

Metacognition over learning attitudes in EFL learning

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Motivation does not always work for low-achieving students. The reason lies in their weak metacognition. This study examined the priority of metacognition over learning attitudes in English as a Foreign Language (EFL) learning. Instruments used were a proficiency test, a metacognitive awareness questionnaire, and an English learning attitudes questionnaire. The data from 250 third-year students of a low-achieving high school indicated learning outcomes affected learning attitudes; the affective factors, then, activated metacognition, and that the metacognition aided the EFL learning in a cyclical manner. Another close investigation of metacognition and motivation within the participants and multiple comparisons of metacognition between 777 students of the participants' school, 80 junior high school students, 67 advanced-level students of another high school, and 59 adults also supported the findings. We should try not only to motivate our students but also to develop their metacognition in assisting low-achieving EFL students.

動機付けは低学力生徒には効かないことがある。その理由はメタ認知の弱さにある。本研究は英語学習におけるメタ認知の学習意識への優越性を検討した。英語能力テスト、メタ認知意識調査、英語学習意識調査を使用し、学力的に高くはない高校の3年生250人のデータから、学習結果は学習意識に影響し、それがメタ認知を活性化させ、英語学習を循環的に促進させることが明らかになった。この結果は、調査参加者のメタ認知と動機付けの関係をさらに検討し、また、同じ高校の777人、中学生80人、別の学力上位高校の67人、成人59人のメタ認知を多重比較した結果からも支持された。低学力の英語学習者を指導する際には、動機付けを図るだけでなく、彼らのメタ認知の開発にも努めなければならない。

RESearch shows that strong motivation correlates with academic success, including in EFL learning (Dörnyei, 2001; Oxford, 1996). Similarly, some of the 169 *Super English Language High Schools* (SELHi), designated by the Japanese Ministry of Education, Culture, Sports, Science and Technology throughout Japan, did 3-year projects on positive learning attitude changes, or effective motivation, and their findings have been widely shared through their reports and others (Benesse Corporation, 2006). A key to students' success in the classroom, as a result, could be their strong motivation. However, motivation does not always work as expected, especially with low-achieving students. Whatever and however strong motivation they may show, they can fail to develop language proficiency, and, eventually, are believed to lack learning abilities and labeled as hopeless. Situations like this, unfortunately, may be repeatedly observed in many classrooms.



As cognitive science progresses, on the other hand, the relationship between learning and “metacognition” (Flavell, 1979) has attracted a lot of attention as a prerequisite for academic success (see Bruer, 1993; Eilers & Pinkley, 2006; Garner & Alexander, 1989; Isaacson & Fujita, 2006; Pressley & Ghatala, 1990; Vandergrift, 2005). It is known as “thinking about thinking,” and falls into two categories: “knowledge of cognition” and “regulation of cognition” (Schraw, 1998; Schraw & Dennison, 1994). Research shows a strong correlation between the level of metacognitive abilities and academic success (Phakiti, 2003; Pintrich & De Groot, 1990; Vrugt & Oort, 2008). However, although a number of studies have demonstrated the role of metacognitive “strategies” in English language learning (Carrell, Pharis, & Liberto, 1989; O’Malley & Chamot, 1990; Oxford, 1990), there is little agreement on how students’ learning, metacognition, and motivation or learning attitudes are related with one another. Do the last two equally activate learning, or is one of them required before the other for effective learning? This paper will develop a hypothesis that motivation does not directly facilitate learning itself but somehow stimulates metacognition so that it will enhance positive and effective learning. Furthermore, metacognition is related with choice and use of appropriate learning strategies, but this possibility and the EFL learning process itself will not be discussed here.

Method

Participants

Two hundred fifty third-year students (113 male, 137 female) of a low-achieving public high school in the Shikoku area, located in the western part of Japan, participated in this research in 2007 and 2008. According to their teachers they were not good at using English in the classroom. Most of them had difficulty in understanding spoken English and comprehending English texts. Ex-

pressing themselves in English was also a problem. They had low self-esteem and were reluctant to study English both in and out of the classroom because they said they had failed or had a bad time in English classes at junior high school. About two thirds of the students, for example, answered that they didn’t like studying English in a simple questionnaire at the beginning of each school year. About 20% of the first year students at the time of their entrance to high school either could not write the alphabet in the right order or could not write a few letters correctly.

