

## **Study on Task Types that Facilitate the Flow Experience**

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### **Abstract**

This study considered how task type affects learners' flow experiences. A one-way analysis of variance was conducted on the average scores of task-specific flow for the six tasks after the lessons. The flow values of jigsaw, information gap, narration and problem-solving were significantly higher than those of decision-making and opinion exchange. In addition, text mining was performed to certify the differences in effect sizes. The results indicated that decision-making and opinion exchange were difficult for the participants. Furthermore, a pairwise *t* test was conducted between clusters after performing a hierarchical cluster analysis of the flow. The results revealed that the flow cluster significantly correlated with English learning motivation. In conclusion, task types with “closed” outcome options facilitate flow more significantly than those with “open” outcome options.

### 1. Introduction

#### 1.1 Task-based Language Teaching and task types

Ellis et al. (2020) suggested that Task-based Language Teaching (TBLT) emphasizes engaging learners' natural abilities to acquire language incidentally by performing tasks that draw their attention to the linguistic form. Moreover, Ellis and Shintani (2014) assert that, “task-based language teaching aims to develop learners' communicative competence by engaging them in meaning-focused communication” (pp.35–36). In TBLT, there are three phases: the pre-task, main task, and post-task

phases. According to Ellis (2018), the pre-task phase includes activities that teachers and students can undertake before performing a task, while the post-task phase includes those tasks that teachers and students can undertake to follow up on the task performance. Moreover, he stated that every task should include a main task phase, although all task-based lessons do not necessarily include all three phases.

As a primary role of TBLT, various scholars have defined “task” (Bygate et al., 2001; Ellis, 2003; Willis, 1996). This study adopted tasks that satisfied the criteria of Ellis and Shintani (2014).

1. The primary focus should be on “meaning,” i.e., learners should be concerned mainly with processing utterances’ semantic and pragmatic meaning.
2. There should be some kind of ‘gap,’ i.e., a need to convey information, to express an opinion or to infer meaning.
3. Learners should largely have to rely on their own resources—linguistic or non-linguistic—to complete the activity, i.e., the task materials do not indicate what linguistic forms are to be used.
4. There is a clearly defined outcome rather than the use of language, i.e., the language serves as the means for achieving the outcome, not as an end in its own right. (p.135).

Scholars have classified tasks in various ways. The classification by Willis (1996) reflects learners’ operations while engaging in tasks such as listing, ordering and sorting, comparing, problem-solving, sharing personal experiences, and creative tasks. Ellis (2003) sorted tasks according to the task dimensions hypothesized to promote meaning negotiation: information exchange, information gap, outcome, topic, discourse domain, and cognitive complexity. However, Matsumura (2017a, 2020) indicated that classification based on a cognitive process is fluid because it depends on teachers or learners and how they teach or learn. He proposed the importance of “design features” and the original characteristics of each task.

According to design features, Pica et al. (1993) analyzed tasks from interactant relationships and requirements in communicating information to achieve

task goals. They categorized tasks into five categories: jigsaw, information gap, problem-solving, decision-making, and opinion-exchange. In addition to these five tasks, Ellis (2018) indicated that recent research has adopted monological tasks that involve narrating a story. For instance, Tavakoli and Foster (2011) used narrative tasks in a monologue style. Based on these previous studies, this study adopted six task types.

## 1.2 Flow and task-specific flow

Csikszentmihalyi and Nakamura (2014) suggested that the flow experience is a powerful motivating force, and the reason it makes learners intrinsically motivated is simple: “in flow, the human organism is functioning at its fullest capacity” (p.183). Moreover, Csikszentmihalyi (1975) suggested “flow” is “the holistic sensation that people feel when they act with total involvement” (p.36). This definition was adopted in the present study. In addition, Kawabata and Mallet (2011) summarized their research series and proposed several features of flow experience.

- Action-awareness merging: involvement is so deep that action feels spontaneous and almost automatic.
- Concentration on the task at hand: a feeling of being intensively focused on what one is doing in the present moment.
- Sense of control: a sense that one can deal with the situation because one knows how to respond to whatever happens next.
- Loss of self-consciousness: lack of concern or worry about the self reflectively.
- Transformation of time: a sense that the way time passes is distorted.
- Autotelic experience: experience of the activity as intrinsically rewarding. (pp.393–394)

Csikszentmihalyi (1997) referred to three preconditions of flow: clear goals, unambiguous feedback, and challenge-skill balance. Asakawa and Csikszentmihalyi (2009) argued that each activity step should have clear goals. Playing tennis provides an example of unambiguous feedback. When a player hits a ball in the opponent’s court, and the opponent hits it back, the player can immediately check

the evaluation against the player's performance. Csikszentmihalyi (1997) divided challenge-skill balance into eight dimensions:

Flow tends to occur when a person's skills are fully involved in overcoming a challenge that is just about manageable. Optimal experiences usually involve a fine balance between one's ability to act, and the available opportunities for action. If challenges are too high one gets frustrated, then, worried, and eventually anxious. If challenges are too low relative to one's skills one gets relaxed, then bored. If both challenges and skills are perceived to be low, one gets to feel apathetic. (Csikszentmihalyi, 1997, p.30)

Matsumura (2012) mentioned the possibility of flow in language teaching in terms of the relationship between flow and English education. He suggested that learners become addicted to tasks if they arouse curiosity and difficulties. However, research on the flow experience in TBLT is limited.

