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CALL Design: Principles and Practice
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Edited by Sake Jager, Linda Bradley, Estelle J. Meima, and Sylvie Thouèsny

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A quantitative and qualitative evaluation of student participants' contribution to carrying out an online international collaborative project on education

Chizuko Suzuki¹, Kenichi Ishida², Shota Yoshihara³,
Klaudia Schultheis⁴, and Barbara Riedhammer⁵

Abstract. This study evaluates an international collaborative project developed and practiced on the internet, as a form of SNS, focusing on how much university students from six countries worldwide participated in the project, from the viewpoint of the participants' contribution to the forum discussion of their own group's topic on education. The 66 participating students' communication data posted in the eight group forums were compiled and analyzed by quantitative and qualitative methods. As for the quantitative method, the corpus data comprising 48,990 running words was analyzed by topics and countries to obtain profiles of the characteristics of the participants' English language use in terms of message volume as well as vocabulary density, sentence length, and key words. As to the qualitative method, the data were analyzed by KBDeX software focusing on some key words such as 'agree/disagree' and 'opinion' to investigate the interactive discourse of discussion, negotiation, or mediation in each group. The results from both quantitative and qualitative analyses revealed the students of each country had their own distinguishing features in language use and communication patterns.

Keywords: online intercultural exchange, knowledge building, negotiation, mediation.

1. Nagasaki Junshin Catholic University; Suzuki@n-junshin.ac.jp.
2. Nagasaki Junshin Catholic University; ishida@n-junshin.ac.jp.
3. Nagasaki Junshin Catholic University; shota@n-junshin.ac.jp.
4. Catholic University of Eichstaett-Ingolstadt; klaudia.schultheis@ku.de.
5. Catholic University of Eichstaett-Ingolstadt; riedhammer@gmail.com.

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1. Introduction

A German university in 2004 initiated the project called “International Project (IPC)” (<http://www.internationalproject-ipc.com/>) for the purpose of nurturing teacher-training course students’ competence in carrying out an international project in the English language. Since then, it has been continually expanded yearly to include eight universities in North America and Asia beyond Europe.

The IPC international project carried out in 2012, working on nine group topics under the main theme of “Children’s Perspective on School, Teaching and Learning” was already evaluated to show the overall effectiveness of the project (Suzuki, Ishida, Yoshihara, Schultheis, & Riedhammer, 2013).

In terms of the extent to which the educational goal had actually been achieved, it was mainly based on the participants’ response data to an end-survey of the project and pre- and post- English proficiency test results. This previous study, eventually, indicated that there remained room for improvement in the project’s administration. This study has aimed at exploring in more detail the content and process of the participants’ communication developed in the eight-group discussion forums of the IPC 2012, as the research project’s final goal to determine effective ways to facilitate the students to participate more comfortably and collaboratively.

2. Method

2.1. Data

The total of 1076 messages posted into the general discussion forum and in the nine group forums by 99 student participants were compiled as the IPC 2012 Learner Corpus of 76,500 words. For the present minute examination, from this corpus, a smaller corpus specified for group activity was prepared as the Group Activity (GrpA) Corpus by excluding the general discussion forum data, one virtually inactive group’s data and participants who existed in name only contributing few messages to their group discussions. This sub-corpus was comprised of 471 messages by 66 students with 48,990 running words. The GrpA corpus was analyzed both in quantitative and qualitative ways by individual students, countries, and group topics to obtain profiles of the characteristics of the participants’ English language use in terms of message volume, sentence length, and key words. Specifically for the current paper, six sub-corpora were designed, divided by country (in alphabetical order): Bulgaria, Germany, Japan, Poland, Spain, and the USA.

2.2. Analyses

2.2.1. Quantitative analysis

WordSmith 6.0 (Scott, 2012) was utilized for corpus profiling. Furthermore, in order to identify words/phrases that are prominent in each sub-corpus divided by country, these were submitted to a keyword analysis using AntConc. 3.2.4w (Anthony, n.d.); in each sub-corpus analysis, the other five sub-corpora files were used as a reference corpus option. The following kinds of results were obtained: 1) Corpus profiles by countries, which included the type token ratio, the mean length of sentences, and the mean length of messages of each country, besides the overall volume, and 2) each country's list of the top twenty keywords which were used more frequently by the country's participant students compared with the other countries. Taking an example from the case of Japan, the list gave 'teaching', 'Japanese', 'Hi', 'Kaori', and so on, including some proper names such as Japanese and Kaori.

