

UNIVERSITY OF LIVERPOOL

DOCTORAL THESIS

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**Investigating Epistemic Cognition in  
Japanese University English Majors**

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Thesis submitted in accordance with the requirements of the University of  
Liverpool for the degree of Doctor of Education (ED.D) by Jim Smiley

*in the*

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School of Histories, Languages and Cultures  
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January 31, 2022

## Declaration of Authorship

I, Jim SMILEY, declare that this thesis titled, “Investigating Epistemic Cognition in Japanese University English Majors” and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.

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English Majors

### *Abstract*

Fourth-year undergraduate students' graduation theses in a Department of a Japanese University frequently fail to exhibit characteristics of sophisticated epistemic cognition. Theses that show one-sided arguments that neglect to question the truth value of any evidence used in support of a thesis' claim, or to include limitations to claims in the form of analysing the evidence or discussing counter-arguments, are the norm. Prior research has indicated a significant relationship between students' epistemic cognition and their academic output. This thesis explores the influence of a targeted pedagogic intervention in epistemic cognition in undergraduate Japanese student writers, asking the research question, "How do Japanese University English Majors experience and think about knowledge in terms of epistemic cognition?"

A literature review found that information about the epistemic cognitive processes used by Japanese third-year undergraduate students preparing for graduation thesis writing is mostly unknown. A purposive sample of nine Japanese third-year English major undergraduates was invited to participate. These students wrote in their second language (English). Three forms of data were generated in this project: semi-structured interview texts, pre- and post-intervention writing samples and online discussion board texts. A qualitative approach utilising template analysis was used on the semi-structured interview and discussion board texts, and the pre- and post-writing samples were analysed for epistemic cognition.

At the commencement of the intervention, participants' beliefs could be established at the group level. These were at the upper naïve end of the epistemic cognitive continuum. However, by the end of the intervention, beliefs became more fragmentary with some participants developing more educationally availing multiplicitic beliefs, which is shown in the movement away from strong beliefs in fixed authority-led truth claims towards the acceptance of multiple perspectives. Participants at both time points expressed strong beliefs in the nature of knowledge as being either factual or opinions.

I conclude that development towards multiplism is possible within a fifteen-week pedagogic intervention. Additionally, a fact/opinion knowledge structure permeates beliefs and provides some reasons for the lack of epistemic focus in academic writing. The small sample size inhibits a generalisation of these results. Moreover, the variation in epistemic cognition between participants at the end of the intervention suggests that more research is required to achieve a fuller characterisation of epistemic cognitive processes in third-year Japanese undergraduates.

*Keywords:* epistemic cognition, Japan, higher education, academic argumentation

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# List of Abbreviations

<b>CPH</b>	<b>Critical Period Hypothesis</b>
<b>EFL</b>	<b>English (as a) Foreign Language</b>
<b>IELTS</b>	<b>International English Language Testing System</b>
<b>OECD</b>	<b>Organisation (for) Economic Co-operation (and) Development</b>
<b>PISA</b>	<b>Programme (for) International Student Assessment</b>
<b>TAP</b>	<b>Toulmin Argument Pattern</b>
<b>TOEIC</b>	<b>Test (of) English (for) International Communication</b>
<b>TOK</b>	<b>Theory Of Knowledge</b>

*Dedicated to my wife, Mai and her ever-supporting parents,  
Hisashi and Chiiko, without whom this project would never  
have started.*

## Chapter 1

# Introduction

This thesis focuses on questions centred on assessing and developing epistemic cognition in a participant group of Japanese university third-year undergraduates. In this chapter, I explain why this topic of epistemic cognition and focus were selected. Then I outline how I decided upon my research approach. This chapter concludes with an outline of the thesis as a whole.

### 1.1 Practitioner problem

This project centres on an issue that delimits the practitioner problem. Fourth-year undergraduate students in my home institution (the Department of English in the Faculty of Humanities and Social Sciences at a Japanese national university, henceforth, the Department) submit a five-thousand-word graduation thesis in English in one of the following four fields: linguistics, second-language acquisition, literature, and communication. Students' English proficiencies enable them to compose their theses generally at an acceptable second language (L2) linguistic level, indicating the curriculum's strength to respond to the linguistic demands of the thesis. Nevertheless, there is a sense in the Department that the quality of undergraduate theses could be improved. In addition to the common criticisms of students' English grammar and expression, professors report that most student writers do not exhibit sufficient critical engagement in their theses. Instead, statements are given without qualification regarding their truth value, and arguments are presented definitively.

At the outset, it was my perception that student theses reveal some common characteristics. Many are statements of opinion and contain few references. Furthermore, they are rarely grounded in theoretical frameworks. This state reinforces my

understanding of the Department's concerns regarding the level of the theses. The Department's criticisms centre on the failure of graduating students to achieve the level indicated by the Faculty's mission statement which states that the Faculty aims to develop:

“people who can contribute to regional international development through their ability to understand various problems affecting modern society from a general perspective and through their specialist knowledge and expertise in humanities, culture, society and the environment” (HSS, 2016, my translation).

The mission statement points to the importance of cultivating graduates who can respond to problems in the modern world with critical and nuanced thinking skills. However, current graduation theses suggest that more may be done to overcome the perceived weaknesses regarding critical engagement and academic thinking.

In classes, students learn how to create thesis statements, develop topics and provide evidentiary support for opinions, in addition to learning about the structural forms of academic papers. These aspects are covered over three semesters in students' second and third years implying a substantive degree of practice. However, although theses demonstrate a grasp of the overall forms of academic content and contain clearly defined opinions and evidentiary support, the content raises serious questions. The following list illustrates some of these:

- opinions are presented as fact
- counterarguments ignored
- when the supporting literature is utilised, it often only tangentially connects with the opinions
- the logic underlying the overall argument is weak
- knowledge justification is overlooked
- one-sided arguments are the norm

Two points can be drawn from this list. The first is that students' linguistic L2 abilities are not a significant issue. The second suggests a weakness in the standard method to address how academic thinking is approached and understood by

students. It is suggestive that a focus on overall academic argumentation structure and academic form is insufficient to develop an adequate level of graduation thesis amongst fourth-year students in the Department. This latter point may suggest that students' first language (L1) linguistic culture influences their academic writing in English. This issue of contrastive rhetoric between linguistic cultures will be discussed in Chapter Two. However, I will note here that contrastive rhetoric primarily focuses on the placing of elements in argumentation (Kaplan, 1966). It assumes that the elements are present. Therefore, a distinction must be maintained between an awareness of appropriate elements of academic writing and where those elements are located.