According to the *Global Test of English Communication for Students* (GTEC), an English proficiency test, their average English level was one school grade behind the national average. Furthermore, *Shinken-moshi*, a nationwide achievement test taken every semester, showed average T-scores of 40 to 43. Both tests are administered by a private company, the latter being used to prepare students for college entrance examinations. Except for some prestigious universities, however, most universities nowadays accept all students to avoid under-enrollment, and thus entrance examinations no longer provide strong incentives to study EFL as they once did.

Instrument

Data were collected through GTEC and two self-assessment inventories in May and June 2008. They were also compared with the data in 2007.

GTEC is a TOEIC-like standardized test, which measures listening, reading, and writing proficiency. Administered by a private company, *Benesse Corporation*, its total score is 800, calculated on the item response theory so that each test result can be compared. The listening and reading comprehension sections are multiple-choice tests, and the third section is essay-writing.

The second instrument was an English learning attitudes questionnaire (See Appendix 1). It is based on a four-point Lik-

ert scale, ranging from *strongly agree* (4) to *strongly disagree* (1), and contains 30 question items that were adopted from Nakata (2007). Nakata developed a questionnaire to collect information on students' learning experiences and their motivational changes. Our inventory investigated a part of his questionnaire and six factors were found: strategy use, autonomy, intrinsic motivation, self-confidence, anxiety, and ability perceptions. Some of these factors were then used to discover the relationship of motivation with English proficiency and metacognition.

The third test was a five-point Likert scale-based metacognitive awareness questionnaire, ranging from *strongly agree* (5) to *strongly disagree* (1) (See Appendix 2). It consisted of 52 question items adopted and translated from the Metacognitive Awareness Inventory, known as the MAI in educational psychology (Schraw & Dennison, 1994). The MAI was an inventory developed not to measure specific EFL-learning-related skills but to measure general metacognitive awareness. Metacognition should be clearly distinguished from English learning attitudes in this study; otherwise, both might be mistaken as the same variables of individual differences. Also, in the original MAI, although two factors, metacognitive knowledge and metacognitive regulation, were identified, total scores derived by adding the scores of each set of questions were used as metacognition scores to avoid sampling variation that might have been caused by translation.

Survey I Procedure

The participants took the GTEC on a particular day with a different schedule from the daily timetable. The time spent was 45 minutes for the reading comprehension, 25 minutes for the listening comprehension, and 20 minutes for the essay writing section, with a 10-minute recess between the first two sections.

They were given the other two questionnaires separately

at the beginning of their regularly scheduled class periods on two days separate from the date of the GTEC, then asked to complete and return them when finished. Students were also informed that their responses were statistically processed and that the results would never affect their grades. The questionnaire surveys lasted approximately 20 minutes for each one. Answer sheets with a missing value or values were discarded to avoid possible misinterpretation.

Data were analyzed in the following three ways: (1) a correlation analysis among EFL proficiency that was inferred through the first instrument, English learning attitudes through the second instrument, and metacognition through the third instrument; (2) comparisons of English learning attitudes scores and metacognition scores on GTEC levels; and (3) comparisons of metacognition scores and GTEC scores on self-confidence levels.

Result

A correlation analysis between English proficiency, learning attitudes, and metacognition

Modest correlations were found between English proficiency, learning attitudes, and metacognition, but not for the anxiety factor (Table 1).

Comparisons of English learning attitudes scores and metacognition scores on GTEC levels

Out of the 250 students, 246 students took GTEC twice, in June 2007 and in June 2008, and they were classified into three categories: (1) Group A, or the top 20% ($n = 47$), whose scores increased by 50 points or more, with a maximum 105-point increase, (2) Group B, or the bottom 20% ($n = 46$), whose scores decreased by 16 points or more, with a maximum 95-point decrease, and (3) the others, or the middle 60%. The mean English

Table I. Correlations between English proficiency, learning attitudes, and metacognition

