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Students' perceptions and learning outcomes of online writing using discussion boards

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*This study explores asynchronous online discussions as a learning strategy for Japanese **EFL** students from various perspectives. A text analysis of learner posts and replies was performed to determine the quantity, quality, and accuracy of the written language produced. Student participation rates during all four online exchanges were measured to determine the influence that teacher participation within forum discussions had on the quantity and quality of learner posts and replies. Student feedback to a survey was examined to identify the degree to which students thought learning was enhanced through this learning experience and what factors contributed to these perceptions. Findings indicated that although there was a marked decline in the quality and quantity of written language produced, levels of participation and interactivity increased. Teacher participation in the online environment was shown to have less effect on student participation and interaction than did the number of students replying to posts. While the discussion board was perceived favorably by the majority of Japanese **EFL** students, motivation was influenced by perceptions of inadequacy regarding computer-based skills, by workload, and by cultural unfamiliarity with the constructivist approach to learning inherent in online discussions.*

Introduction

The popularity of online discussion boards in distance and campus-based blended learning courses can be attributed to educators' long-held view that the process of discussion is a critical dimension of the learning process. By exploiting the asynchronous nature (i.e. time and place independence)

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of online communication, it is thought that discussion boards can help develop an online learning community, in which interactive social learning and a community sense of inquiry can be fostered beyond the classroom (Garrison & Kanuka, 2004).

However, the inherent characteristics of the online discussion mode of communication suggest that learning in this setting is quite different from face-to-face learning. Gerbic (2006) outlines the following three major areas of difference:

1. The presence or absence of nonverbal visual/aural cues, levels of monitoring and feedback, and levels of social cohesion (i.e. face-to-face conversation is competitive and requires confidence to agree and disagree, but is an easier medium in which to build rapport and trust; verses online discussions where communication is more impersonal, and messages may be more difficult to understand because they lack the visual, aural and social cues of normal discussion).
2. Synchronous and asynchronous timing (i.e. face-to-face discussion is rapid, spontaneous and free flowing; versus online discussion where the learner has time to reflect, research information and formulate a response at their own pace).
3. Speech and text-based communication (i.e. in face-to-face discussion emphasis is on listening and talking; versus online discussion where the emphasis is on reading and writing, and messages are often carefully thought out and written).

The asynchronous nature of discussion boards, in particular, has been found to benefit **ESL** students. Previous studies found that **ESL** students participated more in web-based discussions because this online learning environment alleviates those aspects of face-to-face discussions that cause **ESL** students to lack confidence and be hesitant to participate, such as listening, understanding, being forced to comment on the spot, pronunciation and turn taking (Al-Salman, 2009; Gerbic, 2010; Yildez & Bichelmeyer, 2003). Furthermore, **ESL** students were found to especially value the time independence and text-based nature of online discussions, which lead to more substantial participation and a better quality of discussion (Gerbic, 2009).

In addition to allowing **ESL** students to overcome their linguistic limitations in expressing thoughts and concepts, online discussion boards provide a useful tool for extending learners' current knowledge (scaffolding) by encouraging them to actively engage in dialogue with other students and instructors (reciprocal teaching), rather than simply requiring them to answer questions. In this way, discussion boards support the socio-constructivist paradigm (Stacey, 2002). Moreover, the findings of a study by Birch and Volkov (2007) indicate that both **ESL** and **EFL** students perceive that valuable benefits are gained from participation in asynchronous online discussions, and that both groups are receptive to online discussions being set as part of their course assessment.

Literature review

A growing number of case studies into intercultural telecollaboration have shed light on how students interact during text-based, asynchronous, online exchanges. This has led to a greater understanding of the factors that lead to communication breakdown (O'Dowd & Ritter, 2006; Schneider & von der Emde, 2006; Ware, 2005), of how online tasks are best structured to encourage and support intercultural interaction and language learning (Meskill & Ranglova, 2000; Müller-Hartmann, 2000), of how a language focus can be integrated into telecollaborative learning tasks (Ware & Cañado, 2007), and a greater

understanding of the role of the online tutor in supporting these learning tasks (Muller-Hartmann, 2007). Common among studies in this field is the notion that language learning should also support intercultural competence, to prepare learners for online interactions with those of other cultures in a more connected and globalized future.

O'Dowd and Waire (2009) reviewed over 40 peer-reviewed reports in the literature on telecollaborative exchanges and identified 12 general types of telecollaborative tasks. These were organized into 3 main categories that reflect the type of communicative activity involved in each case, and ordered in sequence of perceived difficulty:

1. *Information exchange tasks* – Example: students provide their telecollaborative partners with information about themselves or aspects of their home cultures ('monologic' since there is little negotiation of meaning between interlocutors).
2. *Comparison and analysis tasks* – More demanding since they require learners not only to exchange information, but also to also carry out comparisons or critical analyses of cultural products (e.g. books, films, reading passages or newspaper articles). These analyses or comparisons can have a cultural and/or a linguistic focus.
3. *Collaborative tasks* – Requires learners not only to exchange and compare information but also to work together to produce a joint product or conclusion (e.g. an essay, presentation, or translation). Usually involving a great deal of coordination and planning, but where learners gain substantial amounts of negotiation of meaning both on linguistic and cultural levels as they try to reach agreement on the final product.

