Abstract

This study investigates EFL students’ learning of content knowledge in project work. In the spring semester, 2011, 27 university students conducted a 10-week group research project in a content-based English course on Japanese culture. In the project, each group chose a topic, collected and analyzed data, and created a final product. In this study, a group of three students was audio-recorded during their group work for two months. In order to examine how students’ content knowledge was shaped, discourse analysis was conducted on their audio-recorded interactions and written assignments. The results showed that the students collaboratively and progressively constructed content knowledge by participating in diverse discursive contexts afforded by the project.

INTRODUCTION

Project-based learning (PBL) is a pedagogical approach which aims to foster autonomous and exploratory learning by placing learners in sequenced tasks such as identifying questions, collecting and analyzing data, and reporting the results (Beckett, 2002; Beckett & Miller, 2006; van Lier, 2005). PBL has been widely implemented in general education. Especially in science education, projects are commonly used and have been extensively researched (e.g., Krajcik, Blumenfeld, Marx, Bass, Fredricks, & Soloway, 1998; Marx, Blumenfeld, Krajcik, & Soloway, 1997).

PBL has also been incorporated into L2 education along with an increased interest in
student-centered learning, autonomous learning, and collaborative learning (Hedge, 1993). Although it may not be the main organizing principle in most L2 curricula, many benefits of PBL are reported by L2 educators including increased motivation, enhanced language skills, increased content knowledge, and improved confidence (Stoller, 2006). Moreover, empirical studies on PBL in L2 contexts have been increasing in the last twenty years. Some early studies investigated how PBL was evaluated by teachers and students (Beckett, 1999; Eyring, 1989). More recently, researchers have examined interactions in project-based L2 classes, offering valuable insights about discourse practices in PBL (e.g., Kobayashi, 2006; Vargas, 2012).

BACKGROUND

Complex Activities and Discourse in Project Work

Empirical studies of PBL revealed that activities and discourse tend to be highly complex in project-based classrooms. As witnessed by Krajcik et al. (1998), aspects of students’ inquiry in a project may interact in a complex manner rather than forming a linear process. The complex learning process is likely to have an impact on classroom discourse too. Vargas (2012) identified three types of Discourses\(^1\) used by Colombian students in a citizenship education project. Based on the findings of the analysis, Vargas argued that the three types of Discourses enabled the students to act multiple roles in class—as a learner, a family member, and a citizen.

Moreover, research suggests that the structure of class discourse goes through changes

\(^1\) In Gee’s discourse analysis approach (1999), there is a distinction between “Discourses” and “discourses.” The Discourse with a capital “D” refers to “socially accepted associations among ways of using language, of thinking, valuing, acting, and interacting” that help to “identify oneself as a member of a socially meaningful group” (Gee, 1999, p. 17) whereas the discourse with a lowercase “d” refers to stretches of language or language-in-use.
in the course of a project. In a discourse analysis of a 10-week earth science project, Polman (2004) found that the structure of teacher-student interactions changed across thematic units in the project. When the class worked on students’ proposals early in the project, a high frequency of initiation-reply-evaluation (IRE) sequences (Mehan, 1978) was observed. Later in the project, however, the number of IRE sequences decreased and the number of instances in which the teacher gave students feedback increased. These findings indicate possible changes in roles of the teacher and students. Frequent IRE sequences might suggest that the proposal phase required more teacher-directed teaching whereas increased instances of teacher feedback might indicate that the students gained more control over their learning and the teacher’s role was to monitor it.

Complexity in class activities and discourse observed in the above empirical studies can be seen as supporting evidence for the claim that project work leads to students’ autonomous and exploratory learning. In PBL, because the process of learning is not rigidly prescribed, there is a potential for various learning trajectories to emerge. Students need to make choices about how they carry out their projects.