	1	2						3
		(1)	(2)	(3)	(4)	(5)	(6)	
1. metacognition	--							
2. learning attitudes								
(1) learning strategies	.47**	--						
(2) autonomy	.39**	.55**	--					
(3) intrinsic motivation	.24**	.54**	.43**	--				
(4) self-confidence	.24**	.46**	.42**	.45**	--			
(5) anxiety	-.10*	-.17**	-.31**	-.14*	-.18**	--		
(6) ability perceptions	.19**	.35**	.30**	.55**	.23**	-.33**	--	
3. GTEC	.27**	.26**	.15*	.20**	.27**	-.05	.19**	--

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

learning attitudes scores and the mean metacognition scores of Group A and B taken from the two questionnaires were compared. Independent-sampled t -tests showed no statistically significant difference in the mean English learning attitudes scores for Group A and B (Table 2).

On the other hand, there was a significant difference in the mean metacognition scores for Group A ($M = 164.02$, $SD = 23.71$, 95% CI [157.06, 170.98]) and B ($M = 143.41$, $SD = 24.46$, 95% CI [136.15, 150.68]), $t(91) = 4.13$, $p < .001$, $r = .40$.

Comparisons of metacognition scores and GTEC scores on self-confidence levels

Out of the 250 participants, 224 people answered the English learning attitudes questionnaire twice, in September 2007 and in May 2008. Out of the six factors found in the questionnaire results, focus was on the self-confidence factor, whose scores were

the total points of the following question items: "1. I am good at English.", "2. I am confident about speaking English.", and "3. I am confident of my English pronunciation."

The students with a three to six point increase were classified as Group C ($n = 18$), and those with a two to four point decrease were classified as Group D ($n = 20$), which indicated that the former gained and the latter lost self-confidence. The two groups were compared on mean metacognition scores taken from the questionnaire and mean GTEC scores. An independent-sampled t -test showed no statistically significant difference in the mean metacognition scores for Group C ($M = 154.17$, $SD = 28.13$, 95% CI [140.18, 168.15]) and D ($M = 155.45$, $SD = 27.27$, 95% CI [142.69, 168.21]), $t(36) = 0.14$, $p = .888$, $r = .03$. On the other hand, there was a significant difference in the mean GTEC scores for Group C ($M = 363.78$, $SD = 37.68$, 95% CI [345.04, 382.52]) and D ($M = 432.55$, $SD = 66.02$, 95% CI [401.65, 463.45]), $t(36) = 3.91$, $p < .001$, $r = .55$.

Table 2. Independent-sampled *t*-tests of mean learning attitudes scores on GTEC levels

factors (question item numbers)	Group A			Group B			<i>d</i>	<i>t</i>	<i>p</i>	<i>r</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>				
learning strategies (10, 11, 12, 13)	47	9.02	2.50	46	8.09	2.24	91	1.90	.061	.20
autonomy (14, 15, 16)	47	7.72	1.78	46	7.33	2.08	91	0.99	.324	.11
intrinsic motivation (25, 26, 27, 28, 29, 30)	47	16.02	3.57	46	15.22	3.41	91	1.11	.270	.12
self-confidence (1, 2, 3)	47	5.55	1.80	46	5.17	1.50	91	1.10	.273	.12
anxiety (4, 5, 6, 9)	47	10.11	2.44	46	10.13	2.65	91	0.05	.964	.01
ability perceptions (22, 33)	47	6.34	1.22	46	6.09	1.26	91	0.98	.327	.11

Discussion

A learning hypothesis proposal from the research results

The data obtained imply the following elements: GTEC scores indicate EFL learning outcomes, the metacognitive awareness questionnaire answers show metacognition, and the English learning attitudes questionnaire results relate to learning attitudes.

The first result (Table 1), then, demonstrates that there is a relationship between the three variables: EFL learning, learning attitudes, and metacognition. They are related to each other, but the cause and effect relationship is not clear at this point.

The second result (Table 2) shows learning attitudes do not necessarily guarantee improvement in GTEC scores, and that the score improvement presupposes high metacognition. While learning attitudes and GTEC score improvement showed a correlation in the first result, the second result shows that the former doesn't guarantee the latter. Thus, EFL learning outcomes affect learning attitudes, and GTEC score improvement presupposes high metacognition. The importance of metacognition as a major element that regulates language learning agrees with Casanave (1988) and Wenden (1998).

