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Listen to the Voices of Neglected Autonomous Learners: A Japanese Version of the Group Metacognition Scale Special for eTandem Learning

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ABSTRACT

Group-level self-regulation significantly impacts online collaborative learning performance (Panadero & Järvelä, 2015). Recently, online collaborative learning has been actively implemented in English language education in Japan, and group-level self-regulation, closely related to online collaborative learning, attracts the attention of Japanese researchers. However, no instrument has been developed to measure group-level self-regulation. Therefore, this study aims to adapt the Group Metacognition Scale (GMS) developed by Biasutti and Frate (2018) to Japanese and test it with a sample of eTandem English learners in Japan. Then, a comparison of self-directed and teacher-directed learning was made using GMS to determine whether they differ in their three metacognitive processes: planning, monitoring, and evaluating. The results showed that the Japanese version of the GMS comprised 18 items consistent with the four factors of the original version and had good internal consistency. This suggests that the Japanese version of the GMS is a valid and reliable tool for research and practice with Japanese-speaking populations. In addition, a comparison of mean scores for metacognitive processes revealed that the group metacognitive skills required for self-directed learning could be improved.

Keywords: group-level self-regulation, group metacognition, learner autonomy, self-directed learning, eTandem

Introduction

In recent years, research on self-regulated learning (SRL) has increasingly focused on the influence of an individual's social and cultural contexts (Panadero & Järvelä, 2015). This research tendency coincides with educational goals in Japan. For example, The Ministry of Education, Culture, Sports, Science, and Technology (MEXT) emphasizes the importance of fostering learner autonomy through collaborative activities with others in the latest *Guidelines for the Course of Study for Higher Education* released in 2018 (MEXT, 2018). Consequently, collaborative learning has been actively promoted in Japanese English language education.

By strengthening learner autonomy, students are expected to continue learning English autonomously based on their needs, even after leaving school and moving into wider society (Aoi & Tanaka, 2011). Therefore, research on Japanese English education has recently focused on group-level self-regulation, strongly influencing collaborative learning among students to support them better (e.g., Araki, 2019; Ito, 2017).

However, two major issues remain unaddressed. First, no appropriate measurement instruments are available in Japan, preventing researchers from gaining a deeper understanding of group-level self-regulation among English learners. Second, previous research focused primarily on teacher-directed learning, whereas empirical research on self-directed learning, particularly quantitative research, is lacking. However, these two types of online collaborative activity differ in nature and should not be confused (Holec, 2011). Notably, self-directed learning requires teacher support because even if learners are engaged in self-directed learning, this does not necessarily imply that they can advance their learning and achieve their goals (Morris, 2019). Therefore, to better assist with self-directed learning and advance research related to group-level self-regulation in Japanese English education, it is crucial to develop valid and reliable instruments to measure group-level self-regulation processes and put them to practical use soon.

Literature Review

This section introduces two key concepts–group-level self-regulation and group metacognition and existing measurement tools relevant to the study. Following an introduction to the differences between teacher-directed and self-directed learning, a conclusion emphasizing the significance of this study is presented.

Group-level Self-regulation

Research on SRL focused on self-regulation at an individual level, but more recently, research has focused on self-regulation at a group level (Panadero & Järvelä, 2015). Zimmerman (1986) defined SRL as the process by which students carry out their own learning through three aspects: metacognition, motivation, and behavior. He claimed that observing learners' SRL could effectively assess their learning outcomes. Oxford (2017) divided the SRL process into forethought, performance, and self-regulation phases. It argued that these three stages influence each other and are influenced by the sociocultural context. In other words, when learners engage in collaborative activities, group members who are part of the sociocultural context affect their self-regulation. Hadwin and Oshige (2011) also indicated that when learners engage in collaborative activities, they practice individual and group-level self-regulation. This means that in collaborative activities, learners need to regulate activities from an I perspective to a we perspective (Schoor et al., 2015). Group-level self-regulation means that group members "collectively set goals and monitor, evaluate, and regulate their shared social space" (Hadwin & Oshige, 2011, p. 259). During collaborative activities, both individual-level and group-level self-regulation may occur, while group-level self-regulation can facilitate group members' negotiation to have shared goals and jointly regulate their learning process, which is considered essential and effective in enhancing learning performance when engaging in collaborative activities (Hadwin et al., 2010; Hadwin et al., 2017). Furthermore, different groups may have different group-level self-regulation skills, similar to individual self-regulation skills (Lee, 2014). However, owing to the complexity of group-level self-regulation processes and multiple influencing factors, no appropriate questionnaire has been developed as a measurement tool (Panadero, 2017).

