The use of L1 in an L2 on-line chat activity

Joshua J. Thoms, Utah State University
Jianling Liao, Arizona State University
Anja Szustak

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Abstract: This study focuses on the use of the native language (L1) by second language (L2) learners when carrying out a collaborative jigsaw task in a computer chat environment. It investigates the extent and function of L1 use by means of a sociocultural theoretical framework. The research project was carried out in three languages: Chinese, German, and Spanish. Students were assigned to dyads at random and were asked to perform a jigsaw task activity. The chat logs were collected and analyzed via descriptive statistics and discourse analysis. The findings suggest that across all three languages, the students used their L1 (English) to varying degrees and for a variety of functions. ‘Moving the task along’ (Swain & Lapkin, 2000a) was the primary function of the L1. Further examination of the chat logs indicates that several factors affected the use of L1, such as participants’ task management strategies and the use of symbols.

Résumé : Cette étude porte sur l’utilisation de la langue première (L1) par des apprenants de langue seconde (L2) lors de la réalisation de tâches de collaboration dans le cadre du jeu des semblables réalisé dans un environnement de clavardage. L’utilisation de l’anglais L1 est examinée quant à sa fonction et à son importance dans un cadre socioculturel. Le projet a porté sur trois langues, à savoir le chinois, l’allemand et l’espagnol. Des dyades ont été formées au hasard, après quoi les apprenants ont été appelés à réaliser une tâche dans le cadre du jeu des semblables. Les échanges faits par clavardage ont été recueillis et ont ensuite été analysés à l’aide de statistiques descriptives et d’analyse du discours. Les résultats suggèrent que, dans le cas de chacune des trois langues, les apprenants ont eu recours à la L1 (i.e., l’anglais) à des degrés variables et pour une variété de fonctions, dont la fonction première de faire « avancer le projet » (Swain et Lapkin, 2000a). Un examen plus approfondi des conversations laisse voir que plusieurs facteurs interviennent dans l’utilisation de la L1, tels que les stratégies de gestion et l’utilisation des symboles par les participants.
Introduction

Computer-mediated communication (CMC) in the second language (L2) classroom is becoming the norm in an increasing number of language programs across the United States. With the arrival of this new form of communication, students learning an L2 participate in activities in the synchronous computer-mediated communication (S-CMC) mode (e.g., on-line chats) as well as in the asynchronous computer-mediated communication mode (e.g., e-mail, discussion lists).

CMC in the L2 learning environment provides a plethora of fresh ideas for instructors. Students have also benefited from CMC, as it allows them new ways to interact with one another in the target language. In addition, CMC in the L2 learning environment has given second language acquisition (SLA) researchers the opportunity to investigate the effects of CMC technology on the processes involved in acquiring an L2. As L2 instructors and SLA researchers, we directed our study towards understanding the effects of S-CMC and how they can be interpreted by means of a particular SLA theoretical paradigm.

Besides the influence of technology, researchers have been motivated by sociocultural theory (SCT) to investigate the presence of students’ first language (L1) in the L2 classroom. Based on learning principles put forth by Russian cognitive psychologist Lev Vygotsky, SCT, when applied to the L2 learning environment, is currently an interest among SLA researchers (Antón & DiCamilla, 1998; Brooks & Donato, 1994; Darhower, 2002; Johnson, 2004; Lantolf, 2000; Swain & Lapkin, 1998; Wells, 1998). SCT has also been used to help understand the way learners interact with others in the L2 environment to acquire the L2. Specifically, SCT provides a paradigm for researchers to examine the functions that the L1 serves in its different uses. When combined, the advances of technology in the L2 learning environment and the principles of SCT may help to explain how the L2 is learned.

Literature review

Interaction facilitates second language acquisition

Previous SLA research has examined the importance of interaction between learners in the L2 learning environment. Several studies have shown that when students engage in conversation in the L2, they negotiate meaning to make their messages more understandable to their interlocutors. SLA research indicates that negotiation of meaning
enhances learners’ interlanguage development (Long, 1996; Toyoda & Harrison, 2002) by increasing input and output comprehensibility through language modifications such as simplifications, elaborations, confirmation and comprehension checks, clarification requests, and recasts. These modifications are deemed necessary by some SLA theories as negative evidence needed for continued language development (Blake, 2000). In addition, these adjustments help to make the input comprehensible. Comprehensible input, in turn, has been found to play a critical role in language learning (Fernández-García & Martínez-Arbeláiz, 2002; Krashen, 1982; Pica, Kanagy, & Falodun, 1993).

