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# The Development and Validation of the Self-Regulated Learning in Oral Communication Questionnaire

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## Abstract

本研究の目的は、日本人大学生のオーラル・コミュニケーション（OC）における自己調整学習に関する重要な構成要素（メタ認知、自己効力感、方略）を測る質問紙を作成し、その信頼性と妥当性を検証することである。OCの授業における自己調整学習を測る質問紙がないため自己調整学習質問紙（SRLQ, the Self-Regulated Learning in Oral Communication Questionnaire）は作成された。次の三つの段階を通して質問紙を作成した。第一段階では、先行文献調査、予備調査を行い、質問紙の項目を精選した。第二段階では、関西圏の大学に通う1, 2年生（223名）を対象に探索的因子分析を行い、質問紙の因子数や信頼性を調べた（調査1）。最終段階では、調査1の参加者と同じ大学に通う1, 2年生（200名）を対象に構造方程式モデリング（SEM, Structural Equation Modeling）を用いて質問紙の妥当性を検討した（調査2）。結果、作成された質問紙には信頼性と妥当性があることが示された。探索的因子分析の結果、尺度は6因子で構成されていることが分かった（knowledge of cognition; regulation of cognition; awareness of metacognition; interaction strategies; cognitive strategies; and self-efficacy）。また、尺度全体の信頼性、及び下位尺度に関しても十分な値が得られた（ $\alpha = .80-.93$ ）。SEMの結果、モデルとデータとの適合度は良好であることが分かった。さらに、メタ認知は自己効力感と方略使用に影響するということが明らかになった。これらの結果を踏まえ、最後にメタ認知指導の大切さについて議論する。

**Keywords:** Self-regulated learning, Metacognition, Self-efficacy, Strategy use, Oral communication

## Introduction

Amid ongoing globalization, English has been an international language. Therefore, interacting with one another in English as a common language is

important to understand each other better and to build a rapport. To build a rapport, written communication is important; however, face to face communication is essential and such communication requires interactional competence in English. Interactional competence is “the ability to mutually coordinate our actions” (Hall & Pekarek Doehler, 2011, p. 2). It includes “knowledge of social-context-specific communicative events or activity types, their typical goals and trajectories of actions by which the goals are realized and the conventional behaviours by which participant roles and role relationships are accomplished”. Although undoubtedly interactional competence is important in today’s globalized world, it has been pointed out that those university students<sup>1</sup> who learn English in an EFL environment like Japan lack such competence (Iwai, 2010). Generally speaking, Japanese university students with average or below average English ability often do not feel the necessity to learn English as they are studying in an EFL environment and do not have clear goals in learning English. Therefore, to improve their interactional competence, learners need to understand why interactional competence is important and what and how to improve such competence. They also must have goals in learning English so that they can control their own learning and learn more efficiently and effectively. To have goals, they need to know themselves better as English language learners (e.g., awareness of their weaknesses and strengths). According to social-cognitive learning theory (Schraw, Crippen, & Hartley, 2006), such students’ ability to understand their learning processes and nature of the task (e.g., why interactional competence is important and what and how to improve such competence) and their self-regulation of their academic performance is called self-regulated learning (SRL). SRL involves a combination of three main factors, metacognition, cognition, and motivation (Schraw, et al., 2006). SRL processes involve learning cycles such as goal-setting, planning, implementing, monitoring, and evaluating. In SRL, learners are “metacognitively, motivationally, and behaviorally, active participants in their own learning process” (Zimmerman, 1986, p. 308). In other words, self-regulated learners are those learners who possess the capacity (skills) to control their own metacognition, motivation, and actions in those learning cycles such as goal-setting (planning), implementing, monitoring, and evaluating (Zimmerman, 1986; Zimmerman & Schunk, 2001).

Accordingly, the aims of the oral communication class are mainly to develop interactional competence in English and to help them become more self-regulated learners. To increase their interactional competence, learners are encouraged to

engage in speaking and listening activities through pair-work and group-work (e.g., Nation, 2013; Willis & Willis, 2007). To help them become more self-regulated learners, they are encouraged to reflect on their learning processes and to develop their understandings of why interaction competence and self-regulated learning capacity are important, how to improve them, and their awareness of themselves as English language learners (e.g., Ellis & Sinclair, 1989; Goh, 2008).

Although recent research shows the effect of such raising learners' awareness of the learning process (e.g., Graham & Macaro, 2008; Vandergrift & Tafaghodtari; 2010) and many scholars believe that it is important to help learners become more self-regulated learners (e.g., Takeuchi, 2010; Ellis & Sinclair, 1989; Schraw, et al., 2006), there are no studies show the effect of such instruction in OC. Moreover, we cannot evaluate the effect of the instruction without a scale for measuring SRL capacity in OC classes. Therefore, this study aims to develop such an instrument, a questionnaire which assesses SRL in OC classes.

## **Background**

### **Defining Self-Regulated Learning (SRL)**

SRL consists of three main components: metacognition, cognition, and motivation (e.g., Schraw, et al., 2006; Takeuchi, 2010). Metacognition includes metacognitive knowledge and metacognitive skills which enable learners to understand and monitor their cognitive processes. Cognition includes a repertoire of learning strategies such as cognitive strategies and communication strategies which learners implement to achieve their goals. Motivation includes, for example, self-efficacy and attitudes that affect the use and development of cognitive and metacognitive skills. These subcomponents of SRL capacity described here can be developed by educational intervention (e.g., Cleary & Zimmerman, 2004; Schunk, 2003).

### **Strategy Instruction in Educational Psychology**

Overall, previous research has shown three things: (a) SRL involves a combination of metacognition, strategy use, and motivational beliefs and each component plays an important role; (b) the role of metacognition is especially important because it enables learners to use strategies effectively and it influences their self-efficacy; and (c) among various motivational beliefs, self-efficacy is

considered to be the most important characteristic of self-regulated learners (Zimmerman & Schunk, 2001). It affects learners' use of strategies and other motivational beliefs such as effort and persistence. Thus, self-regulated learning is complex. It is a dynamic construct and consists of multiple processes and components (Boekaers & Cascallar, 2006). SRL capacity has also been enhanced partially in Second Language Acquisition (SLA). The following section describes a literature review on strategy instruction and metacognitive instruction in SLA, focusing on listening and speaking.