Egbert (2003) investigated this relationship and developed a questionnaire to measure the task-specific flow. She classified the task-specific flow into four dimensions: challenge and skills, attention, interest, and control. The tasks in her study were primarily technology-mediated; she conducted seven tasks, including electronic chats and replies to e-mails. She compared computer-mediated tasks to other tasks and concluded that technology-mediated tasks influenced participants' flow experiences better than other tasks. However, Ellis (2018) criticized the fact that her research could not determine which specific task characteristics were necessary for promoting flow. He added that, except for a few examples of studies examining the effect of intercultural contact on flow (for one such study, see Aubrey, 2017), the connection between tasks and flow remains severely underexplored.

Thus, studies that investigate task types as a variable that facilitates flow appear to be lacking, although few studies exist on the relationship between tasks and flow.

### 1.3 The present study

As aforementioned, no study has investigated task type as a variable that facilitates flow, although the possibility of flow in language teaching has been

proposed. This study aimed to examine whether there were differences in flow experience among task types. First, it was necessary to clarify the reliability and validity of Egbert's (2003) translated questionnaire. Egbert developed a questionnaire based on that of Webster et al. (1993). Their original questionnaire targeted people who use computers; thus, it was not intended for language teaching. Although Egbert had already established the questionnaire's reliability and validity, it was essential to confirm them again because the questionnaire had not been undertaken in Japanese. Since Egbert (2003) targeted junior high school students, the present study also targeted junior high school students of ages similar to Egbert's participants. Additionally, Matsumura (2012) indicated that research on flow experience in TBLT is insufficient. Therefore, the correlation between flow and English learning motivation should be examined. If the correlation is proven, it will be established that promoting flow is beneficial in second language teaching. Based on these considerations, the following research questions were formulated:

RQ1. Are there any differences between task types as an incentive to flow?

RQ2. Is there a correlation between learners' flow and English learning motivation?

## 2. Study 1

### 2.1 Purpose

Study 1 aimed to clarify the reliability and validity of the questionnaire developed by Egbert (2003). Although Egbert had already established the questionnaire's reliability and validity, it was essential to confirm them again because the questionnaire had not been undertaken in Japanese. Egbert (2003) also neglects to adequately explain how reliability and validity were ascertained.

### 2.2 Participants

In all, 107 students (60 girls and 47 boys) from the researcher's junior high school participated in Study 1. Their ages ranged from 12 to 13 years. The participants had studied English for two years in elementary school and received a one-hour weekly lesson. Study 1 was conducted in a junior high school classroom. The researcher conducted English lessons approximately four times per week in

each class. Participants were informed that their responses were confidential and that they would not be connected to their names, and permission for the research was obtained. All sessions required for Study 1 occurred during class. Of the 107 participants who completed the questionnaire, seven had missing data, therefore, only data from 100 participants were included in Study 1.

### 2.3 Tasks

Study 1 undertook an information gap task (picture reproduction) from Kato et al. (2020, pp.30–31). The following is a summary of this task.

Task A: There were two similar pictures of a child's bedroom. Each image contained a desk, chest of drawers, chair, clock, trash can, basketball, tennis ball, and poster of a basketball player. However, one picture did not include a child, bed, pillow, monitor, other signs of a robot, or a sock.

Task B: There were two similar pictures of a living room. Each picture contained a sofa, round chair, desk, chair, carpet, poster, laptop, door, and a mouse. One of the pictures also included a newspaper, cat, hat, bed, cushion, and two pillows.

One student in each pair described the picture in Task A, and the other student listened to the explanation and noted them without viewing the picture. After the interaction, they changed their roles as speakers and listeners, and engaged in picture reproduction again in Task B.

### 2.4 Questionnaire

Study 1 aimed to establish the internal consistency, reliability, and criterion-referenced validity of the Japanese translation of the perception questionnaire conducted by Egbert (2003), which measures participants' flow. Egbert had established the questionnaire's reliability and validity in English. In Study 1, 107 participants were asked to report on a 7-point Likert-type scale for exposure to discrimination ranging from 1 (strongly disagree) to 7 (strongly agree). Questions 3, 4, 10, and 12 were reverse scored. In Study 1, one item was deleted because there was no option for learners to select task modes. In addition, Flow Experience Check List was used to confirm its criterion-referenced validity. The Flow Experience Check List is a well-validated questionnaire developed by Ishimura (2014). It

measures the flow experience during activities accompanied by intrinsic rewards. Similar to Ishimura, a 7-point Likert scale was used [from 1 (strongly disagree) to 7 (strongly agree)]. A free description field was provided at the end of the questionnaire.