Group Metacognition in Group-level Self-regulation

Group metacognition dominates group self-regulation and reflects the cognitive skills required for collaborative activities (Biasutti & Frate, 2018). Metacognition was first introduced in Flavell's 1976 paper, which defined it as "one's knowledge concerning one's cognitive processes or anything related to them" (Flavell, 1976, p.232). Regarding the mechanism of metacognition, the meta- and object levels are the two levels (Nelson & Naren, 1990). By exchanging information, the meta-level produces actions that affect the state of the object-level process or the object-level itself (Nelson & Naren, 1990). In contrast, the object level monitors the meta-level to update its state (Nelson & Naren, 1990). Therefore, Schraw and Moshman (1995) divided metacognition into knowledge of cognition and regulation of cognition. They stated that knowledge of cognition helps learners better understand their learning abilities and allows them to determine when and how they should learn. Meanwhile, regulation of cognition refers to specific activities that learners perform in response to the former (Schraw & Moshman, 1995). According to Schraw and Dennison (1994), learners with metacognitive awareness have higher planning, monitoring, and evaluating skills and perform better than those without. Similarly, metacognitive skills may differ depending on the group (Biasutti & Frate, 2018).

Measure Group Metacognition of Autonomous Collaborative Learning

The Group Metacognition Scale (GMS) was developed by Biasutti and Frate (2018) in response to the lack of tools to measure group metacognitive skills. The GMS assesses online collaborative activities. It evaluates learners' group metacognitive skills through self-reporting of collaborative activities. It is based on Schraw and Moshman's (1995) theoretical framework, which divides metacognition into cognitive knowledge and regulation, where the latter includes planning, monitoring, and evaluating. Table 1 describes the target skills for each dimension according to Biasutti and Frate (2018). Biasutti and Frate (2018) confirmed the four-factor model structure of the GMS through exploratory and confirmatory factor analyses. Durak and Uslu (2021) translated the GMS into Turkish and validated a four-factor model structure.

The participants in Biasutti and Frate's (2018) study included psychology students and students pursuing a degree in primary education who were enrolled at a European university. All of these participants engaged in online collaborative activities provided by the university. By comparing the differences in mean scores of metacognitive processes between students from two majors, the GMS proved to be a valid tool for ascertaining differences in metacognitive processes between different groups of students in teacher-directed learning. However, whether it can also be applied to distinguish the differences in metacognitive processes between different learning styles remains unknown.

Table 1

Dimensions and target skills for the GMS

Dimensions	Target skills
Knowledge of cognition	Awareness of the group learning strategies, the information selection, the data selection, the use of material, and the categorization of new information

Planning	Awareness of the group's understanding of the learning objectives before beginning a task, making predictions before reading, selecting the most effective cognitive strategies, considering time and workload management
Monitoring	Awareness of the group's ability to check errors during the activities, change approach, improve the outputs, interact, questioning
Evaluating	Awareness of the group's ability to make judgments about the results, the working methods, the tools and the teamwork

Note. Adapted from "Group Metacognition in online collaborative learning: Validity and Reliability of the Group Metacognition Scale (GMS)," by M. Biasutti, S. Frate, 2018, *Educational Technology Research and Development*, *66*, p. 1328 (https://doi.org/10.1007/s11423-018-9583-0). Copyright 2018 by the Association for Educational Communications and Technology.