While discussion boards can be used effectively to complete tasks in all three of the above main categories, this present study focuses on their usage in one particular category; *comparison and analysis tasks*. Specifically, it investigates a common **EFL** blended learning context in which the learners are required to engage in online discussions as a follow up to course readings on intercultural topics, the teacher providing learners with a set of guiding questions for each discussion.

Investigation of this particular learning context is worthwhile for second language educators since a discussion board used in this context serves two teaching purposes: 1) to provide its **EFL** Japanese learners with a means of more productively engaging with both the target language and culture; 2) to serve as a safe training ground in which **L2** learners can develop their language learning, cultural sensitivity and ability to mediate between different cultural perspectives, prior to being paired with partners from other cultures in more authentic 'online intercultural exchange'. This present study, in measuring levels of participation and patterns of interaction, seeks a greater understanding of collaborative learning among Japanese **EFL** students when engaging in online discussions.

As yet, there has been little investigation into discussion board usage in relation to Japanese **EFL** learners. Miyazoe and Anderson's (2010) exploratory research on the combined usage of discussion board forums, blogs and wikis in an **EFL** blended course at a university in Tokyo found that of the three, discussion board forums were the least favorable (wikis being the most popular). Analysis of interview transcripts revealed that Japanese **EFL** students had mixed feelings toward discussion boards (i.e. tasks demanding formation and expression of their views in written English were considered both challenging and useful). In addition, a text analysis of learners' forum posts indicated that the Japanese learners' vocabulary became much richer in the blogs but slightly poorer in the forum posts. However, forum writing samples exhibited more extensive changes in writing complexity than did blogs.

This present study seeks to validate Miyazoe and Anderson's finding that forum posts exhibit qualitative changes in writing complexity, by measuring change in the quantity, quality, and accuracy of written language produced by Japanese EFL learners. It also seeks to verify Miyazoe and Anderson's finding that these learners consider discussion boards both useful and challenging, by more closely examining learner perspectives of this online learning environment in relation to usefulness of the learning task, workload, and to whether or not they consider discussion boards to be an interesting and effective way to communicate and share ideas. In addition, this study seeks to measure the extent to which Japanese EFL learners interact with each other and with the instructor in this online environment, by measuring levels of participation against patterns of interaction, as demonstrated by volume of posts and replies.

The results of this research will be useful to EFL language teachers wishing to engage learners in task based language learning using discussion boards, as well as useful to foreign-based educators wishing to engage Japanese learners in online intercultural exchange.

Context: Blended course design

Data were collected from 23 third-year students enrolled in an EFL reading course at a large urban university in Hokkaido, Japan. All participants in the study were at a middle- to high-intermediate level of English competence. During one semester, students were required to engage in four online discussions as a follow up to course readings on the following intercultural topics: 1) Japan and the English language: A tool for everyone in a globalized era; 2) Unique Japan: A foreigner's view on unique aspects of Japanese culture; 3) Sexy Ad Sparks Anger: Cultural ethics in advertising vs. freedom of speech 4) Happy in Switzerland: Views on Japanese culture from a Japanese woman living abroad.

These topics were selected on the basis that they would encourage discussions on social, personal, and reflective levels – thereby helping to develop online relationships. They were also chosen to develop language learning, cultural sensitivity, and the ability to mediate between different cultural perspectives in communicative online situations.

Each of the readings on intercultural topics was first completed in a face-to-face classroom environment, where each paragraph was carefully examined and explained by the teacher, and questions asked to check for comprehension of the main ideas. Following this, students were given three guiding questions for oral discussion, and encouraged to record notes as preparation for their discussion board posting on that topic.

For each discussion topic, in addition to being told to submit a well-thought-out response to the guiding questions, students were required to reply to at least one other student's posting. This was done to ensure that students were reading and responding to the discussion postings of other learners, and also to facilitate development of online relationships. Students were made aware that they could edit posts, but that they would no longer remain editable once another board member had replied to it.

The teacher's role in these online discussions was limited to monitoring each discussion to ensure that it did not go off-track. Teacher replies to students posts were mainly limited to the following types of interactions: 1) Correcting misunderstandings of a guiding discussion question; 2) Encouraging learners to give clearer reasons for their opinions; 3) Praising learners whose posts were of high or exceptional standard; 4) Modeling how to acknowledge agreement, quote, add to a member's ideas, ask for clarification, confirm

understandings, and pose follow-up questions; and 5) Encouraging learners to write greater quantity of text in a post.

Teacher replies did not contain any comments referring to grammatical, lexical, mechanical and/or spelling errors; nor did they criticize any of the ideas being expressed. This was done to encourage a high level of interaction among learners, and to limit the "authoritarian presence" that the teacher might bring to the discussion. Students were told that all discussion posts would be assessed, including replies to discussion posts of other students, to ensure that students did not regard them as unimportant, thought more deeply, and spent time preparing their posts.

For each discussion topic, the teacher posted once. This post consisted of instructions, containing the guiding questions that learners had previously discussed in class, as well as instructions on how to make a post. This initial post also contained instructions on how to use the quoting feature when replying to a classmate's ideas. The teacher posted an average of 18 replies to learner posts 1 and 2, and an average of 3.5 replies to learner posts 3 and 4. This decrease in the number of teacher replies was not intentional, but was due to fatigue because of the time intensiveness involved.