In addition to studies focusing on the benefits of interaction and how the negotiation of meaning can make input more comprehensible, researchers have examined the role of interaction in the production of output. Swain (2000) puts forth the idea that output should also incorporate collaborative dialogue. Using a Vygotskian approach to understanding language learning, she explains that when two learners engage in social interaction (e.g., a problem-solving dialogue), they have the opportunity to see for themselves the gaps in their L2 linguistic knowledge. Students are better able to notice or pay attention to the deficiencies in their developing L2 and can attend to these problematic areas more efficiently (Swain, 1993). This, in turn, can facilitate the process of language acquisition.

Collaborative tasks

Some studies have also examined the kinds of tasks used in the L2 learning environment. The kind of task presented to learners can affect the way learners collaborate, negotiate meaning, use their L2, and make use of their L1 in face-to-face communication in the classroom (Brooks & Platt, 2002; Pica et al., 1993; Smith, 2003). Previous research has indicated that jigsaw and information-gap tasks promote negotiation more effectively than other types of L2 tasks (Pica et al., 1993). In these activities, learners work in pairs to solve communication tasks. Each partner has only half of the information, and they must share their respective parts equally to complete the task (Blake, 2000). While completing the communication task, learners encounter lexical, grammatical, or other linguistic problems that, in turn, require negotiation between them (Blake, 2000). Brooks (1992) presented 16 Spanish students with a jigsaw task for which they had to communicate (face to face) in their L2 to complete a diagram. Brooks concludes that the jigsaw task used in the study provided many opportunities for students to negotiate meaning (p. 714).
Furthermore, other studies have shown that collaborative activities have an effect on the L2 grammatical competency of learners. Storch (1999) found that students’ grammatical accuracy improved when they completed a task in pairs rather than individually. Her study further concludes that collaboration had a positive effect on the overall grammatical accuracy of the texts produced by students (p. 370).

Current research is examining the effect of task type on learners in their L2 environment, as well as how and when students negotiate for meaning in a conversation in the L2 within the medium of CMC (Blake, 2000; Fernández-García & Martínez-Arbelaitz, 2002; Iwasaki & Oliver, 2003; Oskoz, 2003; Smith, Álvarez-Torres, & Zhou, 2003). These studies have found that learners continue to negotiate for meaning in ways similar to those found in face-to-face communication. But the new medium of CMC, compared to the traditional foreign language (FL) classroom, ‘can provide many of the alleged benefits ascribed to [Long’s] Interaction Hypothesis, but with greatly increased possibilities for access outside of the classroom environment’ (Blake, 2000, p. 120). Thus, CMC gives learners more opportunities to interact with their peers.

**Theoretical framework**

Based on the research carried out by Vygotsky (1978), SCT initially analyzed the psychological blueprint of human beings. In contrast to Piaget’s idea that an individual’s cognitive nature evolves and distinguishes itself primarily due to biological differences (Vygotsky, 1978), Vygotsky’s SCT emphasizes the cultural and social context in which a person exists and its role on the cognitive and psychological development of the individual (1978). Within an educational setting, Vygotsky viewed learning as a profoundly social process.

Interaction between a more knowledgeable individual and a less experienced person creates a site for *scaffolding*. In the L2 context, scaffolding occurs when a more advanced learner (i.e., an expert) of the L2 is paired with a less knowledgeable student (i.e., a novice). The expert learner interacts with the novice to guide or expose him or her to higher-level functions, such as the more complex structures of the L2.

An important concept related to scaffolding is *intersubjectivity*. Within the L2 learning environment, the expert and the novice interact and collaborate via oral discourse. To create this discourse, learners must share some kind of communicative context. The relationship that learners have within this shared context is called intersubjectivity: ‘When interlocutors have similar background knowledge on a topic of conversation, the context may already be shared’ (Darhower, 2002, p.
Using L1 in an L2 On-Line Chat Activity

If this context is not already established, then it must be created by the learners via language (Rommetveit, 1974). From a sociocultural viewpoint, this common communicative context is what enables learners to cooperate and interact (Vygotsky, 1962).

