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The Relationship Between Critical Thinking Dispositions and Skills of Japanese EFL Learners

Abstract

Critical thinking (CT) dispositions are individual characteristics and attitudes toward the use of CT skills, which have been regarded as one of the essential abilities in English education in the 21st century. However, the relationships between CT dispositions and skills in the context of L2 usage have not been investigated enough. The present study aims to develop a questionnaire for identifying the components of CT dispositions, and to explore the relationship between CT dispositions and skills in English. 70 Japanese university students took a test on CT skills and a questionnaire on CT dispositions, and the analysis identified four components (i.e., Objective and Logical Thinking, Careful Judgement, Organizing Information, Efficient Action) that seem to correspond to the findings in previous studies. However, the results also showed no convincing evidence that CT dispositions and skills were related, suggesting that these two are independent entities under the setting of this study. Therefore, teachers may need to provide students with tasks to develop both their CT dispositions and skills in English classrooms.

[Keywords] *critical thinking dispositions, critical thinking skills, reading comprehension*

1. Introduction

Critical thinking (CT) has rising significance as a necessary ability for making appropriate judgements out of ubiquitous information in the 21st century. As such, students in Japan are expected to develop CT in L1 and L2 classrooms (MEXT, 2016), and an increasing number of studies have recently reported attempts to provide students with more opportunities to foster CT skills in English as a Foreign Language (EFL) classrooms (e.g., Imai & Mineshima, 2017; Kikushima, Teramoto, & Shibahara, 2018).

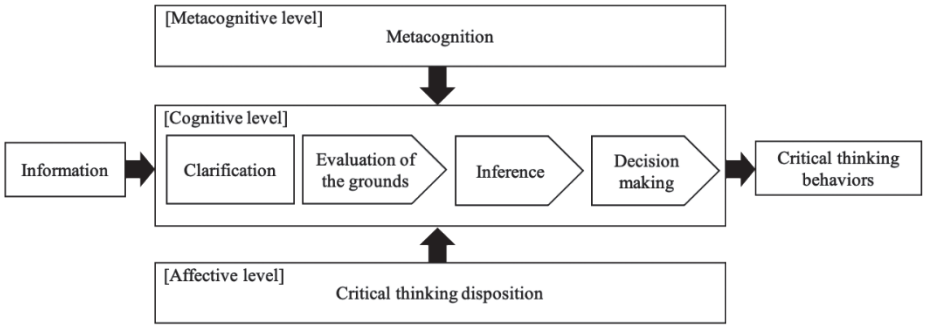
It has also been stated by Ennis (1987) that CT dispositions play an important role in drawing reasonable conclusions. Since this finding, how CT dispositions relate to CT skills has attracted the attention of researchers and teachers (e.g., Hirayama & Kusumi, 2004; Hirooka, Ogawa, & Motoyoshi, 2000). However,

these studies have conducted their investigations in the L1 context, and little research has explored the relationship between CT dispositions and skills with regards to foreign language use. Thus, the present study aims to examine this link between CT dispositions and skills for EFL learners in Japan.

1.1 Theoretical Background of Critical Thinking

According to previous research (e.g., Kusumi, 2018; Michita, 2001, 2003), CT can be defined as (a) rational thinking that follows the criteria in given situations, (b) reflective thinking that is related to metacognitive thinking, (c) goal-oriented thinking, and (d) proactive thinking that helps to decide what to believe and assert. Kusumi (2018) suggests that CT consists of three parallel components, namely metacognitive, cognitive, and affective levels (Figure 1).

Figure 1
Process of critical thinking based on Kusumi (2018)



According to the cognitive level of the model, the main three CT skills (i.e., Clarification, Evaluation of the grounds, and Inference) are required to process received information (e.g., news and task instruction). The first skill, Clarification, refers to logical thinking that explains received information in more detail. In this step, people try to identify the meaning of unclear words and technical terms and examine the construction of arguments in the information. The next skill, Evaluation of the grounds, involves analysis of given information to make appropriate inference. The final skill, Inference, is utilized to draw conclusions based on consideration of the background of facts, values, and ethics. Inference can be classified into three types: inductive, deductive, and value judgement. Each of these CT skills has relevant subskills and is used selectively according to the received information. At the final stage of the cognitive level, a decision is made to choose appropriate behavior.