Discussion board environment

A phpBB3 discussion board was used in this study; a free and open source discussion board software commonly used by online groups to discuss subjects of interest common to the group. phpBB was chosen for its stability, having undergone constant development and revision since its release in 2000, and for its feature-rich interface, which allows students to add images, attachments and hyperlinks, format text, or to highlight points using a quote function when replying to other students' posts.

Research questions

The research questions that guided the study were as follows:

1. Are discussion boards effective in helping the students acquire greater quantity, complexity, and accuracy in the written exchanges?
2. What influence does teacher participation in the discussion board environment have on learner participation and on language production?
3. How do Japanese EFL learners feel about using discussion boards as a learning tool?

Methodology

Using a single case-study research methodology, this research employs mixed method data-collection; 1) A questionnaire, requiring responses to five-point Likert scale based questions, and comments to strengthen and determine foundations for this data; 2) Student posts and replies.

The paper-based questionnaire comprised five statements written in English to which students indicated their level of agreement or disagreement. All respondents (n = 23) also wrote detailed comments in English about the online discussion board used in their course.

Numerical data obtained from the five-point Likert scale based statements, were analyzed quantitatively by counting the number of respondents who selected each response choice for a statement to obtain frequencies, and then dividing these frequencies by the

total number of responses to the statement to compute percentages. Qualitative data obtained from the open-ended questionnaire responses were initially coded using labels to identify related data. During second cycle coding, some of the first cycle codes were later rearranged and reclassified into larger themes.

For analyses of online writing, the textanalysis web tool "Advanced Text Analyser" at UsingEnglish.com was used on students' posts and replies. Measures of language quantity during online exchange included the number of syllables, words, sentences, paragraphs, and average words and syllables per sentence. Any words not produced by the student were deleted prior to text analysis, to ensure a true measure of learner's language production. This included deletion of guiding questions included in posts, unless these had been restated into a student's own words. Measures of language complexity included the number of complex words (i.e. words having 3 or more syllables, and not containing a hyphen); the percentage of words outside level 3 (most common 3,000 words) of the British Lexical Corpus (**BNC**); the average number of complex words per sentence; the average number of words per sentence outside of level 3 of the **BNC**, lexical density (i.e. how many different words are used in a text), and a Gunning Fog Index measure (i.e. a readability test measure used to give an approximate statistical indication of the difficulty of the text).

To measure language accuracy, three categories of writing errors were counted for all posts and replies: 1) Errors regarding capitalization usage in subject headings, counted in posts only; 2) Spelling errors, but not mechanical errors; 3) Lexical and grammatical errors that hindered communication (i.e. word order, word choice, tense, subject-verb agreement, missing articles or words, failure to convey meaning). Each of these errors was given a one-point penalty, except for failure to convey meaning, which often involved a whole sentence and so was awarded a two-point penalty.

To establish intra-rater reliability for counting of errors, 40% of all posts were randomly chosen and the lexical and grammatical errors re-counted. Considering the possibility of discrepancy of ratings of an individual rater which might occur in writing assessment situations, a two-point difference between session ratings was assumed to be reliable and acceptable. Differences between ratings in sessions 1 and 2 were then calculated, and the percentage of ratings falling within the established 2-point difference was measured. These results showed that 90% of all posts within the re-rated sample fell within this 2-point margin.

To determine percentages of gain or loss for each of the aspects measured in the study, the following formula was used: (Ave. post 3 & 4 – Ave. Post 1 & 2)/Ave. Post 1 & 2*100. This resulting percentage of gain or loss is used to compare changes in written text in latter posts (i.e. posts 3 and 4) with that found in students' initial posts (posts 1 and 2).

Results

In this section the results of the data will be reported respective to each research question.

Research question 1: Are discussion boards effective in helping the students acquire greater quantity, complexity and accuracy in written exchanges?

The following results are derived from text analysis and error counting, performed on a total of 76 student posts. Of the 23 students in this study, 19 (82.6%) submitted two or more of the required posts. Of the 76 posts, 54.5% contained spelling errors, while 100% of posts contained lexical or grammatical errors.

Table 1: Measures for language quantity in posts

	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
No. sentences	9.54	9.95	6.75	9.8	9.01	1.31
No. words	137.35	136.10	74.75	115.28	115.87	25.31
Ave. words per sentence	14.50	14.18	11.17	11.70	12.89	1.47
No. syllables	204.15	267.0	197.0	174.28	210.61	34.38
Ave. No. syllables per sentence	21.40	26.83	29.19	17.78	23.80	4.48
No. paragraphs	3.04	1.9	1.88	2.4	2.31	0.47

Results in Table 1 above show that there was a marked decline in the quantity of language in posts submitted in the latter half of the course. A comparison between average measures obtained for initial and latter posts revealed that, in posts submitted in the latter half of the course, the number of sentences decreased by 15.08%, the number of words by 30.5%, and the number of syllables by 21.2%.

