

# The Effects of Jigsaw Task Input Types on the Interaction for Second Language Acquisition

Chihiro SATO

*Akita National College of Technology*

## 1. INTRODUCTION

When a second language teacher hopes that his/her students interact with each other in the target language, a jigsaw task can be one of the effective types of task, which gives the task participants a portion of input data that must be exchanged among them. Then, it is important for the teacher to well know what kinds of language learning opportunity are expected in the task. By knowing it, the teacher can have a clear vision and significance of the task implementation. The present research employs three jigsaw tasks which differ in input types given to the learners at the very beginning of the tasks, and attempts to find a variety of language learning opportunities by examining the learners' interaction.

## 2. LITERATURE REVIEW

### 2. 1. Jigsaw Task and Negotiation of Meaning

According to Ellis (2003), a jigsaw task is a task "where the input material is divided between two or more participants such that they are required to exchange information to complete the task" (Ellis, 2003, p. 344). In such a task, the relationship between learners is two way, in which all the individuals in a group hold a piece of information and become both information suppliers and receivers, and the learners must exchange the information for the task completion (Doughty & Pica, 1986; Gass & Varonis, 1985; Long, 1983, 1996; Long & Porter, 1985).

The jigsaw task is assumed to be most likely to provide the learners with the opportunity of negotiation of meaning (Pica, Kanagy, & Falodun, 1993), which occurs when the learners face communication breakdowns and switch their focus from message meaning to form (Long, 1996). This negotiation triggers the learners' cognitive processes in which they understand the linguistic items that were once unknown (Long, 1981, 1983) and they are pushed to make comprehensible output (Swain, 1985, 1995).

### 2. 2. Research Using Jigsaw Tasks

Several scholars have employed jigsaw tasks in their researches for various purposes: to compare the learners' interaction in a jigsaw task and other tasks (Gass & Varonis, 1989; Nakahama, Tyler, & Lier,

2001; Pica, Holliday, Lewis, & Morgenthaler, 1989); to compare the learners' interaction in two different jigsaw tasks (Pica, Lincoln-Porter, Paninos, & Linnell, 1996); to compare learners' interaction in a jigsaw task in different participation patterns, such as in a teacher-fronted lesson, in a group, and in a pair (Doughty & Pica, 1986).

Differently from these previous studies, the present research employs three jigsaw tasks which use the same materials, follow the same task procedures, but differ in their input types (visual input, textual input, and the combination of the visual and textual). By this task design, the research aims to explore the effects of different input types on the interaction among learners, and find language learning opportunities that can be provided in a jigsaw task.

### 3. THE STUDY

#### 3.1. Participants

Participants involved in the study were 23 first-year students in the Faculty of Education and Human Studies in Akita University. As shown in Table 1, 3 or 4 learners in each group were supposed to work together for their task, divided into Team A and Team B. Team A held Yellow and Blue frames, and Team B held Red and Green frames, as shown in Appendix. The participants were told that the two frames in one team were either the 1st and 3rd or the 2nd and 4th frames of a four-frame cartoon, and they were told not to show their frames to the other team throughout the task.

Table 1  
*Jigsaw tasks with three different input types and the number of learners in each group involved in each of the tasks*

Group (Team)		Visual-only input (Jigsaw V)	Textual-only input (Jigsaw T)	Visual & Textual input (Jigsaw VT)
Group 1	Team A	4	3	4
	Team B	4	3	4
Group 2	Team A	4	4	4
	Team B	4	4	4

<sup>a</sup> S1, S2, S3, S4 = student 1, student 2, student 3, and student 4.

#### 3.2. Materials

The material was based on a four-frame cartoon in *The Wonderful World of Sazae-san* (hereafter *Sazae-san*) by Hasegawa (2004). The original cartoon was processed in the way that the three different input types include the same amount of information (see Appendix).

### 3.3. Procedures

All the jigsaw tasks (Jigsaw V, Jigsaw T, and Jigsaw VT) were carried out along the same procedures. The procedures can be largely divided into two sections according to the two goals shown in Figure 1.

