The Effect of Attitudes toward Lectures on Learning Outcomes Mediated by Attitudes toward Active Learning*

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The purposes of this study were to develop a "Lecture Attitude Scale," examine its reliability and validity, and investigate its impact through the "Active Learning (Externalization) Scale" on learning outcomes. A questionnaire survey was administered to 1,854 undergraduate students. The main finding was that attitudes toward lectures mediated by attitudes toward active learning had a positive effect on the development of competencies and the approach to deep learning. This result suggests that attitudes toward lectures can have an impact on learning outcomes, and that it is important to improve the quality of lectures to develop students' competencies and deepen their learning.

Key words : Lecture, Active learning, Lecture attitude, Externalization

1. INTRODUCTION

1.1. Definition of active learning

In the United States, active learning was first theorized by BONWELL and EISON in the 1990's. Active learning has been advocated as one of the pedagogical methods to support changing the educational paradigm from a teaching-centered approach to a learning-centered approach in relation to the massification of higher education and diversification of students (BONWELL and EISON 1991, BARR and TAGG 1995, TAGG 2003). Active learning is "anything that involves students in doing things and thinking about the things they are doing" and "students are involved in higher-order thinking (analysis, synthesis, evaluation). Students are engaged in activities (e.g., reading, discussion, writing)" (BONWELL and EISON 1991).

Recently in Japan a series of educational reforms ranging from secondary education to higher education has been advanced mainly to promote active learning. One reason for this shift is the growing problem of the transition from school to work / social life (MIZOKAMI 2014a). This transition is the stage for students "to finish

full-time schooling and to find stable full-time work" (MIZOKAMI 2014a). In recent years, even undergraduate students have had difficulties in making this transition, underlining the need to give significance to knowledge constitution and re-constitution, to individuate learning, and to develop deep learning and competencies through the implementation of active learning (MIZOKAMI 2017). This study follows Mizokami's definition (MIZOKAMI 2014b): "Active learning includes all kinds of learning beyond the mere one-way transmission of knowledge in lecture-style classes (= passive learning). It requires engagement in activities (writing, discussion, and presentation) and externalizing cognitive processes in the activities."

This is an aggressive definition because it includes not only changing the educational paradigm from a teaching-centered approach to a learning-centered approach but also the growth of students, including the acquisition of competencies.

1.2. Features and problems of an active learning style class

One purpose of active learning is modifying the classroom activity away from the traditional lecture format, where a teacher engages in a one-way delivery of knowledge to the students. However, active learning does not necessarily

deny the value of lectures themselves. On the one hand, lectures where learning is just done by listening are more passive than active learning, but on the other hand, such lectures are efficient and effective ways to deliver new knowledge and information systematically.

From the empirical perspective of "active learning style classes," these tend to be combined with a lecture part. However, while active learning style classes have been increasingly introduced, it has been pointed out that "activeness in internal factors (cognition) tends to be disregarded because the importance of activeness about external factors (behavior) is emphasized" (MATUSHITA 2015). MORI (2017) also points out that it is important that active learning, which mainly consists of externalization (output of the knowledge), be accompanied by internalization (input of the knowledge), and to bear in mind that there may be a divide between what students think and what they do if internalization is not sufficient.

As discussed above, especially in active learning style classes, lectures should promote internalization by the activity of listening, while active learning, which is composed of engagement in activities beyond listening such as writing, speaking, presenting, and so on, should promote externalization through such activities. Moreover, it is predicted that students' attitudes toward lectures should affect those toward active learning, which should enhance learning outcomes.

Many previous studies of the effect of active learning style classes revealed that they were effective on such scales as "improving memorization," "improving learning," "improving abilities (including skills and attitudes)," "raising the score of the whole class," and "raising the score and pass rate on an achievement for the whole class" (MIZOKAMI *et al.* 2016). For example, it was found that students in active learning style classes had "higher learning motivation," "more time spent on out-of-class learning," and "understanding the class better" than those in only lecture-style classes (TSUJI and SUGIYAMA 2017). However, the results of these studies have not been generalized through verification by comparing active learning with lectures or by conducting pre- and post-surveys in a specific class. Moreover, it has not been shown how an attitude toward active learning should have an impact on learning outcomes.