Table 2: Measures for language quantity in replies

	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
No. and (%) of students replying	11 (47.8)	9 (39.1)	6 (26.0)	20 (86.9)	11.50 (49.95)	5.22 (22.70)
No. sentences	2.45	2.11	1.67	1.67	1.98	0.33
No. words (excluding quotes)	19.45	22.22	14.1	15.0	17.69	3.31
Ave. words per sentence	7.74	11.39	7.83	10.51	9.37	1.61
No. syllables	31.18	31.11	20.50	20.45	25.81	5.34
Ave. No. syllables per sentence	12.70	14.74	12.30	13.19	13.23	0.93
No. and (%) of replies exceeding 2 sentences (excluding quotes)	2 (18.18)	3 (33.33)	1 (16.67)	3 (14.29)	2.25 (20.62)	0.83 (7.47)

Of the 23 students in this study 17 (73.91%) replied to at least one post. Of these students 14 (60.8%) submitted two or more replies. Of the 46 student replies, 25% contained spelling errors and 28.7% contained lexical or grammatical errors. Results in Table 2 above show a marked decline in the quantity of language in replies to posts submitted in the latter half of the course. A comparison between average measures obtained for replies to initial and latter posts revealed that, in replies submitted in the latter half of the course, the number of sentences decreased by 26.75%, the number of words declined by 30.17%, and the number of syllables fell by 34.26%. Also, the percentage of replies of more than 2 sentences length dropped by 39.9%.

Results in Table 3 below show decrease in some measurements of language complexity, and increase in other measurements. A comparison between average measures obtained for initial and latter posts revealed that, in posts submitted in the latter half of the course, the number of complex words per post decreased by 6.06%. However, the number of average complex words per sentence increased by 7.20%. In addition the percentage of words outside level 3 of the British National Corpus fell by 7.21%. Readability measures provided by the Gunning Fog Index also showed a greater than 1 level decline in the difficulty of the written language produced (–1.31). However, there was a 9.95% increase in lexical density in latter posts.

Table 3: Measures of language complexity in posts

	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
No. complex words (i.e. words containing 3 or more syllables)	12.42	10.5	7.25	14.28	11.11	2.60
Ave. No. complex words per sentence	1.30	1.06	1.07	1.46	1.22	0.17
% of words outside Level 3 of the British Lexical Corpus (BNC)	14.77	18.25	17	13.64	15.92	1.81
Ave. No. words per sentence outside level 3 of the BNC	2.13	2.50	1.88	1.60	2.03	0.33
Gunning Fog Index	9.47	8.84	8.36	9.71	9.10	0.53
Lexical Density (%)	60.83	60.93	69.77	64.10	63.91	3.63

Table 4: Measures of language complexity in replies

	Post 1 Replies	Post 2 Replies	Post 3 Replies	Post 4 Replies	Ave.	Std. Dev.
No. complex words (i.e. words containing 3 or more syllables)	2.09	2.11	1.33	0.95	1.62	0.50
Ave. No. complex words per sentence	0.85	1.0	0.80	0.61	0.82	0.14
% of words outside Level 3 of the British Lexical Corpus (BNC)	10.0	11.44	3.33	4.95	7.43	3.38
Ave. No. words per sentence outside level 3 of the BNC	0.77	1.3	0.26	0.52	0.71	0.38
Gunning Fog Index	6.16	8.06	6.97	6.24	6.86	0.76
Lexical Density (%)	92.36	84.01	92.32	94.91	90.9	4.11

Table 5: Measures of language accuracy in posts

	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
Ave. No. spelling errors per sentence	0.29	0.10	0.29	0.18	0.22	0.08
Ave. No. lexical and grammatical errors per sentence	0.91	0.68	0.77	0.79	0.79	0.08
% of posts containing capitalization errors in subject heading	51.85	30.0	31.3	52.0	41.29	10.65

Results in Table 4 above show a marked decrease in the complexity of language in learner replies. A comparison between average measures obtained for replies to initial and latter posts revealed that, in replies submitted in the latter half of the course, the number of complex words decreased by 41.19% and the number of average complex words per

Table 6: Measures of language accuracy in replies

	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
Ave. No. spelling errors per sentence	0.26	0.0	0.10	0.40	0.19	0.15
Ave. No. lexical and grammatical errors per sentence	0.56	0.74	0.9	1.14	0.84	0.21

Table 7: Measures of participation and interactivity

Total No. students = 23	Post 1	Post 2	Post 3	Post 4	Ave.	Std. Dev.
No. and (%) of students who posted	22 (95.65)	18 (78.26)	14 (60.87)	22 (95.65)	19 (82.61)	3.32 (14.42)
No. of replies by teacher	21	17	4	3	11.25	7.89
No. of replies by students	11	9	6	20	11.50	5.22
No. and (%) of students who replied to the same post more than once	1 (4.35)	0 (0.0)	0 (0.0)	4 (21.7)	1.25 (6.51)	1.64 (8.95)
No. and (%) of students who used quotes in replies	2 (8.7)	5 (21.74)	5 (21.74)	15 (65.22)	6.75 (29.35)	4.92 (21.38)
% of quoted replies containing additional info.	100	100	50	70	80	21.21

sentence fell by 19.46%. In addition the percentage of words outside level 3 of the British National Corpus fell by 58.02%. Readability measures provided by the Gunning Fog Index also showed a slight drop in the readability measures provided by the Gunning Fog Index (-0.12), indicating a slight decline in the level of difficulty of the written language produced. However, there was a 6.16% increase in lexical density in replies to latter posts.

