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Faculty of Education **Thesis abstract**

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Title
A PHENOMENOGRAPHIC STUDY OF THE ROLE OF CRITICAL THINKING IN JAPANESE PRIMARY EDUCATION

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Abstract

Nowadays, critical thinking is globally conceived as one of the most important skills. A good example of this is that critical thinking is included as one of the twenty firs century skills and the foundation for key competencies which is determined by the Organization for Economic Cooperation and Development (OECD) as a critical stance. In spite of this fact, the conception of critical thinking is not common in Japan and its study is work in progress. In this thesis, thus, I have attempted to find out the role of critical thinking in primary education in Japan. The main focus of this research is on Japanese primary school teachers since they are the most significant elements for children's learning in schools. It is assumed that the role of critical thinking can be studied through analysing the teachers' experiences. The theoretical framework consists of several theorists starting with John Dewey.

In this thesis firstly, the current situation of the Japanese education system is discussed in terms of critical thinking. This consists of the basic Japanese education system and working culture of Japanese teachers in primary school. Secondly, the definitions of critical thinking by several prominent scholars were explored so as to understand the conceptions of critical thinking. Yet, the single definition of critical thinking cannot be determined, however, the common characteristics of critical thinking can be found in these definitions. After that, the methodology of research was discussed. Phenomenography was the main approach of this research and the means of data analysis was conducted by thematic content analysis. The participants of this research were five Japanese primary school teachers, three women and two men, ranging from a novice teacher to those who have more than thirty years' experience. The data was collected through semi-structured individual interviews which lasted approximately thirty minutes each.

Although almost all teachers did not know the concept of critical thinking, they attempted to conceptualise it by their experiences through the interviews. Their conceptualisations are quite similar to Dewey's concept of reflective thinking and they discussed the concept of critical thinking in terms of nurturing children as future citizens who will make decisions, develop the society, and live in social and cultural diversity. Simultaneously, the teachers feel difficult to apply critical thinking and express differences in Japanese society which is quite collective and homogenous. Furthermore, there are only few opportunities to learn critical thinking during teacher training even though this concept is gradually emerging in formal training, as one of the teachers indicated in the interview.

Despite the low number of participants (5), this research came up with certain findings which can be considered highly relevant. Another challenge of this research was the language; the interviews were conducted in Japanese after which the transcripts were translated into English. Hence it is possible that some nuance in detail was lost which is why the translation process was revised several times comparing carefully the Japanese and English transcripts.

Keywords Critical Thinkig, Japanese Teachers, Phenomenography, Primary Schools, Thematic Content Analysis

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1. INTRODUCTION

In this chapter, I shall introduce the overview of this research including: what is studied, why it is studied, and how is it written in this thesis. To summarise, the central interest of this research is critical thinking in primary education, and this critical thinking will be analysed in the context of Japanese teachers' experiences in Japan.

1.1 The central concern of this research: Critical thinking

Nowadays, critical thinking is one of the most important skills in every society. One example of the importance of critical thinking is the fact that it is included into twenty first century skills determined by partnership for twenty first century learning (Dilley, Kaufman, Kennedy, & Plucker, 2015). Furthermore, according to the Organization for Economic Cooperation and Development (OECD) (2005), who declared necessary competencies for a successful life in the globalised world, these key competencies are constructed by three interrelated categories:

-To use a wide range of tools for interacting effectively with the environment such as language and technology,

-To engage with others who have different backgrounds and interact in heterogeneous groups, and

-To act autonomously in the broader social context (ibid, pp. 4-5).

Underlying these categories is reflectiveness, which allows individuals to think about their interest, assimilate it, relate it to other aspects of their experiences, and to change or adapt it. 'Thus, reflectiveness implies the use of metacognitive skills (thinking about thinking), creative abilities and taking critical stance' (OECD, 2005, pp. 8-9). As illustrated, this reflectivity is deeply connected to critical thinking and thoughtfulness and plays a central role in the key competencies (Higuchi, 2013, p. 8).

Concerning the situation in Japan, as (Higuchi, 2012, p. 199) relates, the study of critical thinking has become increasingly vigorous during the past fifteen years. Higuchi (2012) collected and summarised a study concerning critical thinking of Japanese scholars, and concluded his work having identified four trends and three issues in terms of the study of critical thinking in Japan. Higuchi (2012) concluded that the trends are:

1) The study of the theory of critical thinking by analysing mainly American scholars such as Ennis, Paul, Siegel, Beyer, and Watson & Glaser from the viewpoints of theory, psychology, and critical pedagogy,

2) The development of teaching materials and study units in certain subjects and a few cases of teaching critical thinking directly with original materials without dependence on certain subjects,

3) The analysis of newspaper and commercials in media literacy, and

4) Studies of critical thinking in higher education.

The main issues identified by Higuchi (2012) were identified as being:

1) Setting teaching objectives with the aspect of critical thinking and few cases of study how to teach it,

2) Development of study units and taking them into practice in terms of themes, styles, and ways of lessons, and

3) Evaluation of critical thinking and analysis of lessons.

As shown above, despite the importance of critical thinking, the study of it is a work in progress in Japan. Therefore, it is valuable to study critical thinking in the context of Japanese education. This is especially true when we remember that teachers are the first, and the most significant actors, and school the most important learning environments for children and they have huge influence on their learning. Thus, teachers' understanding of critical thinking is directly connected to children's learning in terms of critical thinking.

1.2 How this research is conducted

Since children's learning is greatly affected by teachers through school activities, the understandings and recognitions of teachers towards critical thinking should be explored, so as to think about the role of critical thinking in primary education, as well as pedagogical issues. In order to identify these, interpretivist ontological and epistemological assumptions are applied in this research. According to Scotland, (2012, p. 12) and Patel (2015) interpretivism views reality as being subjective, and created by individuals in groups (Creswell (2013, pp. 24-25) reminds us that individuals also develop subjective meanings of their experiences and these subjective meanings are formed through interaction with others).

Hence, it is necessary to understand the role of critical thinking in school education by analysing and interpreting teachers' experiences. The appropriate methodology chosen to analyse and interpret these experiences is phenomenography, as it is 'the empirical study of differing ways in which people experience, perceive, apprehend, understand, or conceptualize various phenomena in, and aspects of, the world around them' (Marton, 1997, p. 97). As the central concept of this research is critical thinking, and the aim is to find out how some Japanese teachers perceive it, thematic content analysis is suitable and applicable as a method of analysis.

1.3 The structure of this thesis

Firstly, the research context will be introduced since the informants and the context of this research are Japanese. This context comprises the basic educational system in Japan in terms of the structure of Japanese schooling system, and the purpose of Japanese primary education in relation to critical thinking. In addition to the basic system, the working culture of Japanese teachers in school will also be discussed. This includes the cooperativeness of Japanese teachers and ways of improving their teaching skills, such as the lesson study pedagogy.

Subsequently, the theoretical frame work will be discussed. This framework consists of the definitions of critical thinking, which is the main concept of this research, by prominent scholars. Critical thinking has been discussed since the era of Socrates, Plato, and Aristotle (Burbach, Matkin, nad Fritz, 2004, p. 482; Hare, 1982, p. 107). In this thesis, the definitions

of John Dewey, Robert H. Ennis, John McPeck, Richard Paul, and Yasushi Michita will be explored, in addition to how critical thinking in twenty first century skills are envisioned.

This theoretical section is followed by the methodology section. As mentioned above, the approach of this research is phenomenography and the method of analysing data is thematic content analysis. The data was collected through semi-structured interviews, which are mainly used in phenomenography (Marton, 1997, p. 99). The interviews consisted of five participants and the interviews lasted approximately thirty minutes each. Consequently, this research is a qualitative research.

After having introduced the methodology, the analysis and findings will be discussed. The themes and subcategories will be indicated and findings will be shown according to them. Data analysis was basically done according to the process suggested by Tesch (1990) with some modifications.

Finally, a number of issues will be discussed in the discussion chapter. This chapter also consists of the summary of results, discussion of validity and reliability, and suggestions of further research topics.

2. THE AIM OF THE STUDY AND THE RESEARCH QUESTIONS

The aim of this study is to find out the role of critical thinking for primary school teachers in Japan through analysis of their experiences and perceptions. The following research questions have been constructed, in order to interpret the teachers' perceptions of critical thinking:

1. How is critical thinking defined by certain prominent scholars?
2. How do Japanese teachers in primary school understand the conception of critical thinking?
3. How do Japanese primary school teachers attempt to make children think critically?