At the metacognitive level in the model, metacognition functions to consciously check the cognitive level of the CT process (Kusumi, 2010). It serves to identify the difficulty of the tasks and goals, and decide which CT skills should be used to draw a conclusion efficiently. At the affective level of the model, CT dispositions constantly influence the cognitive process in order to make correct decisions or slow down the pace of decision making. The details of this phase are explained in the next section.

1.2 Relationship Between Critical Thinking Skills and Critical Thinking Dispositions

Although most previous studies suggested that CT consists of metacognitive, cognitive, and affective levels, little is known about the affective level such as which CT dispositions are important and to what extent they influence the cognitive process of CT. With researchers from the fields of Philosophy, Education, and Psychology, Facione (1990) summarized the common components of CT dispositions and created the California Critical Thinking Disposition Inventory (CCTDI, Facione & Facione, 1992) to measure CT dispositions. The CCTDI consists of 75 items that measure truth seeking, open-mindedness, analyticity, systematicity, confidence in reasoning, inquisitiveness, and maturity of judgement. In recent years, Hirayama and Kusumi (2004) pointed out the need to improve the validity of this scale. They reviewed the components of CT dispositions using factor analysis and extracted four CT disposition factors: awareness toward logical thinking, objectivity, inquisitiveness, and emphasis of evidence.

Using the California Critical Thinking Skills Test (CCTST, n.d.) and its disposition inventory (CCTDI), *Profetto-Mcgrath* (2003) investigated the relationship between CT dispositions and skills of 228 Canadian university students in a baccalaureate program. The study found a significant relationship between students' scores for overall CT dispositions and skills. Approximately 85.5% and 38% of the students had adequate levels of CT dispositions and skills, respectively. The results suggested a need for students' continued development in these areas.

Ricketts and Rudd (2004) also explored the relationship between CT dispositions and skills by developing a CT skills test (analysis, inference, and evaluation) and a three-scale instrument for measuring CT dispositions (engagement, innovativeness, and maturity) based on Facione (1990). Although the results should not be overgeneralized due to the limited range of the participants, it was revealed that the correlations between CT dispositions and skills were positive but minimal (r = .05 to .20).

In Japan, Hirayama, Tanaka, Kawasaki, and Kusumi (2010) examined how the scores of a revised Japanese version of the Cornell Critical Thinking Test (CCTT) Level Z (Ennis, Millman, & Tomko, 1985) and a disposition questionnaire made by Hirayama and Kusumi (2004) would relate to each other. The CCTT assesses six constructs (inference, inductive inference, judging the validity of observation, certainty of experiments, hypothesis verification, and judging word definition), and the disposition questionnaire measures four factors (curiosity, objectivity, the evidence emphasis, and awareness of logical thinking). The results showed that there was no significant correlation between overall CT skills and dispositions (r = -.30 to .19), which infers the independence of the two.

In this regard, the relationship between CT dispositions and skills has not been clarified in the context of L1. Moreover, whether this relationship is strengthened or remains unchanged in L2 use situations has not yet been investigated.

1.3 The Present Study

Developing CT for EFL learners is one of the main purposes of language teaching (MEXT, 2016). By revealing the nature of CT dispositions and to what extent they influence CT skills in foreign language use, more effective teaching of CT dispositions and skills in EFL classrooms may be suggested. Furthermore, since research of this kind is scarce, examining the nature of this relationship for people in different contexts is important to obtain more reliable and generalizable results (Hirayama et al., 2010). Therefore, the present study poses the following research questions (RQs):

RQ1: How can the CT disposition items be grouped?
RQ2: How are the grouped CT dispositions related to English CT skills?

2. Method

2.1 Participants

A total of 81 Japanese university freshmen majoring in either humanities or science participated in the experiment. Their English proficiency level was approximately CEFR A2 to B1 level according to the results of the placement test (TOEFL ITP scores; $M = 488.38$, $SD = 7.93$).

2.2 Materials

2.2.1 English Critical Thinking Test

The English Critical Thinking Test (ECTT) was originally created by Hirai, Maeda, Oka, Kato, and Nakano (2020) for EFL learners based on the California Critical Thinking Skills Test (CCTST, n.d.) and Kusumi's model (2010, 2018; see Figure 1). The ECTT is a multiple-choice test consisting of 35 items and focuses on the measurement of three CT skills: consistency, analysis, and inference.