There is no official internal or external educational standard against which graduation theses are assessed. There is no expectation or requirement to disclose class content or achievement levels in common with many institutions in Japan. Aspinall (2015a) acknowledges that "academics in universities in Japan, unlike their colleagues in the West, have usually not needed to answer to any higher authority about what goes on in their classroom" (p. 49). While some institutions may establish internal standards policies for educational levels, these typically affect foreign language classes in the early undergraduate years whose management is located in an "organisational third space" (Hadley, 2015, p. 45) separate from the Faculties and the university administration. My institution has such a "third space" to regulate first-year undergraduate English education. Faculty-taught subjects after the first year are unregulated in the subsequent years.

One conclusion is that there are no objective standards and that any criticisms levelled at undergraduate thesis writers must necessarily be based on subjective beliefs held by individual professors. While this assertion holds some truth, I believe that there are areas where genuine improvement may be possible. Our Department students are highly motivated, able in their L2 and spend adequate time in both institutional and private study preparing their theses. Once these aspects are discounted as probable reasons for the perceived weaknesses, another aspect remains. Tuition in academic form and contents at a relatively superficial level does not account for

more personal beliefs about the nature of academic writing itself. Much remains unknown regarding our Departments' students understanding of knowledge and how they perceive their own knowledge.

These issues are the focus of the field of epistemic cognition. Epistemic cognition centres on "how people acquire, understand, justify, change, and use knowledge in formal and informal contexts" (Greene, Sandoval, and Bråten, 2016a, p. 1). Exploring epistemic cognition issues in the Departments' student body offers the potential to inform my pedagogy at the level appropriate for graduation thesis writing and perhaps overcome some of the perceived criticisms. The first step is to assess how our students think, believe and operate in terms of their epistemic cognition.

An assessment of students' epistemic cognition alone cannot answer the practitioner problem directly as it would only provide a departure point. For educational development to occur, pedagogic implementation is necessary. Such an implementation needs to be responsive to the pedagogic circumstances of the Department. Direct instruction in epistemic cognition could not be applicable because it is in the field of educational psychology and not relevant to the Department's needs. However, the relationship between epistemic cognition and academic argumentation has been widely noted (Bråten, Muis, and Reznitskaya, 2017; Greene, Cartiff, and Duke, 2018; Sandoval and Millwood, 2005), although the precise mechanisms for development are still an active area of research. Iordanou, Kendeou, and Beker (2016) note that "argumentation is one type of reliable process ... for achieving epistemic aims" (p. 45), but "key questions such as the degree to which educational interventions can promote the development of students' argumentative skills, and especially their ability to use evidence in argumentation, remain unresolved" (Iordanou and Constantinou, 2014, p. 42). An intervention that combines epistemic cognition and academic argumentation promises to be informative about student writers' academic thinking and provide them with a set of cognitive structures that support their graduation thesis writing. I created a coursebook for our second-semester third-year students for their final academic writing course before writing their graduation thesis to address the practitioner problem at the heart of this project. I will discuss the intervention in more detail in Chapter Three. I proceed here by relating the

practitioner problem that lies at the core of this project with the reasons epistemic cognition was selected as the lens through which to study the problem.

## 1.2 Epistemic cognition and the practitioner problem

Epistemic cognition will be described in detail in the following chapter. In the next section, I outline two reasons why I selected epistemic cognition as the theoretical framework in this study.

### 1.2.1 Importance to educational development

The relationship between *how* people know *what* they know and their academic outcomes has been the focus of intense research over the past fifty years (Hofer, 2016). Greene, Azevedo, and Torney-Purta (2008) define epistemic cognition as “the processes involved in [knowledge] definition, acquisition and use” (p. 143). More sophisticated epistemic knowers can articulate their own sense of knowing and utilise that in how they enact their response to educational tasks (Bråten, 2016; Greene, Cartiff, and Duke, 2018). Much research verifies this claim; Greene, Cartiff, and Duke (2018) produce a meta-analysis that surveys one hundred and thirty-two investigations and concludes that a “small but meaningful relationship” exists between epistemic cognition and academic outcomes (p. 1084). They assert that educational systems have a role in the development of individuals’ epistemic cognition and argue that higher-order cognitive processing does not occur naturally (Greene et al., 2018). Winberg, Lindfors, and Hofverberg (2018) demonstrate a similarly weak but significant correlation between epistemic cognition and academic achievement goals and note that “many educational systems stress the need to help students develop their . . . epistemic beliefs, that in turn are supposed to generate productive approaches to learning” (p. 2).

These studies and others (Bendixen, 2016; Bråten, Muis, and Reznitskaya, 2017; Lunn Brownlee, Ferguson, and Ryan, 2017; Muis, Trevors, and Chevrier, 2016) culminate in the claim put forward by Kienhues, Ferguson, and Stahl (2016) that “nowadays it is beyond dispute that epistemic cognition plays an important role for formal

and informal learning” (p. 318). These aspects map well onto the practitioner problem described above (see 1.2), and point to the need for a thorough and principled investigation into the epistemic cognitive levels of my students.

As explained above, students’ graduation theses are adequate if not exemplary at the level of L2 English expression and are acceptable in terms of formal structure and constituent elements. The primary problem appears to lie with the lack of critical engagement either with the main claim in the thesis or with any evidentiary support that is utilised. This issue strongly suggests that an investigation of students’ beliefs about knowledge through the lens of epistemic cognition may highlight key issues that hinder the development of academic writing in their graduation thesis.