### **Educational Intervention in SLA**

Thus far, only a small number of studies have examined the role of metacognition, strategic behavior, and self-efficacy in oral communication in SLA. Previous research has shown that: (a) use of learning strategies influenced learners' performance and their self-efficacy in tasks (Graham & Macaro, 2008); (b) metacognitive instruction had a beneficial impact on less-skilled listeners' listening comprehension (Cross, 2011; Goh & Taib, 2006; Vandergrift & Tafaghodtari, 2010); (c) metacognitive knowledge improved the outcome of their learning (Goh, 2008); and (d) metacognitive instruction had a beneficial impact on students' maintenance of fluency and affected their use of achievement strategies (Nakatani, 2005). Nakatani concluded that only those learners who received metacognitive training in the intervention could notice the importance of communication strategies and improved their OC. Thus, research in SLA has indicated that use of strategies influences achievement and self-efficacy and that metacognition is beneficial for achievement and use of strategies.

To develop a scale to assess self-regulated learning in OC classes in English, it is advisable to define all the components clearly and to use the framework of previous studies (e.g., Schraw, et al., 2006) for future research. Therefore, this study uses the framework of SRL suggested by Schraw, et al. (2006) to operationalize and measure SRL in OC classes and defines all the important components of SRL. Based on relevant literature review above, metacognition, self-efficacy, cognitive strategies, and oral communication strategies should be measured as a scale of SRL in OC.

### **Defining the Subcomponents of SRL in EFL Classrooms**

Metacognition “refers to one’s knowledge concerning one’s own cognitive

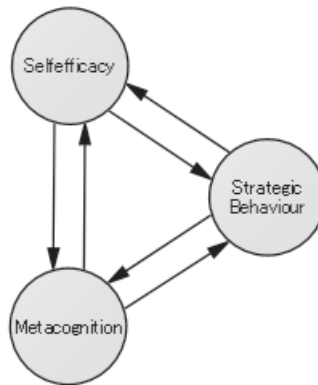
processes and products or anything related to them. [...] Metacognition refers, among other things, to active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objects” (Flavell, 1976, p. 232). Generally speaking, metacognition is composed of two aspects: knowledge of cognition and regulation of cognition (e.g., Sannomiya, 2008; Schraw & Dennison, 1994; Veenman, et al., 2006). The former includes: (a) declarative knowledge (i.e., knowledge about one’s skills, intellectual resources, and abilities as a learner); (b) procedural knowledge (i.e., knowledge about how to implement learning procedures (e.g., strategies); and (c) conditional knowledge (i.e., knowledge about when and why to use learning procedures). Regulation of cognition includes strategies such as planning, monitoring, and evaluation. These strategies are known as metacognitive strategies in SLA (Goh, 2008). Since metacognition is involved in all the three phases of self-regulation, it plays an important role in learning the target language. However, SRL involves not only metacognition but also strategy use and motivational beliefs.

According to Macaro (2006, p. 328), L2 learning strategies are conscious mental activities and are utilized intentionally or in a controlled manner to achieve a certain goal within a learning situation, and “transferable to other situations or tasks”. Learning strategies are regarded as observable behaviors or mental operations. Communication strategies are learning strategies and are often categorized as second language use strategies (Iwai, 2010). They are techniques used to keep the conversation going or to deal with the various problems when communication difficulties arise (Dörnyei & Scott, 1997). Communication strategies are vital for L2 speakers because L2 speakers tend to encounter problems during the course of communication in the foreign language.

Among motivational beliefs, self-efficacy is especially important because it affects use of strategies and other motivational outcomes, such as patience and effort (e.g., Bandura, 1997; Zimmerman & Schunk, 2001). Self-efficacy “refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). The following section summarizes relationships of those important subcomponents of SRL described above.

## Metacongition, Strategic behavior, and Self-efficacy

Previous research (e.g., Cross, 2011; Goh & Taib, 2006; Graham & Macaro, 2008; Vandergrift & Tafaghodtari, 2010) has indicated the following causal relations (see Figure. 1): metacognition influences strategic behavior; metacognition also influences self-efficacy; similarly, self-efficacy affects metacognition; and self-efficacy also affects strategic behavior. In addition, theoretically speaking, it seems reasonable to assume that the three main factors of SRL are all correlated because self-regulated learners are metacognitively, motivationally, and behaviorally active participants in their learning (Zimmerman, 1986). However, it has not been examined whether SRL which is composed of three main factors would show those causal relations as SRL theory claims. Thus, until further studies are conducted, researchers can only speculate those causal relations. Another critical issue is that there are no instruments which measure *SRL in OC*. Therefore, the existing questionnaires which assess the components of SRL described above are reviewed and problems on making questionnaires are examined in the following section.



**Figure 1.** The hypothesized causal relations between metacognition, strategic behavior, and self-efficacy.

## Questionnaires Related to SRL in OC

**The assessment of motivated strategies for learning.** The Motivated Strategies for Learning Questionnaire (MSLQ; Duncan & McKeachie, 2005) has been used widely to assess SRL. The MSLQ is a self-report instrument, composed of 81 items, which are divided into learning strategies and motivation sections. The learning strategies section measures cognitive-metacognitive strategies and

resource management strategies. The motivation section measures valuing, expectancy, and affect. The valuing subsection includes intrinsic-extrinsic goal orientation and task value. The expectancy subsection includes self-efficacy and control of learning and the affect subsection includes test anxiety. Although the MSLQ shows its validity and reliability, this was developed for learning in general and *not* for English language learning. Because self-regulation is context dependent (Zimmerman & Schunk, 2001) and like metacognitive knowledge, the degree of self-efficacy also depends on a specific task or a range of tasks in a given domain (Zimmerman, 2000), the current study's questionnaire needs to be context specific (i.e., OC classes). Furthermore, although generally metacognition includes metacognitive knowledge and metacognitive strategies, only metacognitive strategies can be measured by the MSLQ. Thus, the development of a scale to assess SRL in OC classrooms is essential.

**The assessment of metacognition.** The most famous instrument for assessing metacognition is the Metacognitive Awareness of Inventory (MAI; Schraw & Dennison, 1994). It is also a self-report instrument, including 52 items, using a 100-point scale. Subjects are instructed to draw a slash across the rating scale at a point that best corresponds to how true or false the statement is about them. It measures two aspects: knowledge of cognition and regulation of cognition. Like the MSLQ, this instrument was also developed for learning in general and not for English language learning. Therefore, it needs to be context specific (i.e., OC classes) because of the nature of SRL.