The first question, concerning, the definitions of critical thinking comprise the theoretical conception of this research, with the purpose being to explore how the conceptions of critical thinking has been dealt with in academia. The second research question is the central, and main interest of this research, which is connected to how the theoretical concept of critical thinking is recognised by Japanese primary school teachers. The third research question concerns the pedagogical aspects of critical thinking, insofar as it is not aimed at analysing actual educational situations in schools, but rather seeing empirical aspects of critical thinking by interpreting the teachers' experiences and perceptions through their careers as teachers.

3. THE CONTEXT: THE JAPANESE EDUCATION SYSTEM

In this chapter, I shall illustrate the educational situation in Japan in relation to critical thinking. This illustration consists of the basic structure of the Japanese educational system and the culture of Japanese teachers in Japanese schools.

3.1 The structure of Japanese schooling system

The basic school system in Japan comprises: kindergarten for three years, primary school for seven years (from six to twelve years old), secondary school for three years (from thirteen to fifteen years old), high school for three years and finally higher education at university level. Both primary and secondary educations are compulsory in Japan (see appendix 1). What is taught from kindergarten to high school is determined by national curricula which are revised in each decade. The current curricula were revised in 2008, and partly revised in 2015 in terms of moral education. As related in the Enforcement Regulations for the School Education Law (1947), the Japanese national curriculum comprises of the subjects and other school activities. The subjects are Japanese Language, Social Studies, Arithmetic, Science, Living Environmental Studies, Music, Arts and Crafts, Home Economics, and Physical Education. Other school activities are Moral Education, Foreign Language Activities, The

Period for Integrated Studies, and Special Activities.

3.2 The official statements about the objectives of Japanese education

According to the General Provision of the national curriculum (2008), one of the main objectives of school education is to 'foster in pupils a zest for life'. A zest for life is 'a holistic competency' (The second report of how Japanese education ought to be in the twenty first century, 1997) and it is divided into four core aspects or competencies, listed as:

(1) Competencies of basic and fundamental knowledge and skills,

(2) Competencies and capacity of personally finding problems, personally learning, personally considering, actively judging, acting, and solving problems better according to the situation of the society,

(3) A rich sense of humanity including regulating oneself, cooperating with others, a mind that sympathises with others, and a mind that is impressed, and

(4) Health and physical strength to live vigorously.

(The handbook of national curriculum: General Provisions, 2008, p. 3)

My interpretation is that partly the first competence and primarily the second competence of these elements of a zest for life seem to be related to critical thinking. For example, basic and fundamental knowledge is required for critical thinking, as content specific knowledge, finding problems, judging, and problem solving are some key dimensions of critical thinking as well as they are shown in a zest for life.

Despite the fact that a zest for life is intimately related to critical thinking, nurturing critical thinking is not explicitly included in any national curricula. Currently, discussions on critical thinking have begun in the Central Council for Education, (which is a consultative body of the Minister of Education, Culture, Sports, Science and Technology) for instance, in reports commissioned on high school education, and on higher education (Kusumi, 2012; Hirano, 2012).

In the former report, critical thinking is understood as a generic skill of under graduate students underpinning study, life as a citizen, and work in terms of inquiry, collecting information, inference, decision making, and problem solving (Kusumi, 2012, p. 3). In the latter report, it is shown as a steady implementation and follow-up of new national curricula focusing on a thinking ability (critical thinking), nurturing a communication ability, experiential learning under reformation of primary and secondary education for coping with change of social construction (Hirano, 2012, p. 3). In addition, critical thinking is valued as one of the competences which undergraduate students should acquire in a sense of 'a cognitive competence such as critical and reasonable thinking abilities in order to understand complex matters as problems with applying knowledge and skills and to find solutions towards no answer problems.' (The Central Council for Education, 2012, p. 5)

At the same time, problems relating to Japanese education were indicated in the second report of the basic plan for the promotion of education (2013, p. 9) which states that:

> '...issues are on competences of considering, judging, and expressing… for example, from the result of Programme for International Student Assessment (PISA)… there are problems in terms of interpreting acquired information by understanding relations among it, and of integrating children's own knowledge and experiences with

obtained information.'

In primary education, critical thinking is shown in the collection of examples regarding language activities for primary schools written by the Ministry of Education, Culture, Sports, Science and Technology Japan. According to this publication:

> 'There are still problems in terms of children's abilities of considering, judging, expressing which were revealed by assessments of pupils' learning outcomes. And it is required to nurture abilities of finding issues and problem solving, logical thinking skills, communication skills, and abilities of considering from multiple perspectives (critical thinking)' (Ministry of Education, Culture, Sports, Science and Technology Japan, 2011, p. 10).

The publication also notes that:

> 'it is important to review preconditions and coverage of one's own thought with recognising others' thoughts as well as to develop thoughts by scrutinising validity and credibility from a variety of viewpoints by comparing to others' thoughts, categorising, and associating, that is critical thinking.' (Ministry of Education, Culture, Sports, Science and Technology Japan, 2011, p. 13)

The importance of critical thinking is indicated in this publication and critical thinking is understood as being one of the most important skills in language activities.

3.3 The working culture of Japanese teachers in schools

Japanese teachers have their own culture, and a Japanese teacher's work is very diverse. For instance in addition to teaching children subjects, and attending local events, Japanese teachers are also responsible for teaching: ethical matters such as proper dining manners, how to make relationships with friends, counselling children, pupil guidance, safety education regarding preventing traffic accidents and natural disasters, and more. Teachers also eat lunch and clean the schools with the children. Additionally, experienced teachers give advice to young teachers regarding lessons and class management.

These activities are made possible through the cooperation of teachers. As Himeno (2012, p. 157) claims when referring to the teaching style in Japan that 'Japanese schools have a characteristic based on cooperative structure'. One example of this is lesson study, which is a way of improving teaching skills using lessons which teachers in school to study and to observe them (Himeno, 2012, p. 158; Kawamura, 1999, p. 170; Horie & Nose, 2011, p. 147).

In the case of primary school from my experience as a teacher, all teachers in school discuss and set a theme depending on circumstances of the children. According to the theme, some teachers create lesson plans with their colleagues who are responsible for the same grade and those teachers give lessons. After having done this, they have discussions regarding these lessons with an instructor who is knowledgeable about the topic. These instructors can be headmasters, supervisors in education centres and board of education, and professors in universities. Sakai (2015) shows an example of a lesson study which is constructed by prior group discussions, a lesson, and post study meeting. Teachers who have control of the grade where the lesson is given have prior group discussions and all teachers in the school have

the post study meeting.

Lesson studies in school are a good example of Japanese teachers working cooperatively, which is one of the main ways to improve their teaching skills and in which all teachers are involved. In other words, it is an opportunity to gain new teaching methods and ideas of teaching. The relation between critical thinking and lesson study can be found when critical thinking becomes a topic of lesson study. For instance, Higuchi (2013) participated in developing a curriculum on The Period for Integrated Studies in primary and secondary schools which aims at fostering critical thinking.

4. THEORETICAL FRAMEWORK: CRITICAL THINKING

In this section, I shall introduce the definitions by notable scholars concerning the concept of critical thinking. Subsequently, I shall attempt to determine the definition of critical thinking by integrating these various concepts.

4.1 Defining critical thinking

The idea of critical thinking can be observed in the philosophies of Socrates, Plato, and Aristotle (Burbach, Matkin, & Fritz, 2004, p. 482; Hare, 1982, p. 107). Their basic presuppositions are as Burbach, et al. (p. 482) point out 'to encourage their students to realise that things very often are not what they seem on the surface.' After these philosophers, the conception of critical thinking has been attempted to be defined in various ways by various scholars, of which I shall introduce some in the following chapters. I have chosen the following modern scholars and their definitions on critical thinking: John Dewey, Robert, H, Ennis, John McPeck, Richard Paul, Dilley, et al and the twenty first century skills, and Yasushi Michita.

4.1.1 John Dewey: Reflective thinking

John Dewey is one of the first educators to attempt to define the concept of critical thinking. In his work 'How We Think' which was originally published in 1910, Dewey claims that 'if suggestion that occurs is at once accepted, we have uncritical thinking, the minimum of reflection' (Dewey, 1910, p. 191). Dewey explains this concept using an example of a man walking on a warm day. The man while walking noted that the air was cooler and when he looked up, he saw dark clouds, and then he hurried on his way. In this case, Dewey states that 'walking is one direction of activity; looking and noting are other modes of activity. The likelihood that it will rain is, however, something suggested' (p. 186). The idea it will rain comes to the man's mind by the situation. This is what Dewey declares as *suggestion*.