The practitioner problem could be interpreted primarily as an endeavour to develop academic writing skills. However, such an interpretation, while valid, will be a secondary concern. The contention in this thesis is that the development of academic writing skills should also necessarily involve ways of developing students’ epistemic cognition. Accordingly, this project centres on an investigation of students’ epistemic cognition and what impact an educational intervention may have on that and on students’ academic writing.

## **1.2.2 Epistemic cognition in Japan**

Although the value of knowing students’ epistemic cognition is now established, little is known about it concerning higher education in Japan. Only one empirical study exists in English in the Japanese context to my knowledge (Hofer, 2010b), although some research papers describe the construct (Imafuku et al., 2015; Oshima et al., 2006), and Pederson (2010) bases a segment of his survey instrument on epistemic cognition in his study into Japanese preservice teachers’ beliefs about perplexing questions. In terms of the state of epistemic cognition in Japan, compared with the depth and scale of research in much of Asia, the amount of information about Japan in English is sparse. The journal *The Asia Pacific Education Researcher* (Wong and Chai, 2010) dedicated an entire volume to epistemic cognition, featuring Taiwan, Singapore, Hong Kong, the Philippines and elsewhere but not from Japan. Writing in the Japanese language, a small body of researchers produce output, notably Nomura and Maruno (2011; 2012; 2014; 2017). These will be examined in detail in the

following chapter, but the Japanese voice in the worldwide body of research remains under-represented.

The definitions of epistemic cognition are predominantly based on US-derived models (Hofer, 2010a; Khine, 2008). What is unclear are other forms of knowing that may exist in other contexts, especially Japan, because its voice is largely missing from the worldwide discussion. This leads to a question about the development of epistemic cognition in the Japanese context at the theoretical level. There is a need to assess if information from Japanese participants corresponds or diverges from existing models and to ascertain if epistemic cognition should be developed differently in the Japanese context. These issues outline the theoretical basis underpinning my research focus within the topic of epistemic cognition. At the practitioner level, investigating my students' epistemic cognition may provide avenues of research that address the epistemic issues listed above. Instruction in academic writing does not alleviate these problems, and a deeper reason may be at the root. For reasons I will discuss next, I created this project based on my perception that a significant mismatch may exist between the literature and my experience of Japanese undergraduate students, a perception that became apparent in my attempts to develop their higher-order cognition.

### **1.3 Motivation for the research**

My primary professional remit is to develop Japanese undergraduates' English language skills. This remit contains two separate focal points. The first is linguistic skills and the second is academic thinking skills to be utilised during academic English use. I focus primarily on linguistic skills during first- and second-year undergraduate classes and primarily on higher-order thinking skills in smaller third-year classes that prepare students to write their undergraduate theses. My students' theses may be in literature, linguistics, second-language acquisition and communication theory, and my subject knowledge of literature and linguistics is weak. The attention on academic English skills is, therefore, a pragmatic response to a situation where I have de-emphasised subject-level content knowledge in favour of domain-general linguistic and cognitive skills.

Many years ago, I came across a coursebook aimed at English native speaker pre-university pupils, an age group with whom I have had little opportunity to engage. The International Baccalaureate Theory of Knowledge (TOK) course prepares pre-tertiary pupils for university (Sprague, 2017). Immediately, I realised that TOK mirrored my own approach significantly. Briefly, TOK presents the epistemological question “How do you know?” (Lagemaat, 2011, p. vii) in eight fields of academic inquiry. This question echoes my own and is a central question in the field of epistemic cognition. TOK presents a systematic and structured syllabus to develop a general attitude towards knowledge (Sprague, 2017). The generality of TOK matched my professional needs and provided an availing method of integrating my beliefs about what is beneficial to my students, given the general nature of English as a subject.

However, there are many issues with adopting TOK directly. Although it fosters a useful epistemic attitude, its eight subjects are irrelevant to my students. Furthermore, the implications in TOK seem to be challenging for students. In other words, the assumptions about truth, facts, the generation and stability of knowledge and other factors were not readily accessible to my students. Explaining these assumptions often took up much of a class, which unfortunately often became teacher-centred lectures.

When I began the University of Liverpool Ed.D. course, *epistemological development* was a topic in the first module. Epistemological development (Baxter Magolda, Creamer, and Meszaros, 2010; Moon, 2005) is one competing nomenclature in a field that has not established one overall umbrella term (Greene, Sandoval, and Bråten, 2016b; Hofer, 2016). The epistemological aspect of epistemic cognition is, essentially, the focus of TOK, and development implies the idea that students themselves undergo a developmental process in how they understand their own personal epistemologies (Baxter Magolda, Creamer, and Meszaros, 2010).

Epistemic cognition (and its relatives, epistemological development, reflective judgment, epistemological beliefs and others) not only provides the content of intellectual development in terms of attitudes towards knowledge. It also provides a vehicle for charting student development (Baxter Magolda, Creamer, and Meszaros, 2010). It recognises the developmental processes involved whether the theoretical basis emanates from stage theories (Baxter Magolda, 1992; Belenky et al., 1986; King

and Kitchener, 1994; Perry, 1970), resource theories (Elby and Hammer, 2010; Elby, Macrander, and Hammer, 2016; Louca et al., 2004), or dimensional theories (Hofer and Pintrich, 1997; Hofer, 2004; Muis, Trevors, and Chevrier, 2016; Schommer, 1990). Students' thinking can be assessed according to given criteria within any of these approaches. In this thesis, I adopt the naming conventions of using the terms 'epistemic cognition' and 'epistemic beliefs' as umbrella nomenclatures to encompass notions and concepts from any of the other possible names after personal correspondence with Professor Barbara Hofer (Hofer, 2016, personal communication) who urged me and others (Hofer, 2016) to unite the field under a single name to avoid the differentiation and fragmentation of the construct and research.

In summary, the topic of epistemic cognition interests me as an educator and as a researcher. As a teacher and faculty member, more targeted information about epistemic cognition is likely to lead to better pedagogic systems of use to me directly and to the Department. Moreover, as a researcher, I find the possibility of adding more targeted information about Japan into the worldwide discussion an enticing prospect.