Although human beings have many kinds of tools and signs at their disposal, their most complex tool is language. According to Vygotsky (1978), this unique instrument is the most useful we can employ to mediate between the lower and higher mental levels of human cognition. In the L2 learning environment, some researchers have observed that not only is the L2 the tool that is used to access or acquire the higher-level mental processes and functions of language (e.g., syntactic complexities of the L2), it also serves as the knowledge that is being acquired (Swain, 2000). However, not all collaborative activities in the L2 environment are carried out exclusively in the L2. Students often make use of another mediating tool, namely their L1.

Uses of L1 in L2 classroom learning

L1 use in the L2 classroom has long been a contentious issue among both SLA researchers and FL classroom teachers. Researchers have emphasized that learners should receive a maximum of input in their L2 for acquisition to occur (Ellis, 1984; Krashen, 1982). Until recently, allowing students to speak in their L1 to carry out a task in the L2 was considered counter-productive. For example, Walz (1996) points out that during information-gap activities, code-switching to one’s L1 is often considered unacceptable among classroom teachers. Even today, many instructors are reluctant to permit students to use their L1 in the L2 classroom. But several studies have shed new light on this polemic by suggesting that the L1 does have a place and a function in the L2 learning environment (Antón & DiCamilla, 1998; Brooks, 1992; Darhower, 2002; Fernández-García & Martínez-Arbeláiz, 2002; Wells, 1998). For example, in their analysis of the discourse of eight pairs of Grade 11 Spanish learners engaged in an information-gap activity, Brooks and Donato (1994) found that L1 use is ‘a normal psycholinguistic process that facilitates L2 production and allows learners both to initiate and sustain verbal interaction with one another’ (p. 268). Moreover, Swain and Lapkin (2000a) found that learners who collaborated to carry out a writing task were confronted with several difficulties that pointed to gaps in their L2 knowledge upon negotiating for meaning. To overcome these difficulties, they used their L1 to complete the task. Other studies have noted the value of L1 in the L2 classroom from a sociolinguistic perspective (Blyth, 1995; Cook, 1992; Fraga et al., 1994).
As to when learners use their L1 while learning a foreign language, Platt and Brooks (1994) found that students used the L1 when they had to accomplish a difficult task involving problem solving. Platt and Brooks cite three uses of the L1 when learners communicate in the L2: (a) private speech (when students talk to themselves); (b) situation definition (when students define a learning task for themselves); and (c) metatalk (when students comment on their own language production).

From the perspective of SCT, the use of L1 can facilitate cognitive processing. Behan and Turnbull (1997, as cited in Swain & Lapkin, 2000a) examined L1 (English) use by Grade 7 French immersion students engaged in a cognitively complex writing activity. The results indicate that L1 was used for the functions of task management, information sharing, and vocabulary searches. The L1 was also found to be an effective tool for dealing with cognitively demanding content. Cohen (1994), who analyzed the roles of L1 use in processing numerical and word problems in mathematics among Spanish immersion students in Grades 3 through 5, found that the L1 was used to develop an understanding of the content of the task and to support cognitive processing.

To provide empirical evidence of the advantages of the L1 in the L2 classroom, Antón and DiCamilla (1998) analyzed the functions of students’ L1 (English) use while they participated in a collaborative interaction to complete a writing task in their L2 (Spanish). The results show that the L1 was used to facilitate scaffolding during collaborative pair work. Not only did students resort to their L1 when mediating the cognitive processes used in problem-solving tasks, they also employed it to access L2 linguistic forms. In addition, students used the L1 to promote, establish, or maintain intersubjectivity with their partners while attempting to accomplish the collaborative task. In light of these findings, the L1 can be interpreted as a kind of mediating tool that promotes interaction among learners in the L2 environment.

Further studies have found similar functions of L1 use in the L2 classroom. Although L1 use was not the primary focus of his project, Brooks (1992) observed that students collaboratively carrying out a jigsaw task were inclined to use their L1 to maintain intersubjectivity. He asserts that the students in his study used their L1 (English) to develop their ‘strategic competence’ (Savignon, 1983, as cited in Brooks, 1992), defined as ‘the ability to maintain social discourse despite an imperfect knowledge of the language’ (Brooks, 1992, p. 714). By using their L1 as a tool to facilitate interaction, learners strengthen their strategic competence as well as promote the intersubjectivity of the group while they engage in a collaborative task in the L2 classroom.
other words, from a sociocultural perspective, ‘the establishment and negotiation of intersubjectivity perpetuates collaborative discourse, which is important for language development’ (Darhower, 2002, p. 253).