Self-directed Learning in Autonomous Online Collaborative Learning

Teacher-directed learning and self-directed learning are different types of autonomous learning, which requires completely different level of learner autonomy (Holec, 2011). In the former, students follow the frameworks that teachers have developed for them, whereas in the latter, students must customize a framework for their own learning (Holec, 2011). That is, in self-directed learning, the student is the final decision-maker in the learning process, and therefore, has the responsibility of deciding all matters concerning their learning, such as content, method, and learning frequency. Teachers serve only as supportive participants in the learning process, primarily by providing advice to students when they request assistance.

Currently, language learners have increasingly more resources available to conduct their learning online. An autonomous online collaborative learning method called eTandem, whereby two people with different native languages work together online to acquire a second language, is considered to be one of the most effective ways to learn a foreign language (Cziko, 2004). However, in reality, many eTandem learners have difficulties conducting their learning due to the lack of approaches for teachers to understand their challenges, thus only limited assistance can be provided by the teacher (Moriya, 2019). Furthermore, current empirical studies on autonomous learning appear to have focused primarily on teacher-directed learning, whereas we still lack empirical research to support the distinction between teacher-directed learning and self-directed learning (Aoi & Tanaka, 2011).

Concluding Insights from Literature Review

In summary, with the widespread use of collaborative activities, research interest in SRL and metacognition has shifted from the individual to the group level. Although understanding how learners engage in group-level self-regulation can help us assess learners' performance, as previously mentioned, no appropriate measurement tools are available. Although it does not provide a comprehensive understanding of group-level self-regulation, examining group metacognitive skills is an effective way to gain insight into how learners regulate the group-learning process. Group metacognition directly influences the three regulatory activities of planning, monitoring, and evaluating. The GMS is a valid tool for measuring group metacognition.

However, the difference between teacher-directed and self-directed learning in online collaborative learning was also introduced above. As mentioned, Japanese English teachers expect students to continue learning English through self-directed learning even after graduation and believe collaborative learning is an effective way to learn. However, we do not have a sufficient understanding of the differences between teacher-directed and self-directed learning. Therefore, a validated Japanese measurement tool is urgently needed to enable us to understand group regulatory processes in self-directed learning, and a translated version of the GMS is likely to serve this purpose.

Purpose of the Study

This study aims to adapt the GMS developed by Biasutti and Frate (2018) to Japanese and confirm its effectiveness in identifying differences between teacher-directed and self-directed learning in group metacognitive processes. The two specific research questions are as follows:

(1) Is the Japanese version of GMS reliable and valid?

(2) Do learners' mean scores on metacognitive processes differ between self-directed and teacher-directed learning?

Methodology

Participants

Sixty volunteers (42 males and 18 females) participated in the study. The participants were Japanese native speakers[1] with a minimum age of 18 years. Additionally, all of them had experience with informal eTandem language learning. Since the subjects of this study were people who engaged in self-directed learning–that is, learners who learn English autonomously according to their requirements–the participants were not limited to students. In addition, limiting the learning format to informal eTandem was intended to control the influence of the diversity of online self-directed learning forms on the research results. The participants were selected using convenience sampling. Their ages ranged from 18 to 60 years, and 28% were students. A total of 76.7% were 39 years old or younger, and 23.3% were over 39 years old. According to their self-evaluation of English proficiency, 30% were beginners, 63.3% were intermediates, and 6.7% were advanced. Table 2 presents the demographic characteristics of the participants, including such as gender, age group, student status, and English proficiency.