**The assessment of learning strategies and oral communication strategies.** The Strategy Inventory for Language Learning (SILL; Oxford, 1990) measures strategy use in English language classrooms. Although it has been used predominantly, it has received some criticism that "...the scales in the SILL are not cumulative and computing mean scale scores is *not* justifiable psychometrically" (Tseng, Dörnyei, & Schmitt, 2006, p. 83 emphasis in the original). The SILL uses a 5-point Likert scale ranging from *never or almost never true of me to always or almost always true of me*. Dörnyei (2005) describes the SILL as a *frequency-oriented* scale since the SILL scales range from *never or almost never (true of me)* to *always or almost always (true of me)*. He criticizes that the SILL matters quantity of strategy use (i.e., high frequency is considered to show effective learning in the SILL) but less able learners often use strategies in a



random and uncontrolled manner but they might report high frequency of strategy use. Because the questionnaire items of the SILL do not show declarations or conditional relations to each item, this is not justifiable psychometrically; either low or high reported strategy use does not necessarily mean a sign of effective learning without such declarations or conditional relations (i.e., these are not learners' strategies but they are merely learners' behaviors) (Dörnyei, 2005). As Dörnyei (2005) mentions, although the SILL may be useful to raise students' awareness of various learning strategies, the instrument is not reliable for research purposes unless the descriptions of each item are altered. Therefore, the current study's questionnaire needs to assess students' learning strategies that are linked to a specific context (i.e., OC classes) and the questionnaire items need to show declarations or conditional relations.

The Oral Communication Strategy Inventory (Nakatani, 2006) assesses strategies for coping with speaking and listening problems. Because it was developed for assessing learners' OC strategies, some of the items which were particularly useful for interaction were included. These were strategies called *negotiation for meaning while speaking and listening*.

Taken together, until further studies are conducted, those causal relations that SRL theory claims are merely speculation. Moreover, there is no valid and reliable measurement to assess SRL in OC. Without such a scale, we cannot examine the effectiveness of the instruction, either. Therefore, developing such a scale is essential and examining relationships of important subcomponents of SRL is crucial. Findings from such studies could bring a number of important implications for future practice and research. Hence, in this study, the extent to which a hypothesized model is compatible with the data is evaluated, using structural equation modeling (SEM) and to demonstrate the validity of the questionnaire. Unrevealed relationships of important subcomponents of SRL are also verified, using SEM.

## **Purposes**

To accomplish the goal of the current study described above, two studies, Study 1 and Study 2, were conducted. In Study 1, first an item pool was developed and the first version of the instrument was piloted. Then, an exploratory factor analysis (EFA) was conducted to reveal factors of the questionnaire. Then, an internal consistency reliability analysis was conducted to determine the reliability of the

instrument. In Study 2, SEM was employed to assess if the hypothesized model would fit to the observed data, using the software AMOS 19.0. The following sections describe these steps in detail.

## Study 1

### Developing the Item Pool

A pilot study was conducted in January in 2011 to develop the item pool (Dörnyei & Taguchi, 2010). Learning strategies for oral communication were elicited from students who were similar to the target sample so that the questionnaire items would be relevant to those students who had been studying in the EFL environment. The data were gathered from an OC class where the researcher was teaching. The English textbook that they were using was *Interchange (Student's book1)*. In their OC class, the instructor designed lessons, using task-based framework (see Table 1).

**Table 1**  
*A Lesson Overview*

A lesson	Main instructions
Pre-task	<ul style="list-style-type: none"> <li>● developed listening skills and vocabulary</li> <li>● elicited the target language from students and students took notes so that they could review what they had learned.</li> </ul>
Main-task	<ul style="list-style-type: none"> <li>● encouraged students to interact with one another in English</li> <li>● had them repeat the same task with other students a few times to develop their fluency and accuracy</li> </ul>
Post-task	<ul style="list-style-type: none"> <li>● encouraged students to write what they talked about and to develop their knowledge of English language by correcting their grammatical mistakes or analyzing the structure of the conversations or analyzing the English usage</li> </ul>

The participants were sophomores and non-English majors who were taking an OC class once a week as a required course. None of them had lived overseas more than six months. Some had obtained EIKEN Grade 3. Thirty six students completed an open-ended questionnaire after their end-term oral communication test. Written informed consent was obtained from all the participants. The open-ended questionnaire was written in their mother tongue (i.e., Japanese):

1. In preparation for your oral communication class or test, is there anything you

- did so that you could learn more effectively or you could communicate well in English? What are they? Why? Please specify.
2. *During* your oral communication class or *during* your oral communication test, is there anything you did so that you could learn more effectively or you could communicate in English well? What are they? Why? Please specify.
  3. Reflecting on your oral communication class, are there any skills you have now that you did not have before the class started? What are they? Why do you think you gained these skills? Please specify.

Regarding the open-ended questionnaire above, the participants raised no questions. Then, some of the strategies reported by them were added to the item pool. To measure learners' use of learning strategies psychometrically, all the items were carefully worded focusing on declaration or conditional aspects. After another pilot study was conducted in May in 2011, some wordings were altered based on the feedback from the participants who were freshmen and non-English majors of the pilot study.

The questionnaire was prepared in participants' mother tongue (i.e., Japanese) so that participants could answer appropriately. It was modified over and over again: For example, some double-barreled items were eliminated and some related items were collapsed into one. Some items were reworded as well. Furthermore, the revised instrument was examined critically for clarity and readability by a Japanese language university instructor who is also a researcher in foreign language teaching, resulting in further fine-tuning.

Following a common questionnaire construction practice and guidelines outlined by Dörnyei and Taguchi (2010), the format of the questionnaire was designed. Items were grouped in logical sequences by content but to sustain respondents' attention, some items were negatively worded so that respondents would not mark only one side of the rating scale. The length and the layout of the questionnaire were also carefully designed so that respondents could answer easily and feel less stressed (e.g., the scale types were not mixed). Considering that too many scale points on a Likert scale would lead to unreliable responses as they require more cognitive load, we chose a 7-point Likert scale ranging from *very true of me* to *not at all true of me* (see the Appendix for the final version of the SRLQ items).