2.2.2. Qualitative analysis

The occurrence of certain words contributing to consensus building such as 'agree/disagree', 'opinion', and 'propose' in each group was examined using the word search tool of KBDeX (Knowledge Building Discourse Explorer) –software developed by Oshima, Oshima, and Matsuzawa (2012)–, and the ratios by country were manually counted to observe which country's member(s) uttered or posted the keywords proportionally more than the other countries' members. Furthermore, the discourse in which the selected words were used by the members interactively to develop their discussion was analyzed using the network creation tools of KBDeX to obtain animated visualizations of the context and process of the three kinds of discussion networks: the students/participants' network, the discourse unit network, and the selected word network.

3. Results and discussion

3.1. Quantitative reflection

As can be seen in Table 1 below, there was a considerably wide diversification among the participating countries, particularly in the message volume represented by the token per student as well as the sentence total posted by the country. Except for the few Polish students who joined the project for the first time in the year 2012 in a later stage, German students posted sentences the most, with each student

having uttered the most, while Japanese students posted the fewest sentences with each student uttering the least. A more noticeable diversification was observed among the countries in terms of the top twenty keywords, which were statistically calculated as prominent words for each country, first ranked by numerical order from the highest and then categorized by seven functions from ‘greetings’ to ‘topic-related words’.

Table 1. Profile of group discussion corpus
by participating country

Text file	Overall	Bulgaria	Germany	Japan	Poland	Spain	USA
file size	274,463	38,018	107,515	23,786	1,478	35,697	67,969
tokens (running words) in text	48,990	6,915	19,345	4,128	248	6,547	11,807
tokens used for word list	47,896	6,763	18,981	4,011	240	6,421	11,480
sum of entries	0	0	0	0	0	0	0
types (distinct words)	3,304	1,006	1,753	825	84	1,023	1,665
type/token ratio (TTR)	6.9	14.88	9.24	20.57	35	15.93	14.5
standardised TTR	33.07	31.68	32.21	34.5		33.63	34.47
standardised TTR std.dev.	65.05	57.8	62.69	51.45		55.14	58.57
standardised TTR basis	1,000	1,000	1,000	1,000	1,000	1,000	1,000
mean word length (in characters)	4.31	4.26	4.3	4.4	4.63	4.2	4.37
word length std.dev.	2.42	2.38	2.37	2.44	2.86	2.32	2.54
sentences	51,478	486	1,258	372	24	463	1,003
mean (in words)	13.97	13.92	15.09	10.78	10	13.87	11.45
std.dev.	3.18	11.81	13.24	9.7	5.36	13.24	10.09
no. of students	66	8	13	11	5	14	15
token/student ratio	272.27	864.38	1488.08	375.27	49.6	467.64	787.13

N.B.: This table shows how many words (tokens), how many kinds of words (types) and how often each word type (TTR) were used in group discussions by participant students’ country.

Table 2 shows most countries except for Germany used limited types/functions of keywords. For example, the keywords of Bulgaria, Poland and the USA were categorized into three types, and those of Spain were two, besides ‘greetings’. On the other hand, the keywords of only Germany indicated a variety including ‘inclusive we’ and ‘IPC specific’ words, showing that the German students were taking on the leadership of the project consciously.

These results support a finding from the previous study of the students’ project-end survey that the students did not participate quantitatively in an equally active way (Suzuki et al., 2013) and further suggest that the participants of each country played their own role in the group’s entire activity, depending on their ability, concerns or peculiar characteristics.