Table 2

Demographics of participants

	Demographic	Number of Participants	Number of Participants (%)
Gender	Male	42	70
	Female	18	30
Age group	18−24	20	33.3
	25−29	6	10
	30−34	12	20
	35−39	8	13.3
	40−44	6	10
	45−49	6	10
	50−54	1	1.7
	55−59	0	0
	60+	1	1.7
Student or not	Student	17	28.3
	Not student	43	71.7
English proficiency	Beginner	18	30
	Intermediate	38	63.3
	Advanced	4	6.7

Data Collection

Using Google Forms, a questionnaire link was sent to the target audience via the online platform Tandem[2]. The targets were screened using a filter function. Informed consent was obtained from all the volunteers before they completed the questionnaire. Approval to use the data collected in Tandem was obtained via email.

Measurements

The Group Metacognition Scale (GMS)

Biasutti and Frate (2018) developed the GMS to measure group metacognition in online collaborative learning. The GMS has 20 items measuring four dimensions–knowledge of cognition, planning, monitoring, and evaluation–each of which has five items scored on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5), with higher scores indicating better metacognitive skills. Sample items include "We know our strengths as learners" (knowledge of cognition), "We plan the activities" (planning), "We modify our work according to other group participants' suggestions" (monitoring), and "We make judgments on the difficulty of the task" (evaluating) (Biasutti & Frate, 2018, PP. 1335-1336). In addition, Biasutti and Frate (2018) asked students to evaluate themselves of their online collaborative activities at university, while in the translated Japanese version, GMS asked participants to evaluate themselves of their collaborative activities in Tandem.

Revision and Translation Procedure

Before revision and translation of the survey items, permission to do so was obtained from Michele Biasutti and Sara Frate via email. Then, to fit the context of eTandem learning and for better understanding, the description of GMS was revised slightly. The term "group participants" in item 11 was changed to "pairs". The translation process, including cultural adaptation, was based on the guidelines for translation suggested by Wild et al. (2005). Specifically, in order to avoid any ambiguity or mistranslation, the meanings of some terms in the scale, such as 'task', 'instrument', etc., were confirmed in advance by the scale developers. Then, to ensure accuracy and cultural appropriateness of the translation, a forward-backward translation method was employed. Two native Japanese translators independently performed the forward translation, and after combining the two versions into one, a third translator performed the backward translation. The translation was carried out on the basis of not changing the meaning and wording of the original text as much as possible, however, some words that native Japanese speakers are not commonly using in the context of language learning or are familiar to them were adjusted to reflect the correct wording in the translation. The entire translation process, including wording adjustments and grammar checks, was conducted under the supervision of a Japanese expert with decades of experience in teaching English and applied linguistics. Following the verification of the consistency between the original and the back-translated content, six random Japanese people who met the research subject requirements were invited to check the Japanese version of GMS to determine whether it is comprehensible.

Statistical Analysis

R version 4.2.1. was used to analyze the validity and reliability of the Japanese revised GMS. Construct validity was assessed by exploratory factor analysis (EFA), and internal consistency was assessed using Cronbach's α (Mohajan, 2017). Before analysis, data screening was performed to check for outliers and missing data. The EFA was implemented following the steps of Taherdoost et al. (2014). First, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were used to evaluate whether the data were suitable for EFA after confirming the sample size. The number of constructs retained for rotation was then examined using Kaiser's criteria (eigenvalue > 1 rule) and parallel analysis. Finally, the maximum likelihood method and Promax rotation were used to explore the factor structure of the scale.

A one-sample t-test was conducted using JASP version 0.16.4 to examine whether there were differences in the mean scores between self- and teacher-directed learning regarding planning, monitoring, and evaluation. Data provided by Biasutti and Frate (2018) on the mean scores of primary school trainee teachers and the mean scores of psychology students were utilized to indicate teacher-directed learning (Table 3). This is because it is the only study that provides mean scores for various groups' metacognitive levels of teacher-directed learning under planning, monitoring, and evaluation. As a convenience guide, I refer to the group of primary school trainee teachers with higher scores as the high-scoring teacher-directed learning group and the group of psychology students with lower scores as the low-scoring teacher-directed learning group. A one-sample t-test was performed following Gerald (2018). The assumption of normality was tested using the Kolmogorov-Smirnov (KS) test. Hypotheses were set, and significance levels were stated before calculating the statistics and comparing the results.