However, there are more areas that need further investigation in PBL research. One such area is the learning trajectory of individual students. Although previous research studies revealed complex activities and discourse in project-based classrooms, it was not usually their scope to trace how the learning trajectory of individual students unfolds over time. Furthermore, more research needs to examine students’ activities during a project because a task, or a project, does not always result in the same activities (Coughlan & Duff, 1994; see Kobayashi, 2003, for ESL students’ activities in project work). Therefore, this study aims to contribute to the body of PBL research by investigating activities and discourse of EFL students.
Student Discourse as Situated Practice

This study analyzes student activities and discourse by adopting Lave and Wenger’s (1991) notion of situated learning. In this view, learning is considered as gaining participatory competence in a set of social practices (Lave & Wenger, 1991). Students’ participation in activities and discourse is situated practice and thus needs to be understood in the specific context of communities. Moreover, this study takes up Goffman’s (1981) notion of footing to analyze the way in which students align themselves in the construction and presentation of content knowledge. According to Goffman (1981), there are three roles of a speaker: ‘animator,’ ‘author,’ and ‘principal.’ A speaker is regarded as an animator when he or she is communicating someone else’s ideas. A speaker becomes an author when he or she gains more control over their utterances by selecting and organizing ideas to be communicated. A speaker is regarded as a principal when he or she not only controls what is said but also takes responsibility for opinions and assertions.

The impact of discursive contexts on students’ footing has been witnessed by Llinares and Morton (2010). In a study on discourse in content and language integrated learning (CLIL), they found that explanations generated by CLIL students were different in two discursive contexts. In interviews, the students produced longer explanations and used cognitive markers such as “I think” and “I don’t know” more frequently than in teacher-led class discussions. Using the notion of footing, they argued that the participation framework of the interviews allowed the students to act as authors or principals whereas that of the class discussions limited students to the roles of animators or authors.

The above finding by Llinares and Morton suggests that different discursive contexts lead to different participation patterns and ways for students to (re)construct knowledge. This study aims to investigate how different discursive contexts impact the way in which
students learn content knowledge at various phases in a project. Hence, the following two research questions were posed:

1. What activities did students engage in to complete a group research project?
2. How was students’ content knowledge shaped discursively through the activities?

RESEARCH METHOD

Setting
The setting of the present study was a content-based English course on Japanese culture offered at a Japanese university in the spring semester, 2011. The course aimed to help students gain knowledge about Japanese culture and explain it in English. The class worked on various topics such as geography, seasons, history, and customs in everyday life. All classes were conducted in English.

The Project
Students were required to conduct a 10-week group research project in the course. In small groups, they collected and analyzed primary data (e.g., interviews, questionnaires, site visits) and secondary data (e.g., online materials, magazines, books) about a topic of their choice. The goal of the project was to introduce what they learned in the project, by creating an end product such as a magazine or a guidebook.

In class, mini-lectures were given to guide students’ research, followed by in-class group work. During group work, students were allowed to go out of the classroom for collecting data or working in a computer lab. Students’ in-class discussions were held mostly in English. After class, students submitted a weekly project log in which they documented: 1) what they did, 2) what they learned, and 3) their plan. These log entries
were submitted electronically, and the instructor sent students feedback. Both students’ logs and the instructor’s feedback were written in English.

At the end of the project, the class held an on-campus Japanese Culture Fair where students explained their project to classmates and guests. After the semester finished, students submitted an essay in which they reflected on their learning in the project. The essays were written by individual students in English.

Participants

The participants were 27 juniors and seniors majoring in English who were enrolled in the content-based English course in the spring semester, 2011. The majority of the class was female students. All students had a minimum of 600 points on TOEIC or a score on other English proficiency tests that was considered equivalent by the university.

Of the 27 participants who agreed to participate in this study, one group was selected as a focal group. It was a group of three female students, Ako, Kana, and Rumi. They were selected as a focal group for the richness of the data they provided. The remaining 24 students were regarded as secondary participants and the data collected from them were used as additional contextual information.

Ako, Kana, and Rumi were juniors at the time of data collection. Ako and Rumi knew each other before they joined the class, and Kana was new to Ako and Rumi. Kana had some prior knowledge about their research topic whereas Ako and Rumi did not know much about it. None of them had studied or stayed abroad for a long period of time.