1.3. Purpose

This study has two purposes based on the hypotheses that attitudes toward lectures, which mainly involve "listening," have a positive effect on learning outcomes mediated by those toward active learning, which are mainly "activities beyond listening." The first task is to develop a "Lecture Attitude Scale" and examine its reliability and validity. The second is to investigate the impact of attitudes toward lectures on learning outcomes mediated by attitudes toward active learning. This study should facilitate proposals for improvements in education from the viewpoint of what kind of involvement is desirable for the lecture and active learning components in an active learning style class.

In addition, this study targets not just a particular class but a course as a whole that students have already experienced, and tries to clarify how to improve both the general lecture and the active learning. In this regard, this study attempts to examine the effect of active learning from both points of view: attitudes toward lectures and toward active learning.

1.4. Outline of the analysis

The analysis is conducted as follows. First, the "Lecture Attitude Scale" for undergraduate students was developed by KOYAMA and MIZOKAMI (2017) in order to verify the effects of learning from the point of view of the listening that is specific to lectures, and the reliability and validity of the scale was examined. However, as it was based on a survey of women's college students, it needed to be generalized. Prior research on the factors contributing to learning outcomes has pointed out that experiences before the transition to university, such as scholastic abilities and learning habits, and characteristics of the curriculum and student involvements in learning affect learning outcomes (OGATA 2008, MIZOKAMI 2012, YAMADA 2012). These findings indicate that the attitudes toward lectures of undergraduate students may be different from those of college students, and that the effect on learning outcomes also may be different. The innovation of this study was to develop and generalize the "Lecture Attitude Scale" for undergraduate students. This enabled us to verify how undergraduate students' attitudes toward lectures and active learning have a quantifiable impact on learning outcomes.

Based on the above discussion, a questionnaire survey was conducted for undergraduate students.

First, factor analysis of the "Lecture Attitude Scale" was performed, its reliability and validity were examined, and it was generalized.

The items of the "Lecture Attitude Scale" developed by KOYAMA and MIZOKAMI (2017) are used because the content validity of these had been checked and it was judged that it could be applied to undergraduate students. The "Active Involvement in Learning and Volition Scale" (ASANO 2002), "Active Learning Attitude Scale" (HATANO 2013), and "Approach to Learning Scale (Deep Approach / Surface Approach)" (KAWAI and MIZOKAMI 2012) are used as external instruments to check the validity. It is predicted that scores on the "Lecture Attitude Scale," "Active Involvement in Learning and Volition Scale," "Active Learning Attitude Scale," and "Deep Approach" would show positive correlations, but that those on the "Lecture Attitude Scale" and "Surface Approach" would be negative.

Next, the effect of attitudes toward lectures on learning outcomes mediated by attitudes toward active learning is examined by means of path analysis. The "Active Learning (Externalization) Scale" developed by MIZOKAMI *et al.* (2016) is used to measure the attitude toward active learning. This scale was developed to verify the effects of active learning and to measure the quality of active learning itself based on "involvement in activity" and "output of cognitive process." Moreover, "Competencies" and "Approach to Learning" were adopted as scales of learning outcomes based on the foregoing discussion. Fig. 1 shows the analytical model of this study, and the hypothesis is as follows: the "Lecture Attitude Scale" should affect "Competencies" and "Approach to Learning," mediated by the "Active Learning (Externalization) Scale."
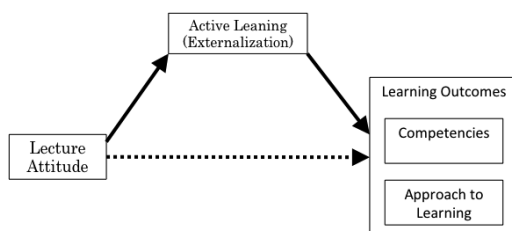

Fig. 1 The analytical model

＊The solid line shows that a path is significant,
   the dashed line that it is not.