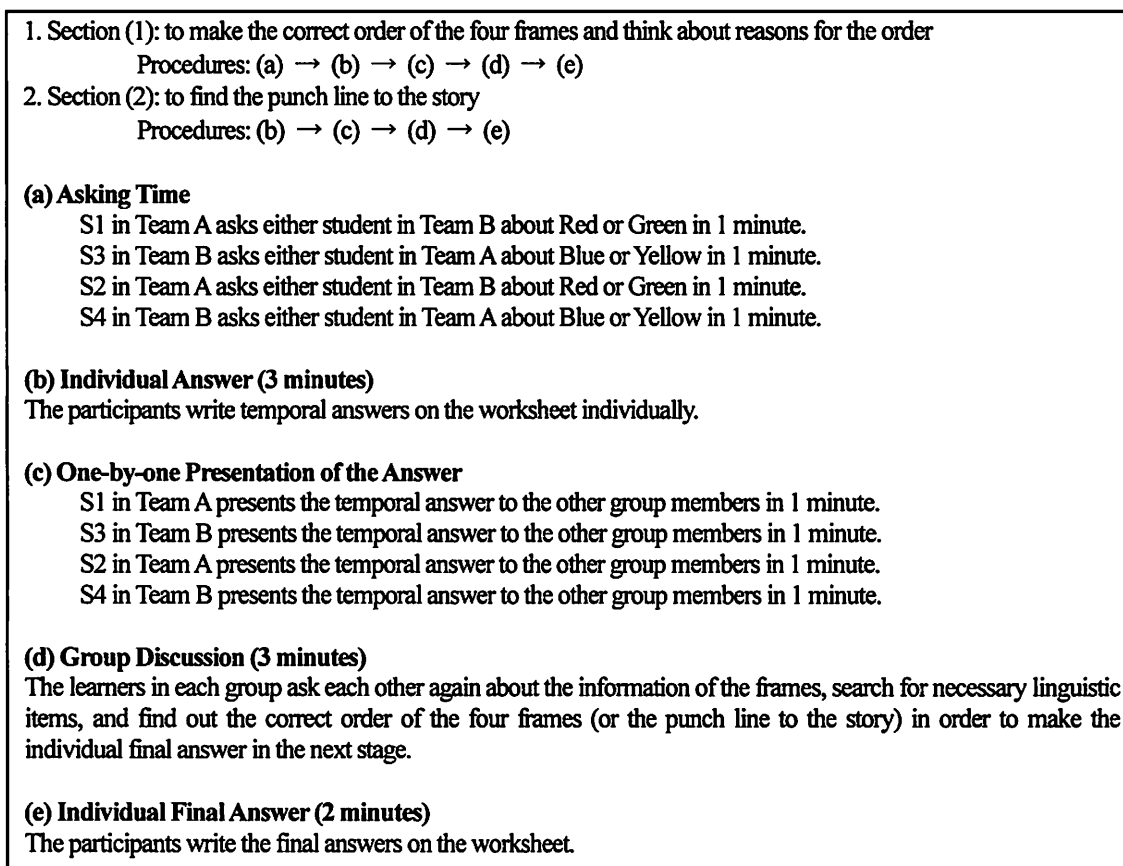


Figure 1: Jigsaw task procedures in the present study

#### 3.3.1. Jigsaw task procedures to facilitate the Japanese learners' interaction

The task procedures were rigidly devised in consideration of the Japanese context, where expressing oneself in front of others may often be taken as immoderate or selfish, and therefore initiating conversation can sometimes be hesitated (Gray & Leather, 1999). This contextual characteristic is seen even when learners are working in small groups, though group work has generally been found effective in prompting interaction among learners (Long & Porter, 1985; Varonis & Gass, 1985). Indeed, in a pilot jigsaw task using another cartoon of *Sazae-san*, only predominant learners spoke a lot and others did not question each other in a group. Therefore, to push every learner to initiate asking each other and express oneself, the author devised Asking Time and One-by-one Presentation of the Answer before Group Discussion.

### 3. 4. Research Questions

1. In a jigsaw task, how do three input types influence learners' interaction when they exchange information?
2. In a jigsaw task, how do three input types influence learners' language production when they exchange information?
3. In subsequent task stages after information exchange in a jigsaw task, how do three input types influence learners' interaction?