2.2.2 Critical Thinking Disposition Questionnaire

The Critical Thinking Disposition Questionnaire (CTDQ) is a five-level Likert-scale CT disposition questionnaire in Japanese. To create the CTDQ, first, 21 items that displayed factor loadings of .35 or higher were chosen from previous studies (Hirayama & Kusumi, 2004; Hirooka et al., 2000; Shiomi & Kawashima, 2000). In addition, 25 items relevant to the ECTT were created for this study. Thus, a total of 46 items were originally included in the CTDQ.

2.3 Procedure and Analysis

The participants first took the ECTT online using the university's educational support system called *manaba* for automatic scoring. After excluding inadequate responses such as those with missing values, the data for 70 students were used for the following analyses.

As for the 35 items of ECTT, the six that met the following criteria were eliminated: (1) item-remainder correlation of the item is low ($rpb < .10$); (2) the result of the Mann-Whitney U test for the upper and lower 25% independent sample (i.e., the good-poor analysis) of the item is not statistically significant. Consequently, 29 items were used for this study (see Table 1).

Table 1
Descriptive Statistics for ECTT

CT skills	*Items*	*n*	*M*	*SD*
Consistency	14	70	8.84	2.70
Analysis	8	70	5.53	1.37
Inference	7	70	3.79	1.44
Total	29	70	17.93	3.86

Note. Maximum score is 29.

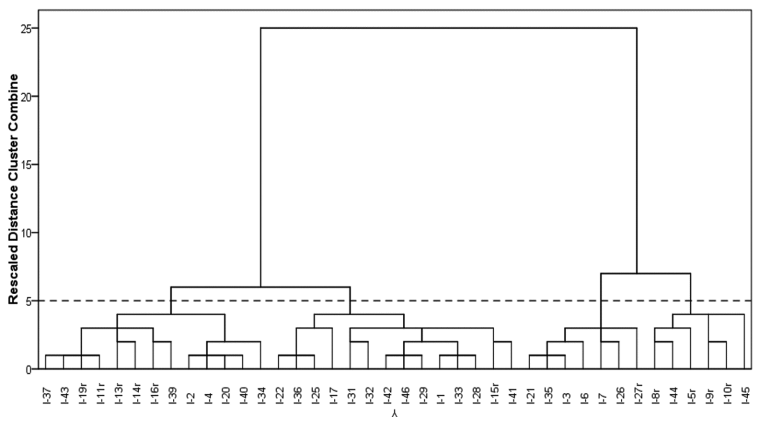
After taking the ECTT, participants answered the CTDQ using the same online platform. Based on the results of the good-poor analysis, six items that did not contribute to the measurement of CT dispositions were eliminated. The remaining 40 items were used for the following analyses (see Table 2).

In order to categorize the items of the CTDQ for RQ1, a hierarchical cluster analysis was performed with Ward's method to arrange Item Clusters (ICs). In addition, another hierarchical cluster analysis was performed using the same method to group the participants regarding their CTDQ answers and classify Person Clusters (PCs). Then, the statistical validity of how these PCs and ICs were categorized was examined using a two-way (3 x 4) mixed design ANOVA. As for RQ2, a correlation analysis was conducted to investigate the relationships between CT dispositions and skills.

3. Results

The result of the first hierarchical cluster analysis suggested that the items could be grouped into four clusters as illustrated in Figure 2.

Figure 2
Dendrogram of cluster analysis for items with dotted line representing the cut-off point



Each of these ICs were named based on the characteristics shared by the

included items. IC1 was named *Objective and Logical Thinking* because items in this group are related to logical ways of thinking, such as "I always try to make unbiased decisions" and "I try to deal with complicated matters in an orderly fashion." IC2 was named *Careful Judgement*. A typical item in this group is "I try to consider things carefully by comparing multiple things rather than taking only one thing into account." IC3 was named *Organizing Information*, since it includes items such as "I am good at organizing complicated tasks." As for IC4, it was named *Efficient Action* because items related to efficiency, such as "I tend to use my time efficiently," were clustered. The descriptive statistics for the CTDQ are shown in Table 2, and a one-way ANOVA revealed that these four ICs were significantly different from one another ($p < .001$).