## 2.5 Procedure

The three English lessons in Study 1 were conducted on the same day in May 2021. Participants were divided into three homeroom classes. They engaged in the task as pairs during the pre-task and main tasks. In the pre-task phase, the participants completed an ID quiz. Using words that students appear to use in the main task, the quiz enabled them to remember the words easily. Only one of each pair was informed of the answers to the quiz. Within 30 seconds, the students explained the answer to their partners without naming it. Afterward, the answer was revealed, and the students shared what to say in English. Subsequently, the partners changed their roles and attempted the other answers. They engaged in picture reproduction twice in the main task phase; every participant performed the task as both speaker and listener. The duration of each reproduction was five minutes. During each task, the teacher simply observed the individual participants and did not intervene in their interaction. In the post-task phase, the time taken to write what they had said to describe the pictures was set aside. Therefore, the students shared the English sentences that the participants had used to complete the main task and corrected the errors. Subsequently, a questionnaire was administered to obtain the participants' perceptions of the flow. Before answering the questionnaire, the researcher informed the participants that they could refuse to answer it, and that refusal would not influence their grades in English lessons.

## 2.6 Analysis of data and scoring

The number of factors was extracted according to Kaiser's criterion (i.e., eigenvalues over 1) and Cattell's scree plot (through the investigation of notable drops). Furthermore, the questionnaire was examined using Cronbach's alpha to explore the internal consistency reliability. Subsequently, to ensure the validity of the questionnaire, Pearson product-moment correlations were performed between

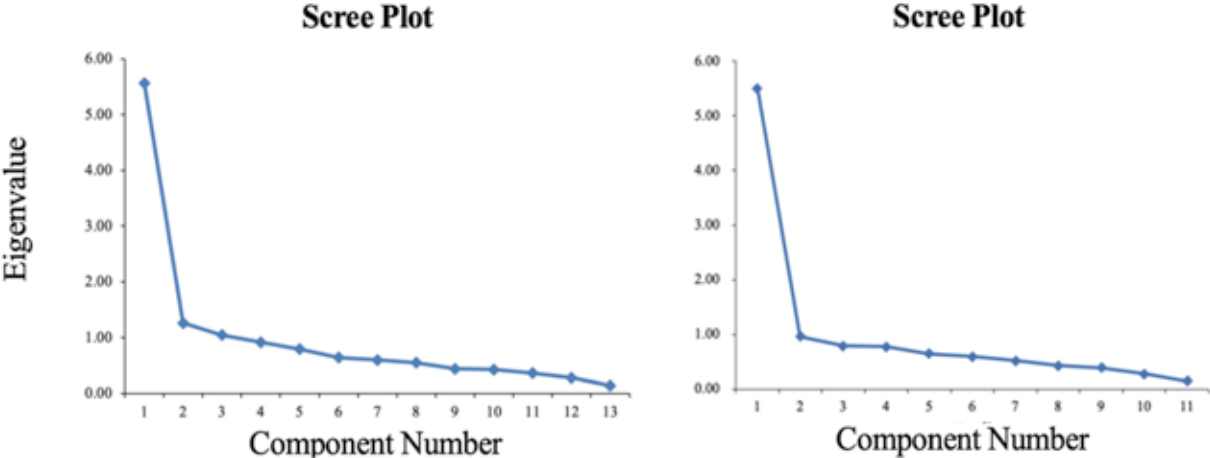
the mean values of the Japanese version of Egbert’s questionnaire and the Flow Experience Checklist to analyze the correlation.

2.7 Results

Factor analysis was conducted on the 13 items to identify the factors. The results revealed one factor, and the least-squares method and oblique rotation were applied. The number of factors to be retained for rotation was identified using Kaiser’s criterion (i.e., eigenvalues over 1) and Cattell’s scree plot (through the investigation of notable drops). First, the revised data revealed the presence of one component with eigenvalues exceeding 1.0, and a validated questionnaire was administered (see Figure 1). Subsequently, the outcome of the Varimax with Kaiser Normalization was a rotated component matrix. Factor loading of 0.4 or greater was considered. Consequently, two items were deleted because their factor loadings were less than 0.4. Cronbach’s alpha was computed to examine the internal reliability of each other. As presented in Table 1, the value reached a high level ( $\alpha = .85$ ), representing sufficient scale internal consistency. Pearson product-moment correlation results revealed the correlation between the mean value of the questionnaire mentioned by Egbert (2003) (11 question items) and Flow Experience Check List. The result indicated a significant correlation ( $r = .72, p < .01$ ).