The comparison of metacognition scores on self-confidence levels shows that the students who gained confidence and those who lost confidence have the same level of metacognitive abilities. It suggests that attitude changes are not affected by metacognition. However, since they are correlated as in the correlation analysis above, learning attitudes can affect metacognition, but not vice versa. In contrast, the comparison of GTEC scores on self-confidence levels reveals that the students who became less confident did better than those who did not. As Table 2 shows, self-confidence does not change GTEC scores; hence, it is the learning outcomes that change learning attitudes. Interestingly, the lower their attitudes scores became, the better GTEC scores the students got. At first glance it seems contradictory, but this is not surprising because the high achieving students at this level may have used their metacognition properly, as shown by the *t*-test of the mean metacognition scores for Groups A and B, and evaluated themselves as still incompetent learners. Their answers became modest, which agrees with an earlier study that revealed the tendency of high performing students to evaluate themselves modestly (Dunning, Johnson, Ehrlinger & Kruger, 2003; Kruger & Dunning, 1999).

These findings altogether have led us to the hypothetical English learning context model I, which is a good learner's model (Figure 1).

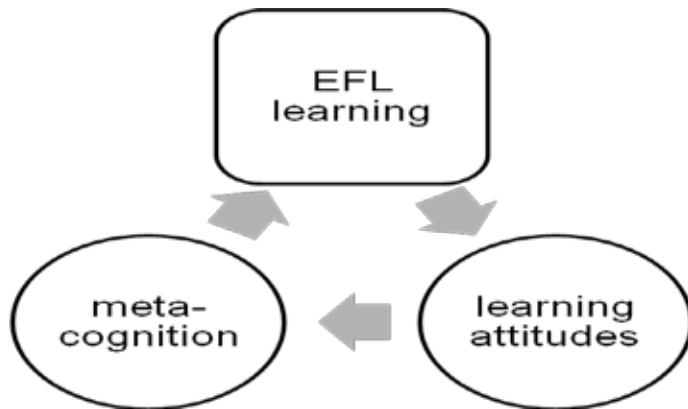


Figure 1. The hypothetical English learning context model I (a good learner)

Survey 2

The mean metacognition scores among six academically different groups were compared to find evidence that good learning outcomes presuppose strong metacognition.

Procedure

To support and confirm the model above, the mean metacognition score differences among six groups were measured in July, 2008: first-year, second-year, and third-year students of the high school in the first survey; second-year public junior high school students; second-year high-achieving high school students of a

competitive high school; and high school teachers.

One hundred metacognitive awareness questionnaires were sent to both an average-level public junior high school and the most competitive high school in the same school district with a request to conduct the survey in the same manner as in the low-achieving school from the first survey. The second year students of both of the schools participated in their homeroom classes, and a listwise deletion of missing data left the participants as shown in Table 3. In addition, teachers of the first school answered the questionnaire during a monthly teachers' meeting.

Result

Table 3 shows that, the higher the academic level, the more metacognition the participants are expected to have.

Table 3. Multiple comparison of metacognitive abilities on different academic levels

groups	n	M	SD	95% CI	
				LL	UL
adults					
high school teachers	59	190.37	a	25.68	183.68 197.07
high school students					
high-achieving 2nd-yr	67	169.64	b	24.04	163.73 175.51
low-achieving 1st-yr	259	151.66	c	27.52	148.30 155.03
2nd-yr	263	146.90	d	24.95	143.88 149.93
3rd-yr	255	151.13	e	24.26	148.13 154.12
junior high school students					
2nd-yr	80	149.09	f	28.58	142.73 155.45

Note. one-way analysis of variance (ANOVA): $F(5, 975) = 33.98$,

$p < .001$, $\eta^2 = 0.15$; Tukey HSD post hoc tests: $a > b > c = d = e = f$, $p < .05$; CI = confidence interval: LL = lower limit, UL = upper limit

Discussion

The data from the students at the low-achieving high school, regardless of the school year differences, showed the same level of metacognition, and it was the same as that of junior high school students. This weak metacognition is one of the main reasons why the students are "low-achieving." They haven't developed enough metacognition which is needed to facilitate and regulate EFL learning. On the other hand, Stewart, Cooper and Moulding (2007) discussed that teachers' metacognition developed with age and years of experience, which indicates why the oldest and the most experienced group in this study had the highest scores. These findings with the above exploration have led us to the second learning context model, which is a poor learner's model (Figure 2).