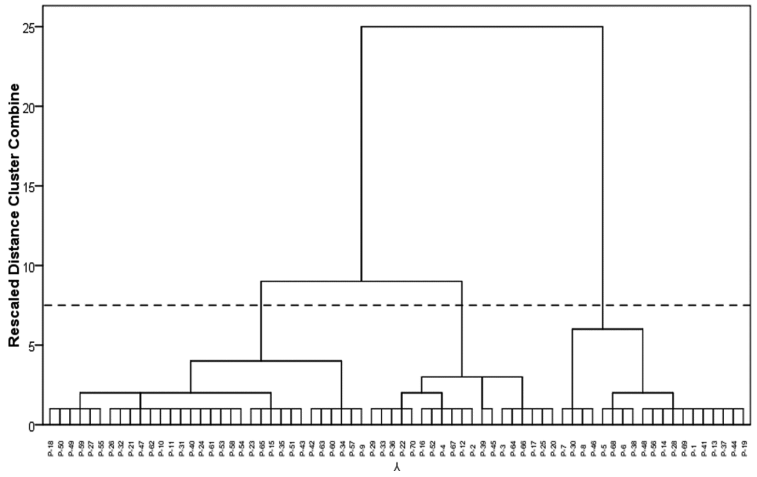
Table 2
Descriptive Statistics for CTDQ

Item Cluster	*Items*	*n*	*M*	*SD*
Objective and Logical Thinking	14	70	3.72	0.54
Careful Judgement	13	70	4.07	0.48
Organizing Information	7	70	3.23	0.72
Efficient Action	6	70	2.66	0.78
Total	40	70	3.61	0.53

Note. Scores range from 1 (disagree) to 5 (agree).

The second hierarchical cluster analysis indicated that the participants could be divided into three PCs as shown in Figure 3.

Figure 3
Dendrogram of cluster analysis for persons with dotted line representing the cut-off point



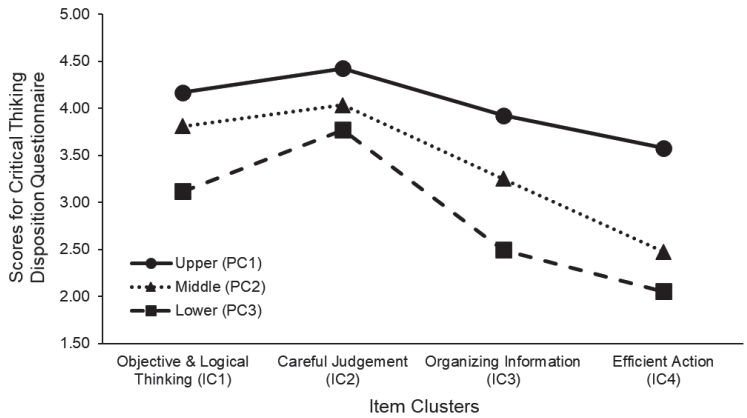
Based on the results of two hierarchical cluster analyses, a two-way (3 x 4) mixed design ANOVA was performed to examine the validity of how these three PCs and four ICs were grouped. It was shown that both main effects of PC,

$F(2, 67) = 94.94$, $p < .001$, $\eta^2 = .28$, and IC, $F(2.63, 175.94) = 130.27$, $p < .001$, $\eta^2 = .38$, were significant. The interaction between the two main effects was also significant, $F(5.25, 175.94) = 6.42$, $p < .001$, $\eta^2 = .04$.

As illustrated in Figure 4, the results of the Games-Howell test for multiple comparison revealed that the three PCs were significantly different to each other except for the difference between PC2 and PC3 in IC2 (Careful Judgement, $p = .135$), which was the cause of the significant interaction. Overall, the three PCs have a parallel trend regarding their disposition levels. In other words, these PCs were characterized by the degree of the four ICs, and their categorization was statistically valid. It was also interpreted that each PC represents the upper, middle, and lower level of CT dispositions.

In general, the Upper CT disposition group was highest in all four disposition components (i.e., ICs). However, among the four, Efficient Action (IC4) seems to be most challenging, as it was relatively lower than the other disposition components. Even so, the four components of the Upper disposition group were significantly higher than those of the Middle and Lower groups.