Research Design

This study adopted a single-case study approach (Duff, 2008; Yin, 2009). In order to

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2 Pseudonyms are used for names of participants.
Data Analysis

In order to answer the research questions, data were analyzed as follows. First, audio-recordings of students’ group work were reviewed to create a written summary of the recordings. A preliminary analysis was conducted on the summary and students’ project logs in order to grasp students’ activities during the project. Second, selected segments of the recordings were transcribed following transcription conventions provided by Dalton-Puffer (2007) (See Appendix for transcription conventions). Third, discourse analysis (Friedman, 2012) was conducted on the transcripts, project logs, the final product, and reflection essays. Interview data were used as supplementary information to understand students’ perspectives of their experience in the project.

RESULTS AND DISCUSSION

Research Question 1: What activities did students engage in to complete a group research project?

The first research question asked what activities students engaged in to complete a group research project. In order to answer the question, project logs written by Ako, Kana, and Rumi and their interactions in group work were examined. In what follows, I describe activities that they engaged in during the project. The activities are listed in an
order which reflects the general progression of their project.

**Conceptualizing the group research project**

Soon after the project began, Ako, Kana, and Rumi decided to conduct research on “Lolita fashion,” a style of contemporary fashion that was increasingly gaining popularity in Japan when they took the course. They also decided to create “a magazine” as a final product. In the initial phase of the project, they made an overall plan of their research by discussing details such as methods of data collection, research schedule, and the content of their magazine.

**Co-constructing their understanding of Lolita fashion**

After the topic was selected, Ako, Kana, and Rumi began to read about Lolita fashion individually outside the class. For instance, Rumi read an article about history of Lolita fashion and Kana read about shops in Harajuku, a popular shopping area for Lolita fashion in Tokyo. These individual activities created a meaningful context for subsequent group work, in which they reported to each other what they had read.

The students also learned about their topic by looking at a magazine together. Early in the project, they brought a magazine that had pages about Lolita fashion to class. As they looked at the pages together, they verbally commented on what they saw. Through this activity, they collaboratively constructed their understanding of categories within Lolita fashion, which were included in their magazine later. More details of how they interactionally co-constructed knowledge are discussed below.

**Collecting and analyzing data**

Ako, Kana, and Rumi conducted interviews and a questionnaire in order to collect primary data about their topic. During the project, they went to Harajuku and interviewed
clerks of Lolita-style clothes shops and women wearing Lolita fashion. In addition, they administered a questionnaire to their classmates and international students on campus. In class, they compared primary and secondary data and identified similarities and differences between the two. This part of their learning is examined with details below.

Presenting research findings

As they analyzed data, Ako, Kana, and Rumi began working on their magazine. The process of making the magazine involved selecting suitable content, putting it in order, and deciding how selected content should be presented in texts and with photos. The findings of their research were also presented at “Japanese Culture Fair.” Ako, Kana, and Rumi explained their research using the magazine they made.

The above description shows that Ako, Kana, and Rumi engaged in a wide variety of activities in and outside the class, and as individuals and in a group. Each of these activities helped them to progressively construct knowledge about their research topic. In the next section, I consider how their content knowledge was shaped discursively in these activities.

Research Question 2: How was students’ content knowledge shaped discursively through the activities?

The second research question asked how students’ content knowledge was shaped discursively through the activities. In order to answer the question, students’ oral and written discourse was analyzed within and across activities. In what follows, I present two cases which illustrate the development of their content knowledge.
Description, classification, and definition

The analysis shows that Ako, Kana, and Rumi initially developed their knowledge about categories of Lolita fashion by collaboratively describing and classifying the fashion. Excerpt 1a shows how students’ knowledge about a category of Lolita fashion emerged when they looked at the magazine about Lolita fashion together. The excerpt begins with Rumi initiating a sequence about “Sweet Lolita” after the group looked at two other categories of Lolita fashion.