Figure 1

Scree Plot of Eigenvalues and Item Numbers (13 items and 11 items)





**Table 1***The Result of Factor Analysis*

Item No.	Factor Loadings
Q5 I would do this task again.	.83
Q1 This task was interesting in itself.	.83
Q4 This task was fun for me.	.82
Q3 This task excited my curiosity.	.71
Q10 This task aroused my imagination.	.71
Q7 When performing this task, I was totally absorbed in what I was doing.	.68
Q8 This task bored me.	.63
Q2 When performing this task, I was aware of distractions	.59
Q11 I would perform this task even if it were not required.	.56
Q6 This task allowed me to control what I was doing.	.54
Q9 When performing this task I thought of other things.	.45

*Note:* Items were cited from Egbert (2003),  $\alpha = .85$

## 2.8 Discussion

Since the question items for which the factor loadings did not meet the criteria were excluded, the factor counts differed from that of Egbert (2003). However, the improved questionnaire had sufficient factor loadings, and the alpha coefficient was also adequate at .85, as indicated by the reliability coefficient. As a result, the questionnaire was appropriate for measuring the degree of flow during activities accompanied by intrinsic rewards. Although the number of factors differed from the original questionnaire, the results indicated that the Japanese questionnaire and Flow Experience Checklist were significantly correlated. The factor was named “learner awareness during task.”

## 3. Study 2

### 3.1 Purpose

Study 2 aimed to clarify which task types can affect participants’ flow state more among jigsaw (synthesizing elements), information gap (conveying information), problem-solving, decision-making, opinion-exchange, and narration. In addition, the correlation between flow clusters and English learning motivation was examined to confirm whether promoting flow is beneficial in second language

teaching.

### 3.2 Participants

In all, 105 students (55 girls and 50 boys) participated in the study at the researcher's junior high school. Their ages ranged from 13 to 14 years. The students had studied English for two years in elementary school and received a one-hour weekly lesson. In addition, they studied for a year after entering junior high school. The study was conducted in a school classroom. Participants were informed that their responses were confidential and that they would not be connected to their names, and permission for research was obtained. All sessions required for the study occurred during class. Of the 105 participants who completed the questionnaire, 43 had missing data or were absent from the day's lessons. A total of 62 participants (31 girls and 31 boys) attended all seven classes and had no missing data. Therefore, the data from 62 participants were included in Study 2. Another English teacher at the researcher's school conducted the lessons to ensure objectivity. The teacher had worked as an English teacher for more than 15 years and held English classes for the participants. The researcher did not conduct any English classes for them.

### 3.3 Tasks

Study 2 comprised six tasks that the students engaged in. These tasks are listed in Table 2: jigsaw, information gap, problem-solving, decision-making, opinion-exchange, and narration. Considering the difficulty level, tasks from the same book were quoted: *Ideas and Materials for Communication through Tasks* (Kato et al., 2020, pp.42, 94–95, 116–117, 128–129, 182–183, and 194). Table 2 lists the details of these tasks. All tasks could be used for A2 proficiency (the Common European Framework of References for Languages). The order of the six tasks was counterbalanced across classes.

**Table 2***Task Types and Task Descriptions*

No.	Task type	Organization	Materials and outcomes
1	Information gap (Conveying information)	With partners	There are two pictures of a family dinner. Participants find 13 differences without revealing their pictures.
2	Jigsaw (Synthesizing elements)	Groups of three	There are six pictures which are series of a story. Participants received two different pictures, to describe them, and predict the order.
3	Decision-making	Groups of three	With the setting to travel, rank three apartments.
4	Opinion exchange	Groups of three	Categorize 24 different buildings into three and explain the reasons for the categorization to their group members.
5	Narration	With partners	There are six pictures. They are series of a story. A speaker describes the story, and a listener takes notes. After checking the answer, they take turns and repeat with a different story.
6	Problem-solving	With partners	They receive a piece of paper with five words. Participants find the odd one out and tell teachers what is different and the reason. They repeat it five times with other words.

### 3.4 Questionnaires

This investigation was conducted to measure the participants' task-specific flow, English learning motivation, and impressions of the tasks in which they engaged. Regarding English learning motivation, participants were asked to report on a 7-point Likert-type scale for exposure to discrimination from 1 (strongly disagree) to 7 (strongly agree). The English Learning Motivation Scale (Agawa & Takeuchi, 2016) was used to assess participants' English motivation. This scale comprises four factors: intrinsic motivation, identified motivation, external motivation, and amotivation. In each class, this investigation was conducted one week prior to the study. In addition, the questionnaire, whose reliability and validity were proven in Study 1, was used to survey the flow after each task. The participants reported on a 7-point Likert-type scale for exposure to discrimination ranging from 1 (strongly disagree) to 7 (strongly agree). Questions 2, 8, and 9 were reverse scored. A free description field was also provided.

### 3.5 Procedure

The research project lasted for six weeks. The participants of three classes engaged in six tasks, presented in Table 2. Participants were involved in the ID quiz for approximately 10 minutes in each task in the pre-task phase. This quiz aimed to

enable them to remember the words they wanted to say; it was designed to help learners more smoothly engage with the main task. In the quiz, the students had 30 seconds to explain the answer to their partners without naming it. Afterward, the partners were told the answer, and the students shared what to say in English. Subsequently, the partners changed their roles and re-engaged. The answers were words that were used during the main task phase. In the main task phase, they engaged in tasks presented in Table 2. The duration of each main task phase was approximately 15 minutes. During the performance of each task, the teacher simply observed the individual participants and did not intervene in their interactions; each task was organized in pairs or groups of three. After the main task, the teacher shared some useful phrases to complete the task in the post-task phase (focus on form); some students told their classmates some sentences they had used. The teachers provided feedback when necessary. Afterward, the participants were asked to answer a questionnaire that measured the flow state during the tasks.