Table 3

Mean scores of high-scoring teacher-directed learning group and low-scoring teacher-directed learning group in Biasutti & Frate (2018)

Factors	Mean Scores of High-scoring Teacher-directed Learning Group	Mean Scores of Low-Scoring Teacher-directed Learning Group
Planning	3.714	3.200
Monitoring	3.876	3.430
Evaluating	3.709	3.272

Results

Research Question One

Exploratory Factor Analysis

The item-to-case ratio was 1:3, and five Likert scales were adequate for this analysis (Bujang et al., 2012). Additionally, Bartlett's test was significant (Bartlett's K-squared = 12.454, df = 4, p-value = 0.01427), and the KMO result was 0.79, higher than the minimum acceptable value of 0.50 (Williams et al., 2010). The results of these tests indicated that the data were appropriate for factor analysis. Furthermore, there was no missing data in the data set.

In determining the number of factors to be retained, the parallel analysis suggested keeping two factors, while the actual data indicated the presence of five factors with eigenvalues greater than one. Still, four were retained for the factor analysis, considering the design theory of the GMS and the clarity of the assessed items (Williams et al., 2010). All cross-loaded items equal to or greater than 0.32 were removed, except when the high load is within the correct factor and the cross-loads differ by 0.1 or greater (Sürücü, 2022). Therefore, item 8 and item 18 were successively removed, whereas item 16 remained.

The final model (Table 4) had a four-factor structure with 18 items, consistent with the original model: Factor 1 (knowledge of cognition; five items), Factor 2 (planning; four items), Factor 3 (monitoring; five items), and Factor 4 (evaluation; four items). Table 4 shows that the rotated component matrix has values between 0.390 and 0.936. The four-factor model explained 56.0% of the total variance. Each factor explained 18.3% of the variance for knowledge of cognition, 14.0% for planning, 11.8% for monitoring, and 11.8% for evaluation.

Table 4

Factor Pattern/Factor Loadings for Exploratory Factor Analysis with Promax Rotation of the Japanese Version of the Revised GMS

Items	Factor 1	Factor 2	Factor 3	Factor 4
Item 1	0.620			
Item 2	0.692			
Item 3	0.809			
Item 4	0.920			
Item 5	0.865			
Item 6		0.618		
Item 7		0.514		
Item 9		0.936		
Item 10		0.892		
Item 11			0.558	
Item 12			0.904	
Item 13			0.476	
Item 14			0.390	
Item 15			0.429	
Item 16				0.593
Item 17				0.920
Item 19				0.680
Item 20				0.543

Reliability Analysis

Cronbach's α was calculated to assess the internal consistency of the scale. The scale was found to have high internal consistency (α = 0.89), and Cronbach's α for knowledge of cognition, planning, monitoring, and evaluating were respectively 0.88, 0.85, 0.74, and 0.81.

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Research Question Two

The results of the KS test in Table 5 showed that the data for all three factors satisfied a normal distribution (p for planning = 0.398, p for monitoring = 0.178, and p for evaluating = 0.417). Therefore, a one-sample t-test was appropriate. Table 5 presents the results of the descriptive statistics. The means of eTandem learners for the planning, monitoring, and evaluation factors were as follows: mean = 3.273, SD = 0.791; mean = 3.370, SD = 0.726; and mean = 3.187, SD = 0.860.

Table 5

Descriptive statistics and normality test results using the Kolmogorov-Smirnov test

Factors	N	Mean	SD	Statistic	p
Planning	60	3.273	0.791	0.116	0.398
Monitoring	60	3.370	0.726	0.142	0.178
Evaluating	60	3.187	0.860	0.114	0.417

Comparison with High-scoring Teacher-directed Learning Group

Table 6 shows the results of the one-sample t-test, with the mean scores of the high-scoring teacher-directed learning group as the test values. It can be concluded that

(1) For factor planning, the mean score of eTandem learners was significantly lower than that of the high-scoring teacher-directed learning group (t =-4.313, p < 0.001, 95% confidence interval [CI] =-0.645 to-0.236, and Cohen's d =-0.557).