Dewey continually claims that the way of avoiding uncritical thinking is 'to turn thing over in mind, to reflect, means to hunt for additional evidence, for new data, that will develop the suggestion, and will either, as we say, bear it out or else make obvious its absurdity and irrelevance' (p. 191). Furthermore, Dewey (1910) used the expression '*reflective thinking*' which means 'judgement suspended during further inquiry' (p. 191), while Dewey also mentions the constitution of reflective thought which is 'active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends' (pp. 185-186).

Moreover, a significant aspect of critical thinking is discussed by Dewey as:

> 'the essence of critical thinking is suspended judgement; and the essence of this

> suspense is inquiry to determine the nature of the problem before proceeding to attempts at its solution. This, more than any other thing, transforms mere inference into tested inference, suggested conclusions into proof'. (pp. 238-239)

For Dewey (1910), critical thinking and reflective thinking are almost the same concept in terms of suspending judgment, and are attained through profound consideration towards problems and performing adequate inquiry before conclusions. Therefore, it is essential in critical thinking 'to maintain the state to doubt and to carry on systematic and protracted inquiry' (p. 191) in order to avoid a rush to reach a conclusion.

4.1.2 Robert H. Ennis: Reasonable reflective thinking

Robert H. Ennis also attempted to define critical thinking. At first, he defined critical enquiry as 'the correct assessing of statements' (Ennis, 1993, p. 179). Ennis then felt it necessary to elaborate the concept of critical thinking to include creative aspects which are 'formulating a problem, questions, possible solutions, and plans for investigating something' (Ennis, 1987, p. 10). His advanced definition is that 'critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do' (Ennis, 1987, p. 10). Under this definition, the process of critical thinking is divided into two main aspects which are *dispositions* and *abilities*, which can be seen in table one below.

Table 1. Dispositions and abilities of critical thinking. (Ennis, 1987, pp. 12-15)

Dispositions	Abilities
1. Seek a clear statement of the thesis or question	1. Focusing on questions
2. Seek reasons	2. Analysing arguments
3. Try to be well informed	3. Asking and answering questions of clarification and/or challenge
4. Use and mention credible sources	4. Judging the credibility of a source
5. Take into account the total situation	5. Observing and judging observation reports
6. Try to remain relevant to the main point	6. Deducing and judging deductions
7. Keep in mind the original and/or basic concern	7. Inducing and judging inductions
8. Look for alternatives	8. Making value judgements
9. Be open-minded	9. Defining terms, and judging definitions in three dimensions which are form, definitional strategy and content
10. Take position (and change a position) when the evidence and reasons are sufficient to do so	10. Identifying assumptions
11. Seek as much precision as the subject permits	11. Deciding in an action
12. Deal in an orderly manner with the parts of a complex whole	12. Interacting with others
13. Use one's critical thinking abilities	
14. Be sensitive to the feelings, level of knowledge, and degree of sophistication of others	

Ennis's definition is substantially expanded from 'the correct assessing of statements' and contains the aspect of creativity in the dimension of abilities, and the aspect of attitude in the dispositions during thinking. Since Ennis (1987) claims the role of dispositions in critical

thinking (p. 24), they, therefore, can be seen as an important element of critical thinking.

Moreover, Ennis mentioned the following ten characteristics of a critical thinker as being:

1. Judge credibility of sources.
2. Identify conclusions, reasons, and assumptions.
3. Judge the quality of an argument, including the acceptability of its reasons, assumptions, and evidence.
4. Develop and defend a position on an issue.
5. Ask appropriate clarifying questions.
6. Plan experiments and judge experimental designs.
7. Define terms in a way appropriate for the context.
8. Be open-minded.
9. Try to be well informed.
10. Draw conclusions when warranted, but with caution. (1993, p. 180)

These discussions show that critical thinking concerns a whole process of thinking, from confronting problems to taking actions towards them rather than a simple and single way of thinking.

4.1.3 John E. McPeck: Reflective scepticism

John E. McPeck (1981) summarised *the characteristics of critical thinking* into ten features which are:

1. Purporting to teach critical thinking in the abstract, in isolation from specific fields or problem areas, is muddled nonsense; thinking of any kind is always 'thinking about X'. Critical thinking cannot be distinct subject.
2. The term 'critical thinking' has an identifiable meaning, but the criteria for its correct application vary from field to field.
3. Critical thinking does not necessarily entail disagreement with, rejection of or deviation from accepted norms.
4. The phrase 'reflective scepticism' captures the essence of the concept, but a more complete description would be something like 'the disposition and skill to do X in such a way that E (the available evidence from a field) is suspended (or temporarily rejected) as sufficient to establish the truth or viability of P (some proportion or action within X)'.
5. Critical thinking does not merely refer to the assessment of statements but includes the thought processes involved in problem solving and active engagement in certain activities.
6. The study of logic (both formal and informal) is by no means sufficient for thinking critically.
7. Insofar as critical thinking involves knowledge and skill, a critical thinker in area X might not be a critical thinker in area Y.
8. 'Critical thinking' (like 'teaching' and 'education') is both a 'task' and an 'achievement' phrase, and does not necessarily imply success.
9. In addition to the assessment of statements, critical thinking may include the use (or rejection) of methods, strategies and techniques as exemplars.
10. Critical thinking is not coextensive with 'rationality' but is a dimension of it. (p. 13)

McPeck (1981) explains critical thinking by using *reflective scepticism*. The judicious use of scepticism leads to the consideration of alternative hypotheses and possibilities and the production of a more satisfactory solution (pp. 6-7). In addition, this reflective scepticism is used to suspend any conclusion until a more sufficient and satisfactory result is acquired. In this sense, the role of scepticism here is similar to Dewey's conception of critical thinking.

Another striking feature of critical thinking in this statement is the fact that the skill of critical thinking is specified in certain contexts such as fields of study, or arenas of problems. For McPeck (1981), the way of critical thinking is various according to the context, and this also indicates that critical thinkers require knowledge and skills of the field in which critical thinking is worked (p. 9).

Finally, McPeck claims the importance of perspective of attitude in critical thinking. This is mentioned by 'active engagement in certain activity' in the fifth characteristic previously shown and 'the core meaning of critical thinking is the prosperity and skill to engage in an activity with reflective scepticism' (McPeck, 1981, p. 8). Critical thinkers need to be concerned with matters which they attempt to solve, or improve actively and with motivation.

4.1.4 Richard Paul: The intellectually disciplined process

Richard Paul separated critical thinking into two conceptions, which are critical thinking in the weak sense and in the strong sense. In *the weak sense*, critical thinking is conceived as a set of discrete micro-logical skills which focus on 'vocational' thinking skills and have no

influence on intellectual, emotional or moral autonomy. In contrast, critical thinking *in the strong* sense is a set of integrated macro-logical skills which have insight into one's own cognitive and affective processes. Hence, it has elements of development of not only technical reason but also emancipatory reason. In other words, it is related to the free, rational, and autonomous mind. (Paul, 1984, p. 5)

The notable feature of Paul's definition of critical thinking is to include a human's affectivity, as this influences the process of acquiring results in critical thinking. Moreover, Paul defined critical thinking with Scriven at the 8th Annual International Conference on Critical Thinking and Education Reform in 1987 (this conference is held by the centre of critical thinking established by Doctor Richard Paul at Sonoma State University in 1980) as 'the intellectually disciplined process of actively and skilfully conceptualising, applying, analysing, synthesising, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action'. (Defining critical thinking, 2013) Here there are similarities to McPeck's views as this definition includes an element of attitude in the word 'actively,' in addition to critical thinking being understood as a process rather than a single action.

4.1.5 Dilley, et al and the twenty first century skills: Reflective, analytical, evaluative, and deliberate skills

Currently, critical thinking is included as one of the twenty first century skills determined by partnership for twenty first century learning. It shows a variety of theories and

conceptualisations by a large number of researchers and educators and it takes common concepts from them, which are ‘reflective, analytical, evaluative, and deliberate skills and characteristics’ (Dilley, Kaufman, Kennedy, & Plucker, 2015, p. 3). On the other hand, it does not include the affective aspect of critical thinking, such as an active attitude towards critical thinking and one’s desire on critical thinking. It is only introduced that there is an argument whether the affective aspect should be involved into the concept of critical thinking. (Dilley et al., 2015, p. 3)

4.1.6 Yasushi Michita: Logical and reasonable thinking

Japanese researchers also define the concept of critical thinking, with one of them being Michita. Michita regards the definition of critical thinking as being ‘logical and reasonable thinking which is released by critical attitude (scepticism) and is supported by creative thinking and knowledge which is inherent to a certain field’ (Michita, 1999, p. 135). According to Michita (1999), critical thinking can be understood as ‘a package of multiple thinking skills and attitudes integrated from the perspective of evaluating and solving daily problems’ (p. 135). The core of this package is appropriate rational thinking and justification which can be seen as logical thinking. In order to employ logical thinking on daily problems appropriately, an attitude of critically and sceptically examining matters is needed. Furthermore, as it aims to solve problems, it is necessary to find other alternatives, to search for possibilities, and to have multiple perspectives which are connected to creative thinking. (Michita, 1999, p. 135) Finally, as Michita (1999, p. 135) relates, if knowledge related to the field where critical thinking works is acquired, the problem can be conceived broadly and

critically.