### 3.6 Analysis of data and scoring

First, a one-way analysis of variance (ANOVA) was conducted on the average scores for the flow state of the six tasks after the lessons. Subsequently, a post hoc Bonferroni test was conducted to examine the effect sizes of the tasks. Further, to certify the cause of differences in the effect sizes, the free impressions of participants were analyzed using KH Coder (Ver.3.beta.04a.). The frequencies of the words, hierarchical clusters, and the co-occurrence network were also examined. In addition, a pairwise *t* test was conducted between the flow clusters and English learning motivation after a hierarchical cluster analysis of the flows was undertaken.

### 3.7 Results

A one-way ANOVA was conducted on the average scores of the six tasks in the flow state. The results presented in Tables 4 and 5 revealed that there was a significant difference among the six tasks,  $F(3.98, 242.97) = 12.84$ ,  $MSE = 0.726$ ,  $p < .001$ , *df* adjusted by Greenhouse-Geisser method;  $\eta p^2 = .17$ . The effect size using the partial eta-squared ( $\eta p^2$ ) was .17, representing a large effect size. A post hoc Bonferroni test revealed that there were statistically significant levels with

a large effect size between Task 2 and 4 (see Table 5). The score for Task 2 was significantly higher than that for Task 4,  $t(61) = .76$ ,  $adj. p < .01$ ,  $d = .80$ .

Additionally, there were statistically significant levels with medium effect sizes between Tasks 1 and 3, Tasks 1 and 4, Tasks 2 and 3, Tasks 3 and 6, and Tasks 4 and 6. The score for Task 1 was significantly higher than that for Task 3,  $t(61) = .61$ ,  $p < .01$ ,  $d = .64$ . The score of Task 1 was significantly higher than that for Task 4,  $t(61) = .69$ ,  $p < .01$ ,  $d = .73$ ; the score of Task 2 was significantly higher than that for Task 3,  $t(61) = .69$ ,  $p < .01$ ,  $d = .71$ ; the score of Task 6 was significantly higher than that for Task 3,  $t(61) = .68$ ,  $p < .01$ ,  $d = .70$ ; the score of Task 6 was significantly higher than that for Task 4,  $t(61) = .76$ ,  $p < .01$ ,  $d = .78$ . In addition, it demonstrated statistically significant levels with small effect sizes between Tasks 4 and 5, and between Tasks 5 and 6. The score for Task 5 was significantly higher than that for Task 4,  $t(61) = .38$ ,  $adj.p < .05$ ,  $d = .34$ , and the score for Task 6 was significantly higher than that for Task 5,  $t(61) = .38$ ,  $adj.p < .05$ ,  $d = .39$ .

**Table 3**

*Descriptive Statistics of the Six Tasks*

Task	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	95% CI		<i>Min</i>	<i>Max</i>
					<i>LL</i>	<i>UL</i>		
1 (information gap)	62	6.08	0.74	.09	5.89	6.27	4.55	7.00
2 (jigsaw)	62	6.15	0.76	.10	5.96	6.34	4.18	7.00
3 (decision-making)	62	5.46	1.12	.14	5.18	5.75	3.00	7.00
4 (opinion exchange)	62	5.39	1.11	.14	5.10	5.67	3.00	7.00
5 (narration)	62	5.77	1.12	.14	5.48	6.05	2.27	7.00
6 (problem-solving)	62	6.14	0.79	.10	5.94	6.34	4.00	7.00

**Table 4**

*Means, Standard Deviations, and One-Way Analysis of Variance in Six Tasks*

	<i>SS</i>	<i>MS</i>	<i>M</i>	<i>SD</i>	<i>F</i> (5,305)	<i>partial</i> $\eta^2$
Task	37.07	7.41	5.83	0.08	12.84	.17