(2) For factor monitoring, the mean score of eTandem learners was significantly lower than that of the high-scoring teacher-directed learning group: t = -5.398, p < 0.001, 95% CI = -0.694 to -0.318, and Cohen's d = -0.697.

(3) For factor evaluation, the mean score of eTandem learners was significantly lower than that of the high-scoring teacher-directed learning group: t = -4.703, p < 0.001, 95% CI = -0.745 to -0.300, and Cohen's d = -0.607.

Table 6

One-sample t-test (mean scores of high-scoring teacher-directed learning group as the test value)

Factors	t	p	Mean Difference	95% CI for Mean Difference		Cohen's d
				Lower	Upper	
Planning	-4.313	< .001	-0.441	-0.645	-0.236	-0.557
Monitoring	-5.398	< .001	-0.506	-0.694	-0.318	-0.697
Evaluating	-4.703	< .001	-0.522	-0.745	-0.300	-0.607

Comparison with Low-scoring Teacher-directed Learning Group

Table 7 shows the results of the one-sample t-test, with the mean scores of the low-scoring teacher-directed learning group as the test values. Thus, the following conclusions were drawn:

(1) For the planning factor, the mean scores of the eTandem learners did not show significance at the level of the mean scores of the low-scoring teacher-directed learning group. This means there was no difference between the two mean scores: t = 0.718, p = 0.476 > 0.05, 95% CI = -0.131 to 0.278, and Cohen's d = 0.093.

(2) For factor monitoring, the mean scores of eTandem learners did not show significance at the level of the mean scores of the low-scoring teacher-directed learning group. This means there was no difference between the two mean scores: t = -0.640, p = 0.525 > 0.05, 95% CI = -0.248–0.128, and Cohen's d = 0.083.

(3) For factor evaluation, the mean scores of eTandem learners did not show significance at the level of the mean scores of the low-scoring teacher-directed learning group. This means there was no difference between the two mean scores: t = -0.768, p = 0.445 > 0.05, 95% CI = -0.308 to 0.137, and Cohen's d = -0.099.

Table 7

One-sample t-test (mean scores of low-scoring teacher-directed learning group as the test value)

Factors	t	p	Mean Difference	95% CI for Mean Difference		Cohen's d
				Lower	Upper	
Planning	0.718	0.476	0.073	-0.131	0.278	0.093
Monitoring	-0.640	0.525	-0.060	-0.248	0.128	0.083
Evaluating	-0.768	0.445	-0.085	-0.308	0.137	-0.099

Discussion and Conclusion

Due to a lack of validated instruments to measure self-directed learners' group-level regulatory processes in Japan, this study attempted to adapt the GMS scale, a group metacognitive skills measurement instrument developed by Biasutti and Frate (2018) for online collaborative learning, to suit the Japanese context specifically targeting at eTandem learners. According to the results of the exploratory factor analysis, the structure of the Japanese version of the GMS scale is valid, and the internal consistency reliability analysis indicates that the items in the Japanese version of the GMS scale are consistent. Therefore, the instrument is valid and reliable for discussing group metacognitive processes in collaborative online learning in the Japanese context, and it can also be used to measure group metacognitive skills in learners who engage in self-directed learning.