Swain and Lapkin (2000a) investigated the uses of the L1 by two groups of Grade 8 French immersion students as they completed a dictogloss or a jigsaw task. The authors designed a coding scheme to categorize the uses of L1 by the learners. They claim that L1 use has three main functions: ‘(a) moving the task along, (b) focusing attention, and (c) interpersonal interaction’ (pp. 257–258). Several subcategories are also identified for each principal category. Swain and Lapkin found that the L1 was used most frequently for task management purposes. They also analyzed the relationship between the amount of L1 use and the quality of students’ writing, as well as the variability in task performance across student pairs. They found significant negative correlations between the percentage of L1 use and the quality of the performance in the jigsaw task group. They also found that the stronger student dyads used the L1 primarily for task management or to develop an understanding of the content of the task.

Chat as a medium for L2 learning

New technologies such as CMC are increasingly being used in L2 learning environments. In general, CMC has been found to have the following advantages over traditional mediums: It amplifies students’ attention to linguistic form (Warschauer, 1997), increases written L2 production (Kern, 1995), and provides a less stressful environment for L2 practice (Chun, 1994) and a more equitable and non-threatening forum for L2 discussions (Warschauer, 1996, 1997).

L2 classroom use of on-line chat, a synchronous or real-time text-based communication tool (Tudini, 2002), is relatively new. On-line chat is characterized by direct interaction between two or more speakers. It is similar to face-to-face communication because all participants in the chat ‘continuously take turns to relay their messages, and unlike in other writing tasks (e.g. diary, letter or essay writing), are not given much time to review their written message’ (Iwasaki & Oliver, 2003, p. 62).

Previous research has indicated, then, that interaction facilitates SLA by making the input more comprehensible through negotiation of meaning and by providing opportunities for the learner to produce comprehensible output. In addition, certain types of tasks have been shown to be more effective than others in pushing learners to produce comprehensible output. Studies also indicate that collaborative activities carried out in the L2, such as jigsaw tasks, result in more opportunities
for negotiation of meaning, thus making the output more comprehensible. It has also been found that not all collaborative tasks in the L2 environment are performed exclusively in the L2. Learners often switch to the L1 to complete a collaborative task. From a SCT perspective, this use of L1 can be explained as a mediating tool to help learners access the higher-mental processes or functions of the L2.

These perspectives on SLA have guided the project documented here. Until recently, there was minimal research dedicated to CMC and the effects of this relatively new medium of communication on L2 learning. Although some studies have explored issues involving CMC and the L2 classroom (Blake, 2000; Darhower, 2002; Fernández-García & Martínez-Arbelaitz, 2002; Oskoz, 2003; Smith, 2003; Smith et al., 2003; Tudini, 2002; Von der Emde, Schneider, & Köttner, 2001), none has investigated the use of the L1 by learners while carrying out a collaborative task in the L2 within an S-CMC environment.

Therefore, the purpose of this study was to investigate L2 learners’ use of their L1 while engaged in a computer chat activity. Specifically, the project addressed the following two questions:

1. What functions does the L1 serve?
2. In the student pairs that use the largest and the smallest amounts of L1, is L1 used for different functions? What are the characteristics of these interactions?

**Methodology**

**Participants**

The participants in this study came from one of the following three intermediate language courses at the University of Iowa: (a) 14 students from a fourth-semester Chinese class; (b) 10 students from an accelerated intermediate German class (equivalent to a fourth-semester course); and (c) 14 students from a fourth-semester Spanish class. Students were asked to fill out a demographic questionnaire to provide information about their prior experience studying their respective language (Chinese, German, or Spanish) and/or travelling or living in a country where that language is spoken. Table 1 provides information about the students who participated in this study.

**Instruments and tasks**

In all, our study consisted of three chat sessions, during each of which participants worked on a collaborative jigsaw task. The tasks were
TABLE 1  
Demographic information of students

<table>
<thead>
<tr>
<th>Language</th>
<th>Male</th>
<th>Female</th>
<th>Mean age</th>
<th>Language level</th>
<th>% of students with experience abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>13</td>
<td>1</td>
<td>23.4</td>
<td>Fourth-semester</td>
<td>29%</td>
</tr>
<tr>
<td>German</td>
<td>7</td>
<td>3</td>
<td>22.1</td>
<td>Fourth-semester</td>
<td>30%</td>
</tr>
<tr>
<td>Spanish</td>
<td>6</td>
<td>8</td>
<td>22.1</td>
<td>Fourth-semester</td>
<td>50%</td>
</tr>
</tbody>
</table>

embedded in the syllabus of each language as a course requirement and were carried out during class time. The first chat session was a practice session intended to familiarize students with the format of a jigsaw activity. This first chat took place early in the semester. The second chat was the session from which we collected our data (see Appendix A, Figures 1 and 2, for the activity). The third chat included another collaborative jigsaw task and was completed near the end of the semester.