Notably, Michita (2004) similarly to Ennis (1987, p. 10) connects critical thinking with daily problems. Critical thinking is a practical activity related to problem solving in everyday life. Additionally, it involves aspects of creativity which are similar to Ennis' conception of critical thinking and requirement of content specific knowledge, as well as McPeck's characteristics of critical thinking. Furthermore, Michita divides the conception of critical thinking into two dimensions, namely critical thinking directed to solution and evaluation which is represented by Ennis' concept and critical thinking directed to inquiry, which in turn is represented by McPeck's concept. According to Michita (2004), there are differences in their aims and objects, as the former aims to solve problems and/or make decisions with thinking, which provides more profound and superior problem solving and decision making, while the latter focuses on clarifying, doubting, and discussing implicit presuppositions, in other words, to question premises and obviousness. Yet, these two dimensions do not exist independently, they are mutual and in some cases, both means of critical thinking work simultaneously, while in other cases, aims and ways shift reciprocally between them (pp. 339-343).

4.1.7 Conclusive remarks on the scholars' views of critical thinking

As illustrated above, arguments concerning critical thinking illustrate that there is no consensus concerning a single definition of critical thinking. However, it seems that the core characteristics of critical thinking can be found from these arguments. Theses core

characteristics of critical thinking are: they are reflective, reasonable, and based on logical thinking, creative thinking, content specific knowledge, and an active attitude such as open mindedness and being well informed. Furthermore, critical thinking includes abilities of identifying, questioning, analysing, applying, observing, and evaluating information and knowledge. Although it is a complex way of thinking, motivated and dedicated practitioners can obtain broad perspectives of educational issues through critical thinking.

5. METHODOLOGY

In this section, I shall discuss the research paradigm which is composed of ontology, epistemology, methodology, data collection and method of data analysis. I shall introduce interpretivism as the ontology and epistemology, phenomenography as the methodology, semi-structured interviews as the method of data collection, and thematic content analysis as the method of data analysis.

5.1 Qualitative research

According to the interpretive paradigm, reality is subjective and reality is created by individuals in groups, thus there is no single reality or truth. Therefore, reality needs to be interpreted and is used to discover the underlying meaning of events and activities. Knowledge is based on culture and history, due to the fact that it is constructed by interactions between humans and the world. (Scotland, 2012, p. 12; Patel, 2015) Since research conducted from the perspective of the interpretive paradigm aims to understand phenomena from the perspective of individuals through interpretation, it deals with qualitative data (Scotland, 2012, p. 11), thus, it is mainly qualitative research. Furthermore, according to the interpretivist viewpoint, individuals develop subjective meanings of their

experiences, and these subjective meanings are formed through interaction with others. Therefore, researchers often focus on processes of interaction among individuals and on the specific contexts in which people live and work. (Creswell, 2013, pp. 24-25)

Qualitative research is defined by Creswell (1998) as

> 'an inquiry process of understanding based on distinct methodological traditions of inquiry that explore social or human problems. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting.' (p. 15)

Schreier (2012) also shows the characteristics of qualitative research as being; interpretive, naturalistic, situational, reflexive, having emergent flexibility, inductive, case-oriented, and putting emphasis on validity (p. 21). These characteristics include similar features of the definition qualitative research by Creswell (1998) such as being context based and focusing on understanding and interpreting the context. Schreier (2012) insists that 'qualitative researchers think of interpretation as a process of actively constructing meaning and they assume that meaning will vary depending on the person who does the interpreting and the context in which meaning is produced' (p. 22). Qualitative research deals with situations and context itself and attempts to construct meaning from them through different means, such as interviewing people.

According to Creswell (1998), there are several reasons for conducting qualitative research. Qualitative research should be conducted when:

(1) the nature of the research question begins with how or why,

(2) exploring the topic is a necessity,

(3) presenting a detailed view of the topic is a necessity

(4) individuals are being studied in their natural setting,

(5) there is interest in writing in a literary style,

(6) there is sufficient time and resources to spend on extensive data collection in the field,

(7) there is an audience,

(8) there is emphasis of the researcher's role as an active learner. (pp. 17-18)

Generally, the methods applied to qualitative research 'exemplify a common belief that they can provide a 'deeper' understanding of social phenomena' (Silverman, 2000, p. 8). Creswell (2013, p. 48) claims that additional reasons to conduct qualitative research are, a need to study a group or population, to identify variables that cannot be easily measured, to hear silenced voices, and a complex and detailed understanding of issues.

To conclude, qualitative research aims to find out deeper understandings about phenomenon through interpretations with individuals in certain contexts. Concerning the context of this research, it is a Japanese school with teachers. As mentioned previously, the concept of critical thinking is neither defined by the national curricula of Japan, nor do the curricula show ways of nurturing critical thinking in pupils. In other words, due to this fact that it is not defined or shown in the national curricula, it is not necessarily taught in schools. This means that teachers' attention and recognition concerning critical thinking and implementation of teaching it vary, and are dependent on their experiences as a teacher. Therefore, teachers' recognitions of critical thinking need to be interpreted. In such a context, qualitative research can be applied to this study which attempts to understand the role of critical thinking in the teachers' work in primary school in Japan.

5.2 Research design

For this research the research approach applied is phenomenography, while content analysis is utilised as the method of data analysis. As the basic stance of this research is that teachers have their own experiences through which they have fostered and are fostering the concept of critical thinking, while additionally, pedagogically, they also have experience related to critical thinking in their daily work (at least unconsciously), in order to understand these teachers' conceptions, phenomenography can be applied as an approach. Concerning data analysis, the central concept of this research is clear; critical thinking, consequently, thematic content analysis which is one of the most common approaches of content analysis can be applied to analyse the data.

5.2.1 Phenomenography

Phenomenography is defined by Marton (as cited in Tesch, 1990, p. 65) as 'a research method for mapping the qualitatively different ways in which people experience, conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them.' Marton (1997, p. 97) also claims that 'phenomenography is the empirical study of differing ways in which people experience, perceive, apprehend, understand, or conceptualize various phenomena in, and aspects of, the world around them.'

Akerlind (2005) insists that the outcomes of phenomenography are represented as a number of qualitatively different meanings, or ways of experiencing, referred to as categories of descriptions, and the structural relationships linking these different ways of experiencing are referred to as outcome space. These outcomes are attained by analysing variations in human meaning, understanding, conception, or awareness or ways of experiencing a particular phenomenon. (p. 322) In other words, 'phenomenographers study how people explain to themselves (and others) what goes on around them, and how these explanations and conceptualizations change' (Tesch, 1990, p. 65), especially based on participants' own experiences.

Uljens (1991) is another researcher who relates that 'phenomenography can be characterized as a qualitative, interpretive, research approach in social (human) sciences. It attempts to describe, analyse, interpret and understand different aspects of the world. The researcher's interest is thus in people's conception.' (p. 82) Moreover, according to Uljens (1991), the phenomenographer deals with the second-order perspective, which means the researcher describes some aspect of reality as it is conceived by a certain group of people, rather than the first-order perspective, meaning that the researcher describes some aspect of reality directly, as the researcher meets it (pp. 82-83). This requires that they attempt to see reality through the lens of the participants. In these definitions, relations between phenomenon and experiences are emphasised and therefore, they are the main objects of phenomenography. Regarding relations between them, Marton (1997) insists that the world is seen from people's viewpoint of specific situation whilst the situation is seen through their experiences of the world. Phenomenographic study, thus, can explore the different ways in which they can be aware of a certain phenomenon or situation. (p. 98)

Ontologically, reality can be studied through people's understanding of it, and the only

reality we can access is the reality experienced by people (Uljens, 1991, p. 85). Data collection in phenomenography is thus mainly performed by semi-structured individual interviews, while it is possible to apply other various methods of collection, for instance, group interviews, observations, drawings, written responses, and historical documents (Marton, 1997, p. 99; Uljens, 1991, p. 89). Marton (1997, p. 100) displays examples of the applications of phenomenography, namely the interrelated nature of the act and the outcome of learning, investigations of the experience of the act of learning, problem solving, the understanding of the phenomenon of learning, understanding, and finding critical differences in which central phenomena, concepts, and principals in specific domains are understood.