However, despite having the same four-factor structure as the original version with 20 items, the Japanese version contained only 18 items. Items 8 "Watashitachi wa tekisetsuna tsuru wo sentaku suru (We choose the right tool)" and item 18 "Watashitachi wa gakusyuusyudan/tsuru nitsuite kentoushiteiru (We are examining learning methods/tools)" with significant cross-loading factor loadings were removed from the Japanese version. This is most likely due to the fact that all subjects in this study used the same learning tool, the online platform Tandem. As they had all defaulted to learning using Tandem as a learning tool, they felt they no longer needed to select a learning tool, so their responses did not reflect the underlying structure expected by items 8 and 18. The removal of items 8 and 18 increased the total variance explained by the four-factor model from 55.5% to 56.0%, which was considered adequate by Williams et al. (2010). Although the overall reliability decreased from 0.91 to 0.89, it still indicated high internal consistency (Nunnally & Bernstein, 1994). Thus, the removal of items 8 and 18 can be considered to have facilitated the structural validity of the GMS measure by allowing the remaining items to reflect the intended constructs more accurately. Therefore, overall, the translation of the GMS proved appropriate for the Japanese, and the results suggest that group-level self-regulation is a possible mechanism for assessing the learning process of autonomous collaborative learning in Japanese populations.

In addition, a one-sample t-test was used to test whether learners' mean scores on group metacognitive processes differ between self-directed and teacher-directed learning. The results revealed that the mean scores in the group metacognitive processes under self-directed learning were lower than those in the high-scoring teacher-directed learning group but not significantly different from those in the low-scoring teacher-directed learning group. These results empirically demonstrate the difference between self-directed and teacher-directed learning and imply room for improving the group metacognitive skills of learners engaged in self-directed learning. Biasutti and Frate (2018) indicated that high-scoring teacher-directed learning groups (primary school trainee teachers) scored higher on average because they knew the importance of group metacognition and practiced it a lot in the classroom. It has been shown in Robillos and Thongpai (2022) that it is possible to acquire self-regulation skills. In other words, learners' metacognitive skills in self-directed learning can be improved if they are made more aware of the importance of group-level metacognition and are provided with appropriate metacognitive skills training applicable to self-directed learning.

The reason that eTandem learners who actively engaged in self-directed learning scored lower than high-scoring teacher-directed learning group in planning, monitoring, and evaluating may be the result of the fact that when learners receive teacher-directed learning in school, most of the planning and evaluating activities were already handled by teachers. As a result, they do not have many opportunities to get practice and receive adequate feedback from teachers in these two dimensions, which is likely why, even when learners engage in self-directed learning according to their needs, they are not necessarily highly skilled in these two areas. Banson (2022) emphasized the importance of planning and evaluating in online collaborative learning, which directly impacts learners' learning. At the same time, Banson (2022) also pointed out that the design of online platforms and teacher support can still be improved significantly. Meanwhile, the three aspects of the metacognitive processes interact and influence one another (Oxford, 2017), so when planning and evaluating are not performed adequately, underperformance in monitoring is likely to follow. There is, however, a need for further investigation as to why self-directed learners have lower mean scores on all three aspects of planning, monitoring, and evaluating.

Implication for Learner Autonomy Practice

Group-level self-regulation is an important factor in self-directed learning (Järvelä et al., 2014). This study was an initial attempt to connect learners engaged in self-directed learning, who had been neglected in the past, with the expectation that more practical assistance could be provided to autonomous learners in the future. Benson (2011) emphasized that education should not be limited to the classroom; only by breaking the boundaries of the classroom and understanding how students learn autonomously outside the classroom can we genuinely develop students with a high degree of autonomy. However, because of school policy constraints and the lack of teachers familiar with learner autonomy, the assistance available to students studying autonomously outside the classroom is limited (Moriya, 2019). Moriya (2019) suggested that it is necessary to analyze and understand the difficulties that current autonomous learners experience to build a complete support system. Similarly, Jeanjaroonsri (2023) emphasized that teacher support is crucial in self-directed learning. The Japanese version of the GMS is a valuable tool that can contribute to this. It helps teachers access self-directed learners' progress in group metacognitive skills. It allows teachers to observe students not doing well in terms of their scores in each dimension to provide specific suggestions for learning.