## 1.4 Choice of research setting and approach

Several research settings were possible. A significant choice was to investigate first-, second-year, or third-year groups. The younger groups option was rejected because the results would speak more retrospectively to their high-school career, rather than prospectively to their university career and graduation. I have little opportunity to influence high-school curricula and should significant results emerge, the impact of the results would be limited in my future pedagogy. So, I elected to investigate epistemic cognition with third-year students as their responses represent their engagement in this institution and I can utilise any findings with future year groups.

The third-year second-semester class prepares students to write their graduation thesis in their fourth year. The graduation thesis is compulsory and comprises eight of the necessary one-hundred and twenty-four credits required for graduation. Writing the thesis is conducted at the same time as job-hunting, and students frequently report experiencing much stress during this period. The high graduation rates of

undergraduates in Japan in comparison with other OECD countries (OECD, 2020) suggests that the quality of graduation theses may be lower. In my experience, no student who has *submitted* a thesis has failed to graduate. Data that connects graduation thesis completion, graduation rates and thesis quality is missing and is unlikely to become available given the level of professorial autonomy (Aspinall, 2015a; Yamada, 2014). This line of thought may imply that students do not feel stress and do not endeavour to produce a graduation thesis to their best abilities. However, to my knowledge, students are largely unaware that they will gain the academic credit simply by submitting their thesis, and conversely, they attempt to produce their best work while experiencing significant levels of stress. Yet, an open question remains: does the high likelihood of graduation also imply that the acceptable pass level of graduation theses (as well as regular courses) is less stringent than that in comparable universities abroad? This project cannot respond to this question directly, but by presenting and analysing late third-year undergraduates' academic writing through the lens of epistemic cognition, some measure of the level may thereby become available.

An essential need for students is to learn about academic argumentation and how that is structured over a large-scale project of five thousand words. The relationship between academic argumentation and epistemic cognition is an actively studied field (Iordanou, Kendeou, and Beker, 2016), and a meta-level knowledge of argumentation as a reliable process of knowledge justification itself is a key component in epistemic cognition (Chinn, Buckland, and Samarapungavan, 2011). Accordingly, I decided to create and establish a course that focuses on epistemic cognition and academic argumentation for this class (research participant) group as a direct response to the practitioner problem.

## 1.5 Thesis structure

The structure of this thesis is shown in Table 1.1:

TABLE 1.1: Structure of the thesis

Ch.	Title	Description
1	Introduction	Describes the overall focus, theme and purpose of the thesis.
2	Literature review	Investigates and discusses the relevant literature related to epistemic cognition, the nexus of epistemic cognition and argumentation and to the development of epistemic cognition in the Japanese context. This chapter establishes the need for a qualitative investigation in this context and presents the research question.
3	Methodology	Declares the ontological and epistemological bases for this study within a critical realist conception of social sciences. Explains the methodological issues of template analysis that underpins this analytical process. Describes the data collection and analytical methods in detail.
4	Findings	Describes the principle thematic areas uncovered by the template analysis.
5	Discussion	Relates the findings to the research question. Proposes advancements on theory. Presents a summary of participant development.
6	Conclusion	Expands on the Discussion chapter by providing a proposal for a pedagogic response to the issues highlighted in the findings chapter. These comprise a set of recommendations for educators. Presents a reflection on the project. Notes the limitations of the study.

We now turn to exploring the literature in more detail in Chapter 2.

## Chapter 2

# Literature Review

My target is to provide a pedagogy that helps Japanese fourth-year English major undergraduates produce better graduation theses. In the previous chapter, I identified epistemic cognition as a plausible vehicle for collecting evidence about students' engagement with information and knowledge. Such information may furnish insights into avenues for the development of a viable academic writing pedagogy in the later undergraduate years in Japan. Accordingly, this chapter reviews key issues related to Japanese academic writing in the late undergraduate years and to what is known about Japanese epistemic cognition more generally. The key literature review question that arises from the previous chapter is:

'How does the literature inform educators about Japanese university undergraduates' epistemic cognition with particular regard to how it mediates academic writing?'

This narrative literature review (Xiao and Watson, 2019) chapter aims to present relevant aspects of the literature to investigate the necessity of a study into third-year Japanese undergraduates' epistemic cognition. Xiao and Watson (2019) define the purpose of a narrative review as "a persuasive presentation of literature to support the overall conclusions on the desirability of" (p. 95) a study based on deficits in the literature.

This chapter begins by contextualising the argument for a Japan-focused study. Then, a brief overview of epistemic cognition is presented to orient the boundaries of this study. Some issues that relate to engagement and higher-order cognition in the Japanese context are discussed to establish more precisely what this project aims to investigate. Claims made about populations' epistemic cognition cannot be made in

isolation because there is no consensus agreement on the nature of lower- or higher-order thinking. Therefore, epistemic cognitions need to be located within broader theories of cognition. A discussion of relevant research into how cognitions may be classified into lower- and higher-orders is provided so as to clearly clarify what is known and what remains unknown. From this basis, the research on Japanese epistemic cognition is reviewed. The chapter then concludes with the research question that informs this project.

## **2.1 Contextualising higher-order cognitions in the Japanese university**

In order to locate the need for a study of epistemic cognition within Japanese higher education, a broader picture of Japanese undergraduates' cognitive abilities needs to be drawn. This review notes the absence of any consensus position. The landscape is characterised by multiple conflicting perspectives which require careful navigation to prise out the issues relating to the development of epistemic cognition or any other form of higher-order thinking.

This chapter looks at three key areas: beliefs about the cognitive demands on Japanese undergraduates; the cultural debate regarding the social roles of learning and development; and contrastive rhetoric. In the first, two opposing views are presented: one which argues that the university functions as a psychological breathing space, a "leisure land" (McVeigh, 2002, p. 4) after the gruelling university entrance examination at the age of 18 and the equally demanding work-life following graduation; and the other that, according to The Ministry of Education, Culture, Sports and Science (MEXT), university students must study for 46.5 hours per week in order to graduate. It must be noted, however, that I could find no source to suggest that MEXT's stipulation is enacted. Indeed, the official figures suggest a much lower engagement with academics (MEXT, 2007). Moreover, Sugimoto (2014) points out that Japan's *adult* population scores very highly in international comparisons, noting that "no doubt, the Japanese educational system has produced a highly intellectual and skilled adult population" (p. 150).