**Table 5***Adjusted p-value and Effect Sizes*

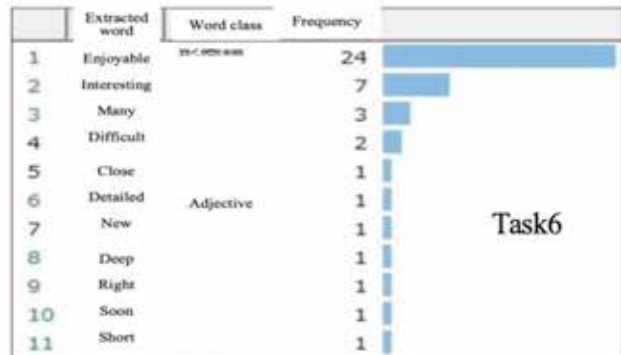
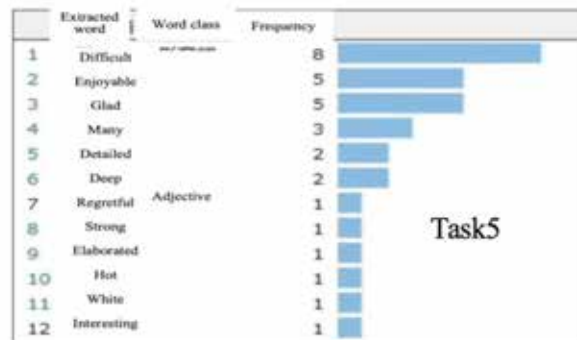
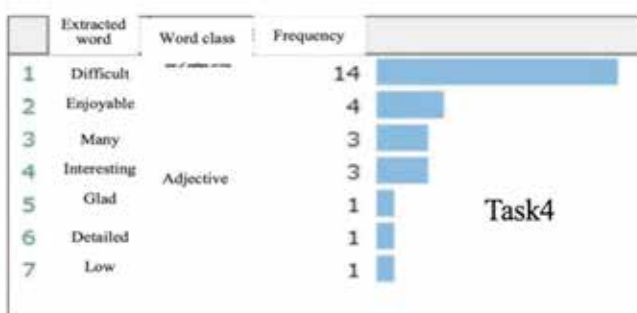
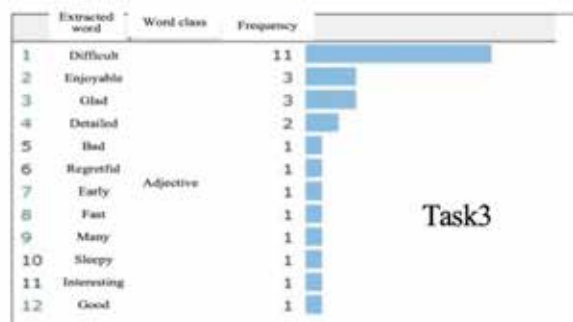
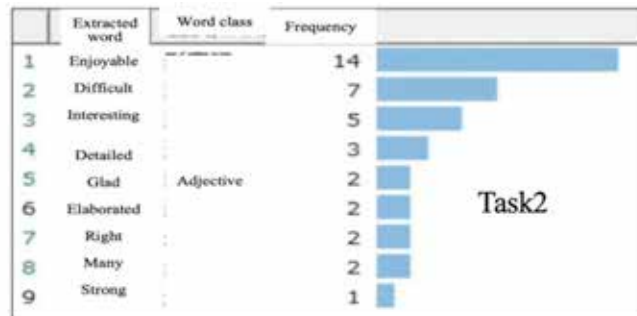
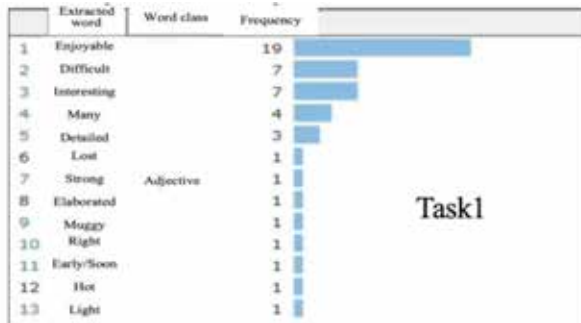
	<i>df</i>	<i>p</i>	<i>D</i>
Task1 - Task 3 (information gap - decision-making)	61	.00**	.64
Task1 - Task 4 (information gap - opinion exchange)	61	.00**	.73
Task2 - Task 3 (jigsaw - decision-making)	61	.00**	.71
Task2 - Task 4 (jigsaw - opinion exchange)	61	.00**	.80
Task6 - Task 3 (problem-solving - decision-making)	61	.00**	.70
Task5 - Task 4 (narration - opinion exchange)	61	.05*	.34
Task6 - Task 4 (problem-solving - opinion exchange)	61	.00**	.78
Task6 - Task 5 (problem-solving - narration)	61	.03**	.39

*Note.* \*\*  $p < .01$ , \*  $p < .05$

In addition, text mining was conducted using KH Coder (Ver.3.beta.04a) to certify the reason, and the students' impressions of each task's performance were analyzed. Word Frequency List of jigsaw, information gap, and problem-solving, the tasks for which the values of flow were higher, demonstrated that the most frequent adjective was "enjoyable" (see Figure 2). The frequency of "enjoyable" was twice or more than twice that of the word in second place in each task. Moreover, the results revealed that the students enjoyed speaking English while completing the tasks. However, the Word Frequency List of narration, the task with a lower flow value, demonstrated that the most frequent adjective was "difficult." Additionally, the results for both text mining of Task 5 (narration) and the co-occurrence network of words focusing on "difficult" demonstrated that it was difficult for students to communicate with their partners or group members (see Figure 3) in the task.