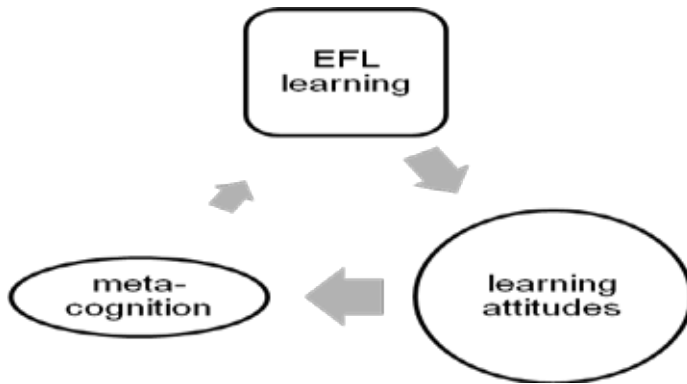


Figure 2. The hypothetical English learning context model II (a poor learner)

This model can explain why some serious students fail to raise their proficiency level regardless of their high motivation. Even if they are inspired to learn, they cannot use the favorable attitude changes for learning because they lack enough metacognition, which is a direct controller of learning. The model could also account for their dependence on only a few strategies, such as rote memorization strategies and repetition strategies, without utilizing other types of strategies. This is because weak metacognition cannot help learners to select appropriate strategies even when it is necessary, or they simply lack enough metacognitive knowledge, which would include metacognitive strategies, such as planning, monitoring, modifying and evaluating learning processes and learning outcomes.

Survey 3

The third survey tried to highlight the relationship between motivation and metacognition, and confirm the validity of the hypothetical models.

Procedure

To begin with, the top and bottom 25% of the 250 participants in Survey 1 were formed as a result of the metacognitive awareness questionnaire. Then, in each of the two groups the top and bottom 25% of the students were identified respectively, based on the intrinsic motivation scores from the English learning attitudes questionnaire. Finally, the four means of GTEC scores were compared.

Result

Though there is not a significant difference between the four means, a certain tendency can be observed (Table 4).

Table 4. Mean GTEC score comparison in terms of metacognition and motivation level

metacognition	motivation	n	M	SD	95% CI		
					LL	UL	
high	high	15	417.67	a	56.80	386.21	449.12
	low	15	407.20		89.24	357.78	456.62
low	high	18	392.44		54.54	365.32	419.57
	low	17	349.94	b	72.89	312.47	387.42

Note: CI = confidence interval; LL = lower limit, UL = upper limit; one-way ANOVA $F(3, 61) = 3.01, p = .037, \eta^2 = 0.13$; Tukey HSD post hoc tests: $a > b, p < .05$

Discussion

In terms of motivation, learners with strong motivation might do better than those with weak motivation, but those with advanced metacognition tend to do much better. This fact strongly supports the hypothetical models proposed above: learning attitudes activate metacognition and thus facilitate learning.

Implications

Strategy training has been popular in Japanese EFL settings. However, EFL teachers should not limit themselves to training alone when they assist low-achieving learners. Likewise, we should be careful not to think of motivating our students as the only goal. In both cases we must consider metacognition development as a prerequisite to the following training and/or motivational variables; otherwise, we may not have favorable learning outcomes. The students must develop appropriate metacognition beforehand to make the most of their motivation and choose the best strategies efficiently at any particular moment.

How then can we develop the students' metacognition? Metacognitive knowledge is teachable (Schraw, 1998), and some

teaching methods have been suggested (Conley, 2008; Schraw, 1998). Another option is "reciprocal teaching" (Palincsar & Brown, 1984) and other cooperative learning methods (Jacobs, Power, & Loh, 2002; Slavin, 1994). Metacognition cannot be observed from the outside, but peer interaction can make it easier for students to monitor their own mental processes, by making them explain their thoughts to others, thereby improving their metacognition. Describing your thoughts to other people requires you to focus on your own thoughts. The questions and clarifications from your listeners can also turn your attention to your thinking. Even in a Japanese EFL context, where students are thought to be quiet learners, carefully planned cooperative learning may work.