The three jigsaw tasks in the chat sessions were done in pairs. The dyads were assigned at random for each task to increase the validity and reliability of the study’s results. The jigsaw task from which we collected data was a collaborative task carried out via a text-based chat. The activity was adapted from the jigsaw task used by Brooks (1992). Students received a portion of a diagram, and each collaborated via computer with his or her partner to complete the missing information in his or her diagram (see Appendix A, Figures 1 and 2, for this task). The goal of the activity was for the members of the dyad to make their diagrams look similar to the master diagram (see Appendix A, Figure 3) by completing them with information supplied by their partners. Although the instructions were given in English, students were told to complete the activity in the target language. The students were allowed up to 50 minutes to complete the collaborative chat task, which required both students in each dyad to request and supply missing information in the L2 from their respective diagrams. Ideally, when finished with the task, each student would have the same picture of the master diagram.

Data analysis and results

Data management

After students completed the tasks, the chat logs were collected and the data were analyzed based on the research questions. First, the amount of English used in the chats was studied in several different ways. The total number of English words used in each chat was counted. The total
number of words for each dyad was also calculated to determine the percentage of English use. Furthermore, the English used by the participants was categorized into different functions. A function (or functions) of L1 use was determined for each turn. Turns in this study were operationalized the same way as in previous studies analyzing discourse in S-CMC (Smith, 2003; Tudini, 2003): A turn was defined as when the ‘floor’ was transferred from one participant to the other.

Previous research on face-to-face collaborative tasks (Swain & Lapkin, 2000a) has identified three main functions of L1 use: moving the task along, focusing attention, and interpersonal interaction (p. 257). These functions of L1 use were adopted and used for this study, and seven subcategories were created based on the task used in this study.

Moving the task along

1 Locating and describing the information in the diagram (e.g., *In row one there is a triangle.*)
2 Task management (e.g., *Let’s number the rows and columns.*)

Focusing attention

3 Vocabulary search: Asking how to say a word and/or a response to the question (e.g., *How do you say ‘triangle’ in Spanish? It’s trángulo.*)
4 Focus on form: Retrieving and/or explaining grammatical information (e.g., *What is the past tense of ‘be’?*)

Interpersonal interaction

5 Off task (e.g., *Meet me at Joe’s Place.*)
6 Frustration with task (e.g., *This is hard!!*)
7 Creating a positive environment (e.g., *Nice job!!*)

The use of L1 in our data set was analyzed based on the above functions. One of the goals of our study was to see if L1 use in chats differs from what previous research had found for face-to-face interaction. Finally, the last focus of our data analysis was to examine L1 use by the two dyads in each language group that used the most and the least English respectively. For each language group, the functions of L1 were analyzed and compared between these two dyads.
Using L1 in an L2 On-Line Chat Activity

In the example below, lines 38 through 41 are the numbered lines from the original chat log of a Spanish dyad. Line 38 by Student D was counted as one turn. Line 39 by Student C was counted as a different turn. Finally, lines 40 through 41 were counted as one turn, even though Student D hit the ‘Enter’ key in between. In all, the example below constitutes three turns. To determine the function of the L1 use in the example below, we did not consider each individual word; rather, we looked at the entire turn and defined its function(s). For example, in line 39, the turn includes five English words. Instead of determining a function for each of the five words, we looked at the overall context of the entire turn to determine the function(s) of the L1 use in the turn. Thus, there is one function in this particular turn: locating and describing information.1

Example 1: Definition of a turn and its corresponding functions of L1

38 Student D: esta en el 2nd ‘box’
   it is in the 2nd box

39 Student C: tengo un diagonal fila en 5th y ultima box en 3rd column
   I have a diagonal row in 5th and last box in the 3rd column

40 Student D: tengo un circulo en el 4th pero no es completa... ‘half’
   I have a circle in the 4th but it is not complete ... half

41 Student D: $410.15 esta en el ultima ‘box’ en 1st ‘column’
   $410.15 is in the last box in 1st column

Results

The results will be discussed with reference to our two research questions.