The second focus investigates the culturally situated meanings of learning and the role socialisation plays in establishing notions of attainment in education. Clément (2016) cautions that three meanings of ‘social’ need to be considered. The first refers to information ‘*about* the social (*i.e.*, persons and social entities)’ (Clément, 2016, p. 86, italics in original). This informational content is distinguished from that of learning “*via* others” (p. 86, italics in original) and how individuals may reason in group settings. Of direct importance to this review are the notions of apprenticeship, trust, roles, future selves and other beliefs that are engendered as functions of learning “*via* others” (Clément, 2016). This debate features two main issues: how culturally embedded notions of Japaneseness either inform or do not necessary affect one’s identity and how that influences educational attainment (Kobayashi, 2011); and how different cultural milieu have divergent standards for attainment and how those may influence educational outcomes (Rohlen and LeTendre, 1998).

The third area of investigation builds on the previous one but narrows the focus onto writing in a foreign, or second, language (L2). This project does not seek to discuss L2 writing pedagogy directly. However, as the participants are experiencing their learning in their L2, it is intuitively useful to consider if there are L2 issues that impede either their linguistic expression of their epistemic cognitions or my own unreflected biases regarding their linguistic expression. Tasaki and his colleagues (2001; 2008), in particular, warn Western educators of dismissing the cognitive abilities of East Asian students because of culturally biased beliefs about outward linguistic expressions. The field of contrastive rhetoric, beginning with the seminal work of Kaplan (1966), offers insights into potential issues for this project.

I will look at each of these three areas in turn.

### 2.1.1 The Japanese university as *inferior*

The rationale for this section rests on the assertion aimed at Japanese undergraduates that they encounter “undemanding academic requirements at Japanese higher educational establishments” (Poole, 2010, p. 1), a claim that only rhetorically softens McVeigh’s 2002 “leisure land” cited earlier. Yet, the proposition addressed by both requires clarification. If it is the case that the *university* is not the place for higher learning—however that is defined—then it stands to reason that an assessment of

epistemic cognitive skills in undergraduates is likely to be unavailing. I put the term 'university' in italics in the previous sentence because Poole (2010) argues that the Western (presumably the American) notion of university does not map onto the Japanese concept of *daigaku*. Poole's assertion rests on the charge that "most *daigaku* do not have the breadth of research and education that a 'university' does" (Poole, 2010, p. 151).

Both of these criticisms should be critiqued. Firstly, I wonder why Poole (2010) needs to make the comparison with American institutions. The term *daigaku* is protected in the Japanese Schools Education Law (Osaki, 1997). Worldwide, higher education systems exist in various organisational configurations, and it seems to be bordering on the cultural imperialist to criticise one form based on the differences from another. Rather, the point should be drawn that many critics of the Japanese system writing in English are employed within the English teaching sphere and may operate on the unreflected assumption that their 'home' system is superior without necessarily recognising another form of scope and nature of the Japanese higher education system.

In this vein, Poole's 2010 othering of Japan may be miscalculated. Poole, himself has a deep understanding of Japanese higher education and has worked with Japanese educators towards reform. In 2005, he translated and prefaced an influential criticism of Japanese higher education originally authored by a Japanese professor of Education, Ikuo Amano (Amano and Poole, 2005). A close reading of Amano, however, does not reveal any criticism of educational levels *per se*, professors' research abilities, or any comparison with other nations. Amano discusses issues of liberalisation of universities, their societal role and how the autonomy of governance is threatened by governmental pressures. In respect to research, Amano directly contradicts Poole's earlier assertion. He reported on a comparative survey of Japanese and Americans professors' research attitudes:

"Which do you feel is more important, teaching or research?: almost 70% of Japanese professors answered 'research' while just over 30% of the American professors felt so, numbers that show a striking contrast" (Amano and Poole, 2005, p. 700).

A professor's attitude towards research does not, however, equate with their ability and output of research. Poole's (2010) criticism may still be valid, but he does not attempt to clarify his position in this matter or on the actual academic level and content found in the universities.

McVeigh's 2002 characterisation of the university as a leisure land is more problematic. MEXT (2007) stipulates that an academic credit can be awarded after 45 hours of study, leading to a workload of 46.5 study hours per week. A direct rationale for this stipulation is difficult to obtain, but Yamada (2014) and others (*e.g.*, Arimoto 2015, Aspinall 2015) discuss the degree of autonomy held by the professoriate to the extent that the only avenue for criticism is through student evaluations and not from any other professor or institutional body. I suspect, therefore, that the 45-hour rule acts as a proxy for academic rigour in lieu of possible intrusion on professorial autonomy. McVeigh's observation hits directly at that rigour if it turns out that students are not engaging with academics for that length of time.

Before continuing, the arithmetic for the 46.5 hours necessary for graduation is as follows:

MEXT (2021) stipulates that to graduate 124 credits are required and that a credit comprises 45 hours.  $124 \times 45 = 5580$  hours. The arithmetic is: distributed equally over 4 years:  $5580 \div 4 = 1395$  hours per year. There are 30 class weeks per year, giving  $1395 \div 30 = 46.5$  hours per week. Typically, however, most students complete between 100 and 118 credits in the first three years, leaving the final year for job-hunting and writing the graduation thesis.

The private educational research group Benesse concur with the above calculations and offer advice to undergraduates to study at home for 30 hours for each 15-week course in which they are enrolled (Kimura, 2019).

Yet MEXT's (2007) own data indicates that compared with American undergraduates who do individual study (that is, beyond the class hours) for over 11 hours per week is 58.4%, while Japanese students do 14.8%. The rate for 1–5 hours in Japan is 57.1%, in contrast with the 15.3% of Americans. According to this data, Japanese undergraduates' study engagement outside of contact classes is much lower than that

of American undergraduates. Whether or not this constitutes a 'leisure land' centres on engagement time not cognitive demands on undergraduates. To the contrary, if Sugimoto (2014) is correct that "the Japanese educational system has produced a highly intellectual and skilled adult population" (p. 150), then it may well be better to argue that the Japanese higher education system is highly efficient. I do not think that this is the case, however. Intuitively, I find myself agreeing with McVeigh (2002) and Poole (2010) and others in respect to my experience with lower-level institutions. The Department's professors also express criticisms of the quality of undergraduate theses, but the precise nature of the contention over quality remains unclear.