Results in Table 5 above show a marked decrease in spelling accuracy within posts, and slightly greater capitalization errors in subject headings. However, there was a slight increase in lexical and grammatical accuracy within posts. A comparison between average measures obtained for initial and latter posts revealed that, in posts submitted in the latter half of the course, the number of spelling errors increased by 20.15%, and there was also a slight 1.77% increase in capitalization errors within the subject headings of posts. However the number of lexical and grammatical errors, decreased slightly (-1.89%), indicating slightly greater lexical and grammatical accuracy in latter posts.

Results in Table 6 above show a marked decrease in the accuracy of learner replies. A comparison between average measures obtained for replies to initial and latter posts revealed that, in replies submitted in the latter half of the course, the number of spelling errors increased by 111.5%. In addition, there was a slight 1.77% increase in capitalization errors within the subject headings of posts, and also a slight 4.73% increase in the average number of lexical and grammatical errors within replies to latter posts.

Research question 2: What influence does teacher participation in the online environment have on learner participation and on language production?

Results in table 7 above show that, in comparison to the initial two posts, the percentage of students posting to latter discussions declined by 10%, and the number of teacher replies to these latter discussions fell significantly by 81.58%. However, there was a 30% increase in the number of student replies to latter posts, a 400% increase in the number of students who replied to the same post more than once, and a 214% increase in the number of students who used quotes in replies. Conversely, there was a 40% decrease in the number of student replies containing additional information beyond, for example, "I agree when you say, (quotation from post)".

A low positive correlation was found between the number of teacher replies and the number of students who posted (0.33); a low negative correlation between the number of teacher replies and the number of student replies (–0.30); and a low negative correlation between the number of teacher replies and the number of students replying to the same post more than once (–0.44). However, a strong negative correlation was found between the number of teacher replies and the number of students using quotes in their replies (–0.72), and there was an almost perfect positive correlation between the number of students submitting replies and the number of students replying to the same post more than once (0.98). A strong positive correlation was also found between the number of students replying and the number of students using quotes in their replies (0.84). However, there was a low positive correlation between the number of students replying and the percentage of quoted replies that contained additional information (0.04).

*Research question 3: How do Japanese **EFL** learners feel about using discussion boards for comparison and analysis telecollaborative learning tasks?*

Table 8: Student responses to questionnaire statements

Respondents = 23	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
The discussion board is easy to use	13%	17%	8%	58%	4%
The discussion board allows me to express my ideas	0%	12%	21%	38%	29%
The discussion board is a useful part of the class	4%	16%	13%	63%	4%
The discussion board is interesting to use	4%	16%	16%	52%	12%
The discussion board is a good way to communicate with my classmates and teacher	4%	26%	8%	50%	12%

The results in Table 8 above show that the majority of students expressed positive views about all five statements related to the discussion board, with a level of positivity ranging between 62% and 67%, depending on the aspect of the discussion board being considered. Although the majority of students surveyed (62%) agreed or strongly agreed to the

statement that the discussion board is easy to use, a significant number (30%), still considered the use of the discussion board either difficult (17%) or very difficult (13%), and 8% had no opinion. It is also notable that fifty percent of all respondents chose to comment about technological issues related to using the discussion board. Analysis of students' comments regarding these technological issues further revealed two types of concerns: feelings of inadequacy regarding their computer and ICT skills, and feelings of inadequacy in using the discussion board's interface, and its embedded tools and functions.

The majority of students (67%) considered that the discussion board allowed them to express their ideas, with a relatively low number (12%) disagreeing. The high level of strong agreement to this statement (29%) connotes that many students recognize that discussion boards allow them to overcome their linguistic limitations in expressing thoughts and concepts. However, 20% of all students gave no opinion, indicating that several students were still waiting to make a judgment, based on continued use of the discussion board. Analysis of students' comments revealed two factors that might be causing such indecision in determining whether discussion boards allow them to express their ideas: 1) Some students lacked prior experience in engaging in online discussions within a learning context; 2) Some students questioned the overall level of student participation in online discussions, believing it to be caused by a lack of motivation.

The majority of students (67%) considered the discussion board a useful part of the class, with 20% of respondents believing it wasn't, and 13% having no opinion. Notably, 42% of all students chose to comment positively about the usefulness of the discussion board. Analysis of these comments revealed that these Japanese EFL students recognized the following benefits: 1) Flexibility of learning afforded by the asynchronous (i.e. the time and place independent nature of communication discussion boards provide); 2) The ability to read and share ideas with other students.

The majority of students (64%) agreed that the discussion board was interesting to use, while 20% of the students did not think so, and 16% had no opinion. However, analysis of student comments revealed no evident basis upon which they determined whether or not the discussion board was interesting to use.

The majority of students (62%) considered the discussion board a good way to communicate with their classmates and teacher. However, 30% of students did not think so, and 8% had no opinion. Analysis of student comments revealed the following factors, which may have contributed to the high level of negative perception regarding this aspect: 1) Time and workload requirements. It is notable that 13% percent of students of all students' comments alluded to issues of time regarding online learning via the discussion board. Although perceived as useful, several students questioned the extra work required to complete discussion tasks outside of classroom time, because it took time away from the learners which they would rather dedicate to other areas of study or life; 2) A lack of familiarity with the discussion board interface and its embedded tools and functions: 20% of all comments made reference to problems regarding their ability to use the tools and functions of the discussion board.