What functions does the L1 serve?

In this section, results are given regarding the functions of L1 use found in the dyads of all three languages. As outlined earlier, three main categories were established to code the functions of the L1 used by learners while doing the jigsaw activity. The main categories used were (a) moving the task along, (b) focusing attention, and (c) interpersonal interactions. Below we discuss one example from each main category.
Moving the task along

Across all three languages, L1 was primarily used to locate and describe the information in the diagram (a subcategory of moving the task along), as shown in the Chinese example below:

Example 2: Locating and describing information in a Chinese dyad

13 Student E: Yi C, triangle
   One C, triangle

14 Student F: wo de 1A you ‘$103.95’
   my 1A has ‘$103.95’

15 Student E: Yi D, mei you
   One D, mei you
   One D, doesn’t have anything

16 Student F: zenmeyang de triangle??
   what kind of triangle??

17 Student E: 90 degree isosoles [sic]
   90 degree isosceles

In this example, Student E describes what he sees in one of the cells in his diagram. Not knowing the Chinese word for ‘triangle,’ he uses the English word instead. His partner, Student F, does not respond to this information immediately. After two turns, however, Student F comes back to ask Student E what kind of triangle it is by similarly using the English word ‘triangle.’ Again, lacking the necessary linguistic knowledge, Student E responds in English: ‘90 degree isosoles.’ As Example 2 indicates, for the purpose of locating or describing information, English was sometimes mixed with the L2 and sometimes stood alone. The use of English for this purpose helped the students to maintain their communication when their skills in the target language were not strong enough to support the goal, thus helping to move the task along.

Focusing attention

Focusing attention was the second main category used to classify other functions of L1 use elicited by learners in this study. Vocabulary search is one of the subcategories of focusing attention.

The Spanish example below shows students using their L1 to search for a particular lexical item in the L2.

Example 3: Vocabulary search in a Spanish dyad

47 Student D: tengo las letras OP en el tercero ‘box’
I have the letters OP in the third box
Using L1 in an L2 On-Line Chat Activity

48 Student C: tengo $103.95
   I have $103.95

49 Student D: donde?
   where?

50 Student C: tercero box
   third box

51 Student C: tercero = top?
   third = top?

52 Student D: creo que tercero = 3rd
   I think third = 3rd

53 Student C: lo siento
   I’m sorry

54 Student D: es no problema
   is no problem

The second subcategory under focusing attention was that of focus on form. Our analysis found no instances in any of the three languages in which students used their L1 to focus on form.

Interpersonal interaction

Students used L1 for a variety of interpersonal interactions, including off-task communication, creating a positive environment, and expressing frustration with the task. For example, in several cases, students in all three languages used their L1 to create a positive environment. The example below is an excerpt from a German dyad that illustrates this function. Student E expresses his excitement about figuring out a part of the diagram, and thus fosters a positive atmosphere, by saying ‘Cool!’ in line 25.

Example 4: Creating a positive environment in a German dyad

22 Student F: beispiel ... | \ |
   example ... | \ |

23 Student E: Ja——\P
   Yes ———\P

24 Student F: mein ist ... | ___z\___ |
   I got ... | ___z\___ |

25 Student E: OK – gut. Wir haben ein Systeme. Cool!
   OK – good. We have a system. Cool!

Is the L1 used for different functions in the interactions of the student pairs using the largest and the smallest amounts of the L1? What are the characteristics of these interactions?
To better identify the factors that could be related to the learners’ use or non-use of L1, the complete chat logs of the two dyads in each language were examined from a holistic point of view. The goal was to identify the broader contexts that may have facilitated or restricted the use of L1. Table 2 shows the number of English words and the percentage of English use by the dyad with the greatest and the least amount of English use for each language.

Upon closer examination, it was found that in the dyads with the least L1 use, there were several factors that may have allowed them to maintain the conversation in the L2 without using much English. First, establishing task management strategies early on in the discourse helped to reduce the use of L1. In contrast, effective task management strategies were not used in the dyads with the most L1 use. The absence of effective task management may have led to more use of English to question and clarify the parts of the diagram the partners were referring to.

The second strategy that helped to reduce the use of English was the use of symbols, as shown in the example below. This strategy, however, was not often found in the dyads with the greatest amount of L1 use.