2. METHOD

2.1. Participants and methodology

A questionnaire survey was conducted using Kanden CS Forum, Inc., in November 2016. The participants were 1,854 national, public, and private undergraduate students in Japan (927 male, 927 female; 618 first-year students, 618 second-year students, 618 third-year students; 447 humanities course, 483 social science course, 86 interdisciplinary course, 477 science course, 169 four-year medical course, 94 six-year medical course students, and 98 others). As almost all fourth-year students were engaged in a graduation thesis when this survey was conducted, they were eliminated from this survey to clarify the characteristics of student learning in the general class.

The "Lecture Attitude Scale" (KOYAMA and MIZOKAMI 2017) was used. It consists of five items: "I do not sleep during class," "I listen to lectures while taking notes," "I try to listen to the teacher with interest," "I do not chat during class," and "I listen to what teacher says carefully." The students were asked, "Since entering university, have you had these attitudes or behaviors in a lecture that didn't contain presentations or discussion? Please choose the answer that most closely matches your situation." They responded to these items on a 5-point scale from "I do not agree at all" to "I agree thoroughly" (the other scales are the same as this).

2.2. Experience of Active Learning

The students were asked, "Have you ever attended active learning style classes with tasks including thinking about problems, presentations, or discussion? Please choose the answer that most closely matches your situation." They responded to each item on a 4-point scale from "not at all" to "many." Those who chose "not at all" were excluded as not meeting the purpose of this study. As a result, there were 1,732 valid responses (93.42%).

2.3. Active Learning (Externalization) Scale

The "Active Learning (Externalization) Scale" (MIZOKAMI *et al.* 2016) was used. It consists of 3 items: "I give my opinions to classmates with evidence," "I explain my thoughts in an argument and presentation clearly," and "I think about how to express my thoughts to my classmates well." The students were asked, "Since entering

university, have you had attitudes or behaviors such as thinking about problems, making presentations, and holding discussions in an active learning style class? Please choose the answer that most closely matches your situation." The students responded to each item on a 5-point scale. Cronbach's alpha was .81, and the arithmetic mean was used in the subsequent analysis.

2.4. Active Involvement in Learning and Volition Scale

This scale, developed by ASANO (2002), was used to measure active involvement in learning and volition. It consists of two factors. One factor is "Active Involvement in Learning," which includes three items: "I think I have a high motivation for learning," "I think I learn with active involvement," and "I like to study." The other is "Volition," which includes two items: "I want to learn as long as possible" and "I always feel like learning." The students were asked, "How do you feel about the following items now? Please choose the answer that most closely matches your situation." Two factors had high consistency (r = .74, p < .001), so the scale was judged as having a one-factor structure. They responded to each item on a 5-point scale after other questions in this research, though ASANO (2002) used a 4-point scale. The value of Cronbach's alpha was .89, and the arithmetic mean was used in the subsequent analysis.

2.5. Active Learning Attitude Scale

The "Active Learning Attitude Scale" (HATANO 2013), which HATANO and MIZOKAMI (2013) originally developed as the "Active Class Attitude Scale," was used. It consists of nine items: for example, "I often finish reports and homework with the feeling that I should merely submit it" and "I make an effort to finish reports and homework to the best of my ability." The students were asked, "How do you feel about the following items now? Please choose the answer that most closely matches your situation." They responded to each item on a 5-point scale. Cronbach's alpha was .82, and the arithmetic mean was used in the subsequent analysis.