In this research, the central phenomenon is critical thinking and it can be studied by analysing teachers' conceptions, based on their experiences according to the perspective of phenomenography. Thus, phenomenography is an appropriate approach to understand the role of critical thinking for primary school teachers in Japan.

5.2.2 Content analysis

The means of analysing data adopted in this research is qualitative content analysis, which has features such as a descriptive methods to summarise what is in the data rather than on creating a theory (Schreier, 2012, p. 41). Content analysis has been defined as 'any technique for making inferences by objectively and systematically identifying specified characteristics of message' by Holsti, 'any research technique for making inferences by systematically and objectively identifying specified characteristics within text' by Stone et al, and 'a research

technique for making replicable and valid inferences from data to their context' by Krippendorf (Franzosi, 2004, pp. 548-549). Content analysis permits the researcher to make inferences from various sources based on texts, documents, and transcripts of records, therefore, content analysis can be applied as the method of analysis in order to describe how critical thinking is understood by primary school teachers in Japan and what the role of critical thinking is for them.

5.3 Research persons

The data for my research was collected from five public primary school teachers in Japan. This group of informants consisted of three female and two male teachers. Two of these teachers were elderly, having a longer experience of teaching as a career (JT1F and JT3F who have taught for approximately thirty years), and three younger teachers (JT2M who has taught for approximately ten years, JT4M for three years, and JT5F who is a novice teacher). JT, F, and M refer to Japanese teacher, female, and male respectively.

All participants belong to the same school, and all of the teachers interviewed have different responsibilities in their school. JT1F teaches sixth grade and Special Activities, JT2M teaches first grade, the period of integrated study, and Living Environmental Studies, JT3F teaches Third grade, Japanese Education, and has the responsibility for the school library, JT4M teaches fifth grade and Moral Education, and JT5F teaches third grade. As JT5F is a novice teacher, JT5F has novice training in and outside of the school.

Interviews with the teachers were conducted individually and were performed “face to face.” Each interview took between twenty to forty five minutes.

5.4 Semi-structured individual interviews

The interviews conducted with Japanese primary school teachers were semi-structured, with the interview questions being:

(1) What do you understand with the concept of critical thinking?

(2) How important is critical thinking for you as a teacher?

(3) Should children be taught critical thinking at school? Please explain why it is important or not important? What age children should it be taught?

(4) In your work as a teacher, when and how do you try to make the kids in your classroom think critically? Please illustrate.

(5) Was critical thinking discussed when you studied in order to become a teacher? and

(6) Has critical thinking been discussed in your study after becoming a teacher?

The first question asks the recognition of critical thinking. The teachers pondered the reason of importance of critical thinking by the second question. The third question refers to children in particular. The fourth question is related to pedagogical aspect and examples of implementation in terms of critical thinking. The fifth and sixth questions are as regards learning of critical thinking in their education and career. Additional questions were asked when necessary during the interviews such as ‘what do you mean by that?’ and /or ‘could

you explain more about this point?'

5.5 Thematic content analysis

In content analysis, researchers need to decide on coding categories and coding scheme, with coding categories formalising each characteristic of interest, and the scheme relating to the set of all coding categories to be applied to a set of texts. This scheme is then systematically applied to all selected texts of interest for the purpose of extracting uniform and standardised information. (Franzosi, 2004, p. 550)

Coffey and Atkinson (1996, p. 26) also specify coding referring to a process to assess tags or labels to the data based on the concepts, and to condense the bulk of data sets into analysable units by creating categories with, and from the data. Additionally, they divide coding into two opposite functions, which are a way of simplification and reduction by creating a small number of general codes, and data complication. (Coffey & Atkinson, 1996, pp. 28-29). After reducing the data to certain patterns, categories, or themes, the researcher interprets this information by using schema (Creswell, 1994, p. 154). Notably, 'different investigators could be looking for different things' (Franzosi, 2004, p. 550). Thus, it is essential that coding categories and coding schemes are determined carefully.

One method of content analysis is thematic content analysis, in which the 'coding scheme is based on categories designed to capture dominant themes present in a text' (Franzosi, 2004, p. 550). Themes can be set according to researchers' interests that the researchers are

attempting to understand. Regarding thematic content analysis Franzosi (2004) claims that it is relevant to draw a clear picture of the basic content of a text which can answer questions such as, what is in the mind of interviewees, rather than the form of texts and how actors, actions, and events are described in texts which are dealt with in referential content analysis (pp. 562-563). The focus of thematic content analysis is on the specific topics in which researchers are interested in. In this sense, thematic content analysis can be applied as a method to understand and make inferences regarding teachers' recognition in terms of critical thinking through interviews.

6. DATA ANALYSIS

In this section I shall firstly introduce the data analysis procedure, including the process of deciding the themes and subthemes, which were determined according to the techniques proposed by Tesch (1990). Subsequently, the concrete process of analysing the data shall be presented, while finally, after the themes and subthemes are extracted from the data, the findings shall be discussed.

6.1 The analysis guide by Tesch

The process of data analysis requires several steps, with Tesch (1990) recommending that the following steps should be followed when examining and analysing data:

1. Get a sense of whole. Researcher should jot down ideas about the data as they come to mind. It gives researchers background information.
2. Pick any data document which might be the most interesting one, the shortest one, or the one on the top of the list. Ask ‘what is this about?’ Do not pay any attention to the substance of the statements. Write the topic which researcher identified.
3. When this step has been completed for several sets of data, make a list of all

topics and cluster together similar topics. After naming each cluster, reorganise them as major topics, unique topics, and leftovers.

4. Go back to the data with the list. Abbreviate the topics as codes and write the codes next to the appropriate segments of text. This might discover new topics and researchers must decide whether they are relevant for the research.
5. Find the most descriptive wording for the topics and turn them into categories. Try to relate topics.
6. Make a final decision on the abbreviation for each category and alphabetise these codes.
7. Assemble the data material belonging into each category in one place and perform a preliminary analysis.
8. If necessary, recode the existing data. (pp. 142-145)

Coffey and Atkinson (1996) demonstrate several starting points of coding. The first alternative to commencing coding is from a framework including research interests, key words, particular events, theoretical or conceptual framework, hypotheses and so forth. Another possibility is to adopt an inductive way based on the research questions. (pp. 31-32) Coffey and Atkinson then illustrate two steps of coding as examples of coding; which are deciding generic categories, and generate a number of subcategories. Subcategories can be created from informants' words, summary glossaries of text which informant seem to refer to, and researchers' conceptual interests. (Coffey & Atkinson, 1996, pp. 34-36)

Basically, I have followed the steps recommended by Tesch (1990), however the procedures were modified when needed. Additionally, one theme (which was the main concern of this research) was identified by adopting the approach suggested by Coffey and Atkinson.

6.2 Analysing the data

In order to analyse the data, firstly, as the interviews were recorded, their contents needed to be transcribed. Having done this, the transcripts were translated into English as the interviews were conducted in Japanese, and then the answers were sorted according to the questions. After this, themes were decided upon by repeating the following process: transcripts of the interviews were read, answers towards each question were identified, topics were decided upon by reflecting upon the meanings of the answers, and themes were decided upon by clustering similar topics.

Additionally, as Coffey and Atkinson (1996, pp. 31-32) mentioned, one of the topics was decided upon as *definitions of critical thinking* by Japanese primary school teachers, which was directly related to the research questions. Other themes identified were: *social change in Japan*, *necessity of critical thinking*, *pedagogy*, *teacher education*, and *personal development*, with some of these themes also containing subthemes.

Table 2. Themes and subthemes

Themes	Subthemes
1. Definitions of critical thinking	Discussed later in section 6.3.1.
2. Social change in Japan	Collectivism VS Individualism
	Obedience of children
3. The necessity of critical thinking	Decision making

	Development
	Diversity
4. Pedagogy	The age of children
	The opportunities of learning critical thinking
	The examples of teaching critical thinking
5. Teacher education	Discussed later in section 6.3.5.
6. Personal development	Discussed later in section 6.3.6.

6.3 Findings

Below, I shall introduce my findings according to the themes which were determined as shown above. The following abbreviations are used to identify the interviewees:

- Japanese teacher 1: JT1F,
- Japanese teacher 2: JT2M,
- Japanese teacher 3: JT3F,
- Japanese teacher 4: JT4M, and
- Japanese teacher 5: JT5F.