To answer these three research questions, the interaction among the learners was audio-recorded, videotaped, and then transcribed.

### 3. 5. Results and Discussion

#### 3. 5. 1. In Response to Research Question 1: Interactional Features in Asking Time (Information Exchange)

To answer the first research question, the information-exchange interaction at the first stage of the task procedure, (a) Asking Time, was coded according to the six interactional features shown in Table 2.

Table 2  
*Interactional features in Asking Time (information-exchange interaction)*

Interactional features	Jigsaw V		Jigsaw T		Jigsaw VT	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Listeners' (information receivers')						
Clarification requests	1	0	3	2	0	2
Confirmation checks	0	2	2	2	1	2
Speakers' (information givers')						
Responses through modification	0	2	0	0	0	0
Responses through repetition	1	0	4	3	1	2
Voluntary repetitions	3	0	7	8	1	0
Noticing a hole	0	4	0	0	0	1

##### 3. 5. 1. 1. Jigsaw T learners' dictation work

The listeners' clarification requests, confirmation checks, speakers' responses through repetition, and speakers' voluntary repetitions were most frequently observed in Jigsaw T learners. They may have been concerned with dictating the textual input to the listeners. The listeners asked the speakers many times in order to take exact notes, and the speakers answered them by repeating their speech or they voluntarily repeated part of their speech each time they found the listeners unable to take quick and exact notes.

##### 3. 5. 1. 2. The possibility of negotiation of meaning among Jigsaw T learners

The textual input given to Jigsaw T (and Jigsaw VT) learners was designed to tell the same amount of information as the visual input, which resulted in too simplified text to the university students. Such reduced input may not involve negotiation of meaning (Long, 1983). Then, it was necessary for the textual input to include vocabulary items or grammatical structures that either the speakers or listeners would not know at all or partially.

### *3. 5. 1. 3. Jigsaw V and Jigsaw VT learners' negotiation of meaning?*

The four interactional features most frequently observed among Jigsaw T learners were also seen in Jigsaw V and Jigsaw VT learners. However, they, similar to Jigsaw T learners, did not seem to be negotiating the message meaning. Rather, they seemed to be just ascertaining what they heard from the speakers.

### *3. 5. 1. 4. The possibility of negotiation of meaning among Jigsaw V and Jigsaw VT learners*

Although the listeners' clarification requests and confirmation checks did not seem to be negotiating meaning, these signals could have directed the speakers' attention to their original speech and triggered the modification of it, as two occurrences of speakers' modification were observed among Jigsaw V learners. However, the learners needed much more time to more focus on the form of the speakers' speech after they modified the original speech.

### *3. 5. 2. In Response to Research Question 2: Noticing A Hole in Language Production*

The second research question was how the difference of jigsaw task input types influence learners' language production when they exchange information. To answer this question, the speakers' language production is analyzed in terms of noticing a hole.

Noticing a hole is maintained in the Output Hypothesis as one of the three functions output has (Swain, 1995, 1998, 2000). It claims that output stimulates learners to shift from open-ended semantic processing of input to complete syntactic encoding. This processing directs learners to discover what they cannot do (a hole) and subsequently attend to future ideal input to fill the hole. Therefore, noticing a hole triggered by output is an important step toward language development.

The present study has so far identified the occurrences of noticing a hole when the learners overtly substituted what they could not say with their corresponding first language. Although it is impossible to clearly identify further occurrences of the speakers' noticing a hole, from now on, the author attempts to explore further possibility of it. To do this, the speakers' language production in Asking Time is analyzed in the following two sections.

3. 5. 2. 1. *Exploring further possibility of noticing a hole (1): the percentage of the speakers' own words in their production, and complexity of the production*

Table 3 shows how much the speakers relied on their own language resources and how much the complexity of the production was.

Throughout Jigsaw V and Jigsaw T learners, the higher the percentage of the speakers' own words in their production becomes, the lower the complexity of the production becomes.