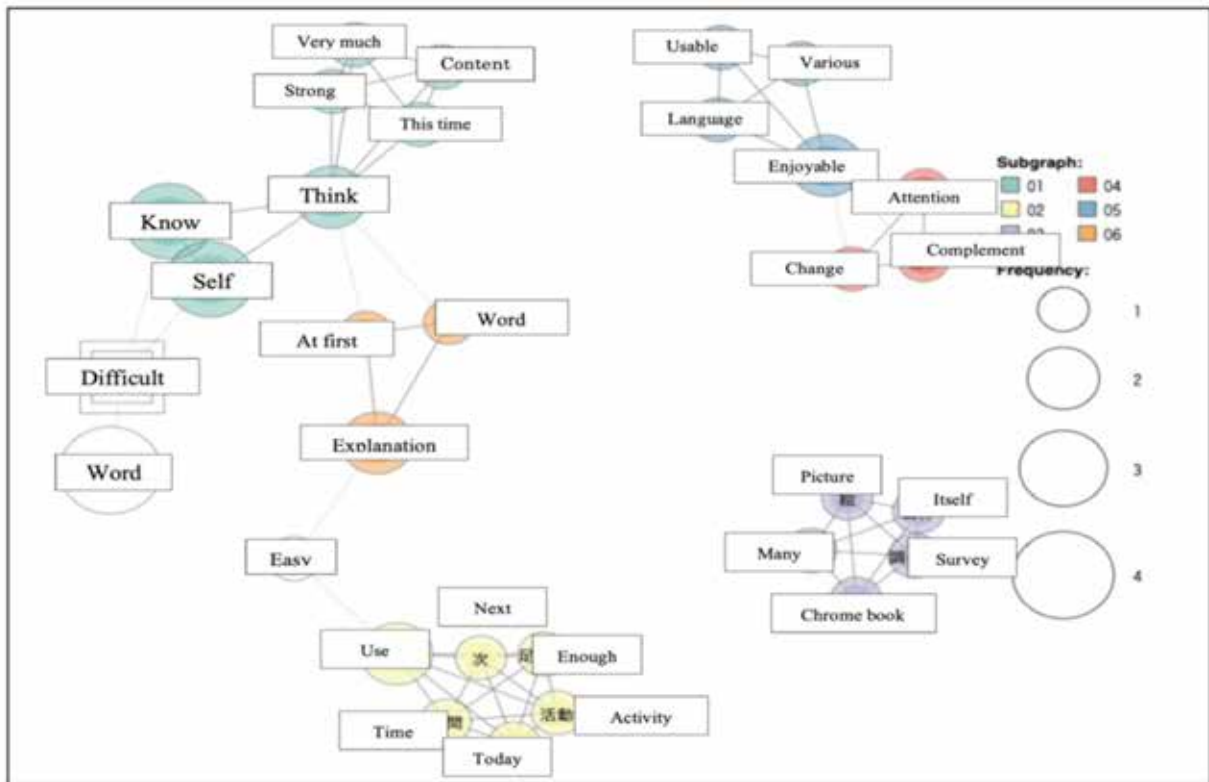
**Figure 2**

*List of Extracted Adjectives*



**Figure 3**

*Co-occurrence Network of Words Focusing on 'difficult in Task 5(narration)'*



The Ward Method on Euclidean distances was used to determine the flow's degree of clustering. As a result of a hierarchical cluster analysis of flow two distinct clusters were revealed: (1) students with lower flow ( $n = 41$ ) and (2) students with higher flow ( $n = 21$ ). These two groups were used for the data analysis. The standardized scores of the clusters for each task are listed in Table 6. Moreover, the results of a pairwise  $t$  test between the flow clusters and English learning motivation revealed a significant difference in the mean level of English learning motivation,  $t(61) = 50.49, p < .01, d = 6.60$  (see Table 7). The effect size was medium.



**Table 6***Standardized Scores of Clusters*

Flow	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6
Cluster 1(lower)	-.42	-.38	-.19	-.53	-.38	-.40
Cluster 2(higher)	.82	.74	.37	1.03	.74	.78

**Table 7***The Result of a pairwise t test between the Flow Clusters and English Learning Motivation*

	<i>t</i>	<i>df</i>	<i>P</i>	<i>adj.p</i>	<i>D</i>
Flow Cluster-ELM	50.49	61	.00**	-	6.60
Flow Cluster-Intrinsic	22.96	61	.00**	.00**	3.36
Flow Cluster-Identified	43.00	61	.00**	.00**	6.29
Flow Cluster-External	16.56	61	.00**	.00**	3.16
Flow Cluster-Amotivation	4.24	61	.00**	.00**	.85

*Note.* ELM = English Learning Motivation, \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$

### 3.8 Discussion

Considering the results in Tables 3 to 5, the values of jigsaw, information gap, narration, and problem-solving were significantly higher than those of decision-making and opinion-exchange. Matsumura (2017b) defined the former tasks as “reaching correct answer tasks,” whose number of outcome options is “closed” (Pica et al., 1993). He also represents the latter as “free-answer tasks.” According to this distinction, tasks that reach correct answers are significantly higher than free-answer tasks. However, there was a difference in effect sizes among them—the effect size of narration was smaller than that of the other reaching correct answer tasks: jigsaw, information gap, and problem-solving.