Figure 4



Line plot of mean scores in each Item Cluster by Person Clusters

Next, to clarify the relationship between the grouped CT dispositions and the English CT skills for RQ2, the descriptive statistics for the ECTT by PCs were examined (Table 3). The mean scores of the three CT skills (i.e., Consistency, Analysis, and Inference) across the three disposition groups (i.e., Upper, Middle, and Lower) were similar, and there were no obvious differences.

In addition, a correlation analysis was performed using Spearman's rank coefficient since the data was not normally distributed. The relationship between the overall scores of the CTDQ and ECTT showed no significant correlations ($r = -.07$, $p = .583$), which suggests that there is no evident relationship between CT dispositions and skills (see Table 4). Among the correlations between subordinate scores, only the result between Efficient Action (IC4) and Analysis in the ECTT was significant ($r = .25$, $p = .034$), though with small association. Since interpreting the relationship between the ECTT and CTDQ overall from these

results was difficult, it was further examined by individual disposition groups (i.e., PCs) (see Table 5).

Table 3
Descriptive Statistics for ECTT by Person Clusters

		Consistency		Analysis		Inference	
	n	*M*	*SD*	*M*	*SD*	*M*	*SD*
PC1. Upper	19	8.58	3.36	5.32	1.53	3.79	1.62
PC2. Middle	32	8.84	2.45	5.47	1.41	3.75	1.41
PC3. Lower	19	9.11	2.47	5.00	1.11	3.84	1.38

Note. ECTT = English Critical Thinking Test; PC = Person Cluster in Critical Thinking Disposition Questionnaire. Number of items for Consistency, Analysis, and Inference is 14, 8, and 7, respectively.

Table 4
The Relationship Between ECTT and CTDQ

	IC1. Objective and Logical Thinking	IC2. Careful Judgement	IC3. Organizing Information	IC4. Efficient Action	Total CTDQ
Consistency	-.05	-.07	-.08	.06	-.06
Analysis	.17	.09	.07	.25*	.13
Inference	.11	.09	-.01	.00	-.02
Total ECTT	.02	-.02	-.08	.08	-.07

Note. ECTT = English Critical Thinking Test; CTDQ = Critical Thinking Disposition Questionnaire; IC = Item Cluster in CTDQ. *$p < .05$, **$p < .01$.

Table 5
The Relationship Between ECTT and CTDQ by Each Person Cluster

Person Cluster	CT skills in ECTT	IC1. Objective and Logical Thinking	IC2. Careful Judgement	IC3. Organizing Information	IC4. Efficient Action
PC1. Upper	Consistency	-.04	-.11	.01	-.29
	Analysis	.10	.19	.38	.20
	Inference	.34	.40	.37	.18
PC2. Middle	Consistency	-.12	-.21	-.14	.09
	Analysis	.03	-.01	-.45**	.30
	Inference	.32	-.08	-.27	-.05
PC3. Lower	Consistency	.35	.18	-.07	.45
	Analysis	.29	-.06	.37	.41
	Inference	-.19	.14	.40	-.03

Note. ECTT = English Critical Thinking Test; CTDQ = Critical Thinking Disposition Questionnaire; IC = Item Cluster in CTDQ; PC = Person Cluster in CTDQ. *$p < .05$, **$p < .01$.

The results revealed at least two significant tendencies. First, in both IC1 and IC2, the correlations for Inference in ECTT decreased from Upper (PC1) to Lower (PC3) (from $r = .34$ to -.19; .40 to .14 highlighted in boxes). Since Inference is the superordinate cognitive skill in CT process (Figure 1), participants with higher inference skills tend to be more objective and careful when making

judgements. Second, related to the significant correlation between Analysis skills and Efficient Action (IC4) shown in Table 4, this relationship was clearer in the Lower disposition group (r = .41) than in the Upper (r = .20) or Middle (r = .30) groups.

4. Discussion

The aim of this study was to examine the relationship between the CT dispositions and skills of EFL learners. To this end, the ways in which CT disposition items could be grouped were analyzed in RQ1. The disposition items in CTDQ were categorized into four clusters based on the results of cluster analysis. These clusters were classified as Objective and Logical Thinking (IC1), Organizing Information (IC3), Careful Judgement (IC2), and Efficient Action (IC4).