Discussion

In this section findings will be discussed respective to each research question.

Research question 1: Are discussion boards effective in helping the students acquire greater quantity, complexity and accuracy in written exchanges?

Results showed a 15% decline in the quantity of sentences produced. Despite this decline in quantity, sentences were found to contain a greater number of words of three or more syllables (7.5%) and a greater amount of lexical density (9.95%), indicating greater inclusion of longer words and greater variety among the words used. However, a 24% fall in usage of words falling outside level 3 of the British National Corpus, indicates that students opted to use simpler vocabulary in their posts as the course progressed.

Declines in quantity and quality were even greater in replies than in posts, with a 26% reduction in the average number of sentences produced. Unlike posts, however, sentences in latter replies were found to contain far less complex words (-23.78%), but with greater lexical density (6.16%), indicating usage of shorter words, but with greater variety among words used. A 61% fall in the usage of words falling outside level 3 of the British National Corpus (**BNC**), indicates that students also opted to use simpler vocabulary in latter replies.

This study's finding of increased lexical density (i.e. greater word variety) is in contrast to that of Miyazoe and Anderson (2010), which reported a decline in lexical density within students' discussion board posts. Furthermore, this present study's findings of decreased readability (a greater than 1 level decline in the Gunning-Fog Index measure) and lower levels of vocabulary, contradicts the findings of Miyazoe and Anderson's (2010) study, which reported increased readability and slightly higher levels of vocabulary in learners' forum posts as the course progressed. These differences in findings may be attributed to the 3 different online environments to which learners were simultaneously exposed in Miyazoe and Anderson's study (i.e. a blog, wiki, and discussion board). These differences in findings may also be attributed to the more longitudinal nature of their study (i.e. writing samples were collected over two semesters), versus this current study in which data samples were collected over only one semester.

In answer to the above research question, the online discussion board tasks in this study resulted in less language production, with less readability and lower levels of vocabulary usage. This decrease in quantity and quality was greater in learner replies than it was in posts. While some measures of language complexity were found to decline (i.e. readability and vocabulary level), other measures of complexity increased (i.e. the number of complex words per sentence, and the variation among these words). Spelling accuracy was found to decline markedly in both posts and replies, but there was little change in accuracy regarding correct capitalization in subject headings of posts, or in the level of grammatical and lexical accuracy of written language produced.

Research question 2: What influence does teacher participation in the online environment have on learner participation and on language production?

In this study, participation rates in latter posts fell by 10%. Although this decline in participation may be attributable to the 81% decline in teacher replies to these latter posts, the low positive correlation found between the number of teacher replies and the number of students who posted (0.41) suggests other factors; such as different levels of interest in the discussion topics, or time management issues on the part of students.

However, despite this fall in the percentage of students posting, 30% more students were found to have replied to latter posts, with the number of students replying to the same post more than once increasing four-fold, and twice the number of students using quotes in their latter replies. These findings suggest greater levels of interactivity among learners

as the course progressed. The almost perfect correlation between the number of students submitting replies and the number of students replying to the same post more than once (0.98), and the strong positive correlation found between the number of students replying and the number of students using quotes in their replies (0.84) suggest that as the number of students replying to posts increases, so does the likelihood they will respond to the same post more than once, and that they will more likely use quotes in their replies.

The sharp decline (40%) in the number of students providing additional information in replies beyond, for example, "I agree when you say, (quotation from classmate's post)", suggests a growing acceptance among learners that simply quoting a classmate's idea and claiming their level of agreement or disagreement with it, but not expanding upon it, is a sufficient level of collaboration in these online learning tasks.

In answer to the above research question, teacher participation in the online environment was found to have a mild effect on student participation in online discussions, as evidenced by the 10% reduction in student posts when the level of teacher interaction had been greatly reduced. However, the greater effect on levels of student participation and interactivity was found to be the number of students replying to posts; as the number of student replies increased (by 30%), so did levels of interactivity, as evidenced by a 400% increase in the number of students replying to the same post twice, and a 200% increase in the number of students using quotes in their replies. This was also confirmed by the very high positive correlations found between these factors.

It is not clear whether the level of teacher participation influenced levels of language production. The marked drop seen in the quantity, complexity and accuracy of language produced in latter posts may be due to learners adopting a more conversational tone to their writing, or simply due to different levels of interest in the topic being discussed.

*Research question 3: How do Japanese **EFL** learners feel about using discussion boards for comparison and analysis telecollaborative learning tasks?*

Overall, the asynchronous online discussion board was perceived favorably by the majority of Japanese **EFL** students to be a useful, easy and interesting to use learning tool that provided a good way to express ideas with classmates and the teacher. However, a significant proportion (30%) of students considered discussion boards difficult to use, and not a good way to communicate with classmates and the teacher, indicating that nearly a third of students felt uncomfortable with a discussion board as a context for learning; despite engaging with it for a full semester.