Example 5: Using symbols in a Chinese dyad

119 Student A: diba ni youshenme
   what do you have in the eighth

120 Student B: diba wo you yige xiao \ zai zuo bian, xiao / zai you bian
   in the eighth I have a small \ on the left, the small / is on the right

121 Student B: zai xiabian
   it is at the bottom

Another variable that helps to explain the stark differences between the dyads that used the most L1 and those that used the least is that of previous experience and motivation to learn the L2. The demographic information provided by many learners in the dyads that used the most

<table>
<thead>
<tr>
<th>Language</th>
<th>Highest number of English words (%) used by a dyad</th>
<th>Lowest number of English words (%) used by a dyad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>332 (30%)</td>
<td>18 (2%)</td>
</tr>
<tr>
<td>German</td>
<td>123 (20%)</td>
<td>7 (1%)</td>
</tr>
<tr>
<td>Spanish</td>
<td>116 (20%)</td>
<td>8 (1%)</td>
</tr>
</tbody>
</table>
English reveals similar experience with regard to learning the L2: These students indicated that they did not have contact with the L2 outside of the classroom, and, furthermore, several of them indicated that they had never studied nor travelled in countries where the L2 is spoken.

It is speculated that students’ motivations and lack of L2 exposure may have led them to use a higher percentage of L1 while doing the jigsaw task. Other factors such as proficiency level and overall ability in the L2 may also contribute to the amount of L1 use and to the functions of the L1 used by learners. However, these variables were not included in the analysis of the data, and thus our interpretations are limited to speculation.

Discussion and conclusion

A major finding of the current study is that, across the three languages, L1 was primarily used to locate or describe information, a subcategory of moving the task along. Other functions, such as task management, vocabulary search, off-task comments, expressions of frustration with the task, and creating a positive environment, have also been identified. One of the goals of our study was also to see whether L1 use in chat is different from what previous research has found for face-to-face interaction. In contrast to the results identified by Swain and Lapkin (2000a), no L1 instance was found in any of the three data sets for the function of focus on form. The task itself may explain the absence of this kind of L1 use. There are many possible reasons that the type of task may have influenced students to avoid L1 use for this particular function. First, in contrast to the jigsaw activity used by Swain and Lapkin, our students were simply asked to describe their part of the diagram to their partner. Because of the descriptive nature of the task, there was no need to pay particular attention to form. The jigsaw activity used by Swain and Lapkin elicited more L1 use dedicated to focus on form because students not only needed to describe pictures in a sequence but were also required to collaboratively write a narration of what they had described. Swain and Lapkin (2000b) have found that a writing component is an important factor in pushing students to focus on form. The fact that we did not require the students in our study to write or produce language after doing the jigsaw task may explain why they did not use their L1 to focus on form. Another potential reason for the lack of focus on form may be the effect of the medium. In Swain and Lapkin (2000a), students communicated in a face-to-face environment using oral discourse, whereas in our study, students communicated via chat, typing messages to each other.
Another observation relates to one of the major functions studied in this project, that of task management. By analyzing the chat logs of the dyads that used the least amount of English in each of the three languages, we observed that these dyads created task management strategies at the beginning of their chat session, either in their L1 or in their L2. This strategy seems to have helped them to maintain the conversation in the L2 and not use much English. In contrast, the dyads that used the most English did not establish any task management strategies, which may have led to higher amounts of English use by these dyads across all three languages.

A further interesting feature that we observed in the data was the use of symbols as a tool of communication (e.g., `^ --', '_' \_, '|' -'). Because of the nature of the task (see Appendix A), students used these symbols to describe the information found in the diagrams. In some dyads, using these symbols reduced the use of English. Specifically, in the Chinese dyad that used the least L1, many symbols were used to locate and describe information in the diagram, thus minimizing the use of English. Overall, students in all languages used symbols as a tool to compensate for their linguistic deficiencies in the L2.

An SCT perspective posits that language serves as a tool to establish a shared communicative context between interlocutors. Through this communicative context, learners cooperate and interact to accomplish a task. In our study, students were expected to carry out the task in the L2. However, as our data suggest, the learners also used their L1 to create a communicative context in order to complete the task successfully.

Thus, the current study provides evidence that the L1 can be used positively to help L2 learners to initiate and sustain interaction with one another. For example, participants used the L1 to help them locate and describe information in the diagram when they lacked the linguistic ability to move the task along in the L2. Among Chinese and Spanish students, the L1 was also used to establish effective task management strategies within a dyad that made the interaction more effective and efficient. In the German section, however, some dyads established task management strategies in the L2.