Sugimoto's (2014) claims rests on data from OECD's Programme for International Assessment of Adult Competencies (PIAAC) in 2013 (OECD, 2013) when Japan's scores were at the top. To assess the conceptual foundations and scope of this claim, it is necessary to analyse the PIAAC testing instrument itself. This instrument was created in consultation with the International Standard Classification of Education (ISCED) Levels 2 to 4 (UNESCO, 2011). Level 2 corresponds to middle-school education, level 3 to high-school and level 4 to "post-secondary non-tertiary education" (p. v). In other words, the PIAAC does not attempt to assess whether adults in a nation have tertiary education level skills, which they define as:

"build[ing] on secondary education, providing learning activities in specialised fields of education. It aims at learning at a high level of complexity and specialisation" (UNESCO, 2011, p. 46).

A cursory look at the PIAAC questions themselves confirms the non-speciality nature of the test. In an important sense, these results merely mirror the PISA tests in which Japan regularly scores well (OECD, 2019), even if critics within Japan lament a relative decline, a "PISA shock" (Aspinall, 2015c, p. 12) that serves to instigate some Japanese internal reflection on the state of their education.

McVeigh (2002) offers one further criticism of Japanese tertiary education. He notes (by 2002): "much is made of the fact that Japan has so far only produced six Nobel laureates in the natural sciences (the United States has produced 179; Britain 67; Germany 61; France 21; and Switzerland 14)" (McVeigh, 2002, p. 5). McVeigh's assertion centres on the inability for schooling to produce creative thinkers.

While this may be so, McVeigh's argument merely conflates many issues and can easily be dismissed. One reason is that the number of possible confounding variables between university graduation and becoming a Nobel laureate refute a direct correlation between the education system and creativity. Other factors include a post-graduate or professional research culture of team work and particular research community norms in regard to hierarchical structures that prevent a simplistic equation of schooling and creative thinking. This issue is more properly located within the field of sociology than with educational psychology. Moreover, McVeigh supports his contention of a lack in creative thinking by citing Japanese authors. I will develop this point in Section 2.1.2, but for now, bear in mind that institutes of higher education in any country come in many forms at various academic levels. It becomes a relatively easy task to select commentators who decry one level to make a criticism of other levels. Furthermore, McVeigh also seems to be conflating commentators who ask idealistic questions about the nature of their own country's education system (at whichever level) with a foreigner's impression of inadequacies. For these reasons, I attempt to remain agnostic about Japanese undergraduates' higher-order thinking (to be defined later) until concrete data is available.

Concluding this line of investigation, unfortunately, does not lead to anything definitive about undergraduates' quality of thought other than to confirm that the gains identified at the 15-year-old level in PISA are maintained at the societal level in adults in non-specialist testing in Japan. Information about comparative "specialised fields of education" (UNESCO, 2011, p. 46) that can indicate tertiary educational cognitive engagement is required.

In summary, neither the contention that Japanese *daigaku*/universities differ qualitatively from Western ones (Poole, 2010) nor that they are indeed a 'leisure land' (McVeigh, 2002) — whatever the internal merits and demerits of the arguments — offer information about Japanese undergraduates' cognitive abilities, in particular, their epistemic cognition. Indeed, these cultural critiques on Japan emphasise the importance of providing relevant and precise information. The next section, though, potentially offers insights into epistemic cognitive issues, such as trust, testimony, authority and connectedness of knowledge.

### 2.1.2 Situational demands on Japanese undergraduates

Situational demands on Japanese undergraduates appear in two forms. The first is the societal role of the university which, depending on how it is conceptualised, may lead to a more or less demanding educational experience in terms of academic rigour. The second appraises the argument that particular academic socialisations have the potential to influence epistemic cognitions, especially in regard to authority and conformity pressure. I will survey these issues in turn.

#### Contextualising the university

Following on from the previous section, many commentators have described the undergraduate experience as being hardly more than:

“playgrounds with no specific academic purpose in a system geared more to labelling individuals according to the institution attended than to the quality of teaching and learning within the institution” (Horne, 2009, p. 43).

This labelling is widely recognised to be crucial in undergraduates’ career development. High school pupils select their target university on the basis of their nationwide standardised score *hensachi* (Yonezawa, 2010). Any particular university’s societal role is often characterised as primarily an indicator of potential employee worth to industry, acting as a “screening device for identifying talented human resources with high ‘trainability’ ” (Yonezawa, 2020, p. 45). Sugimoto (2014) reports that:

“corporations justify the system on the grounds that, in the absence of dependable detailed information about the quality of each student, the most reliable indicator is the level of the university which he or she has succeeded in entering: the more difficult it is to get in, the more ability the prospective employee must have” (Sugimoto, 2014, p. 137).

Note, too, that here Sugimoto (2014) is also recognising the dearth of information about the quality of university education.

The question for this thesis in regard to undergraduates' epistemic cognition centres on the potential for that to be culturally influenced by societal norms. Issues such as trust of authority and obedience to non-confrontation of authority may act upon undergraduates' epistemic cognitions. If undergraduates also believe that the university is their time for relaxation, this belief may limit their ultimate educational attainment. While this may be the case for some individuals in some institutions, the argument for a blanket categorisation is weak. To determine why a uniform characteristic is unlikely, I will discuss two aspects: university level and the national licensing exam.

**University level** One aspect that has not received much attention in the literature is the critical point of university level. Above, Sugimoto (2014) states that the high school *hensachi* (nationwide standardised academic attainment score) mediates the level of university into which university matriculation is possible. This indicates that various levels of university exist in Japan. This statement, although obvious, requires comment.

