree just looking one's economic to know the healthy of country. It's my opinion.</p>
Teacher's feedback	<p>Thank you for taking the time to answer the question. Because of your enthusiasm, I would like to provide you with some assistance on grammar. So, below is an edited version of your answer:</p> <p>Your answer:</p> <p>I would like to state that I do not think economic health is the only one way to judge how healthy a country is. Other criteria, including government policy, actual freedom the public enjoys, national consciousness, and a host of others are also important. The environment of a country is the most important issue that I take into account when judging a country's system of organization. Hence, I do not agree that just looking at a country's economic health is enough to determine the health of a country.</p> <p>My response:</p> <p>I would also like to provide my response to your question. I believe that in the long term it is difficult for any country to have economic health if it is not good on its environmental policies, education system, community development plan, and several other standards. Therefore, I believe that long-term economic health is the best way of judging how healthy a country is.</p> <p>About the first question:</p> <p>Finally, the first question basically wants to know if you agree or disagree that school's provide students with academic education but often forget about financial education.</p>

Table 12. Indicating the differences to arouse students' language awareness

~~And I wanna would like to say-is state that I do not think economic health is not the only one way to show-the judge how healthy the a country would-be is. Including Other criteria, including government policy, actual freedom of the public enjoys, national consciousness...etc.-and a host of others are also import. Especially, The environment issue of a country is the most important thing-to-attract-me-to-know-the issue that I take into account when judging a country's system of organization, so I don't. Hence, I do not agree that just looking one's at a country's economic health is enough to know determine the healthy health of a country. It's my opinion.~~

The student-student interactions in the CSCL community were also found to foster students' language awareness on the lexical level. Table 12 showed that in an online discussion forum, several students from different majors and

countries autonomously participated in the context of Travel English to discuss the issue about independent travelers (Table 13). At the beginning, student A raised a question to initiate peer communication. Six peers (students B to G) expressed their opinions in L2 using some key words such as hotel, guidebook, map, and information. While they were discussing a common issue, students were able to observe peers' language performance and compare it to their own so that their language awareness could be enhanced.

Table 13. Intercultural communication among students

Student A's question	How to be independent when traveling alone?
Student B's response	You should prepare something before traveling, such as information about hotel, a guidebook and map. The most important thing is don't be afraid of communicating with other people.
Student C's response	If you have many experience, or you may travel with others.
Student D's response	First, you have to search some information about your trip in advance, such as hotel information, train or subway information etc. Secondly, you may bring a map with you, then you won't get lose easier. And the third opinion is "you should use your mouth more often", when you have any question, don't be afraid to ASK local people. I believe you will have a very good experience when you travel alone and an unforgettable culture experience.
Student E's response	Before you going to other places unacquainted, you should bring a guidebook with you in case of losing your orientation.
Student F's response	Try to open your mind to communicate with other people.
Student G's response	Bring all the things that you could do it alone, and trying to raising your foreign language abilities.

Students' progress in language awareness

The 208 participating students' language awareness gained through intercultural communication was evaluated by the assessments in the CSCL community. As shown in Table 14, the mean report showed a stable increase in students' scores from Test 1 to 9. One-way analysis of variance (one-way ANOVA) was also used to test whether the scores of each assessment were significantly different (Table 15). The result of the ANOVA test showed that the *F* values ranged from 9.12 to 1180.68 and were significant at the 0.001 level. Since the difficulty levels of the 9 tests were differentially less than .05, the result indicated that students made progress in the assessments on language awareness. This suggested the effectiveness of intercultural communication in the CSCL community for raising students' language awareness in an ESP context.

Table 14. Mean report of the assessments

Test	Mean	SD
1	38.86	29.46
2	34.42	24.33
3	41.38	31.35
4	44.40	32.09
5	49.38	24.99
6	53.35	30.63
7	53.32	25.46
8	58.75	33.52
9	59.73	35.42

Table 15. ANOVA analysis of the differences among the assessments

		<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Test 2	Between groups	120460.30	7	17208.61	292.27	.001*
	Within groups	11775.83	200	58.88		
	Total	132236.13	207			
Test 3	Between groups	50482.80	7	7211.83	9.12	.001*

	Within groups	158240.83	200	791.20		
	Total	208723.63	207			
Test 4	Between groups	163708.59	7	23386.94	110.33	.001*
	Within groups	42393.33	200	211.967		
	Total	206101.92	207			
Test 5	Between groups	102803.12	7	14686.16	236.38	.001*
	Within groups	12425.83	200	62.13		
	Total	115228.95	207			
Test 6	Between groups	95447.34	7	13635.34	47.66	.001*
	Within groups	57224.53	200	286.12		
	Total	152671.88	207			
Test 7	Between groups	58417.42	7	8345.35	128.13	.001*
	Within groups	13026.22	200	65.13		
	Total	71443.64	207			
Test 8	Between groups	63941.67	7	9134.52	18.32	.001*
	Within groups	99713.33	200	498.57		
	Total	163655.00	207			
Test 9	Between groups	212124.20	7	30303.46	1180.68	.001*
	Within groups	5133.22	200	25.67		
	Total	217257.42	207			

Note. * $p < .01$.