An information cover page assured respondents that: (a) there were no right or wrong answers to any questions but forthright responses were important; (b) their

responses would not affect their grades; (c) confidentiality would be respected; and (d) their response would be used for research purposes only. Written informed consent was obtained from all the participants. It took approximately 10 minutes for them to complete the questionnaire. All the data were collected in the classroom at the end of July and at the beginning of August in 2011.

## Participants

More than 250 university students participated in the study. They were freshmen and sophomores whose age was either 18 or 19. They were sampled from oral communication classes in two private universities in the western part of Japan where the researcher had been working as an English instructor. The participants from these two universities had similar characteristics: (a) they had a 90-minute English lesson twice a week as required courses. They had one lesson by a native English-speaking teacher once a week and they had the other lesson by a Japanese English teacher once a week; (b) they were all non-English majors, studying English as a foreign language; (c) the English textbooks that they were using were either *Touchstone (Student's Book 1)* or *Firsthand (Access or Success)* which were used for communicative approach classes for beginner learners. These textbooks are designed to develop oral communication skills; (d) oral communication activities/tasks were involved in their classes. They also had the opportunities to analyze the language: To raise awareness of English language, they were encouraged to fill in a notebook of language that was focused on during the unit. Talking about casual conversation topics such as family and summer vacation was their main activity; and (e) although not all the students had English proficiency scores, many students had EIKEN Grade 3 and Grade Pre-2.

Those learners' data were excluded from the sample: (a) learners who had lived overseas more than 6 months; (b) learners who obtained higher English proficiency than others; (c) learners who had taken English conversation lessons outside the classroom; (d) those data which contain missing information or missing values; or (e) the questionnaires that were not answered appropriately (e.g., marking only one side of the rating scale) as the questionnaire was carefully designed for respondents not to fall into such a pattern by adding some negatively worded items. Accordingly, 223 students' data (male: 69, female: 154) were used for further analysis.

## Results

**Exploratory factor analysis (EFA).** The first version of the SRLQ was investigated by means of EFA, using the software SPSS 19.0 to reveal factors and to identify any items that might be removed from the questionnaire. After confirming that all the questionnaire items did not show a ceiling or floor effect, the major factor method was conducted on the 46 items of the SRLQ to estimate the maximum number of factors. An initial estimate of the number of factors was determined, evaluating a scree plot, evaluating discontinuity in variance, and following Kaiser's criterion (i.e., selecting factors with eigenvalues greater than one). The major factor method was chosen with Promax rotation with Kaiser Normalization, which allows for intercorrelation among factors. A six-factor solution met the goals of interpretability and was comprehensible. These items were deleted: (a) items with high loadings on more than one factor; (b) items with low loadings (below 4.0); or (c) items that failed to load significantly on any of the factors. Accordingly, three items were deleted. Using an interactive process, several subsequent principal-axis factor analyses with Promax rotation were conducted. This led to the eventual retention of 43 items.

All of the six emerging factors were clearly identifiable. Factor 1 was related to metacognitive activities such as planning, monitoring, evaluation, and accordingly, it was labeled "Regulation of Cognition". Factor 2 was related to metacognitive knowledge such as knowledge of one's cognition, knowledge of how to use the strategy, and knowledge of why and when to use the strategy and therefore it was labeled "Knowledge of Cognition". Factor 3 measured the use of cognitive strategies. Therefore, it was labeled "Cognitive Strategies". Factor 4 measured the awareness of metacognitive knowledge and metacognitive activities. Therefore, it was labeled "Awareness of Metacognition". Factor 5 consisted of 5 items which all measured use of interaction strategies. It was labeled "Interaction Strategies". Factor 6 consisted of seven items which measured students' self-efficacy in the

**Table 2**  
*The Internal Consistency Reliability of the Six Factors*

	Factors	$\alpha$
1	Regulation of Cognition	.93
2	Knowledge of Cognition	.92
3	Cognitive Strategies	.92
4	Awareness of Metacognition	.88
5	Interaction Strategies	.92
6	Self-efficacy	.82

oral communication class. Thus, it was labeled “Self-efficacy”. Cronbach’s alpha of the all the items as a whole was .96. All the individual scale coefficients are above .80, which indicates that the scales performed well in terms of reliability (see Table 2).

## **Discussion**

SRL is composed of these three main components: metacognition, motivation, and strategy use. The results of EFAs showed that the questionnaire contains six factors: three of the factors were related to metacognition (i.e., Knowledge of Cognition, Regulation of Cognition, and Awareness of Metacognition), one of the factors was related to motivation (i.e., Self-efficacy), and two of them were related to strategy use (i.e., Cognitive Strategies and Interaction Strategies). Thus, the results suggested that the developed questionnaire was composed of the important factors of SRL in OC and that it had high reliability. However, because an EFA does not allow us to examine causal relationships between variables and reveal relationships of subcomponents of SRL, in Study 2, we verify the validity of the questionnaire, using SEM.

## **Study 2**

### **Purposes**

In SEM, first, the construct of the latent variables and their paths are hypothesized. Based on theoretical consideration, higher-order confirmation factor analyses are conducted. There are three possible models: (a) the hypothesized model (see Figure 2); (b) a self-efficacy higher-order model; and (c) a strategic behavior higher-order model. The best model is chosen by considering results of Akaike’s Information Criterion (AIC) and comparing fit indices. Small values of AIC indicate good fitting (Tabei, 2011). After choosing the best model, the model is evaluated whether it would be mirrored or confirmed by the six variables obtained through EFAs. Then, the extent to which the hypothesized construct would fit with the data is examined, using fit indices. SEM also allows us to examine causal relations between the variables as well. These higher-order factor analyses would allow us to examine the causal relations in Figure 1. Consequently, in Study 2 the extent to which the hypothesized model (driven by theory) would fit with the data is evaluated.