6.3.1 Definitions of critical thinking

The interviewees answered the question of what they understand with the concept of critical thinking. This question directly asks for their definitions of critical thinking and therefore, by investigating the answers provided, recognitions of primary school teachers concerning critical thinking can be explored. Some of the participants have similar views concerning critical thinking. JT3F, JT4M, and JT5F answer:

> *As it is impossible to criticise without something conflicting, it is to think opposite matter towards something and to think whether it is possible in one's mind.* (JT3F)

> *A way of thinking that people reorganise matters by themselves before concluding or deciding. It is neither to take something for granted nor accept something without doubting, rather to interpret it by oneself and to consider both positive and negative aspect of something.* (JT4M)

> *I have an image that someone reads newspaper or article critically. (Interviewer: What do you mean by critically in concrete?) It is the fact that although this article is writing like this about certain matter, I have own ideas or I express my opinions. It does not mean denial, but I do not take it for granted, and I want to see it from my point of view. In other words, I take different perspectives.* (JT5F)

All of these answers include different perspectives, particularly JT4M's and JT5F's claim that not to take something for granted is involved into critical thinking. As regards having multiple perspective, JT2M also mentions:

> *I have an image that when develop it by myself, we need to analyse something from many angles with meta-cognitive skills.* (JT2M)

In addition, JT1F states that,

> *It might mean that I correct myself by questioning and thinking that if what I and others are doing is correct. Moreover, it is to improve things by communicating what I think incorrect.* (JT1F)

This illustrates the idea that to question, and improve something are the key conceptions of critical thinking. These ideas are closely akin to what is considered by Dewey as reflective thinking. Contrarily, JT2M explains the concept of critical thinking from a slightly different viewpoint. He insists that:

> *I currently conceive of critical thinking as a way of thinking to look for the essence. I personally think an important feature of critical thinking is inter-subjectivity.* (JT2M)

He defines critical thinking by relating essence and inter-subjectivity as important features of critical thinking. After claiming that the essence is vague and occurs at the location, he continues:

> *When people discuss something, members in that discussion inter-subjectively develop their opinions by using meta-cognitive skills. In this sense, discussions with*

> *some people should be effective for critical thinking.* (JT2M)

According to JT2M, critical thinking appears through interactions among people such as discussions using inter-subjectivity and metacognition. As JT2M mentions a few skills, other teachers also indicate some skills. JT3F claims that critical thinking is learnt through debate and then mentions logical thinking and knowledge.

> *Children try to defeat opponent with logical thinking. ... Children who can defeat opponents in debate have a large amount of knowledge.* (JT3F)

Furthermore, JT2M also points to the importance of basic knowledge.

> *Basic knowledge is definitely significant. Children need to learn the basic knowledge. However, as it is not good to teach only basic knowledge and not to teach how to use it, teachers need to construct teaching units with the viewpoint according to which when and how children use it and children can deal with it.* (JT2M)

The importance of knowledge as discussed by McPeck (1981) and Michita (1999), is an issue, insofar as not only how to gain it, but also how it is used. Another aspect which McPeck (1981) claims is an active attitude towards thinking. JT4M referred to this point, however, he did not realise this at the beginning of the interview, but came to this realisation during the interview process. When questioned that ‘it seems that your idea towards critical thinking is changing through this discussion, so do you have anything that you want to add or anything new’, he answered

> *At first, I said that the image of critical thinking was to consider what to prioritise , now I feel that it is also critical thinking to act with thinking actively.* (JT4M)

It was obvious that my discussion with this teacher, and probably with the others too, inspired them to reflect upon this theme more profoundly.

6.3.2 Social change in Japan

All the interviewed teachers think that critical thinking is important and they apprehend the necessity of critical thinking in relation to the societal changes in Japan. This theme includes two subthemes namely *collectivism versus individualism* and the *obedience of children*.

Firstly, it is commonly stated that Japan is a homogenous and collective society. When this is negatively interpreted, it results in pressure to be the same as others, with even teachers having difficulties to think and behave critically. As JT2M relates:

> *It is absolutely important as an ability of a teacher. But it is better not to have it in order to work smoothly in Japan.* (JT2M)

Children have similar difficulties as teachers.

> *Children tend to avoid it because of fear. They avoid both criticising others and being criticised. Because children themselves do not want to be hurt, they do not use such kinds of words. This kind of thinking is increasing.* (JT1F)

JT3F also indicates this by comparing Japanese children with American children, who improve their skills of discussion as they grow.

> *On the other hand, Japanese children have opposite trend that they can express anything they think, then they become not to do so because of shame.* (JT3F)

This avoidance and shame are due to the fact that when they display differences from others, they are blamed.

> *I want them to know that it is not enough to follow others' opinions. I feel that it is so difficult to tell this in Japan. If people express individuality, they are blamed. Because of this, they are in majority instead of showing their personality.* (JT1F)

It can be seen that it is difficult for both children and teachers to show individualities and differences in Japanese society, and therefore people attempt to have similar ideas to the mainstream majority. Teachers who have such an opinion have a willingness to change this.

The second subtheme is *obedience of children*. Especially, experienced teachers feel that currently children easily obey teachers and adults. They claim that

> *If I say something strongly, perhaps, children obey that and they fit into a frame which I show. But I want children to consider that if things that they are being told are right for them or if they are really correct.* (JT1F)

> *In these days, a lot of children obey what they are told by adults*. (JT3F)

And JT1F and JT3F think that critical thinking is important in order to not be influenced by teachers and adults without questioning nor doubting (JT1F), and in order to have children's own opinions (JT3F). JT1F mentions the cause of this obedience in terms of change of teachers' ways in organising school work. In the past, teachers' meetings in schools were much less calm than meetings in recent times, meaning that teachers discussed and decided their divisions of duties by themselves. Under such circumstances, they had the willingness to work. However, this has changed. JT1F maintains that:

> *So it was us who decided the role in a division. It became top-down in this 15 years. Although I am not sure if this way of deciding is good, at least teachers have been obedient. We accustomed to top-down way of deciding. By doing so, critical thinking might weaken. It has got natural and common. Children may be the same.* (JT1F)

JT1F thinks that this weakening of autonomy of teachers might have an influence on teachers' critical thinking and on children's attitudes.

6.3.3 The necessity of critical thinking

All interviewees think that critical thinking is important from a number of different aspects and therefore, the interviewees gave a variety of answers in terms of the necessity of critical thinking. In this theme, three subthemes were set: 1) *decision making*, 2) *development*, and

3) *diversity.* These subthemes are related to socialisation, citizenship, and future creation, or, in other words, to educating good future citizens.

The first subtheme is *decision making* related to daily life in society as a citizen.

> *When they become adult and are in society, I want them to consider that if that is really good, if a policy of the government is good, or if what is being done is really for protecting the human rights always rather than taking them on faith. I want them to have questions.* (JT1F)

> *It is necessary in order not to be influenced by the world without own opinions. ..., I want children to have such a perspective.* (JT3F)

For JT1F, the core concept of critical thinking is to question, and it is necessary for citizens when making decisions in their life as part of a society, as well as, as JT3F claims, the importance of assessing information in the world by thinking critically.

The next subtheme is *development* which is mainly indicated by JT2M.

> *Critical thinking is related to rationality, the essence, and sustainability of the future. If we do not conceive the essence with critical thinking, anything do not continue longer.* (JT2M)
>
> *It can create the future and it can deconstruct obstructive. .... I think that people need to have stimulation. In this sense, the deriving thinking ability connects to the new development and ideas as well as inspiration and evolution.* (JT2M)

'Deriving thinking ability' refers to critical thinking here, as the teacher thinks that the *essence* is the core idea of critical thinking. He infers that the *essence* includes the idea that it can be transferred into another content. Critical thinking is conceived in the connection to sustainable development with inspiration and evolution.

The final subtheme of the necessity of critical thinking is *diversity*. A few teachers mentioned this viewpoint.

> *I want them to have questions. There are some parts which they can accept but this is not everything. And then, I want them to live in their own way. In other words, I want them to know that it is not enough to follow others' opinions. ...I think this should be valued for the future because it is fundamental to overcome a variety of differences, such as nationality. I think when children become adult, their neighbours will be foreigners. They have different ways of thinking and different sense of values.* (JT1F)

> *Those who have different ideas and something that the person cannot accept should emerge in daily life. At that time, rather than they just cooperate with each other, it is better that they criticise each other and make relationship by realising 'there are such ideas which I do not have'.* (JT5F)

JT1F insists that people can find their own way to live through questioning and understanding differences, and this is the way to overcome diversity. On the other hand, JT5F insists that people can make relationships by not only cooperating but also by criticising from broad perspectives and multiple angles. In order to achieve both of these ideas, critical thinking is imperative.

6.3.4 Pedagogy

Informants make their children think critically while working as a teacher. Subthemes of this theme consist of 1) *the age of children*, 2) *the opportunities of learning critical thinking*, and 3) *the examples of teaching critical thinking*.