Table 2. Keywords list by participant students' country categorized by type/function

Rank	Bulgaria	Germany	Japan	Poland	Spain	USA
1	from	anna	teaching	questionnaire	spain	rules
2	presentation	greetings	japanese	audience	granada	class
3	ve	we	thank	century	lve	classroom
4	denica	sophia	kaori	embrace	greeting	everyone
5	research	maybe	hi	extracurricular	pass	grade
6	results	ipc	draft	gathered	draws	student
7	bulgaria	everybody	q	relate	think	does
8	dear	lt	however	target	yolanda	follow
9	bulgarian	our	japan	childhood	is	happens
10	make	story	group	documents	gymkhana	your
11	oppinion	gdo	m	holiday	ls	these
12	questionnaire	german	sorry	hi	first	savannah
13	katrin	com	questionsin	appear	rules	states
14	put	networks	contents	attached	in	assignments
15	educational	researches	elementary	available	gadgets	united
16	one	mixxt	yuki	recess	spend	dr
17	publish	it	ask	compare	convience	internet
18	summarize	folder	questionnaire	download	eassier	how
19	m	drawing	chika	times	image	following
20	luck	http	margarethe	favorite	imageshack	powerpoint

Category Legend	
	Addressing/greeting words
	Inclusive 'we'
	Epistemic expressions

Category Legend	
	IPC-specific terms
	Project-specific words
	Method-specific words
	Topic-related words

3.2. Qualitative reflection

An interesting phenomenon relevant to the role-sharing observed above was revealed by closely looking into the use of a selected consensus-building word, such as 'agree', comparatively with the rest of the words within a country. The word was used more proportionally by the Japanese students compared with the ratio of all their messages in most groups as seen in Table 3. Hence, it may demonstrate that the Japanese students attempted to make the project proceed by responding to an opinion proposed by another country's member with a positive word.

Furthermore, the process of how the word 'agree' was used by a Japanese member interactively with the other countries' members within the group could be visually illustrated by the network results of KBDeX seen in Figure 1 below.

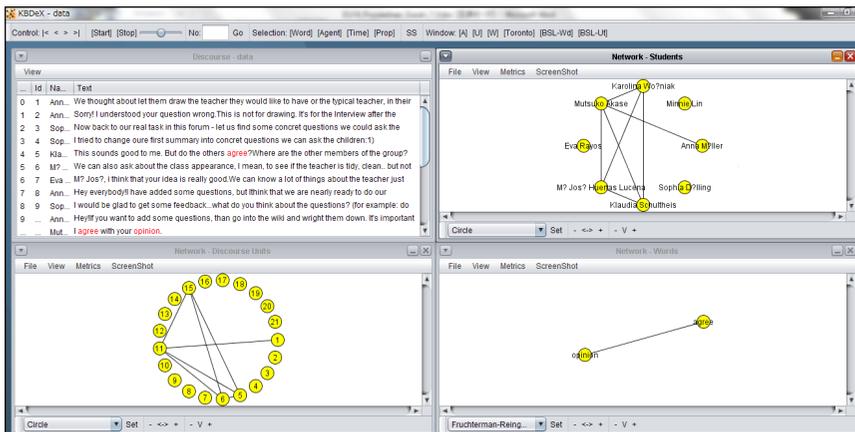
Table 3. Comparison of the consensus-building word use ratios among countries

	Bulgaria		Germany		Japan		Poland		Spain		USA	
	agree(%)	msge(%)										
Group 1			75.0	63.0	12.5	6.3	12.5	11.3				
Group 3	11.1	24.4	61.1	54.9	11.1	2.4			16.7	18.3		
Group 4	27.3	30.1	27.3	54.8	9.1	2.7					36.4	12.3
Group 5					11.1	17.4			44.4	10.1	44.4	72.5
Group 6	33.3	20.0			33.3	8.0					33.3	56.0
Group 7	50.0	5.6			25.0	13.9			25.0	47.2		
Group 8			33.3	88.2	66.6	11.8						
Group 9	37.5	27.8	37.5	27.8	12.5	2.8			12.5	41.7		

4. Conclusions

The facts discussed in the preceding sections based on some of the results of this study indicate that a disparity in the amount of the students' activity existed between the participating countries and that the students of each country might have endeavoured to contribute to advancing the project by playing their roles. Both of these facts can be taken into consideration when administering a further project. At least, the participating students and teachers should be informed of imbalanced jobs in quantity but shared ones in quality in order that they can exert their own characteristic potentials while trying to overcome weaknesses respectively for their common final goal of accomplishing the project more collaboratively and comfortably.

Figure 1. Animated visualizations of discussion networks when 'agree' was used in a group



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