Table 3  
*The percentage of the speakers' (information givers') own words in the total number of words they produced in Asking Time and complexity of the production*

Frame	Jigsaw V				Jigsaw T				Jigsaw VT			
	Group 1		Group 2		Group 1		Group 2		Group 1		Group 2	
	O.W. <sup>a</sup>	Com. <sup>b</sup>	O.W.	Com.	O.W.	Com.	O.W.	Com.	O.W.	Com.	O.W.	Com.
Red	100% 17/17	4.3	100% 7/7	3.5	0% 0/21	7.0	0% 0/26	8.7	17.2% 5/29	9.7	0% 0/15	5.0
Yellow	100% 10/10	5.0	100% 29(31) /29(31)	5.6 (5.8)	0% 0/25	8.3	0% 0/25	8.3	47.1% 8/17	4.3	0% 0/25	8.3
Green	100% 17/17	4.3	100% 10(11) /10(11)	10.0 (11.0)	0% 0/20	6.7	0% 0/20	6.7	39.1% 9/23	11.5	63.0% (66.7%) 5(6)/8(9)	2.3 (2.7)
Blue	100% 31/31	5.0	100% 22(23) /22(23)	6.3 (6.7)	5.6% 1/18	9.0	0% 0/18	9.0	50.0% 9/18	9.0	38.5% 5/13	6.5
Mean	100% 18.8/18.8	4.7	100% 17(18) /17(18)	6.4 (6.8)	1.4% 0.3/21	7.8	0% 0/22.3	8.2	38.4% 7.8/21.8	8.6	25.4% (26.3%) 2.5(2.8) /15.3(15.5)	5.5 (5.6)

<sup>a</sup> O.W. = Own words, meaning the percentage of the information givers' own words in the total number of words they produced

<sup>b</sup> Com. = Complexity measured by the total number of words per AS-unit (i.e. an utterance consisting of an independent clause and any subordinate clause(s), or sub-clausal unit and any subordinate clause(s) (Foster, Tonkyn, & Wigglesworth (2000))

*Note:* The numbers in the parentheses under the column of O. W. indicate the number of words including the learners' native language words which were substituted for what they could not say in the target language but which were still incorporated in the target language syntax. The numbers in the parentheses under the column of Com. indicate the complexity taking into account the number of the learners' native language words used within the target language syntax.

This correlation is not entirely applied to Jigsaw VT learners; some of them used their own words and still got higher complexity than Jigsaw T learners, and others of them used smaller percentage of their own words and got lower complexity than Jigsaw V learners. Then, the production by Jigsaw VT learners can be categorized into three types: Jigsaw V-like production (by one Jigsaw VT learner in Group 1 describing Yellow frame and two Jigsaw VT learners in Group 2 describing Green frame and Blue frame), Jigsaw T-like production (by two Jigsaw VT learners in Group 2 describing Red frame and Yellow frame), and the production peculiar to Jigsaw VT learners (by the other three Jigsaw VT learners in Group 1 describing Red frame, Green frame, and Blue frame). Of these three types, Jigsaw V-like

Jigsaw VT learners could have been given the further possibility of noticing a hole. It is assumed that they used their own words at the risk of low complexity, as Jigsaw V learners did, attempting to say things challenging for them. Then, they might have the chance to notice what they could not say.

### 3. 5. 2. 2. *Exploring further possibility of noticing a hole (2): the speakers' dysfluency*

The further possibility of the speakers' noticing a hole is now explored by finding their dysfluent phenomena, such as false starts, repetitions (Foster, Tonkyn, & Wigglesworth, 2000), reformulations, and replacements (Skehan & Foster, 1999).

Table 4 shows how many dysfluencies the speakers (information givers) made in describing the

Table 4  
*The number of information givers' dysfluencies in Asking Time*

Dysfluency	Jigsaw V		Jigsaw T		Jigsaw VT	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
False starts	3	2	0	3	0	0
Repetitions	5	5	0	0	0	2
Reformulations	3	3	0	1	1	1
Replacements	2	3 (4)	0	0	0	1
Total	13	13 (14)	0	4	1	4

*Note:* Numbers in parentheses indicate the number of dysfluencies including those incidences in which learners substituted their native language words for what they could not say in the target language but still kept the target language syntax.

frames in Asking Time. In total, Jigsaw V learners made the most dysfluent phenomena. Jigsaw T and Jigsaw VT learners showed a similar total number of dysfluent phenomena.