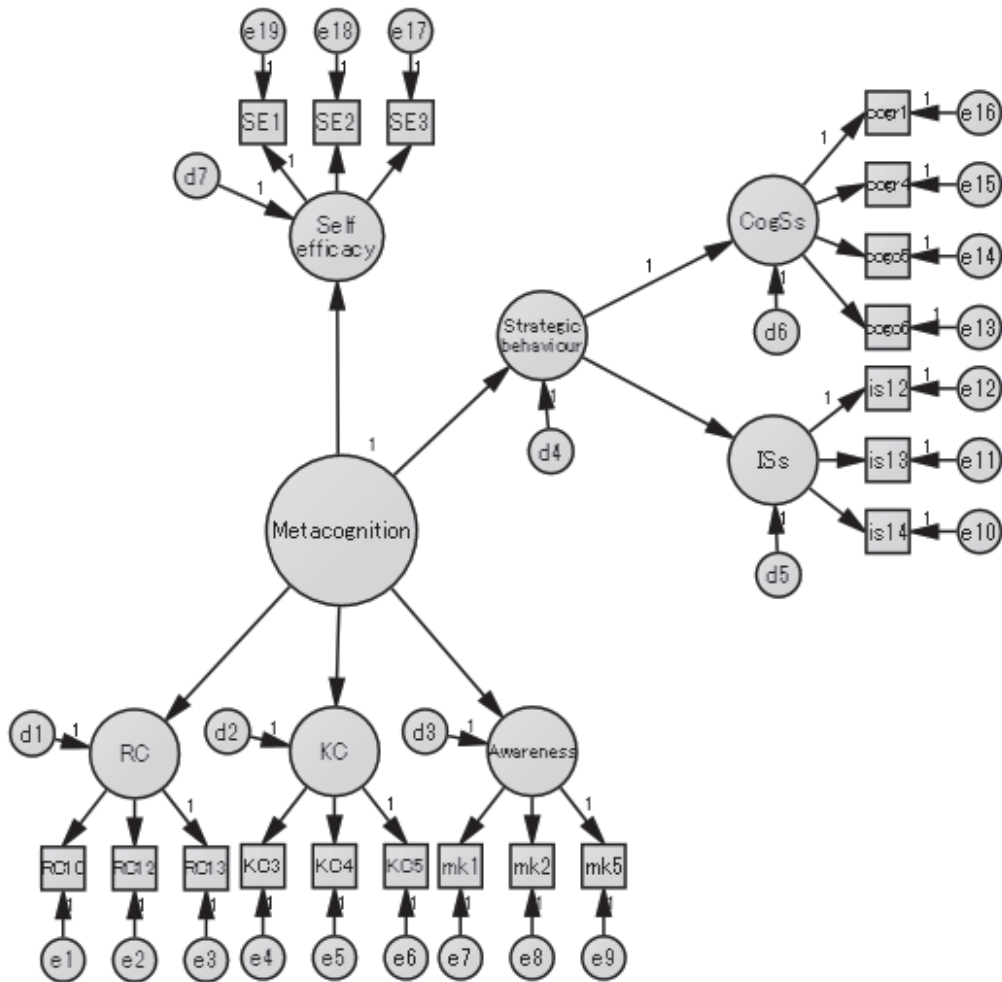
## Participants

Participants of the second study were more than 230 Japanese students. All the data were collected in November in 2011 in their classrooms in the same manner as the first study was conducted. The questionnaire was written in the participants' mother tongue (i.e., Japanese). The sample was obtained from the same universities of the first target sample. 58.5 % of the total sample was female. They were chosen because they represent the majority of Japanese university students in terms of English ability. The participants in Study 2 and the participants in Study 1 shared the same characteristics: (a) the participants in Study 3 were also freshmen (54.5%) and sophomores (45.5%); (b) they were also non-English majors; (c) materials they were using in OC classes were also *Touchstone (Student's Book 1)* or *Firsthand (Access or Success)*; and (d) their English proficiency was considered to be Basic Users from the level of textbooks and casual interviews the instructor had with students' teachers. Some of the data were excluded from the target sample in the exactly same way as some data of the first sample were excluded so that findings of this study could be generalized to similar populations in similar contexts. After excluding some, exactly 200 data from the sample group were used for the analysis.

## The Hypothesized Model

Figure 2 in the following page illustrates a hypothesized model of the relationship among metacognition, self-efficacy, and strategy use in the OC class. As shown in Figure 2, the model was composed of three main latent variables (i.e., Metacognition, Strategic Behavior, and Self-efficacy). Regulation of Cognition and Knowledge of Cognition were positively correlated. Although Awareness and Regulation of Cognition were not so strongly correlated, Awareness and Knowledge of Cognition were positively and strongly correlated. Based on theoretical considerations and interpretability, Regulation of Cognition, Knowledge of Cognition, and Awareness were classified as Metacognition variables. Similarly, Cognitive Strategies and Interaction Strategies were classified as Strategic Behavior on the basis of theoretical considerations as well as the correlational analyses conducted in the previous phases of the research. Strategic Behavior is strategies that L2 learners use to maximize their L2 linguistic knowledge resources (Macaro, 2010). Linguistic knowledge resources include these: (a) lexical-semantic knowledge; (b) phonological-graphological knowledge;





**Figure 2. Hypothesized model.**

RC = Regulation of Cognition; KC = Knowledge of Cognition; Awareness = Awareness of Metacognition; CogSs = Cognitive Strategies; ISs = Interaction Strategies.

(c) morpho-syntactic knowledge; and (d) pragmatic knowledge.

The hypothesized model in Figure 2 represents a metacognition higher-order model, which means that the first-order factors and the second-order factors would be explained by some higher order structure which, in the case of the SRLQ, is a single third-order factor, metacognition. To test such a model, the model hypothesized a priori that: (a) two first-order factors (Cognitive Strategies, Interaction Strategies) would be explained by a higher order structure, a single second factor of structure (Strategic Behaviour); (b) this second-order factor (Strategic Behaviour) as well as the other four second-order factors (Self-efficacy, Regulation of Cognition, Knowledge of Cognition, Awareness) would be



explained fully by a higher-order structure, a single third factor structure (Metacognition); (c) error terms associated with each item would be uncorrelated; and (d) covariation among the five second-order factors would be explained fully by their regression on the third-order factor.

Therefore, if the hypothesized model in Figure 2 is valid, metacognition would be the most influential factor among those important subcomponents of SRL. Furthermore, results would confirm that all the second-order factors are correlated. As shown in Figure 2, for the identifiability of the hypothesized model, the regression coefficients from a factor to one of its indicators were all fixed to a value of 1 (Brown, 2006), the path from Strategic Behavior to Cognitive Strategies was also fixed to 1, and the variance of Metacognition was fixed to 1. Then, all the paths in the model were drawn on the basis of theoretical considerations.