2.6. Approach to Learning Scale

This study used the "Approach to Learning Scale (Deep Approach / Surface Approach)," developed by KAWAI and MIZOKAMI (2012),

which consists of 15 items covering both deep and surface approaches to learning. The "Deep Approach" includes eight items, for example, "I try to relate ideas I come across to other topics or other courses whenever possible" and "I try to make sense of things by linking them to what I know already." The "Surface Approach" includes seven items, for example, "I don't think through topics for myself, I just rely on what we're taught," "I tend to just learn things without thinking about the best way to work." The students were asked, "How do you feel about the following items now? Please choose the answer that most closely matches your situation." They responded to these items on a 5-point scale. Cronbach's alpha coefficient for the "Deep Approach" was .88 and that for the "Surface Approach" was .84, and the arithmetic mean was used in the subsequent analysis.

2.7. Competencies Scale

We adapted the 22 items for undergraduate students' generic skills developed by YAMADA and MORI (2010). They consisted of four factors: "Critical Thinking / Problem Solving," "Social Skills," "Sustainable Learning / Social Involvement," and "Self-Presentation." "Critical Thinking / Problem Solving" has six items, for example, "the ability to solve problems and the subjects that I discovered" and "the ability to solve new problems creatively." "Social Skills" has six items, for example, "the ability to make relationships with others and to maintain them" and "to act with coordinated and collaborative efforts." "Sustainable Learning / Social Involvement" has six items, for example, "the attitude of trying to acquire new knowledge and skills" and "learning on my own even after graduation." "Self-Presentation" has four items, for example, "the ability to express my opinion logically" and "the ability to express my opinion plainly." The students were asked, "Looking back on your recent studies, to what degree have you been able to learn the following abilities through lecture style classes or active learning style classes? Please choose the answer that most closely matches your situation." In this survey, only the data about active learning style classes were used even though the students were asked to respond to each class style. They responded to each item on a 5-point scale, as with the other questions in this study, even though YAMADA and MORI (2010) used a 4-point scale. Cronbach's alpha for each factor was over .84,

and the arithmetic mean was used in the subsequent analysis.

3. RESULTS

3.1. Factor analysis of the Lecture Attitude Scale

First, factor analysis (maximum likelihood method) was performed, five items being used on the "Lecture Attitude Scale." As a result, eigenvalues declined from 2.92 to .70 to .65, revealing one factor supported by a scree test, Gutman standard, and interpretability of the factor (Table 1). Cronbach's alpha is .81, so it was considered reliable from the point of view of internal consistency. Therefore, the mean score of the five items was used as the scale score on the "Lecture Attitude Scale" in the subsequent analysis. Table 2 shows the basic statistics and the results of correlation analysis.

Next, we examined the validity of the "Lecture

Attitude Scale." There were moderate or strong positive correlations between the "Lecture Attitude Scale" and "Learning Motivation Scale" and between the "Active Learning Attitude Scale" and "Deep Approach" ($r = .42 \sim .54$, $p < .001$), and there was a weak negative correlation between "Lecture Attitude Scale" and "Surface Approach" ($r = -.11$, $p < .001$). This result shows that the students with high scores on the "Lecture Attitude Scale" tended to have high motivation for learning, tried classwork and tasks independently, and made sense of learning contents by linking them to what they already knew and thinking about them critically. Above all, the "Lecture Attitude Scale" was examined and found to be valid.

Moreover, there was a weak correlation between the "Lecture Attitude Scale" and "Active Learning (Externalization) Scale" ($r = .32$, $p < .001$), showing that there might be less of a relation between the attitudes toward lectures and active learning and that students might discriminate between them.