Jigsaw T learners almost entirely copied the textual input in describing the frames, and all their dysfluent utterances were made by the failure to read the input correctly.

On the other hand, Jigsaw V and Jigsaw VT learners had the opportunity to use their own existing language knowledge, and it is possible that they noticed their own language problems while making the dysfluent speech. Jigsaw V learners made false starts by reformulating the utterance that was begun. Repetitions were observed in both Jigsaw V and Jigsaw VT learners, commonly in planning what to speak next. Reformulations by Jigsaw V and Jigsaw VT learners were common to produce more accurate form of the target language. Replacements were particularly observed among Jigsaw V learners. They made replacements to describe the content of the visual input with more details as well as to produce a more accurate form of the target language.

The present study cannot tell if there were moments when the learners realized they could not say what they wanted to say. However, if such moments appeared to be their dysfluent phenomena, the

analysis carried out here could imply further occurrences of the speakers' noticing a hole.

### 3. 5. 3. *In Response to Research Question 3: Interaction at Later Task Stages*

The third research question asked how the difference in jigsaw task input types influence learners' interaction after the first task stage of information exchange. The later jigsaw task stages are the two discussion stages indicated in Figure 1 as (1)(d) Group Discussion about the order of the frames and reasons for it, and as (2)(d) Group Discussion about the punch line to the story. These two different discussion stages are together analyzed from the following perspectives: (1) the amount of information successfully communicated in each group at the first task stage (Asking Time); (2) the contents the learners were discussing at the two subsequent discussion stages.

#### 3. 5. 3. 1. *The amount of information successfully communicated in Asking Time*

The amount of information was measured by the following way: (1) the English text given to Jigsaw T learners was divided into 19 segments; (2) the author counted how many of the 19 pieces of information were included in the transcriptions of the learners' interaction in Asking Time and the memos the listeners took during the interaction.

As shown in Table 5, Jigsaw T learners communicated with each other the largest amount of and almost all of the information about the four frames, followed by Jigsaw VT learners, and then Jigsaw V

Table 5

*The amount of information successfully communicated among the learners at the first task stage of Asking Time*

	Jigsaw V		Jigsaw T		Jigsaw VT	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
The amount of information successfully communicated	11 / 19	9 / 19	18 / 19	19 / 19	16 / 19	13 / 19

learners.

#### 3. 5. 3. 2. *Contents of interaction in later jigsaw task stages: Jigsaw V and Jigsaw VT learners*

Failing to communicate some information in Asking Time, Jigsaw V and Jigsaw VT learners needed to discuss the missing information. Then, allowed to talk more freely than in Asking Time, the learners exchanged information in the first language. Thus, Jigsaw V and Jigsaw VT learners, who might had been provided with the opportunities of negotiation of meaning and noticing a hole in Asking Time, seemed to have little learning opportunity in the later discussion stages.

#### 3. 5. 3. 3. *Contents of interaction in later jigsaw task stages: Jigsaw T learners*

With the textual input, Jigsaw T learners could easily share almost all the information about the four



frames in Asking Time, and with the shared information, they could smoothly proceed to the later discussions. In the discussions, they focused on the target language form to use at the next task stage (i.e. (e) Individual Final Answer). In this meta-language talk, or a language-related episode (LRE) (Swain & Lapkin, 1995, 1998), Jigsaw T learners hypothesized the target language, corrected the other members' language hypotheses, or suggested alternative hypotheses.

These Jigsaw T learners showing the LREs would be provided with a further opportunity of language development. As a consequence of the meta-talk in the group, they made hypothesis testing as a group. This hypothesis could have been proved or denied through the feedback by a native-speaker or by a teacher. Thus, Jigsaw T learners, who seemed to have almost no opportunity of negotiation of meaning and noticing a hole in Asking Time, have another learning opportunity of LREs at the later task stages.

#### 4. CONCLUSION

The present research has investigated how different input types affect learners' interaction in a jigsaw task, and suggested that different input types in a jigsaw task engage the learners in different kinds of language learning at different task stages. The learners with visual input could have had the opportunities of negotiation of meaning and noticing a hole at the first information-exchange stage. The learners with textual input, on the other hand, focused on the language form to use for the task outcome at the later task stages of group discussion.