Because the hypothesized model in Figure 2 represents a metacognition higher-order model, it does not show the causal path from Self-efficacy to Strategic behavior in Figure 1. In such a higher-order model, the causal path from Self-efficacy to Strategic behavior cannot be drawn because the model hypothesizes that they (i.e., Self-efficacy and Strategic Behavior) are correlated. Accordingly, to reveal the causal relations in Figure 1, the three possible higher-order models will initially have to be examined as mentioned earlier.

## Results

Fit index figures indicated that the model did not fit the data as had been expected. Therefore, the questionnaire items were reexamined carefully. On analysis, it was found that some of the items were rather too specific. These items were especially from the items taken from the previous studies although they were altered for this study's context (i.e., OC classes). For instance, "When I study for OC, I understand by making connections between what I learned in the class and what I already know" (Duncan & McKeachie, 2005), "When I study for OC, I relate ideas in this subject to those in other courses", and "I learn more when I know something about the topic of OC tasks/activities" (Schraw & Dennison, 1994). Then, the questionnaire items were subjected to expert judgment for content validity again (Dörnyei & Taguchi, 2010) and those rather too specific ones were deleted. When similar items were found, items which show broader concepts were left and more than four items per factor remained. Then, an EFA was conducted again, using the software SPSS 20.0 to reveal factors and to

**Table 3**  
*Factor Loadings of the Self-Regulated Learning Questionnaire*

Items		F1	F2	F3	F4	F5	F6
Regulation of Cognition ( $\alpha = .93$ )	RC12. After I finish the task in the OC class, I try to evaluate my performance.	.960	-.019	.039	.031	.011	-.068
	RC13. After I learn in the OC class, I try to evaluate to what degree I achieve my own goal I set.	.949	.054	-.018	-.024	-.041	-.008
	RC10. I try to ask myself regularly whether my learning progress serves goals I set for myself.	.778	-.018	-.032	-.037	.040	.107
Interaction Ss ( $\alpha = .92$ )	is12. In the OC class, I confirm in English with my classmate whether I understand what he/she is saying.	-.004	.957	-.030	.011	-.076	.067
	is13. In the OC class, I confirm in English with my classmate whether he/she understands what I am saying.	.060	.923	-.031	-.019	-.008	.006
	is14. In the OC class, I communicate in English to keep the conversation going well.	-.039	.781	.065	.016	.133	-.074
Self-efficacy ( $\alpha = .89$ )	SE3. I feel I can do well on assignments and tests in the OC class.	.092	-.091	.879	-.007	-.064	.026
	SE2. I feel I can understand basic contents taught in the OC class.	-.047	.037	.878	-.005	.013	-.027
	SE1. I feel I can obtain satisfactory grades in the OC class.	-.050	.050	.808	.001	.052	.046
Awareness of Metacognition ( $\alpha = .89$ )	mk2. With respect to OC learning, I think it important to know what learning strategies are most effective and when to use them effectively.	.011	.008	.056	.912	-.058	-.054
	mk1. With respect to OC learning, I think it important to know my strengths and weaknesses as a learner.	-.076	.085	.004	.835	-.029	.008
	mk5. I think it important to reflect on how well I did after doing OC tasks.	.042	-.094	-.078	.820	.087	.073
Cognitive Ss ( $\alpha = .80$ )	cogo5. When I study for OC, I review the notes of the class.	-.115	-.024	-.040	-.102	.795	.095
	cogr4. When I study for OC, I read sentences and words aloud over and over again.	.033	.006	-.028	.065	.741	-.032
	cogo6. When I study for OC, I write down important expressions and sentence patterns.	.048	.047	.026	-.009	.737	-.091
	cogr1. When I study for OC, I memorize basic expressions and sentence patterns.	.092	-.009	.065	.076	.520	.033
Knowledge of Cognition ( $\alpha = .91$ )	KC3. With respect to OC, I can evaluate my own learning progress.	-.088	-.011	.031	.003	-.003	.878
	KC4. With respect to OC, I have a clear goal when I use learning strategies.	.070	-.011	-.006	.033	-.025	.869
	KC5. When I study OC, I am aware of what learning strategies I use.	.084	.044	.026	-.019	.038	.804

identify any items that might be removed from the revised version of the SRLQ (it was tested with a second sample of respondents,  $N = 200$ ). After confirming that all the questionnaire items did not show a ceiling or floor effect, the major factor method was conducted on the 25 items of the SRLQ to estimate the maximum number of factors. An initial estimate of the number of factors was determined, by evaluating a scree plot, evaluating discontinuity in variance, and following Kaiser's criterion (i.e., selecting factors with eigenvalues greater than one). Maximum likelihood extraction factor analysis method was chosen with Promax rotation with Kaiser Normalization. A six-factor solution met the goals of interpretability and was comprehensible. These items were deleted: (a) items with high loadings on more than one factor; (b) items with low loadings (i.e., below 4.0); or (c) items that failed to load significantly on any of the factors. As a result, 19 items were retained.

Table 3 in the previous page presents the six emerging factors, questionnaire items, and the Cronbach's alpha internal consistency reliability coefficients of each individual scale. The Cronbach's alpha of all the items as a whole was .89. All the scale coefficients were above .80, which indicates that the revised SRLQ can be used as a reliable research instrument (see Table 3). All of the six factors were the same as the factors obtained before and clearly identifiable.

After EFAs, the shorter, revised version of the SRLQ was submitted to a confirmatory factor analysis. SEM was employed based on data collected from the second sample, using the software AMOS 21.0 to assess whether the hypothesized model would fit to the observed data.