First, the items in IC1 (Objective and Logical Thinking) seem to match the Clarification component of the CT process, which is the skill to clarify received information in detail. Second, items in IC3 (Organizing Information) seem to correspond to the Evaluation of grounds component, which is the skill to evaluate and analyze information for appropriate inference. Third, items in IC2 (Careful Judgement) are similar to the definition of the Inference component, which is the skill to draw conclusions based on reliable information. Finally, some items in IC4 (Efficient Action) seem to roughly match the definition of the decision-making component and CT behavior output in that it includes several items about how people behave in specific situations. Therefore, these four disposition categories may represent the components of the whole CT process as shown in Figure 1. Thus, CT dispositions and skills may interact with each other.

However, with regard to RQ2, which investigates the link between CT dispositions and skills, the overall result showed that there was no significant correlation between the two (r = -.07). Moreover, there were low or no relationships between the three skills of the ECTT and the four ICs of the CTDQ (see Table 4). These results were contrary to the assumption that students with high CT skills would also have high CT dispositions (e.g., Profetto-Mcgrath, 2003), but were in accordance with the previous L1 studies (e.g., Hirayama et al., 2010; Ricketts & Rudd, 2004) that indicate the independence of CT dispositions and skills.

Looking closer at the relationships between CT dispositions and skills based on the participants' disposition levels as shown in Table 5, some tendencies were observed. First, in the Upper disposition group (PC1), students with higher Inference skill tended to have higher disposition traits (r = .34 and .40) compared to the Middle (PC2; r = .32 and -.08) or Lower (PC3; r = -19 and .14) groups. Inference is the superordinate cognitive skill in the CT process, and it may be the key skill relating to CT dispositions. Yet, considering that there were no relationships between Inference skill and Efficient Action (IC4) in any of the disposition groups, it is suggested that those who have high inference skills do not necessarily take action efficiently.

On the other hand, Analysis skill was significantly related to Efficient Action (IC4), especially in the Lower disposition group (PC3; r = .41). This implies that

analytic persons or those who are good at calculation may take more efficient actions. In addition, such individuals tended to organize information better since the correlation between Analysis skill and Organizing Information (IC3) in Upper (PC1) and Lower (PC3) disposition groups were .38 and .37, respectively. This is reasonable because Analysis skill is particularly necessary at the beginning phase of the CT process when attempting to organize information.

As such, there might be some relationship between CT dispositions and skills on more specific levels, but it was suggested that even students with high CT dispositions do not necessarily have high CT skills in L2 (see Table 3). Thus, it could be concluded that developing only CT dispositions does not enhance CT skills, or vice versa. In other words, English teachers should interactively nurture both students' CT dispositions and skills in their classrooms.

5. Conclusion

As exploratory research to find out the relationship between CT dispositions and skills, this study has some limitations, and the following points should be improved in future investigation. First, all of the participants were university students with similar educational backgrounds. Such a homogeneous sample could have led to the low correlations between CT dispositions and skills. Second, this study used multiple-choice items to measure CT skills. Compared with open-ended questions that ask participants to write their answers freely (e.g., Hirayama & Kusumi, 2004), the researcher-developed CT test used in this study may have limited the range of cognitive skills measured, and led to CT dispositions and skills not showing sufficient correlations. Thus, it is assumed that if the tasks could have drawn out participants' abilities more or appealed to their principles, the relationship between the two might have been different. To these ends, further investigation is necessary in the future.

Despite these limitations, this study revealed the following findings. First, items in CTDQ could be characterized into four groups (i.e., Objective and Logical Thinking, Careful Judgement, Organizing Information, Efficient Action). Second, there was a group of participants that scored significantly higher than others in all these four components. Third, among the four disposition components, taking efficient action was the most challenging. Although they can think critically and may know what to do, it seems to be harder to put it into practice. Fourth, there was no evident relationship between overall CT dispositions and CT skills in English, which leads to the conclusion that these two are independent entities under the setting of this study.