Ishikida (2005) notes that; "all colleges are academically ranked" and elucidates the ranking process: "preparatory cram schools for college examinations publish rankings every year" (p. 115). These private educational services provide ranking tables for the 786 universities (Statistics, 2021, p. 612). Typically, university ranks range from A to E, but many other categorisations are evident. Yamada (2014) notes that Japan has entered the "post-massification" (p. 153) stage of entry into higher education using Trow's classification which defines a category in which over 50% of the population enter university. *Hensachi* scores range from 70% to "border free", that is, automatic matriculation to those who apply (Yamada, 2015, p. 216).

Adequately contextualising undergraduates requires a clear description of their academic level. Without this, it becomes questionable to claim that undergraduates' quality of cognitions *in toto* are weak. This is the reverse of the claim made above, as the direction of the critique is towards the institutions not the students. However, reversing the direction of condemnation is useful because it indicates where research needs to be conducted if such a claim that academic engagement is low were to be verified.

This project is located in a national institution whose *hensachi* places it in the second tier of universities in Japan. It is the most prestigious in the prefecture (county-level administrative region) and, as such, attracts many of the prefecture's most able students. My experience with this level of student informs me that they are in general much more academically motivated than students in lower echelon near border-free institutions where I had taught previously. The students in my present institution have course workload averages of at least 15 hours class contact time (some exceeding 20 hours) and homework as required. Perhaps they do not complete the 46.5 hours required by the Ministry, but their workload is not inconsequential. It is this experience that makes me suspicious of McVeigh (2002) and Poole (2010) and others who make the 'leisure land' claim. Such institutions may, and almost certainly do, exist, but that is not equivalent to validating the claim that all undergraduates experience the same lack of academic rigour in terms of workload and engagement.

**National licensing exams *kokka shiken*** Additionally, there is a strong tendency for universities to prioritise national examinations, the *kokka shiken* or national licensing examinations, typically taken by fourth-year students prior to commencing their professional careers. This has not received adequate attention in the English literature on Japanese higher education, yet the demand on undergraduates' time and how it structures their learning make it an important factor in their late-years university education. Much is written in unrefereed Japanese university bulletins regarding the *kokka shiken*. Akutsu, Ohya, and Naoki (2019) discuss healthcare undergraduates and add "the additional stressors of off-campus practical training and national examines [sic]" (p. 29 [abstract in English]) as health care risks to undergraduates. In dentistry, Suzuki et al. (2012) surveyed undergraduates and professors and reported that, after class and homework times, "the average daily study time required to pass the national exam is 6.0 hours, plus or minus 3.3 hours" (p. 43, original in Japanese, my translation). The Japanese central database of university publications contains many articles in health-science education that discuss issues of workload for undergraduates preparing for the national examinations. Little exists to my knowledge of information about the teaching or civil service licenses taken

by students in the Humanities. My third- and fourth-year students regularly report difficulties because of the amount of time required for these examinations.

Many universities provide English instruction only to first- and second-years (Hadley, 2015). Moreover, Hadley (2015) reports on the increasing tendency to place English instruction within a “third space” (p. 25) between the academic faculty and the administration. The possibility is that many native speaker teachers of English never see the efforts expended by either later-year undergraduates or students outside of English education. Without more concrete data in English, the exact role of the university, and therefore contextualisation undergraduates’ cognitive engagement with it, becomes difficult to assess. Instead, I concur with Horiguchi, Imoto, and Poole (2015, p. 7) who argue in the context of criticisms against English language teaching in Japanese higher education that:

“in fact, . . . correctly in our opinion, observers need to take more care in their evaluations of the Japanese context and that there exists an overemphasis of essentialized features of Japanese students in the research literature on ELT (English language teaching)” (Horiguchi, Imoto, and Poole, 2015, p. 7).

Such ‘essentialised features’ may equally refer to a national characterisation of higher institutions as to the student body. However, once again, I note that nothing in the previous discussion provides any evidence regarding undergraduates’ quality of thinking. Without such data, many of the sociological arguments seem bare. Indeed, if Sugimoto’s (2014) argument is valid, Japan has the world’s best higher education system alongside Finland’s. My experience does not support this contention, however.

### **Academic socialisation issues**

Once the university has been contextualised according to its societal role, we note that a wide range of levels exist and that many students perceive university as an avenue for pursuing national licensing examinations. However, several issues remain unresolved. The first is that undergraduates’ graduation rate is very high at 90.5% compared with the OECD average of 70% (MEXT, 2013; OECD, 2007). Given

that it is widely accepted that employers consider the level of university more than the quality of tertiary education itself (Horne, 2009; Sugimoto, 2014), the rate of graduation may be considered in two ways. The first is that the quality of cognitive engagement must be low, hence the 'leisure land' position, or that graduation *per se* is not an important issue. For the 'leisure land' argument to be valid, the whole university sector, including the professoriate, must be compliant with the notion that "many students regard their college years as a 'break-time' between the 'examination hell' of high school and the working period" (Ishikida, 2005, p. 156). Conversely, it is possible that graduation rates are high because of the hard-work ethos in Japan. Sugimoto (2014) echoes the common belief that Japanese workers are "'working ants', 'workaholics', and 'economic animals' who toil for their organisations at the cost of personal pursuits" (p. 79). Sugimoto is characterising those in their 'working period', not undergraduates, but the argument that undergraduates do not actually work hard has not been made. In my institution, third year undergraduates contend with ten plus classes per week and homework for those classes and many have part-time jobs and extracurricular club activities. In informal sessions, my students report that their time available for sleeping is often less than six hours per night.

So far, none of these issues are concerned with the particular cognitions (epistemic or otherwise) of undergraduates. There remains the possibility that academic socialisation from preschool to university structures undergraduates' cognitions. Rohlen and LeTendre (1998) present a collection of essays that explore various cultural facets of Japanese education, including a chapter on learning in a Zen monastery (Hori, 1998) and how primary school classrooms are structured (Lee, Graham, and Stevenson, 1998). These chapters are instructive as indicators of early learning socialisation. Rohlen and LeTendre (1998) articulate the argument that: "critics of the Japanese system of education . . . continue to denounce the system as one that stifles individuality and produces a docile body politic" (p. 6). A broad overview of the socialisation process places group activities forefront, although primary school children have more freedoms and "group emphases do not overwhelm individual inclination at this stage" (p. 7). From middle school onwards, group processes dominate. Rohlen (1998) describes personal growth as increasing levels of stricter discipline and challenges within a group context while developing one's *seishin* 'spiritualism'

that is associated with Buddhism and Shinto. The view of Buddhism, at least as presented in this volume (Hori, 1998), is of a very rigid set of rules that monastics must comprehend and follow. Failure risks severe reprimands and public shaming (Hori, 1998).