Analysis of students' comments revealed underlying concerns: feelings of inadequacy regarding computer and **ICT** skills, and feelings of inadequacy in using the discussion board's interface, and its embedded tools and functions. This finding is supported by Ushioda's (2005) study, which found that second language learners tended to have relatively high anxiety about online learning due to their lack of familiarity with the specific online learning environment, but that learners' familiarity with computers was not an important precondition for effective learning in the online environment.

Winke and Goertler (2008) found that students tend not to have literacy in using specialized tools necessary for **CALL**, because they normally do not use these in their daily personal or academic computer use. This indicates the importance of conducting an assessment of students' computer literacy at the outset of a course, and that refresher training should also be provided during the course, to ensure that all students have the necessary skills and confidence to use discussion boards effectively.

Another voiced concern was the extra work required to complete discussions outside of classroom time. Ramsden (2003) warns that while assessment is one of the most central influences on students' learning, students' approach to assessment is strongly influenced by workload, and that feelings of pressure due to too much work cause a tendency for students to adopt surface approaches to learning. This implies that institutional policies need to be implemented that reduce face-to-face class time, homework or other assessment load in recognition of the increased workload involved in using online discussion boards.

The aspects of the discussion board most valued by the Japanese EFL learners were that it allowed them to express their ideas, and was perceived as a useful learning experience. This finding is supported by other studies (see Gerbic, 2009; Birch & Volkov (2007), which found that second language learners most value the time independence and text-based nature of online discussions, allowing them to research and consider their responses before engaging in the discussion, and that they recognize that valuable learning benefits can be gained from participation in online discussions.

Although most students agreed that the discussion board allowed them to express their ideas, 20% of all students remained undecided, and analysis of learner comments found this indecision to be caused by a lack of prior experience in engaging in an online learning context and, to a lesser extent, by frustration with the differing levels of fellow students' participation in online discussions and of the quality of their classmates' online contributions. Perhaps these differences in learner motivation were influenced by the constructivist approach to learning inherent in online discussions, which was perceived as unfamiliar by some Japanese learners who have a cultural bias toward predominantly instructivist styles of learning, causing them to question the relevance of online discussions as a learning strategy. This implies an important role for teachers of Japanese EFL learners is choosing carefully thought-out discussion questions and topics that connect with course objectives, and also making explicit to students how these discussion activities relate to the overall learning outcomes of the course.

Limitations

There are several limitations to this study. First, it involved a relatively small population of intermediate Japanese EFL students (n=23), preventing generalizations to larger groups of Japanese EFL learners at different stages of language development. Second, language production was measured over only a one-semester course, preventing generalizations to year-long courses, where students have longer time to gain familiarity with communicating in a discussion board learning environment. Third, the questionnaire instrument did not provide spaces for comments under each statement for students to justify their perceptions, which would have yielded more detailed reasoning for the answers they chose.

Conclusion

While the marked decline in the quality and quantity of written language produced in the discussion board learning environment may at first seem disappointing, it is important to remember that the main focus of the learning context being investigated in this study was cultural, and not linguistic. The time independence and text-based nature of online discussions did enable greater exchange of ideas than would have been possible with these

EFL learners in a face-to-face scenario, and also resulted in increased levels of participation and interactivity. In this regard, the discussion board proved successful.

These findings indicate that online teachers should be clear about their main learning focus when using discussion boards and adjust their pedagogical role accordingly: If the focus is on improving students' language production, then simpler information exchange tasks should be chosen that will enable students to concentrate more on language formation than on trying to express their views in written English. In this case, the role of the teacher is one of providing more explicit language scaffolding, and also monitoring students' writing for language errors. However, if the focus is on increasing learners' cultural sensitivity and their ability to mediate between different cultural perspectives, then more demanding comparison and analysis tasks would be appropriate, and the role of the teacher shifts more to supporting and monitoring the learners' collaborative learning process, and to encouraging learners to focus on the meanings which the target culture attributes to behavior, as opposed to simply focusing on the behavior itself (see Muller-Hartmann, 2007; O'Dowd, 2006).

It is unclear why some measures of language complexity declined (i.e. readability and vocabulary level) while others increased (i.e. the number of words containing 3 or more syllables and the variation among these words). Nor is it clear whether the reductions seen in the quantity, complexity and accuracy of language produced were a direct result of reduced teacher participation in latter posts, or if they were due to learners adopting a more conversational tone to their writing, or were simply due to lower levels of interest in the latter topics. These findings indicate that ESL/EFL teachers using discussion boards need to appreciate how challenging it is for second language learners to both create and express their views in English, and need to adjust their expectations accordingly regarding the quality and quantity of language such learners can be reasonably expected to produce because of this cognitive overload. In addition, these findings indicate the need for teachers to choose their discussion topics carefully, so that they are interesting and appealing enough for students to want to exchange ideas about them online.

Teacher participation in the online environment was shown to have little effect on student participation and interaction, which was found to be more greatly influenced by the number of students replying to posts (i.e. student-to-student interactivity). These findings indicate that an important way to increase student participation is by encouraging them to reply to each others' posts. Furthermore, the teacher should encourage learners to reply to replies, and to not simply agree with other students' ideas, but to extend upon or ask questions about these ideas.