Since the correlation between CT dispositions and skills was only confirmed under limited conditions, it is necessary for teachers to encourage students to use and develop their CT skills regardless of their level of CT dispositions in language classrooms. For example, in reading and writing classes, teachers should prepare questions to help students not only process information more deeply and critically, but also to apply their ideas to reality (e.g., Imai & Mineshima, 2017). Teachers could also assign a realistic problem-solving task, let students come up with a solution and put it into action. It is further important to note that classroom instructions need to not only be supportive but

also challenging for students (Shim & Walczak, 2012). Collaborative learning activities such as discussions and debates would encourage the active use of CT by the students. By having such opportunities, students can enhance not only their skills for thinking critically but also their dispositions to act responsibly.

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References

CCTST. (n.d.). California critical thinking skills test. Retrieved November 20, 2021, from https://www.insightassessment.com/Products/Products-Summary/Critical-Thinking-Skills-Tests/California-Critical-Thinking-Skills-Test-CCTST.

Ennis, R. H. (1987). A taxonomy of critical thinking dispositions and abilities. In J. Baron & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice* (pp. 9–26). W. H. Freeman.

Ennis, R. H., Millman, J., & Tomko, T. N. (1985). *Cornell critical thinking test level x and level z: manual* (3rd ed). Midwest Publications.

Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction (The Delphi report)* (ED315423). ERIC. Retrieved November 20, 2021, from https://files.eric.ed.gov/fulltext/ED315423.pdf

Facione, P. A., & Facione, N. C. (1992). *The California critical thinking disposition inventory.* California Academic Press.

Griffin, P., McGaw, B., & Care, E. (Eds.). (2012). *Assessment and teaching of 21st century skills.* Springer. https://doi.org/10.1007/978-94-007-2324-5

Hirai, A., Maeda, H., Oka, H., Kato, T., & Nakano, E. (2020). The development of an English test for measuring critical thinking skills. *JACET Journal, 64,* 205–225. https://doi.org/10.32234/jacetjournal.64.0_205

Hirayama, R., & Kusumi, T. (2004). Effect of critical thinking disposition on interpretation of controversial issues: Evaluating evidences and drawing conclusions. *Japanese journal of educational psychology, 52,* 186–198. https://doi.org/10.5926/jjep1953.52.2_186

Hirayama, R., Tanaka, Y., Kawasaki, M., & Kusumi, T. (2010). Development and evaluation of a critical thinking ability scale from cornell critical thinking test level Z. *Japan Journal of Educational Technology, 33*(4)*,* 441–448. https://doi.org/10.15077/jjet.KJ00006063557

Hirooka, S., Ogawa, K., & Motoyoshi, T. (2000). A exploratory study of measurement of the "the orientation toward critical thinking". *Bulletin of the Faculty of Education, Mie University (Educational Science), 51,* 161–173. Retrieved November 20, 2021, from http://hdl.handle.net/10076/4577

Imai, R., & Mineshima, M. (2017). Fostering learners' critical thinking (CT) skills in English communication I: Development of a CT skills list and core performance tasks. *ARELE: Annual Review of English Language Education in Japan, 28,* 365–380. https://doi.org/10.20581/arele.28.0_365

Kikushima, M., Teramoto, T., & Shibahara, Y. (2018). Practice and evaluation of

an educational program for developing undergraduates' critical thinking and attitudes. *Japan Journal of Educational Technology, 41*(4), 427–437. https://doi.org/10.15077/jjet.41060

Kusumi, T. (2010). Hihanteki shikou to kouji riterashii [Critical thinking and higher-order literacy]. In T. Kusumi (Ed.), *Shikou to gengo* (pp. 134–160). Kitaohji Shobou.

Kusumi, T. (2018). Critical thinking in support of literacy development: Implications for reading science. *The Science of Reading, 60*(3), 129–137. https://doi.org/10.19011/sor.60.3_129

Michita, Y. (2001). Various concepts of critical thinking: What do they think it is? *Bulletin of Faculty of Education, University of the Ryukyus, 59,* 109–127. Retrieved November 20, 2021, from http://hdl.handle.net/20.500.12000/524

Michita, Y. (2003). Diversity and a fundamental image of the major concepts of critical thinking. *Japanese Psychological Review, 46*(4), 617–639. https://doi.org/10.24602/sjpr.46.4_617