Excerpt 1a  Group work (June 3)

1  R  sweet lolita.
2  A  yes.
3  K  um.
4  R  wa::
5  A  [wa:
6  K  [wa:
7  R  there is only pink and white.
8  A  yes maybe .. it is a .. sweet lolita’s .. clothes=
9  R  =color?
10 A  yes. color=
11 R  =(xx) main color?
12 A  u::m.

After the topic of the sequence is vocalized by Rumi (line 1) and acknowledged by Ako (line 2) and Kana (line 3), the students express their instant reaction to Sweet Lolita by saying “wa:” (wow) (lines 4-6). The reaction, which expresses surprise, suggests their unfamiliarity with this category of Lolita fashion, or Lolita fashion as whole. Then, Rumi describes what she sees in a full sentence, “There is only pink and white” (line 7). In the following turn, Ako nominates a possible association between the colors and
Sweet Lolita (line 8). The adverb “maybe” and frequent pauses in Ako’s turn might indicate her uncertainty resulting from her limited knowledge about Sweet Lolita. Rumi responds to Ako’s utterance with one word, “color?” (line 9), which enables Rumi to clarify the association nominated by Ako. After Ako gives a positive confirmation and repeats what she said (“yes. color”), Rumi says “main color?” which is again meant to be a question. Rumi’s utterance (“main color?”) can be interpreted as her attempt to specify the association between colors and the category of Sweet Lolita further. Ako gives a positive confirmation (“u::m”) of Rumi’s question. It should be noted that the students do not seem to have concrete knowledge about Sweet Lolita.

Later in the conversation, however, the state of their knowledge appears to change.

**Excerpt 1b**  Group work (June 3)
(This part of the conversation occurs about two minutes after Excerpt 1a.)

13  R   this is *gosu* lolita.
14  A   yes yes.
15  K   ah::
16  R   this is [sweet lolita! 
17  A   [sweet lolita!
18  K   ah:::
19  A   different type.

In Excerpt 1b, Rumi begins to classify what she is seeing in the magazine into the categories that she described with Ako and Kana. In line 13, Rumi says “this is *gosu* (Gothic) Lolita.” The falling intonation indicates that she has confidence in her classification. In line 16, Rumi classifies what she is seeing in the magazine again, which was joined by Ako (line 17). They say together, “Sweet Lolita.” In line 19, Ako says in a clear tone of voice, “different type.”
In the above two sequences, Rumi, Ako, and Kana are engaged in jointly constructing their understanding of what Sweet Lolita is. In Excerpt 1a, Rumi and Ako change the visual information in the magazine into the verbal mode. In Excerpt 1b, they apply the emerging knowledge by giving verbal labels to visual information. The increasing level of their confidence is evident in the falling final intonation and the absence of hedges. On the other hand, Kana’s participation may appear to be peripheral due to her limited utterances and the fact that she was new to Rumi and Ako. However, her timely responses and a joint turn shared with Ako (line 6) indicate her active participation. In addition, Kana’s utterances are not notably fewer than those of Rumi and Ako in other parts of this group work.

Their learning is documented in the project log by the students themselves. In Entry 1, which was submitted after the group work on June 3, they wrote as follows:

Excerpt 2  Students’ project log (Entry 1)

a. I learned the kinds of Lolita fashions and the difference of it. I could know each Lolita have each characteristic. (Rumi)
b. Before researching, I did not know about Lolita fashion. However, I could know that there are many types of Lolita fashions and cloth shops which sell those clothes. (Ako)
c. I noticed that there are many kinds of lolita fashion in Japan. (Kana)

Here, the students’ language differs from that in the group work. First, in the group work, their utterances were brief and turn-taking was frequent. This is a similar feature witnessed when content knowledge was interactionally constructed by teachers and students in CLIL lessons (Dalton-Puffer, 2007). On the other hand, they described their learning in complete sentences in the log, which is a feature of students’ writing expected in school. Second, they used “I” in the log when commenting on the types of
Lolita fashion (“I learned,” “I could know,” “I noticed”). These markers which express the cognitive state of the speaker/writer, as Llinares and Morton (2010) found in their data, might indicate their sense of ownership over the newly learned knowledge.