Limitations

Although we have proposed the hypothetical English learning context model I and II, we haven't discussed the relationship between metacognition and strategy use. We know that metacognition governs the choice of context-appropriate strategies, including metacognitive strategies (Carrell, Pharis, & Liberto, 1989), but we need to make it clear how and when it works. Comparisons of good and poor learners are needed not only

from a behavioral perspective but also from a cognitive perspective. In other words, we should discover the mental processes involved in good language learning. Also, we know that questionnaires are not always an ideal measuring instrument. It might be difficult to ask low-achieving students to retrospect their behavior correctly, a task that requires metacognitive abilities. In this case, personal interviews may contribute to deeper understanding. It might be dangerous to overgeneralize our findings, ignoring cultural background (Turner, 1993). Learning style preferences between cultures (Reid, 1987) might affect the study results. Similar studies in different cultures should help explore this view of metacognition.

Nevertheless, despite these weaknesses, we should reconsider metacognition enhancement in and out of the classroom when teaching low-achieving students. Many students work hard but fail to show expected improvement. In that case, before giving them more tasks, giving up helping them, or labeling them as incompetent learners, we should focus on one of their internal factors, namely, metacognition.

Conclusion

This study revealed that metacognition has priority over learning attitudes in EFL learning. Although both have much to do with EFL learning, it is not learning attitudes, including motivation and self-confidence, but metacognition that affects learning directly. Learning outcomes can change learning attitudes, but the latter do not directly impact the former. When attitudes are positively affected as a result of learning they activate metacognition, which finally regulates learning. These internal changes happen in cycles. However, when metacognition has not been developed enough to be activated by positive attitude changes, it does not facilitate learning. This is why low-achieving students do not always develop language proficiency even if they are motivated.

Bio data

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Appendix I

Contents of the English learning attitudes questionnaire

この調査は、みなさんの意識の変化を確認するためのものです。この結果をもとに、さらに英語の授業を効果的なものにする研究をしていきます。回答内容は調査目的以外には使用されません。また、追跡調査のため出席番号と氏名を記入してはもらいますが、この調査結果は統計的に処理するため、個人が特定されるような利用の仕方もされません。

年 組 番 氏名

それぞれ当てはまるものを一つだけ選び○で囲み、回答用紙にマークしてください。

1. 英語は得意だ。
2. 英語を話すことには自信がある。
3. 英語の発音には自信がある。
4. 英語の授業で当てられて答えなければならないのは緊張する。
5. 英語の授業で先生に「誰か答えてもらえませんか」と言われると当たらないかと不安になる。

6. 授業で英語を話すと、クラスメートが自分の英語を笑わないかと心配になる。
7. 英語のテストを受ける時は、結果が心配になる。
8. テストでは、自分の真の英語力が発揮できない。
9. 授業で先生が英語を速く話すと、パニックになってしまう。
10. 英語のテストでうまくいかなければ、必ず理解できるまで復習する。
11. 英語の授業についていけるよう自分の学習時間をつくる。
12. 英語の授業で学習したことが、身についているかどうかチェックする。
13. 英語で間違いをした時は、その原因を理解し、そこから学ぼうとする。
14. 英語学習において目標をつくることができる。
15. 自分なりの英語の学習方法を持っている。
16. 自分のペースで英語を学習できる。
17. 間違ったところはすべて先生に教えてもらいたい。
18. 英語力が伸びているか自分で確認したい。
19. 英語力が伸びているか先生に教えてもらいたい。
20. 知能というものは、生まれつき備わったもので、変えることのできないものだ。
21. 英語学習において最も重要な要素は、前もって全体的な語学力が備わっていることだ。
22. 努力すれば、私は英語ができるようになる。
23. 誰にも外国語を習得する能力がある。
24. これまで文法を中心に英語を学んできたので、英会話を始めても遅すぎる。
25. 私が英語を勉強するのは英語が好きだからだ。
26. 英語を勉強していると、とても満足感がある。
27. 自ら進んで英語が勉強できればいいのと思う。

28. 英語は一生勉強を続けていきたいと思う。
29. 国際社会をになう日本人として将来英語は必要だから勉強する。
30. 英語学習は私の視野を広げてくれるので大切だ。