Discussion

In this study, activity theory helped to categorize the students' language awareness into four dimensions. First, Subject-Tool-Object revealed participants' development of language awareness by means of their engagement in the CSCL community. Students' language awareness was revealed to support the idea that the CSCL community provided the students with opportunities to communicate with peers and teachers among different universities and ESP contexts. Second, Subject-Rule-Object indicated the effectiveness of regulating students' knowledge sharing among different universities on their consciousness of language uses in specific contexts. Third, Subject-Community-Object emphasized the integration of online and on-site collaborative discussions to achieve students' various learning goals, needs, and purposes. Fourth, Subject-Division of Labor-Object indicated the extended interaction between students and the teacher in meaning negotiation as well as the collaboration among students in role-play. The students' language awareness was identified as they acquired expressions from different cultures and contexts on the levels of lexical, syntactic, and textual organization as well as their engagement in collaborative learning activities. As the students from different backgrounds shared common understandings during their intercultural communication, language awareness was developed.

Different from previous studies (e.g., Deutschmann & Panichi, 2009; Liaw, 2006; Mokhtari & Reichard, 2004; Yashima & Zenuk-Nishide, 2008) that investigated students' language awareness in the CSCL community within a single context, this study examined students' language awareness in an intercultural CSCL community where students and teachers from different colleges and universities discussed diverse topics within five ESP contexts. The CSCL community in this study not only enabled students to meet peers with common learning goals but also engaged them in different learning contexts without the limitations of time and space. This increased the effectiveness and efficiency of developing students' language awareness and problem solving abilities in different contexts.

This study has provided further evidence of the value of forming a CSCL community which combines all kinds of collaborative learning activities from different colleges and universities. In the CSCL community, students are trained to be independent learners who take control of their own learning goals, strategies, and evaluation. In the CSCL community, the role of the teacher should be as a facilitator who monitors students' learning processes and provides them with appropriate scaffolding when necessary.

Although language awareness gained through intercultural communication in the CSCL community within ESP contexts was supported by this study, some limitations should be mentioned. First, the duration of data collection

was less than three months which might not be long enough to adequately investigate the development of language awareness. Comparisons between students' language awareness before and after participating in different contexts could be further analyzed to investigate the development of language awareness in the long-term. Second, students' pragmatic awareness was excluded in this study because the study focused mainly on the levels of lexical, syntactic, and textual organization. Third, not all of the students and universities were analyzed in terms of their intercultural communication and language awareness. Examples of some cases were presented within the limitation of length. Finally, students' majors, language proficiency levels and career plan in relation to selecting an ESP context were not investigated in this study. Students might participate in as many discussions as possible without clearly understanding their learning needs and goals. Further research is suggested in terms of understanding the relationship between students' resumes and learning portfolios so as to raise their language awareness in learning ESP through intercultural communication.

Conclusion

The results of this study indicate that college students' language awareness was stimulated during intercultural communication in different ESP contexts in on-site group discussions and online CSCL community based on activity theory. The multi-discipline CSCL showed that students expressed their perspectives in on-site group discussion to figure out solutions toward the problems in different social and cultural contexts. Based on their different perspectives, cultural backgrounds, and majors, students engaged in intercultural communication and raised their language awareness in the learning community.

In the CSCL community, the students discussed various topics in the contexts of Vocational, Business, Technical, Travel and Medical English. They were also engaged in knowledge sharing since the learning resources such as learning materials, photos, discussions, and assessments were shared online among the eight universities. Moreover, in the on-site discussion groups, students were provided with opportunities to meet with peers from different colleges such as the College of Engineering, Management, Humanities and Applied Sciences, and Design. Through discussions of a common issue, students from diverse backgrounds developed shared language knowledge and meanings in a specific context. Students were able to increase their language awareness through on-site group discussion and the online CSCL community on the levels of lexical, syntactic, and textual organization with the support of peers from different majors and universities in a multicultural context.

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Appendix A

Question 1	What does a company's specialty refer to?
	<input type="radio"/> A. A company's requirements. <input type="radio"/> B. A company's business environment. <input type="radio"/> C. A company's line of work. <input type="radio"/> D. A company's industries of focus.
Question 2	Glebeo's (see description A of handout) main office of operation is in _____.
	<input type="radio"/> A. West Nile <input type="radio"/> B. Madrid <input type="radio"/> C. Paris <input type="radio"/> D. Hamburg
Question 3	A pharmaceutical company produces _____.
	<input type="radio"/> A. medications <input type="radio"/> B. electronics <input type="radio"/> C. accessories <input type="radio"/> D. furniture
Question 4	Which of these will NOT be dealt with by corporate law firms?
	<input type="radio"/> A. Mergers <input type="radio"/> B. Bankruptcy <input type="radio"/> C. Financial fraud <input type="radio"/> D. Spousal abuse
Question 5	Which of the following is NOT true about Bob and Sons (see description C of handout)?
	<input type="radio"/> A. Its head offices and branch offices are in South East Asia. <input type="radio"/> B. It definitely hires builders and architects. <input type="radio"/> C. It focuses on large scale housing projects. <input type="radio"/> D. Its clients are other business.