Limitations and Future Research

This study examined group-level self-regulation skills and provided evidence for using the Japanese version of the GMS among a sample of eTandem Japanese learners. Although the study sample met the requirements for conducting EFA, one study limitation was that it included only eTandem learners; thus, this scale is limited in being generalizable to eTandem learners. It is suggested that other collaborative learning studies be conducted to evaluate the Japanese version of the GMS in the future. The sample of eTandem learners in this study was also characterized by group members with different native languages, English as the target language, and an age group of 18 years or older. Therefore, future studies should investigate the validity and reliability of the Japanese GMS using other Japanese samples (e.g., different group pairings, target languages, and age groups).

Second, the Japanese GMS contained 18 items instead of the original 20. Nevertheless, this study found a four-factor structure consistent with the original model (Biasutti & Frate, 2018) and the Turkish version (Durak & Uslu, 2021). Future research should retest the factor structure of the 20-item and 18-item Japanese GMS with other Japanese samples to confirm the results of the present study.

Third, when comparing the GMS scores for learners in self- and teacher-directed learning, the three groups did not have the same majors, and the versions of the GMS used did not have the same number of items, although they had the same four-factor structure. These differences cannot be assumed to have affected the results. These differences cannot be completely assumed to have had no effect on the results. Future studies should test these aspects again with improvements to determine whether the same results will be produced.

Conclusion

Group-level self-regulation is an important determinant of learning effectiveness in collaborative learning. The GMS was developed to assess the group metacognitive skills of learners engaged in online collaborative learning (Biasutti & Frate, 2018). I adapted the GMS to fit the context of eTandem, and translated it into Japanese. The preliminary validation results showed that the Japanese version of the GMS was reliable and valid for research and practice among Japanese eTandem English learners. Furthermore, the results support the notion that group-level self-regulation is appropriate in the Japanese context. Nevertheless, future research will help continue testing the Japanese version of the GMS using Japanese samples. Finally, examining whether there were differences in the GMS scores of learners in self-directed and teacher-directed learning showed that there is still room for improvement in the group's metacognitive skills needed for self-directed learning.

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Endnotes

[1] In this study, native Japanese speakers were judged by volunteers who set their Japanese level as native speakers based on their self-evaluation in the mobile app Tandem.

[2] Tandem is an eTandem platform with 18 million users worldwide who can practice with native speakers of their target language through its website or mobile apps (Tandem, n.d.).

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Appendix

Japanese Version of Revised Group Metacognition Scale for Tandem Learning

説明：「Tandem」による言語学習活動中に、あなたと最も頻繁に交流した学習パートナーとの間で通常起きたことを考え、以下の記述にどの程度当てはまるか、もしくは当てはまらないかをお答えください。

	全くそうは思わない	そう思わない	どちらともいえない	そう思う	強くそう思う
1. 私たちは学習者としての自身の強みをわかっている					
2. 私たちは関連のある情報を選択する方法を知っている					
3. 私たちは資料の使い方を知っている					
4. 私たちは新しい情報を整理する方法を知っている					

5. 私たちは新しい情報を既にある知識に結びつける方法を知っている	
6. 私たちは計画的に学習活動を行なっている	
7. 私たちはタスク（学習活動）に必要なものを決める	
8. 私たちは適切なツールを選択する	
9. 私たちはタスク（学習活動）に応じて学習方法を決めている	
10. 私たちはタスク（学習活動）に応じて学習時間を調整している	
11. 私たちは他のペアからの提案により自身の学習活動を手直しする	
12. 私たちは理解度を確認するために質問をする	
13. 私たちは学習成果を向上させるために自身のやり方を確認している	
14. 私たちはグループ活動によって自身の学習活動を改善している	
15. 私たちは不具合を探して，直している	
16. 私たちはタスク（学習活動）の難しさについて検討している	
17. 私たちは学習活動の量について検討している	
18. 私たちは学習手段・ツールについて検討している	
19. 私たちは学習活動の成果について検討している	
20. 私たちはチームワークのあり方について検討している	