3.2. Results of the Path Analysis

Next, the indirect effects of the "Lecture Attitude Scale" score on "Competencies" and "Approach to Learning" mediated by the "Active Learning (Externalization) Scale" were examined. On the basis of the results of correlations among variables (Table 3) and the hypothetical model

Table 1. Factor analysis of the Lecture Attitude Scale

Item	
I listen to what teacher says carefully	.85
I try to listen to teacher with interest	.83
I listen to lecture with taking notes	.70
I do not sleep during class	.55
I do not chat during class	.53
Contribution Rate	58.47
α	.81

Table 2. Basic statistics and the results of correlation analysis

		Mean	SD	α	1	2	3	4	5
1	Lecture Attitude	3.66	.83	.81	–				
2	Active Leaning (Externalization)	3.47	.86	.83	.32**	–			
3	Active Involvement in Learning and Volition	3.08	.92	.89	.42**	.37**	–		
4	Active Learning Attitude	3.15	.65	.82	.54**	.36**	.53**	–	
5	Surface Learning	3.19	.71	.84	−.11**	−.05*	−.15**	−.36**	–
6	Deep Learning	3.35	.69	.88	.44**	.51**	.54**	.53**	−.01

$^{**}p < .001$, $^{*}p < .05$

Table 3. Basic statistics and the results of correlation analysis

|		Mean	SD	α	1	2	3	4	5	6	7
1	Lecture Attitude	3.66	.83	.81	–						
2	Active Leaning (Externalization)	3.47	.86	.83	.32*	–					
3	Critical Thinking / Problem Solving	3.29	1.06	.96	.21*	.36*	–				
4	Sustainable Learning / Social Involvement	3.13	1.04	.95	.21*	.34*	.91*	–			
5	Social Skills	3.38	1.07	.96	.19*	.32*	.92*	.87*	–		
6	Self–presentation	3.22	1.08	.93	.17*	.39*	.91*	.88*	.89*	–	
7	Surface Learning	3.35	.69	.84	−.11*	−.05*	−.09*	−.07*	−.06*	−.08*	–
8	Deep Learning	3.19	.71	.88	.44*	.51*	.32*	.33*	.26*	.31*	−.01

$^{*}p < .01$
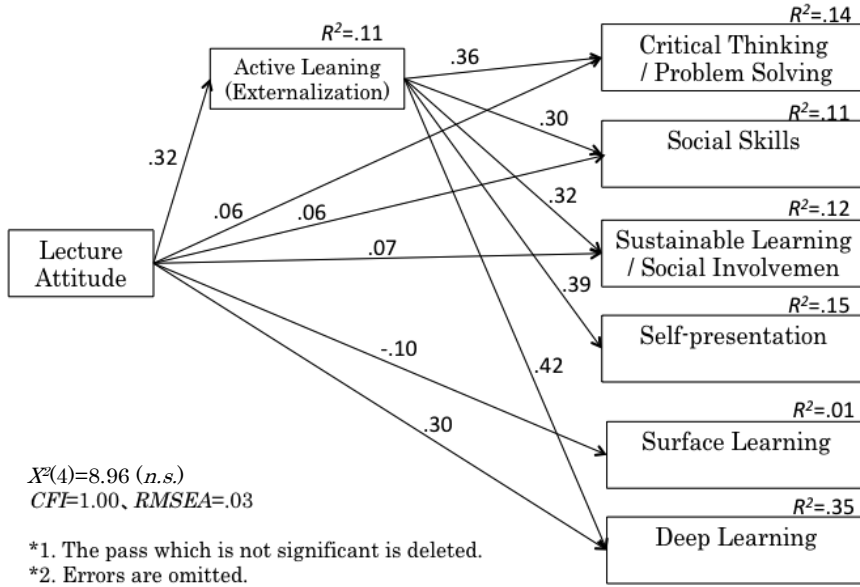
Fig. 2 Results of Path Analysis

(Fig. 1), path analysis was conducted by structural equation modeling. According to this analysis, the goodness–of–fit indexes were $\chi^2(4) = 8.96$, *n.s.*, CFI = 1.00, RMSEA = .03. This model (Fig. 2) was adopted because each index matched the standard value.