In the final product, Ako, Kana, and Rumi present their new knowledge by defining categories of Lolita fashion. Their magazine has a section titled “Categories of Lolita fashion,” which starts as follows:

**Excerpt 3a**  The final product (Categories of Lolita fashion)

There are many kinds of Lolita fashion in Japan, so we are going to introduce about representative of Lolita fashions.

In the body of the section, seven categories of Lolita fashion are defined.

**Excerpt 3b**  The final product (Categories of Lolita fashion, Sweet Lolita)

This fashion’s concept is “cute and sweet” like a princess. Sweet Lolita style is heavily influenced by Rococo styles, so it uses light colors like pink and pale blue and childlike motifs in its design.

Excerpts 3a and 3b show that their knowledge has been solidified to the level where they can provide these definitions. It is evident that they are able to not only produce extended texts but also control the way they align themselves in the presentation of the knowledge. In Excerpt 3a, they first inform their magazine readers that there are many kinds of Lolita fashion. Then, after announcing their next move, i.e., introducing representative types of Lolita fashion, they present defining features of Sweet Lolita (Excerpt 3b). The use of the present tense and the absence of “I” in Excerpt 3b suggest that the students perform as “knowers” of the topic and present information as “facts” in the magazine (Mohan, 2007). In Goffman’s (1981) terms, they perform as principals.
who take responsibility for what they say.

**Collecting multiple data, making comparisons, and identifying similarities and differences**

The analysis also shows that Ako, Kana, and Rumi developed multifaceted knowledge about Lolita fashion by collecting and comparing multiple data. In this section, I focus on Ako’s writing in the project log in order to trace the development of the multifaceted knowledge.

As noted above, Ako, Kana, and Rumi conducted interviews and a questionnaire to collect primary data. Excerpt 4 is Ako’s project log that she wrote after going over their classmates’ responses to the questionnaire with Kana and Rumi in class.

**Excerpt 4** Ako’s project log (Entry 4)

In this week, we could ask some questions for classmates using questionnaire and many of them know Lolita fashion. Also, they said that Lolita Fashion is cute, sweet and outstanding, so these kinds of fashion are different from their fashion, so many of them do not want to wear Lolita Fashion.

Excerpt 4 shows that the administration of the questionnaire yielded knowledge about the classmates’ perceptions about Lolita fashion. In the log, Ako gives a description of the newly learned knowledge.

In the following week, the students administered the questionnaire to international students. In class, they compared the three kinds of data that they had collected: the interview data in Harajuku, the classmates’ responses to the questionnaire, and the international students’ responses. In Excerpt 5a, Ako reflects on the group work as follows:

**Excerpt 5a** Ako’s project log (Entry 5)

In this week, we could ask some questions for international students using questionnaire.
Many of them know Lolita Fashion and they said that Lolita Fashion is cute and interesting, but it looks childish and inconvenient to wear. It suggests that international students think that Lolita Fashion is daily clothes, so they said that it is inconvenient to wear. However, Lolita girls in Harajuku said that Lolita fashion is not daily clothes, so it was one of the interesting points that we found.

Here, the way Ako organizes her writing indicates that she is able to build up on what she had learned from interviews in Harajuku by making a comparison between the interview data and the newly obtained data about international students’ perceptions. In addition, in the second half of the same entry, Ako discusses a difference between the classmates’ perception and the international students’ perception.

**Excerpt 5b** Ako’s project log (Entry 5)

Also, according to the questionnaire for our classmates and international students, many of our classmates answered about the Lolita fashion in terms of only appearance (ex: Many of them answered that Lolita fashion is cute, sweet and outstanding), but international students answered about it in terms of appearance and functionality of clothes (ex: Many of them answered that Lolita Fashion is cute and interesting, but it looks inconvenient to wear). There are different points of view between our classmates and international students, so it was interesting for me.