授業中に英語力の変容を客観的に測るため撮影をすることがあります。その一部を校外の報告で紹介することも考えられます。あなたの映っている部分を発表などに使われたくない場合は、下の に✓を記入し、署名してください。

私を撮影したものを学校外の発表に使用することに同意しません。
平成 年 月 日 氏名:

Translation of the question items:

1. I am good at English. (self-confidence)
2. I am confident about speaking English. (self-confidence)
3. I am confident of my English pronunciation. (self-confidence)
4. I get nervous when I am called on to answer in class. (anxiety)
5. I dread being called on when my teacher says, "Any volunteers?" (anxiety)
6. I worry that my classmates will laugh at me when I speak English in class. (anxiety)
7. I get worried about my English test results.
8. I cannot do well on any English test.
9. I get panicked when my teacher speaks English fast in class. (anxiety)
10. I always go over the mistakes on my English test until I understand. (learning strategies)
11. I take enough time to study so I can follow the English class. (learning strategies)
12. I check if I understand what I learn in the English class.

(learning strategies)

13. I try to learn from my mistakes when I use English. (learning strategies)
14. I can set up my own goals in my English learning. (autonomy)
15. I have my own English learning strategies. (autonomy)
16. I can study English at my own pace. (autonomy)
17. I want my teacher to teach me about all of my mistakes.
18. I want to check myself to see if my English is getting better.
19. I want my teacher to tell me if my English is getting better.
20. Intelligence is innate and unchangeable.
21. Language aptitude is the most important factor in English learning.
22. If I study hard, I can become a good English user. (ability perceptions)
23. Anybody can master a foreign language. (ability perceptions)
24. Because I have studied English with a focus on grammar, I cannot learn English conversation.
25. I study English because I like the language. (intrinsic motivation)
26. I feel very satisfied when I study English. (intrinsic motivation)
27. I wish I could be more willing to study English. (intrinsic motivation)
28. I hope to keep studying English all my life. (intrinsic motivation)
29. I study English because it is necessary as a Japanese living in the international community. (intrinsic motivation)
30. Studying English is important because it will broaden my

views. (intrinsic motivation)

Appendix 2

Metacognitive awareness questionnaire

年	組	番	氏名
この調査は、みなさんの勉強の仕方を確認するためのものです。回答に正解はなく、成績にも関係なく、調査目的以外には使用されません。信頼性を高めるために記名してもらいますが、調査結果は統計的に処理するため、個人が特定されるような利用の仕方もしません。それぞれあてはまる数字を一つ選び○で囲んでから、回答用紙にマークしてください。			
1	自分の目標に近づいているかどうか定期的に自分に問いかける		
2	問題にとりかかる前には、やり方をいくつか考えてみる		
3	前にうまくいったやり方でやってみる		
4	勉強には自分のペースで必要な時間をとる		
5	自分はどんな頭の使い方が得意なのかわかる		
6	課題を始める前には、それが何を学ぶためのものなのかを考える		
7	テストを終えたときには、どれぐらいできたか自分でわかる		
8	課題を始める前に、具体的な目標を立てる		
9	大事なところに来たと思ったら十分に時間をかける		
10	勉強している内容のうち、とくに何が大事かわかる		
11	解答中は、すべての解き方を考えてみたのか自分に問いかける		
12	教科書やノート、参考書などをまとめることが得意だ		
13	重要などころには他よりも力を入れて勉強する		
14	勉強方法を選ぶときは、その理由をはっきりさせている		
15	学習内容についての関連知識を持っていれば内容がよく身に付く		
16	先生が私に何を学んで欲しいと思っているのかわかる		
17	覚えることが得意だ		
18	勉強する内容によって勉強の仕方を変える		
19	課題終了後は、もっと簡単なやり方がなかったのか自分に問いかける		
20	うまく勉強できるように、時間、環境、方法などを調整できる。		
21	勉強したことを整理するため定期的に復習する		
22	勉強は、わからないことや難しいことを探してから始める		
23	問題の解き方をいくつか考えて、いちばん良い方法を選ぶ		