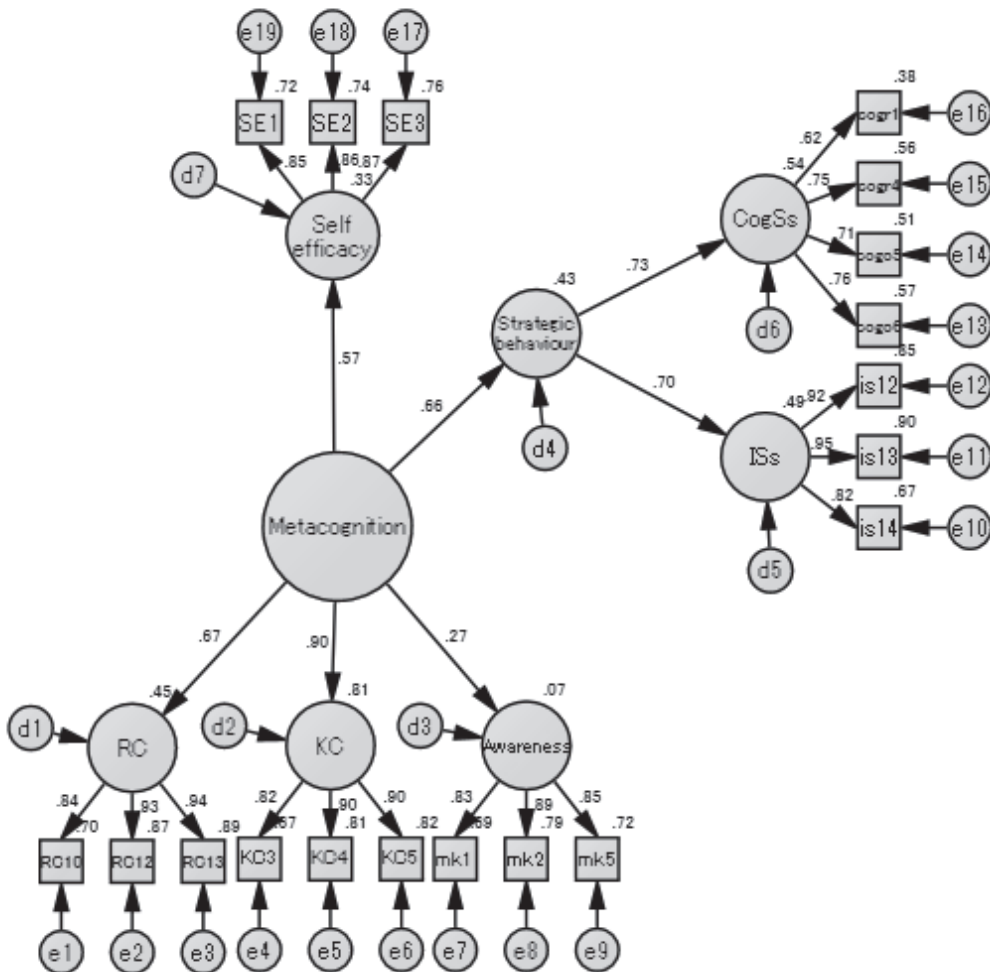
## Findings

**Structural equation modeling.** It was found that the self-efficacy higher-order model was considered to be incorrect: Although it was identified, one of the factor loadings in the standardized solution was over 1.0 (i.e., 1.09). Furthermore, results of Akaike's Information Criterion (AIC) of the other two models indicate that the hypothesized model was better than the strategic behavior higher-order model: The AIC value of the hypothesized model was smaller (i.e., 295.758) than that of the strategic behavior model (i.e., 309.690). Therefore, the hypothesized model in Figure 2 was considered to be the best model among the three models. As shown in Table 4, six out of seven structural model fit indices indicate that the model fit the data reasonably well ( $N = 200$ ) (Brown, 2006).

**Table 4**  
*Summary of the Evaluation of Measurement Model Fit*

	CFI	GFI	AGFI	RMSEA	TLI	IFI	NFI	AIC
Standard	> .95	> .9	> .9	< .08	> .9	> .9	> .9	—
CFA model	.976	.904	.875	.046	.972	.977	.925	295.758

*Note.* CFI = Comparative fit index, GFI = Goodness of fit index, AGFI = Adjusted goodness of fit index, RMSEA = Root mean square error of approximation, TLI = Tucker-Lewis index, IFI= Incremental fit index, NFI = Normed fit index.



**Figure 3.** The results of the hypothesized model. Path coefficients represent standardized estimates,  $p < .001$ . See Figure 2. for abbreviation.

Four other results were drawn from Figure 3 above: (a) as hypothesized, metacognition was composed of three latent variables, which were Regulation of Cognition, Knowledge of Cognition, and Awareness of Metacognition; (b) the path from Metacognition to Self-efficacy was significant; (c) the path from Metacognition to Strategic Behavior was also significant; and (d) covariation among the five second-order factors (i.e., Regulation of Cognition, Knowledge of Cognition, Awareness, Self-efficacy, and Strategic Behavior) were explained fully by their regression on the third-order factor (i.e., Metacognition).

## Discussion

The results in Table 4 provided the evidence for the validity of the construct of the measurement. Although one fit index, the adjusted goodness of fit index (AGFI), did not meet the acceptable fit threshold, other fit indices suggested that the hypothesized model was meaningful and appropriate and it had a good overall fit with the empirical data (Brown, 2006). AGFI adjusts the GFI based upon degrees of freedom. Values for the AGFI range between 0 and 1 and generally, an AGFI value close to .90 suggests good fit (Schumacker & Lomax, 1996). As can be seen in Table 4, the AGFI here is not too far from .90 (i.e., .875). Accordingly, we can conclude that the hypothesized construct in Figure 2 is empirically valid.

The model also showed that metacognition was composed of three latent variables: Knowledge of Cognition, Regulation of Cognition, and Awareness of Metacognition. Awareness of Metacognition has not been measured by the existing questionnaires such as the MAI (Schraw & Dennison, 1994) and the MSLQ (Duncan & McKeachie, 2005). Although it is a new factor, it is an important component of metacognition. It corresponds to students' perceptions of value or importance of metacognition. For instance, those students with high awareness of metacognition consider knowing themselves as learners or evaluating their own performance to be important. Such awareness is vital because when students think what they are doing is meaningless, that affects their performance negatively. The model suggests that those Japanese university students who value metacognition are likely to use more learning strategies than those who undervalue. This finding gives us an important educational implication: It is crucial to raise awareness of metacognition when metacognitive instruction is conducted so that they can use learning strategies more effectively.