Some interviewees answered that *the age of children* should be taken into consideration. The way and amount of teaching critical thinking should not be the same in different grades.

> *As I think there are steps according to the grade, basically, familiar topics are suitable for the lower and middle grade. On the other hand, I attempt to broaden topics and make them more abstract for the upper grade.* (JT2M)

> *An amount of critical thinking should be increasing according to growth of children. Higher grade children should have more opportunities to learn critical thinking.* (JT4M)

> *When I remember my experience, my approach and expectations to fifth grade children in this year are different from the ones to third grade children last year and the year before. In these, the amount of critical thinking has increased and when I think of that, I feel it is important.* (JT4M)

> *When children reach the upper grade, they can see their surroundings and then they naturally begin to think 'is it wrong?'* (JT5F)

In all cases, the teachers consider that critical thinking is learnt more in higher grades than in lower ones, and according to JT2M more abstract topics are appropriate for children of higher grades while lower grade children can learn critical thinking with familiar topics. This illustrates that teachers perceive that appropriate periods and materials should be prepared for children related to their growth.

Secondly, *the opportunities of learning critical thinking* differ among participants. They are divided into two aspects which are; learning in certain subjects, and learning through school life rather than school subjects. The subjects are history and agriculture in Social Study (JT1F & JT2M), debate in Japanese Language (JT1F & JT3F), Living Environmental Studies with dialogue (JT2M), and role play activities (JT3F). Furthermore JT1F and JT2M insist that critical thinking can be learnt through experience.

In contrast, JT4M and JT5F claim that critical thinking can be learnt through daily life in school and school activities. These includes school events, daily life with teachers and friends, and activities with children in other grades.

> *Critical thinking should not be taught as a subject but there are opportunities to learn it naturally such as in making relationships, in daily life in school, and in activities with children of other grades.* (JT4M)

> *I do not think it should be taught from the lower grade as a main topic. When children reach the upper grade, they can see their surroundings and then they*

> *naturally begin to think 'is it wrong?' I think it is good to make them consider critical thinking give advice advice.* (JT5F)

Finally, interviewees shared their experiences as *the examples of teaching critical thinking* which is the third subtheme. JT1F illustrates history in Social Study and debate in Japanese Language. In Social study, children critically wrote newspapers regarding historical incidents, as if the children themselves had lived in that period, writing to people who had lived in that period. For example, one topic of the debate was 'whether animals in the zoo are happy, or not.' JT1F carefully chose the topics of the newspapers and for the debates since 'if I give lessons in which children think of a variety of ideas towards current issues, parents who have different opinions will complain.' (JT1F)

JT2M considers that dialogue is the main method of teaching critical thinking and he provides Living Environmental Studies with dialogue as an example. In Living Environmental Studies children studied about the leaf, and then prepared a public bath with leaves. Through this experience and dialogue, their usage of language changed. He says:

> *Children change their way of thinking from a superficial expression … to seek more profound expressions with words which they have already known. And I think that the trigger of this is experience.* (JT2M)

JT3F had a debate in her class whose topic was 'Which is the better city, Hokkaido or Okinawa?' During this example, she mentions that a large amount of knowledge and logical thinking are important in a debate in order to make counterarguments.

> *Many pupils can tell their own opinions if they prepare them. But they need to reply*

> *in debate. It is impossible to memorise all counterarguments. Some children who are good at doing it can bring forward counterarguments smoothly.* (JT3F)

The example provided by JT4M is, contrarily, one of the school events which is not included in certain subjects but rather is more cross-curricular. He especially mentions the preparation for outdoors school. He claims

> *I attempted to change direction from forcing them to do something related to school activities to make them think actively and do them by themselves.* (JT4M)

Active thinking and active attitude are indicated here. JT5F shows an example of when she and her children had recreation in break time. They planned playing tag and discussed how they should organise it. In this discussion, she thinks that critical thinking worked.

> *As they did not specify the area where children play tag, a pupil suggested to specify the field to play or increase the number of chasers otherwise it is difficult for chasers to catch. I think critical thinking worked in this case without changing the way of playing but changing the framework of the game such as a range of the field or the number of chasers.* (JT5F)

6.3.5 Teacher education

Teacher education provides significant opportunities to lean theories and methods of

educational activities for teachers. However, participants seem not to learn much critical thinking during their teacher education. JT2M and JT3F answer that they have not learnt it in their universities, JT1F indicates that she had the experience of being criticised in her circle activity as an opportunity to experience critical thinking. JT2M indicates that he studied the importance of critical thinking through research of lessons although he was not aware of critical thinking since the expression, critical thinking, did not exist at that time. JT5F has heard that there was a criticism on the contents of textbooks. It can be seen that there were not many opportunities to learn critical thinking itself, nor lectures deeply related to it.

6.3.6 Personal development

As discussed in the research context, there are learning opportunities available through in-service training in Japan, such as lesson studies and formal training after becoming a teacher. In spite of this fact, it is difficult to find opportunities to learn critical thinking in them. JT1F, JT4M and JT5F claim that there were no formal trainings related to critical thinking, instead, they have learnt it through private experiences and trainings. JT1F had a lecture from a person who is transgender regarding identity, and she learnt to question and doubt something which she took for granted. What is more, JT1F experienced separation between people's experience and what is broadcasted by televisions and newspapers. She claims that:

> *I have come to think that because information from newspaper and TV is constructed by other's perspective and it is written in a narrow field, I must not just*

receive without questioning. (JT1F)

JT4M and JT5F insist that critical thinking has been learnt through private study meetings with other teachers by analysing trial lessons, teaching materials, and children's work. Other teachers bring different perspectives from their own ones, and this was a good method of learning, and for broadening their perspectives.

JT2M mentions that critical thinking is gradually becoming common in formal training. However, as he mainly focuses on analysing lessons as the method to improve critical thinking, he insists that formal training in which participants attempt to analyse lessons cannot be found. He says that he is improving his critical thinking in private study as well as other teachers.

JT3F points to the post-discussion of the lesson study as an example of opportunities for critical arguments. She has experienced that:

> *A post-discussion of the lesson started with criticism such as 'what did you do, today?', 'what do you want to do in that lesson?' Therefore, they were good learning opportunities for me.* (JT3F)

At the same time, she mentions that this method of having post-discussions related to the lesson study was done in the past and nowadays, criticism has disappeared in the discussion. These informants' experiences imply that the development of critical thinking of teachers relies heavily on each teacher and their personal experiences, although some teachers feel that it is being gradually introduced into education.

7. DISCUSSION

In this final section I shall discuss the research results, issues related to validity and reliability and topics for future research. Firstly, I shall summarise the research findings and connect them to the research questions. Secondly, issues concerning validity and reliability will be discussed, and finally, suggestions for further research topics will be provided.

7.1 Conclusive remarks of the findings

As introduced in the first and second chapters, the goal of this research was to find out the role of critical thinking for primary school teachers in Japan. In order to achieve this goal, three research questions were formulated: 1) how is critical thinking defined by certain prominent scholars? 2) how do Japanese teachers in primary school understand the conception of critical thinking? and 3) how do primary school teachers in Japan attempt to make children think critically?

Prominent scholars provide a large variety of definitions concerning critical thinking, and while there is no single definition, common features of critical thinking can be perceived from these various definitions. According to my research, the core characteristics of critical

thinking are as follows: *reflective, reasonable, and based on logical thinking, creative thinking, content specific knowledge, and active attitudes such as open mindedness and being well informed, with abilities and skills to identify, question, analyse, apply, observe, and evaluate information and knowledge*.

As far as Japanese primary school teachers are concerned, four of the five teachers did not recognise the concept of critical thinking in itself. Nevertheless, they attempted to define it through the interviews based on their experiences as teachers. By doing so, their conceptualisations are similar to Dewey's writings on reflective thinking. They answered that 'it might mean that I correct myself by questioning' (JT1F), 'we need to analyse something from many angles with meta-cognitive skills' (JT2M), 'it is to think opposite matters towards something and to think whether it is possible in one's mind' (JT3F), 'a way of thinking that people reorganise matters by themselves before concluding or deciding. It is neither to take something for granted nor accept something without doubting, rather to interpret it by oneself and to consider both positive and negative aspects of something' (JT4M), and 'it does not mean denial, but I do not take it for granted, and I want to see it from my point of view. In other words, I take different perspectives' (JT5F). In addition to these, one of the teachers (JT2M) specified the purpose of critical thinking by relating it to essence, rationality, sustainable development, inspiration, and evolution with inter-subjectivity and metacognition. In conclusion, it can be said that most of these Japanese teachers expressed ideas related to critical thinking, despite the fact that they could not give an accurate definition or description of 'critical thinking.' All in all, male and female teachers' views on critical thinking did not differ. As for the younger and more experienced teachers, there did not seem to be any considerable differences.