The path from the "Lecture Attitude Scale" to the "Active Learning (Externalization) Scale" was significant ($\beta = .32$, $R^2 = .11$). The indirect effects of the "Lecture Attitude Scale" on "Competencies" were as follows: "Critical Thinking / Problem Solving" ($\beta = .36$, $R^2 = .14$), "Social Skills" ($\beta = .30$, $R^2 = .11$), "Sustainable Learning / Social Involvement" ($\beta = .32$, $R^2 = .12$), and "Self–Presentation" ($\beta = .39$, $R^2 = .15$). The indirect effects of the "Lecture Attitude Scale" on "Approach to Learning" were as follows: "Deep Approach" ($\beta = .42$, $R^2 = .35$) and "Surface Approach" (*n.s.*).

The "Lecture Attitude Scale" had a positive direct effect on "Critical Thinking / Problem Solving" ($\beta = .06$), "Social Skills" ($\beta = .06$), "Sustainable Learning / Social Involvement" ($\beta = .07$), and "Deep Approach" ($\beta = .30$), and it had a direct negative effect on "Surface Approach" ($\beta = -.10$).

Above all, it was concluded that the hypothesis was partially supported.

4. CONSIDERATIONS AND FURTHER ISSUES

4.1. Development of the Lecture Attitude Scale

The first purpose of this study was to develop the "Lecture Attitude Scale" and examine its reliability and validity. To do so, we set out to examine learning outcomes in active learning style classes consisting of a lecture part and an active learning part, focusing on the attitudes toward lectures and toward active learning.

The "Lecture Attitude Scale" consists of five items and was developed through factor analysis (maximum likelihood method), and it was determined through a scree test, Gutman standard, and interpretability that it should have one factor. Cronbach's alpha is .81, so it was observed to be reliable from the point of view of internal consistency. There were moderate or strong positive correlations between the "Lecture Attitude Scale" and "Learning Motivation" and between the "Active Learning Attitude" and "Deep Approach," and there was a weak negative correlation between the "Lecture Attitude Scale" and "Surface Approach." Therefore, the validity of the "Lecture Attitude Scale" was verified. It is significant that this study developed the "Lecture Attitude Scale" (KOYAMA and MIZOKAMI 2017) through studies undergraduate students, then drew general conclusions from the findings.

4.2. Consideration of the hypothesis

The second purpose of this study was to investigate the effect of attitudes toward lectures on learning outcomes mediated by those toward active learning. Based on the results of path analysis, the hypothesis is that the "Lecture Attitude Scale" should affect "Competencies" and "Approach to Learning" mediated by the "Active Learning (Externalization) Scale."

First, the "Lecture Attitude Scale" had a positive effect on the "Active Learning (Externalization) Scale" (β = .32, R^2 = .11). This indicates that it is significant for students to engage in lectures because their attitudes toward them also affect their attitudes toward active learning in active learning style classes. MIZOKAMI *et al.* (2016) point out that the criticism of such activities as "only activity causes no learning" (WIGGINS and MCTIGHE 2005) may arise not from the lack of cognition of learners but rather may be due to the superficial characteristics of activities on the basis of the factor structure of the "Active Learning (Externalization) Scale." This study implies that learners may be conscious of their involvement in the activities of active learning if they can become more involved in listening to lectures; this implication strengthens the insights of MIZOKAMI *et al.* (2016).

Next, the "Lecture Attitude Scale" had a positive effect on "Critical Thinking / Problem Solving" (β = .36, R^2 = .14), "Social Skills" (β = .30, R^2 = .11), "Sustainable Learning / Social Involvement" (β = .32, R^2 = .12), and "Self-Presentation" (β = .39, R^2 = .15) mediated by the "Active Learning (Externalization) Scale" score. Though each direct effect of the "Lecture Attitude Scale" on "Critical Thinking / Problem Solving" (β = .06), "Social Skills" (β = .06), and "Sustainable Learning / Social Involvement" (β = .07) was significant, each of its indirect effects on them was stronger. It has already been shown that it is difficult to develop competencies only through lectures, so it would be expected that active learning would develop competencies in theory (e.g., MATUSHITA 2010, MIZOKAMI 2014b). This study implies that attitudes toward lectures have a positive effect on competencies mediated by those toward empirical active learning.