While the majority of Japanese EFL students perceived the asynchronous online discussion board to be a useful, easy and interesting to use learning tool that provided a good way to express ideas with classmates and the teacher, analysis of student comments revealed that a large number of Japanese EFL students expressed a lack of confidence in using discussion boards due to perceptions of inadequacy in their computer and ICT skills, or in using the forum's interface and embedded tools and functions. In addition, several students expressed concerns regarding differing levels of participation and the quality of contributions by fellow classmates, and also concerns about the extra work required to complete discussions outside of classroom time. These findings indicate that an assessment of students' computer literacy should be conducted at the outset of a course involving discussion boards, and that necessary training be provided to ensure that all students have the necessary skills and confidence to use them effectively.

Furthermore, the findings indicate that Japanese **EFL** learners' motivation to learning via discussion boards may be influenced by two factors: Firstly, the constructivist approach to learning inherent in online discussions may be perceived as culturally unfamiliar by some Japanese learners. To alleviate this, teachers of Japanese **EFL** learners must carefully align discussion questions and topics to course objectives, and make explicit to students how these discussion activities relate to the overall learning outcomes of the course. Secondly, the extra work required to complete discussions outside of classroom time may be perceived as unreasonable by some Japanese learners, causing them to adopt a surface approach to learning, focused more on assessment requirements rather than engaging meaningfully and enthusiastically with the discussion topics. To mitigate this effect, institutional policies may need to be implemented that reduce face-to-face class time, homework or other assessment load in recognition of the increased workload involved in using online discussion boards.

References

Al-Salman, S. M. (2009). The role of the asynchronous discussion board in online communication. *Journal of Instruction Delivery Systems, 23*(2), 8–13.

Bassett, P. (2011). How do students view asynchronous online discussions as a learning experience? *Inter-disciplinary Journal of e-Learning and Learning Objects, 7*, 69–79.

Belz, J. A. (2007). The development of intercultural communicative competence in telecollaborative partnerships. *Languages for Intercultural Communication and Education, 15*, 127.

Birch, D. & Volkov, M. (2007). Assessment of online reflections: engaging English second language (**ESL**) students. *Australasian Journal of Educational Technology, 23* (3), 291–306.

Garrison, R., & Kanuka, H. *(2004).* Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education, 7*(2), 95–105.

Gerbic, P. (2006). *On-campus students' learning in asynchronous environments.* Unpublished doctoral thesis. Deakin University, Australia.

Gerbic, P. (2009). Including online discussions within campus-based students' learning environments. In E. Stacey & P. Gerbic (Eds.), *Effective blended learning practices: Evidence-based perspectives in **ICT**-facilitated education* (pp. 20–37). Hersey, **PA**: **IGI** Global.

Gerbic, P. (2010). Getting the blend right in new learning environments: A complementary approach to online discussions. *Education and Information Technologies, 15*, 125–137.

Meskill, C., & Ranglova, K. (2000). Sociocollaborative language learning in Bulgaria. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 20–40). Cambridge: Cambridge University Press.

Miyazoe, T., & Anderson, T. (2010). Learning outcomes and students' perceptions of online writing: Simultaneous implementation of a forum, blog, and wiki in an **EFL** blended learning setting. *System, 38*(2), 185–199.

Müller-Hartmann, A. (2000). The role of tasks in promoting intercultural learning in electronic learning networks. *Language Learning & Technology, 4*(2), 129–147.

Müller-Hartmann, A. (2007). Teacher role in telecollaboration: Setting up and managing exchanges. *Languages for Intercultural Communication and Education, 15*, 167.

O'Dowd, R. & Ritter, M. (2006). Understanding and working with 'failed communication' in telecollaborative exchanges. ***CALICO** Journal, 61*(2), 623–642.

O'Dowd, R., & Waire, P. (2009). Critical issues in telecollaborative task design. *Computer Assisted Language Learning*, *22*(2), 173–188.
Ramsden, P. (2003). *Learning to Teach in Higher Education* (2nd Ed.). London: RoutledgeFalmer.
Stacey, E. (2002). Learning links online: Establishing constructivist and collaborative learning environments. In S. McNamara & E. Stacey (Eds.), *Untangling the web: Establishing learning links*. Proceedings **ASET** Conference 2002. Melbourne, 7–10 July.
Schneider, J., & von der Emde, S. (2006). At the intersection of telecollaboration, learner corpus analysis, and L2 pragmatics: Consideration for language program direction. In J. Blez & S. Thorne (Eds.), *Internet-mediated intercultural foreign language education* (pp. 178–207). Boston, **MA**: Heinle and Heinle.
Ushioda, E. (2005). The role of students' attitudes and motivation in second language learning in online language courses. ***CALICO*** *Journal, 23*(1), 49–78.
Ware, P. (2005). 'Missed' communication in on-line communication: Tensions in a German-American telecollaboration. *Language Learning & Technology, 9*(2), 64–89.
Ware, P. D., & Cañado, M. P. (2007). Grammar and feedback: turning to language form in telecollaboration. *Languages for Intercultural Communication and Education, 15*, 107.
Winke, P., & Goertler, S. (2008). Did we forget someone? Students' computer access and literacy for **CALL**. ***CALICO*** *Journal, 25*(3), 482–509.
Yildez, S., & Bichelmeyer, B. (2003). Exploring electronic discussion board participation and interaction by **EFL** speakers in two web-based graduate-level courses. *Distance Education*, *24*(2), 175–193.

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