Japanese society is changing in line with other societies. Primarily, it is widely believed that

Japanese society is a homogenous and collective society. In this sense, there is a pressure to be similar in schools as well as in society, and it is difficult for people in such circumstances to understand and accept differences in each other. This mentality causes feelings of shame and prejudice against people who are seen as ‘different’. Moreover, it is easy for children to obey authorities such as teachers and adults as JT1F and JT2M indicate that ‘as thinking is tiresome, children tend to avoid the tiresome thing’ (JT1F) and ‘there are many Japanese people who think ‘you do not need to participate in such a tiresome matters.’’ (JT2M) However, such a way of thinking needs to be changed while individualistic aspects are being introduced into changing Japanese society. For instance, JT1F continued the above citation with ‘perhaps, it is really important to question if it is good, like critical thinking.’

There are several reasons as to why critical thinking is important, in decision making in social life, sustainable development as human resources, and understanding diversity, with all of these reasons being related to the aim of nurturing well educated citizens in the future. In order to attain this, teachers have daily educational activities, which include certain subjects such as history in Social Study and debate in Japanese Language, while also taking part in other school activities, such as school events and activities in break time. Some teachers think the age of children should also be taken into consideration.

For teachers participating in this research, critical thinking was seen as one of the most significant skills for their children, who will one day be future citizens. Despite the fact that most of the interviewees had not known of the concept of critical thinking before the interviews, they observed through the variety of their experiences as teachers, that such skills are necessary for children both now, and in the future.

7.2 Validity and reliability

The data of this research was collected through the interviewing of Japanese primary school teachers. Firstly, the interview questions were carefully constructed, both directly and indirectly from the research questions. In particular, the first interview question, which asked for the definition of the concept of critical thinking and the fourth question which asks the methods of teaching critical thinking. In addition, the interview questions include whether critical thinking is important for teachers and children in school life, and why critical thinking is important for the participants. They are profoundly related to the aim of this research.

Turning to the participants. There is certain relationship between the interviewer and the interviewees that should be acknowledged, as all participants were colleagues of the researcher, with some of them having worked together with the researcher for five months, others for one and a half years. Creswell (2013) indicates the importance of prolonged engagement and persistent observation in the field which includes building trust with participants, learning the culture, and checking for misinformation. In this sense, they share the experience of working in the same school, thus making it easier for them to have discussions regarding the topic.

With only five participants, the number of participants for this research could be said to be relatively small when compared to previous similar research. For example, Harris (2008) conducted research on twenty secondary school teachers utilising forty-five to sixty minutes interviews, while Beutel (2010) conducted research on twenty lower secondary school

teachers utilising forty-five minutes interviews. Despite the relatively small number of participants, a satisfactory numbers of findings can be extracted from the data of the interviews with only five teachers, yet, needless to say, the findings might have been more profound and broader if there were more participants.

In addition to issues related to the participants, all interviews were recorded and transcribed with interviewees' permission. The interviews took from approximately twenty minutes to forty five minutes. Recordings were clear and the interviews were listened to repeatedly. During the interviews, the influence of the researcher was minimised as much as possible by avoiding giving too much information of critical thinking.

One of the most significant issues concerning this research was the language issue. Neither the interviewer nor the interviewees are native English speakers and therefore, the interviews were conducted in Japanese. After transcribing the records of the interviews, the transcripts were then translated into English. Through this translating process, the possibilities of losing nuance and of distorting the meaning of interviewees' answers cannot be completely eliminated, even though the transcripts were carefully translated. The translations were continuously revised throughout the processes of translating, coding, and analysing the data, and were modified several times by comparing them with the original transcripts in Japanese.

7.3 Suggestions for further research

As mentioned in the previous section, the number of participants of this research is relatively

small, and research using a larger number of interviewees could allow for broader and more profound descriptions regarding the concept of critical thinking amongst Japanese teachers. Furthermore, this research mainly focuses on teachers' conceptions due to the fact that the approach adopted for this research is phemonenography, which is a methodology employed to understand a phenomenon through the lens of human experience. Therefore, the actual educational activities connecting to critical thinking could be analysed using other methodologies, for instance, by analysing lessons of certain subjects related to critical thinking, and creating a curriculum to foster critical thinking in the subjects and other school activities.

In terms of critical thinking, the recognition of teachers from different cultural backgrounds could be studied as a comparative education research. Differences and similarities which are found through comparison are significant elements in understanding and interpreting the educational systems of each country, due to the fact that comparative education research can give perspectives not only to learn more about other cultures and societies, but also to learn more about one's own (Bray, 2007, p. 37).

All in all, my own understanding of the significance of critical thinking in Japanese primary education has increased, and I will continue the discussion on the importance of critical thinking in all education.

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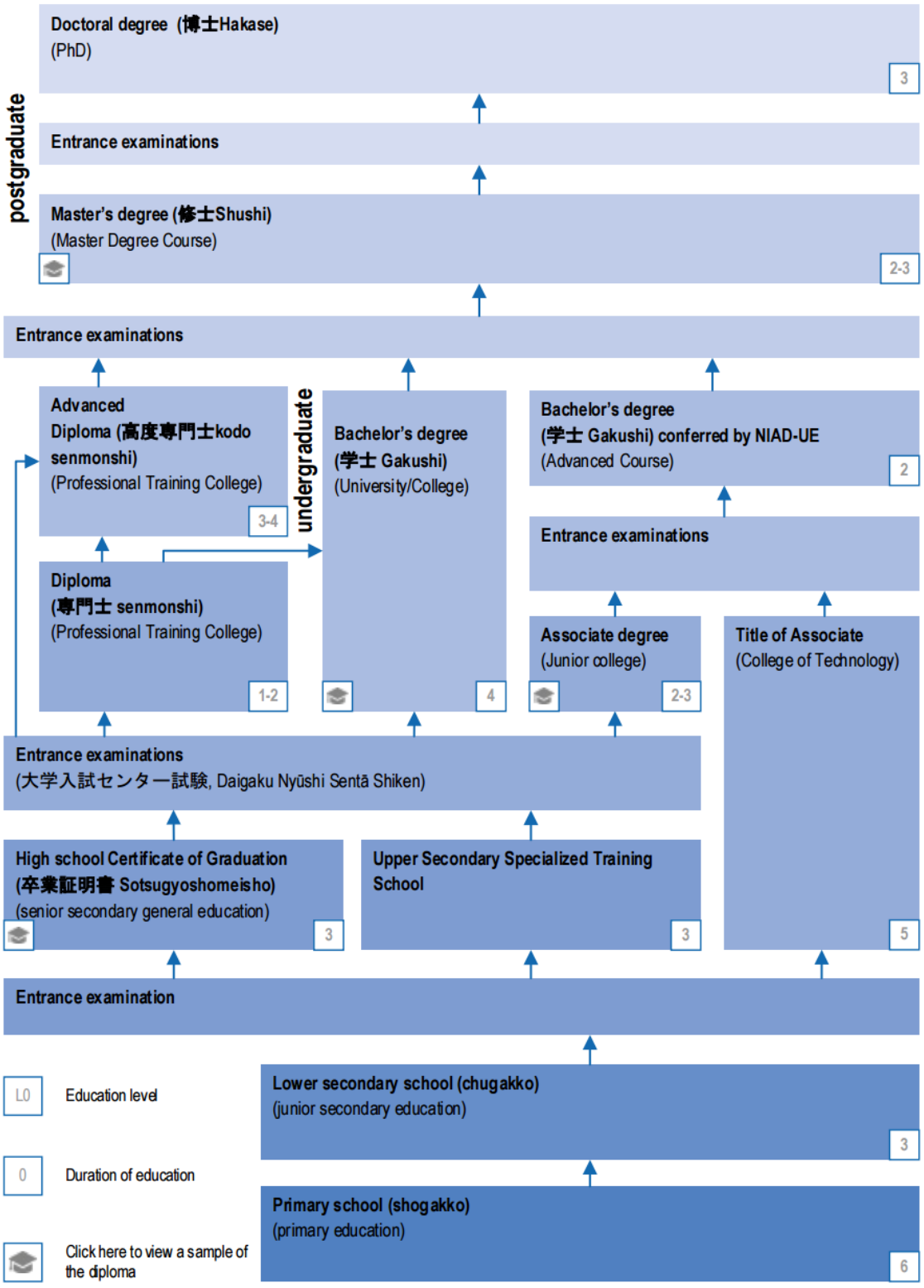
APPENDIX 1



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