Moreover, the "Lecture Attitude Scale" had a positive effect on "Deep Approach" (β = .42, R^2 = .35) mediated by the "Active Learning (Externalization) Scale." It also had a direct effect on "Deep Approach" (β = .30). This study indicates that attitudes toward lectures contribute to deepened learning, such as a deeper understanding of knowledge; furthermore, it is more effective when mediated by attitudes toward active learning. Higher education must develop competencies to tackle the problem of transition. This study indicates to some extent that employing an active learning style class made up of a lecture part and an active learning part, can solve such a problem because of the limits of the lecture, our traditional instructional method.

4.3. Conclusions and further issues

In this study, we examined how the "Lecture Attitude Scale" and the "Active Learning (Externalization) Scale" have an impact on learning outcomes, for example, "Competencies" and "Approach to Learning." It was found that the "Lecture Attitude Scale" had a positive effect on "Competencies" and "Approach to Learning" mediated by the "Active Learning (Externalization) Scale." This implies that the attitude toward lectures should affect learning outcomes.

It has been pointed out that activeness both in internal factors (cognition) and in external factors (behavior) is important (MATUSHITA 2015, MORI 2017). This study revealed that students can discriminate between the lecture part and the active learning part, and that some students may participate only in the part that they feel better at. This implies that aptitude–treatment interactions may occur in active learning style classes. In other words, learning outcomes in active learning style classes may be different from how the lecture part and active learning part are combined and students' aptitudes. Thus, it is important for students to understand the significance of both parts and to support their involvement in both parts by explaining how they should act and which competencies they might in fact need before a lesson. In particular, it is necessary to support those who are bad at listening to lectures in active learning style classes. Even though teachers tend to think about how to employ activities and how to involve students in activities, this study implies that they should improve their lecture styles in view of the relation between attitudes toward lectures and toward active learning.

One of the limitations of this study is that the scale of learning outcomes is just an indirect assessment of competencies and approach to learning. Consideration should be given to how

attitudes toward lectures and toward active learning impact learning outcomes, including direct assessments such as performance assessments. Another limitation is that the target of this study was every class that the students took and every department. However, the curriculum differs across departments and years of study, and the experience of active learning style classes is different from student to student. Therefore, further studies are needed to elucidate these differences and assist in education reform on the program level.

REFERENCES

ASANO, S. (2002) Motivation that Enhances Lifelong Learning: Open University Students and Regular University Students. *Japanese Journal of Education Psychology*, **50**: 141–51 (in Japanese)

BARR, R.B. and TAGG, J. (1995) From Teaching to Learning: A New Paradigm for Undergraduate Education. *Change*, **27**(6): 12–25

BONWELL, C.C. and EISON, J.A. (1991) *Active Learning: Creating Excitement in the Classroom*. ASHE–ERIC Higher Education Report No. 1

COHEN, J. (1988) *Statistical Power Analysis for the Behavioral Sciences (2nd ed.)*. Hillsdale, NJ: Lawrence Erlbaum

HATANO, K. (2013) The Mediation of Self–Regulated Learning Strategy between Intrinsic Motivation and Active Class Attitude in University Students. *Japan Society for Educational Technology*, **37**(Suppl.): 81–84

HATANO, K. and MIZOKAMI, S. (2013) The Examination of Student's Type Based on Active Class Attitude and Learning Time in University Students. *Japan Society for Educational Technology*, **37**(1): 13–21 (in Japanese)

KAWAI, T. and MIZOKAMI, S. (2012) Analysis of Learning Bridging: Focus on the Relationship between Learning Bridging, Approach to Learning and Connection of Future and Present Life. *Japan Society for Educational Technology*, **36**(3): 217–226 (in Japanese)