Ministry of Education, Culture, Sports, Science, and Technology. (2016). Youchien, syougakkou, chuugakkou, koutougakkou oyobi tokubetu shienn gakkou no gakusyuu shidou youryou tou no kaizenn oyobi hitsuyouna housaku tou ni tsuite (toushinn) [Improvement and necessary measures for the course of study in kindergartens, elementary schools, junior high schools, senior high schools, and special-needs schools (report)]. Retrieved November 20, 2021, from https://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/toushin/__icsFiles/afieldfile/2017/01/10/1380902_0.pdf

Profetto-Mcgrath, J. (2003). The relationship of critical thinking skills and critical thinking dispositions of baccalaureate nursing students. *Journal of Advanced Nursing, 43*(6), 569–77. https://doi.org/10.1046/j.1365-2648.2003.02755.x

Ricketts, J., & Rudd. R. D. (2004). The relationship between critical thinking dispositions and critical thinking skills of selected youth leaders in the National FFA Organization. *Journal of Southern Agricultural Education Research, 54*(1), 21–33. Retrieved November 20, 2021, from http://www.jsaer.org/pdf/Vol54/54-01-021.pdf

Shim, W., & Walczak, K. (2012). The impact of faculty teaching practices on the development of students' critical thinking skills. *International Journal of Teaching and Learning in Higher Education, 24*(1), 16–30.

Shiomi, K., & Kawashima, N. (2000). A teaching practices of Japanese classes for students' acquiring tender thinking and expressing their attitudes frankly. *Hyogo University of Teacher Education journal. Ser.1 (School education, early childhood education, education for handicapped children), 20,* 1–12.

Appendix

Critical Thinking Disposition Questionnaire

Items
1. 意見を批判する前に、その人の立場に立って考えてみるようにしている。
2. いつも偏りのない判断をしようとする。
3. どちらかと言えば人から頼られたり、相談にのる方だ。
4. 推理小説や推理ドラマが好きだ。
5. 十分な根拠や正確な事実があれば、意に反することでも、立場を変える。
6. はっきりと言われなくても、言いたいことを汲み取れる。
7. 問題と関係あることと、無関係なことをきちんと区別できる。
8. 自分に関係がある問題が起これば、解決策を思いつき実行に移せる。
9. 代替案にも目を向けようとする。
10. 優先事項を見極めて、行動している。
11. 複雑な全体を順序よく扱おうとする。
12. 文章を読む際は、全体の流れを考えながら読み進める。
13. 結論の出ない話題については最後に話した人の意見に左右されてしまう。
14. 結論は根拠から直接導けることにとどめ、無理な論理の飛躍をしない。
15. 物事を決めるときには、客観的に判断することを心がける。
16. その人の置かれている立場や役割を配慮できる。
17. 自分の意見に反する事実は無視するようにしている。
18. 新聞やテレビの報道は，事実をそのまま伝えていると思う。
19. テレビやネットの広告などに影響され、つい買ってしまって後悔することがある。
20. 世の中は複雑すぎて、論理的に考えることを学んでも役に立たないと思う。
21. 占いや迷信を気にして行動してしまいがちだ。
22. 文章を読んでいるとき、つい次の展開を予想してしまう。
23. 他人の考えや意見が正しいかどうかについて、その根拠を自分で見極めるようにしている。
24. 一つのことだけを取り入れないで、じっくり比較検討するようにしている。
25. 大きな決断をしなくてはならない時は、まず可能な限りの情報を集める。
26. わからない単語は、文脈を利用して判断する。
27. 注意深く物事を調べる方だ。
28. 何かの問題に直面しても、冷静に解決する。
29. 建設的な提案をすることができる。
30. 複雑な問題を整理していくことが得意だ。
31. 一筋縄ではいかないような難しい問題に対しても取り組み続けることができる。
32. 資料として提示された数値について、細かくチェックするようにしている。
33. 資料やデータは、信頼できる出所か、まずチェックする。
34. 上の人から指示を出されると、理由を考えないで言われた通りにする。
35. 落ち着いて考えようとしても、つい気が散ってしまうことが多い。
36. 時間に無駄がなく効率に使っている方だ。
37. 実生活で図表が出てくるとじっくり見ないで避けてしまう。
38. 一見どちらも正しいような２つの意見から１つを選ぶことは苦手だ。
39. 自分の問題について、くよくよ悩むことが多く、なかなか考えがまとまらない。
40. 知識欲が旺盛で、頻繁にニュースなどを読んだり見たりする。