24	勉強したあとは、わかったことをまとめる
25	分からないことがあれば誰かに聞く
26	自分で自分を勉強する気にさせることができる。
27	勉強するときはどんなやり方がいいのかわかっている
28	勉強しながら自分のやり方が適切なかを考える
29	勉強するとき、苦手な考え方は得意な考え方でカバーする
30	新しい知識を得たとき、それが自分にとって重要なかがわかる
31	自分なりに例文や例題を作って勉強する内容をわかりやすくする
32	自分がどれぐらい理解したのか判断できる
33	気がつくと、うまくいくようなやり方で勉強している
34	わかっているかどうか定期的にチェックする
35	それぞれの勉強の仕方がどんなときにうまくいくのかわかる
36	勉強終了後は、目標にどれぐらい近づいたのか自分に問いかける
37	勉強中は、理解しやすくするために図や絵を描いてみる
38	解答後は、すべての解き方を考えてみたのかを自分に問いかける
39	勉強した内容を自分の言葉で言い換えてみるようにしている
40	わからなかったときは勉強の仕方を変えてみる
41	教科書や参考書の構成や使い方をわかっておいて勉強に活かす
42	課題などは問題文をよく読んでから始めるようにしている
43	本などの内容と前から知っていることとの関係を自分に問いかける
44	分からなくなったら、考え方が間違っていないかどうか考え直す
45	うまく目標に近づくために時間配分を考える
46	勉強する内容に興味がわくと、よく身に付く
47	勉強は、いっぺんにではなく少しずつするようにしている
48	細かいことより全体の内容をつかむようにしている
49	勉強がどれぐらいはかどっているのかを途中で自分に問いかける
50	課題終了後は、しっかり勉強になったのかを自分に問いかける
51	勉強する内容が難しくわかりにくいときは最初に戻ってやり直す
52	読んでいて分からないところは、繰り返し読む

Original question items in English from Schraw and Dennison (1994):

1. I ask myself periodically if I am meeting my goals.

2. I consider several alternatives to a problem before I answer.
3. I try to use strategies that have worked in the past.
4. I pace myself while learning in order to have enough time.
5. I understand my intellectual strengths and weaknesses.
6. I think about what I really need to learn before I begin a task.
7. I know how well I did once I finish a test.
8. I set specific goals before I begin a task.
9. I slow down when I encounter important information.
10. I know what kind of information is most important to learn.
11. I ask myself if I have considered all options when solving a problem.
12. I am good at organizing information.
13. I consciously focus my attention on important information.
14. I have a specific purpose for each strategy I use.
15. I learn best when I know something about the topic.
16. I know what the teacher expects me to learn.
17. I am good at remembering information.
18. I use different learning strategies depending on the situation.
19. I ask myself if there was an easier way to do things after I finish a task.
20. I have control over how well I learn.
21. I periodically review to help me understand important relationships.
22. I ask myself questions about the material before I begin.
23. I think of several ways to solve a problem and choose the best one.
24. I summarize what I've learned after I finish.

25. I ask others for help when I don't understand something.
26. I can motivate myself to learn when I need to.
27. I am aware of what strategies I use when I study.
28. I find myself analyzing the usefulness of strategies while I study.
29. I use my intellectual strengths to compensate for my weaknesses.
30. I focus on the meaning and significance of new information.
31. I create my own examples to make information more meaningful.
32. I am a good judge of how well I understand something.
33. I find myself using helpful learning strategies automatically.
34. I find myself pausing regularly to check my comprehension.
35. I know when each strategy I use will be most effective.
36. I ask myself how well I accomplished my goals once I'm finished.
37. I draw pictures or diagrams to help me understand while learning.
38. I ask myself if I have considered all options after I solve a problem.
39. I try to translate new information into my own words.
40. I change strategies when I fail to understand.
41. I use the organizational structure of the text to help me learn.
42. I read instructions carefully before I begin a task.
43. I ask myself if what I'm reading is related to what I already know.
44. I re-evaluate my assumptions when I get confused.
45. I organize my time to best accomplish my goals.
46. I learn more when I am interested in the topic.
47. I try to break studying down into smaller steps.
48. I focus on overall meaning rather than specifics.
49. I ask myself questions about how well I am doing while I am learning something new.
50. I ask myself if I learned as much as I could have once I finish a task.
51. I stop and go back over new information that is not clear.
52. I stop and reread when I get confused.