Although the present study ended up just assuming some possible learning opportunities, it might give a further consideration about what kinds of task design or feedback are necessary.

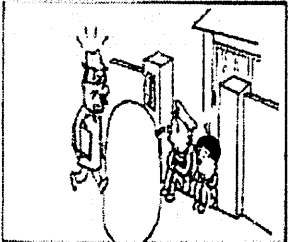
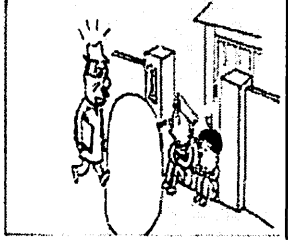
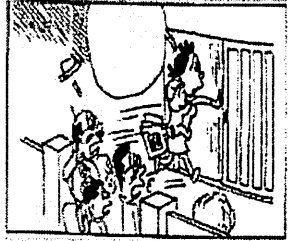
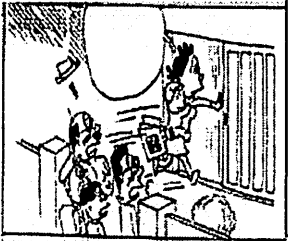
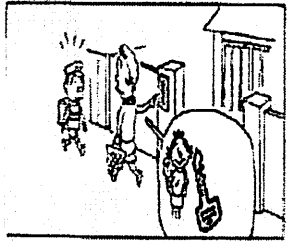
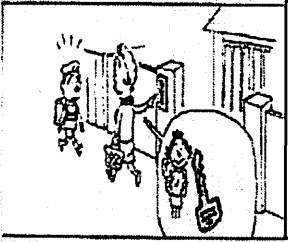
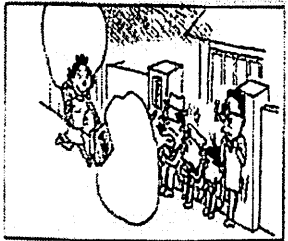
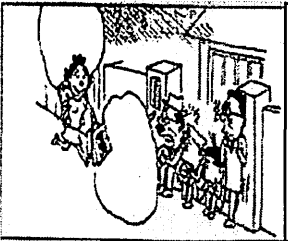
Involving learners in a jigsaw task with visual input, the teacher should consider how the task could trigger not only negotiation of meaning or noticing a hole but also the learners' cognitive comparison of the form negotiated or noticed and the ideal one. Intentional feedback in which the target form is salient may be one of facilitative teacher interventions (Nobuyoshi & Ellis, 1993). Involving students in a jigsaw task with textual input, on the other hand, the teacher can include particular unknown linguistic items in the input to be exchanged among the students. Such new items should be carefully chosen and incorporated into the input so that it meets the students' needs and level of competence. These things need to be taken into account and implemented in second language classrooms.

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Frame holder	Name of frame (Order)	Visual-only input for Jigsaw V groups	Textual-only input for Jigsaw T groups	Visual and textual input for Jigsaw VT groups
Team A (Students 1 & 2)	Yellow (2nd)		Katsuo and Wakame are sitting in front of the house. Namihei comes home. He looks surprised to see them sitting in front of the house.	 Katsuo and Wakame are sitting in front of the house. Namihei comes home. He looks surprised to see them sitting in front of the house.
	Blue (4th)		Sazae opens the front door of the house. Namihei, Katsuo, Wakame, and Masuo are surprised to see that.	 Sazae opens the front door of the house. Namihei, Katsuo, Wakame, and Masuo are surprised to see that.
Team B (Students 3 & 4)	Red (1st)		Katsuo comes home from school. A woman is walking in front of his house. The woman tells Katsuo that Sazae locked the door and went out.	 Katsuo comes home from school. A woman is walking in front of his house. The woman tells Katsuo that Sazae locked the door and went out.
	Green (3rd)		That night, Sazae comes running back home. Namihei, Katsuo, Wakame, and Masuo are waiting outside the house. They look angry.	 That night, Sazae comes running back home. Namihei, Katsuo, Wakame, and Masuo are waiting outside the house. They look angry.