When Excerpts 4, 5a, and 5b are compared, it becomes clear that Ako’s knowledge became more complex as she made comparisons among the collected data. In the log, her multifaceted knowledge is expressed with the use of an adverb “however” and a conjunction “but.” Furthermore, her lexical choice has changed. In Excerpt 5b, Ako discusses the difference of perceptions between the classmates and international students by using abstract nouns (“appearance” and “functionality”), which is a feature of academic discourse in university (Biber, 2006).
In the final product, the students’ knowledge about differences among people’s perceptions about Lolita fashion can be found. At the end of a section titled “Analysis of Lolita Fashion,” they write as follows:

**Excerpt 6** The final product (Analysis of Lolita Fashion)

What we noticed through the research

[1] Lolita girls do not wear Lolita clothes every day.
International people care about the function of their fashion.

Extract 6 exemplifies that their knowledge about Lolita Fashion is made up of multiple perspectives. It is also notable that the text is written in short, simple sentences. The choice of this style is likely to have been influenced by the genre of a magazine. Awareness of the genre can be witnessed in Kana’s project log. She wrote, “Magazine has to be read and understand easily for readers” (Entry 6). Thus, it can be assumed that the difference in their writing styles was derived from their awareness of the genre.

In sum, students’ spoken and written discourse shows that their content knowledge was collaboratively and progressively shaped as they participated in various activities during the project. The above excerpts 1a-3b illustrated that their participation changed as they engaged in the group work, wrote about their learning in the project log, and presented their knowledge in the final product. Early in the group work, although they were interactionally active as indicated by the frequent turn-taking, their participation was limited to ‘reacting’ to what they saw in the magazine. Later in the group work, they began to take more control over their conversation by applying their knowledge to the magazine. In the project log, they could discuss their learning experience by writing about it in complete sentences. Finally, in the final product, they were ready to perform
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the role of magazine editors by presenting the content in the way that their findings could be understood by readers.

Excerpts 4-5b illustrated how Ako’s participation in data collection and analysis affected her writing. The experience of collecting and comparing multiple data provided Ako with multifaceted knowledge about the topic. In the project log, Ako could reconstruct the knowledge in her writing by producing longer and more complex texts and using abstract nouns. In the final product (Excerpt 6), as noted above, the students could perform as magazine editors by producing genre-appropriate texts.

Furthermore, the students’ discourse data suggest the impact of discursive contexts on their participation. As witnessed by Llinares and Morton (2010), different discursive contexts prefer different participation patterns. On one hand, it can be considered that in the group work, where the mode of communication was speaking and the interactants had similarly limited knowledge, the interactants’ utterances tended to be relatively short and distributed. On the other hand, in the project log and the final product, where the writer was a solo participant (except for expected readers of their writing), she, or they in case of group writing, needed to take full responsibility for her/their writing, which resulted in the production of longer and more organized texts.

CONCLUSION

This case study aimed to illustrate how students learn content knowledge through project work. Analysis of students’ activities and discourse showed that the group project in this course prompted students to engage in various activities, which, in turn, created diverse discursive contexts. By participating in the activities, the students seem to have gained more participatory competence in the discursive contexts and used their L2 to construct and reconstruct their content knowledge. This supports the claim that PBL is a pedagogical approach that can offer rich learning opportunities.
This study focused on the learning process of one group. Future research could examine multiple cases to deepen our understanding of the potential of PBL. Another direction for future study is to focus on a single learner. Such an analysis might enable a more fine-tuned analysis of students’ learning process. Although the current study was limited in scope, I hope that it offers empirical support for PBL.

REFERENCES


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**APPENDIX**

Transcription conventions

- [ ] simultaneous overlapping talk by two speakers
- = latching between utterances
- .. … short pause, long pause
- ? rising intonation, not necessarily a question
- ! strong emphasis with falling intonation
- . falling final intonation
- , low rising intonation suggesting continuation
-goo:::d one or more colons indicate lengthening of preceding sound
- (xxx) a stretch of talk unintelligible to the researcher

Adapted from Dalton-Puffer (2007)