Regarding relationships between latent variables, I believe that the following

interpretations are supportable. First, the result that the path from metacognition to self-efficacy was significant and the result that the path from metacognition to strategic behavior was also significant indicate three things: (a) metacognition can influence self-efficacy positively; (b) metacognition can also influence strategic behavior positively; and (c) those Japanese university students, who regard metacognition important and are metacognitively active, are more likely to be self-efficacious, are more aware of their responsibilities in the OC class, and use more learning strategies. By using interaction strategies, they can contribute to the class well. SRL has been considered to be composed of three main factors, which are metacognition, motivation, and strategy use and those students who hold self-regulated learning capacity are “metacognitively, motivationally, and behaviourly, active participants in their own learning process” (Zimmerman, 1986, p. 308). Hence, the result that metacognition influences self-efficacy and strategic behavior positively suggests that metacognition is an extremely important factor in SRL. This finding supports a great deal of the previous work (e.g., Goh, 2008; Schraw, et al., 2006), which concluded that the role of metacognition is especially important.

Moreover, this combination of findings suggests that activating learners’ metacognition through metacognitive instruction can have a positive impact on self-efficacy and strategy use (e.g., Goh, 2008; Paris & Paris, 2001; Vandergrift, 2005). Furthermore, from the result that the path from metacognition to strategic behavior was significant, it is possible to hypothesize that activated metacognition through metacognitive instruction can affect strategy use and then that influenced strategy use can influence achievement (e.g., Graham & Macaro, 2008; Nakatani, 2005; Vandergrift & Tafaghodtari, 2010).

Lastly, SEM analyses have shown that a self-efficacy higher-order model was incorrect. Therefore, it is not possible to claim that there is a causal relationship between self-efficacy and strategic behavior. However, as previous literature (e.g., Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1990) suggested, we found a correlation<sup>2</sup> between self-efficacy and strategic behavior. This result indicates that when self-efficacy is affected positively, strategic behavior is also affected positively.

## **Conclusion**

The purpose of the present study was to develop a self-regulated learning

questionnaire which assesses L2 learners' self-regulated learning in oral communication classes because there was no valid and reliable instrument that measures such capacity (skills). The SRLQ was developed through two studies: In Study 1, developing the item pool and EFA; and in Study 2, SEM. Study 1 and Study 2 have described the development and validation of the SRLQ and have shown that the SRLQ, which assesses L2 learners' metacognition, self-efficacy, and strategic behavior, is a reliable and valid instrument.

Through the results of SEM, unrevealed relationships of important subcomponents of SRL have been revealed and verified: First, metacognition positively influences both strategy use and self-efficacy. This finding has suggested that those students who are more metacognitively active are more likely able to perceive themselves as being capable of dealing with a given task and are more active in the OC class by using more cognitive strategies and interaction strategies than those students with less metacognitive awareness. This finding has also indicated that if metacognition is affected positively by educational intervention, both self-efficacy and strategy use are also affected positively. Furthermore, the result that there are correlations among the important subcomponents of SRL has confirmed previous research findings and reinforced such a view. Taken together, this combination of findings has provided some support for the premise that activating metacognition through metacognitive instruction in the OC class will play a key role in SRL.

Now that a questionnaire which measures SRL in the OC class has been established, we can assess learners' SRL and with this measurement we can also examine the effectiveness of the instruction as well.

Finally, limitations need to be considered. First, it was not possible to demonstrate if there is a relationship between interactional behaviors reported in the SRLQ and actual performance. Because such correlational data would increase the validity of the questionnaire, future research should include actual interaction performance to examine the relationship. Similarly, it was not possible to provide learning outcome data with the developed questionnaire; however, such correlational analysis would enhance the validity of the instrument as well. Lastly, this study's findings may not be generalized to other groups such as more advanced English learners and English majors. Accordingly, caution needs to be taken in an attempt to discuss and generalize the findings.



## Notes

1. The average speaking score of the TOEIC IP Speaking and Writing test of Japanese university students is 99.9, Level 4, which means they cannot interact with each other freely without preparation (ETS, 2013).
2. The results of correlational analyses, using SEM showed that Strategic Behavior and Self-efficacy were slightly moderately correlated (i.e., .37) (Tabei, 2011).

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## Appendix

The Self-Regulated Learning Questionnaire (SRLQ) items (translated from Japanese into English)

*Note.* These are presented below each part (i.e., Part1–Part4) in the original questionnaire:

1 = (0–10%) 2 = (10–20%) 3 = (20–40%) 4 = (40–60%) 5 = (60–80%) 6 = (80–90%) 7 = (90–100%)

1 = (*Not at all true of me*)

7 = (*Very true of me*)

### Part 1: Self-efficacy items

1. I feel I can obtain satisfactory grades in the OC class.	1	2	3	4	5	6	7
2. I feel I can understand basic contents taught in the OC class.	1	2	3	4	5	6	7
3. I feel I can do well on assignments and tests in the OC class.	1	2	3	4	5	6	7

### Part 2: Knowledge of Cognition items

1. With respect to OC, I can evaluate my own learning progress.	1	2	3	4	5	6	7
2. With respect to OC, I have a clear goal when I use learning strategies.	1	2	3	4	5	6	7
3. When I study for OC, I am aware of what strategies I use.	1	2	3	4	5	6	7

### Part 3: Awareness of Metacognition and Regulation of Cognition items

1. With respect to OC learning, I think it important to know my strengths and weaknesses as a learner.	1	2	3	4	5	6	7
2. With respect to OC learning, I think it important to know what learning strategies are most effective and when to use them effectively.	1	2	3	4	5	6	7
3. I think it important to reflect on how well I did after doing OC tasks.	1	2	3	4	5	6	7
4. I try to ask myself regularly whether my learning progress serves goals I set for myself.	1	2	3	4	5	6	7
5. After I finish the task in the OC class, I try to evaluate my performance.	1	2	3	4	5	6	7
6. After I learn in the OC class, I try to evaluate to what degree I achieve my own goal I set.	1	2	3	4	5	6	7

### Part 4: Strategic Behavior items

1. When I study for OC, I memorize basic expressions and sentence patterns.	1	2	3	4	5	6	7
2. When I study for OC, I read sentences and words aloud over and over again.	1	2	3	4	5	6	7
3. When I study for OC, I review the notes of the class.	1	2	3	4	5	6	7
4. When I study for OC, I write down important expressions and sentence patterns.	1	2	3	4	5	6	7
5. In the OC class, I confirm in English with my classmate whether I understand what he/she is saying.	1	2	3	4	5	6	7
6. In the OC class, I confirm in English with my classmate whether he/she understands what I am saying.	1	2	3	4	5	6	7
7. In the OC class, I communicate in English to keep the conversation going well.	1	2	3	4	5	6	7