Although the study described here investigated the extent and functions of L1 use during L2 learners’ participation in a collaborative jigsaw task activity via an on-line chat, the data also indicate that the L1 was used in all three language sections (Chinese, German, and Spanish). The amount of L1 use was higher in the Chinese section than in the German and Spanish sections. Although our study did not consider each student’s overall proficiency level, nor did it attempt to compare the
proficiency levels of learners between languages, it is hypothesized that learners of a non-cognate L2 (e.g., English-speaking learners of Chinese) may more frequently resort to L1 use in a lexically rich task such as the one used in this study.

The findings of the current study may have implications for relevant teaching practice, specifically for task-based teaching. The study suggests that, rather than viewing L1 use by L2 learners as totally counter-productive or unacceptable, instructors should consider that the use of L1 may be beneficial for certain linguistic or communicative functions. In collaborative tasks, when task management strategies are crucial for the successful completion of the task, it may be beneficial for L2 learners to use their L1 to create such strategies when performing completely in L2 is impossible or beyond the students’ linguistic ability. In task-based language instruction, occasionally the task assigned to L2 learners may require linguistic skills more advanced than the learners’ current proficiency level. In these circumstances, use of L1 may also enable less proficient learners to sustain interaction with or even to access the higher-level knowledge from more experienced learners.

The findings of the current study have several limitations. First, no thorough statistical analysis was employed. Therefore, results drawn from this study are limited to descriptive observations. The sample size in the study was also relatively small. Second, the proficiency levels of the individual students were not assessed. Third, only one kind of jigsaw task was used; this may have affected or restricted the ways in which learners used their L1. In future studies, L1 data drawn from different kinds of jigsaw tasks (e.g., a picture sequence or description) should be compared to investigate possible task effects on L1 use. Conducting more studies on the on-line-chat L2 learning environment is crucial to obtain a better understanding of learning aspects such as the linguistic nature of language production, interaction patterns, and L1 use involved in this medium. Additional research into this new medium has the potential to improve L2 teaching practices, and these practices could, in turn, enhance the L2 acquisition process for students.

Joshua Thoms is a second-year PhD student studying second language acquisition in the FLARE program (Foreign Language Acquisition, Research, and Education) at the University of Iowa. He is currently a teaching assistant and course supervisor in the Department of Spanish and Portuguese. His research interests include technology and its role in SLA, social and contextual factors and their effects on SLA, and foreign language pedagogy.

Contact: joshua_thomas@uiowa.edu

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Jianling Liao is a second-year PhD student studying second language acquisition in the FLARE program (Foreign Language Acquisition, Research, and Education) at the University of Iowa. She has taught Chinese language courses and is currently a technology specialist in the Department of Asian Languages and Literature. Her research interests include CMC and its effect on SLA, multimedia applications to language learning, and foreign language pedagogy. Contact: jianling_liao@uiowa.edu

Anja Szustak is a second-year PhD student studying second language acquisition in the FLARE program (Foreign Language Acquisition, Research, and Education) at the University of Iowa. She is currently a teaching assistant and technology specialist in the Department of German. Her research interests include multimedia applications to language learning and its effect on SLA and foreign language pedagogy. Contact: anja_szustak@uiowa.edu

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Note
1 Transcription conventions:
   Text from participants' chat logs appears in roman type.
   English translations of chat log excerpts appear in italics.
   Boldface type indicates L1 use pertaining to the category or sub-category under discussion (e.g., locating and describing information).

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Using L1 in an L2 On-Line Chat Activity


**Appendix A**

*Jigsaw task (adapted from Brooks, 1992, p. 701)*

Note: The task provided is the German version. The tasks for Chinese and Spanish are similar except for some of the words.

**FIGURE 1**

Student A

```
\[\text{Student A (German)}\]
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Directions: You (student A) have a picture of a diagram and your partner (student B) has another one. The two diagrams are similar but they aren’t identical. You (student A) need to describe your diagram to your partner (student B) in order to create a ‘master’ diagram.

FIGURE 2
Student B

Directions: You (student B) have a picture of a diagram and your partner (student A) has another one. The two diagrams are similar but they aren’t identical. You (student B) need to describe your diagram to your partner (student A) in order to create a ‘master’ diagram.

FIGURE 3
Master copy (German)