Therefore, text mining was conducted using KH Coder (Ver.3.beta.04 a) to clarify the reason, and the students’ impressions of each task’s performance were analyzed. Figures 2 and 3 demonstrate that the challenge was too high for the

students in terms of challenge-skill balance, which is a precondition for flow. The task's difficulty caused "Anxiety" (see Csikszentmihalyi, 1997). However, the value of narration was significantly higher than that of decision-making and opinion exchange. This fact supported the above insistence: tasks "reaching correct answer" tend to induce flow better than "free-answer tasks."

The results reported in Table 7 argue that the values of English learning motivation are high if there is increased flow.

#### 4. General Discussion

The participants' flow states differed among the task types. Tasks in which students must reach correct answers significantly cause students' flow state more than "free-answer tasks," that is, decision-making and opinion-exchange. This difference could be explained in terms of the outcome options. Ellis (2003) indicates that outcome options of jigsaw, information gap, and problem-solving are "closed" whereas those of decision-making and opinion-exchange are "open." He defined the outcome options as follows:

Outcome options: This refers to the scope of the task outcomes available to the participants in meeting the task goals. In the case of 'closed' tasks a single outcome is required whereas 'open' tasks permit several possible outcomes. (p. 215).

Furthermore, he argues that "closed tasks are more effective in promoting negotiation of meaning" (p. 215). Asakawa and Csikszentmihalyi (2009) introduced players' flow states in tennis rallies as an example of unambiguous feedback, a precondition for flow. Closed tasks promote students' negotiation of meaning in engaging in tasks, and they provide unambiguous feedback, as in the example of a tennis rally. As a result of the unambiguous feedback, the flow of the students was promoted and resulted in a significant difference.

With regard to the correlation between flow clusters and English learning motivation, it was established that promoting flow is beneficial in second language teaching. However, learning outcomes were not measured. Note that Egbert (2003) hypothesized a strong relationship between learning outcomes and flow. Ishimura

(2014) similarly argued that flow experience is characterised by the ability of learners to develop their current skills. Thus, facilitating flow experience not only has a motivational effect on learners, but also enhances their abilities.

The above findings could be attributed to the participants' lack of complete proficiency. Further investigation will determine if these findings hold true for more proficient learners. In addition, the present study only included six tasks. More specific factors of the tasks, such as task difficulty, context, and culture, may have influenced the results.

## 5. Conclusion

This study examined task types under conditions that have received limited attention in previous studies. Additionally, only limited and ambiguous task characteristics have been investigated in earlier studies, such as computer-mediated tasks and the differences in the number of groups. This study considered this question from an entirely new perspective because it is based on the precise classification of task types.

Based on these findings, "reaching correct answer tasks," such as jigsaw, information gap, narration, and problem-solving promote students' flow state significantly better than "free-answer tasks," such as decision-making and opinion-exchange in the second grade of junior high school in Japan. According to the psycholinguistic typology of tasks by Pica et al. (1993), task types whose outcome options are "closed" were significantly better than those whose options are "open." The result implies that a task type "reaching correct answer" plays a role of unambiguous feedback, one of the preconditions for flow.

In addition, although students enjoyed speaking English in jigsaw, information gaps, and problem-solving, they had difficulties using the words they had already learned in narration, opinion exchange, and decision-making, which represented differences in flow. In students' impressions of free description, the rate of the students who answered "difficult" was high. In the three tasks, the learners could have been in state of "arousal" or "anxiety," per Csikszentmihalyi's (1997)

flow classification, according to which “arousal” refers to a state in which the level of challenge is too high but the skill level is moderate, unlike “anxiety,” where the challenge is high but the level of skill is lower. However, the values of the flow state in the narration were significantly higher than those in the “free-answer tasks.” This fact supports the discussion that “closed” tasks enhance flow tendency better than “open” tasks.

Further, this study suggests that it is worth studying SLA flow. Survey results revealed that flow clusters and English learning motivation were significantly correlated. Promoting flow affects learners’ motivation to learn English. Though not a subject of investigation, the relationship between task-specific flow and learning outcomes could be highly effective. Kage (2013), for instance, noted that learners’ motivation can enhance the quality of learning and performance, and thus promote learners’ growth.

Insights drawn from the findings could also help instructors effectively design annual lesson plans, especially matching the task types to grade level in junior high school. For instance, in the context of Japan, the survey results show that tasks with “closed” outcome options are more appropriate for second graders in junior high school than task “open” outcome options.

However, there is room for further investigation because only a few tasks were addressed in this study. Further studies are required to determine whether similar results can be obtained for other tasks. In addition, detailed studies should be conducted on the appropriate organization of tasks in the English curricula of junior high schools in Japan. The proper order of curricula will arouse learners’ motivation to learn English.

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