KOYAMA, A. and MIZOKAMI, S. (2017) Effects of Students' Attitudes in "Lecture" and "Active Learning" on Learning Outcomes: Results of the Questionnaire Surveys at a Junior College. *Nagoya Journal of Higher Education*, **17**: 101–122 (in Japanese)

MATUSHITA, K. (2010) 〈Atarashiinouryoku〉 Gainen to Kyouiku–Sonohaikei to Keifu. MATUSHITA, K. (Ed.) 〈*Atarashiinouryoku*〉 *ha Kyouiku wo Kaeruka–Gakuryoku・Literacy・Competency*. Miruneva Shobou, Kyoto, 1–4 (in Japanese)

MATUSHITA, K. (2015) Deep・Active Learning. Eno Izanai. MATUSHITA, K. and Kyoto University Center for the Promotion of Excellence in Higher Education (Eds.) *Deep・Active Learning*. Soukei Syobou, Tokyo, 1–27 (in Japanese)

MIZOKAMI, S. (2012) Gakusei no Manabi to Seicyou. Kyoto University Center for the Promotion of Excellence in Higher Education (Eds.) *Seiseisuru Daigaku Kyouikugaku*, Nakanisiya Shuppan, Kyoto, 119–145 (in Japanese)

MIZOKAMI, S. (2014a) Gakkou kara Shigoto heno Transision toha, MIZOKAMI, S. and MATUSHITA, K. (Eds.) *Koukou・Daigaku kara Shigoto heno Transition–Henyou suru Nouryoku・Identitiy to Kyouiku*. Nakanisiya Shuppan, Kyoto, 1–39 (in Japanese)

MIZOKAMI, S. (2014b) *Active Learning to Kyoju Gakushu Paradigm no Tenkan*. Toshindo, Tokyo (in Japanese)

MIZOKAMI, S. (2017) Active Learning gata Jyugyou tositeno Hantenjyugyou. MORI, T. and MIZOKAMI, S. (Eds.) *Active Learning tositeno Hantenjyugyou [Rironhen]*. Nakanisiya Syuppan, Kyoto, 1–15 (in Japanese)

MIZOKAMI, S, MORI, T., KONDA, H., KAWAI, T., MIHO, N., HONDA, S. and YAMADA, Y. (2016) Developing the Active Learning (Externalization) Scale by Bifactor Model. *Kyoto University researches in higher education*, **22**: 151–162 (in Japanese)

MORI, T. (2017) 「Wakattatumori」 wo 「Wakatta」 he Mitibiku Hantengakusyuu no Manabi. MORI, T. and MIZOKAMI, S. (Eds.) *Active Learning tositeno Hantenjyugyou [Rironhen]*. Nakanisiya Syuppan, Kyoto, 19–35 (in Japanese)

OGATA, N. (2008) Student Engagement and College Outcomes. *Higher Education Review*, **11**: 45–46 (in Japanese)

TAGG, J. (2003) *The Learning Paradigm College*. Bolton, MA: Anker

TSUJI, Y. and SUGIYAMA, S. (2017) A Comparison of Learning Effects between Active Learning and Traditional Learning for Identical Lecture. *Japan Society for Educational Technology*, **40**(suppl.): 45–48 (in Japanese)

WIGGINS, G. and MCTIGHE, J. (2005) *Understanding by Design (Expanded 2nd ed.)*. Alexandria, VA: Association for Supervision and Curriculum Development

YAMADA, R. (2012) *Gakushikateikyouiku no Situhosyou ni Mukete-Gakuseicyousa to Shonenjikyouiku kara Mietekitamono–*. Toshindo, Tokyo (in Japanese)

YAMADA, T. and MORI, T. (2010) Role of Regular– and Extra–Curricular on Generic Skills of University Students from the Students' Viewpoints. *Japan Society for Educational Technology*, **34**(1): 13–21 (in Japanese)