I will focus on Hori (1998) and Lee, Graham, and Stevenson (1998) to attempt to specify some particular details relating to epistemic cognition in the educational socialisation process. Hori (1998) describes how monastics learn new tasks. The principle methods are observation and inquiry but may also utilise their own judgement and rationality to discern important from unimportant aspects of a learning task. In terms of truth value, we note that there is no questioning of the validity of the tasks. Tasks represent models, targets of learning, whose success can be readily ascertained by the degree of mimicking. When steps in the process towards targets are unclear, monastics must trust the testimony of informants. Knowledge is not fluid; its immutable state allows it to be mimicked and transmitted through generations of monastics. Knowledge is not a single object. It consists of an interwoven connection of disparate procedures and associated elements. Similarly, the description of Japanese primary education presented by Lee et al. (1999) does not radically alter the above Zen depiction. However, they provide evidence that Japanese primary school teachers are significantly more explicit in their pedagogic methods than their American counterparts.

Of interest here is that the Japanese teachers received only minimal training in pedagogic techniques. Mainly, they learned their trade in consultation with fellow professionals after commencing their employment. Some US teachers had Master's degrees which included much training in teaching pedagogy, and the US cohort reported a decidedly higher degree of confidence in their teaching abilities. Much has been written about the US individuality as compared with Japan's interdependence (Shimizu and Levine, 2001; Matsumoto and Yoo, 2006; Singelis, 1994). However, this particular case may better be represented as education leading to confident individuality versus insecurity caused by a lack of education resulting in a necessary interdependence. Whether the lack of provision of both theoretical knowledge or intensive practical training in preservice educational courses is an example of increasing levels of stricter discipline and challenges within a group context is an open question.

Certainly, it is consistent with the overall theory of Japanese education outlined by Rohlen and LeTendre (1998).

One striking difference between Zen and primary school learning is the degree of explicitness provided by the teachers. Explicitness is favoured in many pedagogic systems in Japan. Nonaka and Takeuchi (1995) describe the attention to detail that bakers employed. The master baker's implicit knowledge was converted by the researchers into explicit knowledge, allowing others to copy the model. Lee et al.'s (1998) method resembles the Japanese 'lesson study' technique, whereby "teachers work collaboratively and reflectively with colleagues on improving their classroom teaching" (Oshima et al., 2006, p. 43). Interestingly, the focus on collaboration within the professional environment emphasises the degree to which the mechanics of group cohesion operate to overcome Japanese undergraduates' lack of extensive practicum training. This may be deliberate, as discussed by Saito (2012):

"In order to develop such a community or culture, it is increasingly important for teachers to mutually observe and jointly reflect on practices at the classroom level. This is because teachers tend to obtain most of their ideas through actual practice — both their own and that of their colleagues" (Saito, 2012, p. 777).

The result of lesson study is an increased attention to detail. During lesson study, teachers share experiences of learner difficulty and build lessons that attempt to overcome as many difficulties and increase the chances of learning as possible. The result is highly detailed and articulate lesson plans.

Marton (2015) distinguishes two pedagogic cultures: a *see* and a *do* culture. A *do* pedagogy attempts to make all steps in a learning procedure as explicit as possible. The target is an algorithm, akin to Nonaka and Takeuchi's (1995) study of explicit actions by bakers. A *see* pedagogy deliberately allows gaps in the procedure on the rationale that expertise in understanding requires practice in *seeing* how elements are related.

Rohlen and LeTendre's (1998) description of Japanese lesson plans support the argument that Japanese education is based on a *do* pedagogy. They note that:

“The lesson plan itself is . . . organised in as accurate or true a way as possible. The teacher has consulted the text, tapped several sources of accumulated knowledge on the subject, typically talked with other teachers about it, and summarised it in detail in a series of precise steps” (Rohlen and LeTendre, 1998, p. 14).

Other chapters in Rohlen and LeTendre (1998) confirm different facets of this pattern. Russell (1998) outlines the history to *Kumon*, the massive privately owned educational company that provide supplementary extra-curricular training to primary-aged children. The Kumon method makes “children . . . practice computation until finding solutions becomes automatic” (Russell, 1998, p. 251). Importantly, their syllabus is exceptionally fine-grained. “Kumon’s problems are sequenced to an astonishingly minute degree” (p. 252) which emphasises the *do* facet of Japanese education. A similar phenomenon is found in primary mathematics (Stigler, Fernandez, and Yoshida, 1998).

The summary of this discussion is that the Japanese education system places much more emphasis on *doing* than *seeing*. This has implications for many aspects of learning in higher education, including the development of critical and creative thinking. The *do* pedagogic culture is a result of the strong egalitarian spirit in Japanese education (Yoneyama, 1999; Aspinall, 2006; Poole, 2010) that wishes to deliver as much of the curriculum to as many people as possible.

A further insight that Marton’s (2015) *do* and *see* distinction allows is to place Hori’s (1998) Zen training firmly within the *do* tradition, thus confirming the Japanese cultural preference of that view of learning. At first glance, Zen training may seem to be located within a *see* culture. Hori (1998) describes monastics needing to observe without being trained explicitly, what he calls “teaching without teaching” (p. 26). They are “expected to learn the ancient tradition without really being taught” (p. 27). In this respect, Zen training appears to differ significantly from primary school education. However, three facets must be remembered: 1) Monastics are self-selected learners. They are powerfully motivated to observe and learn, unlike many primary school pupils; 2) there is no democracy in Zen monasteries; and 3) the target of learning in both situations is an exact algorithmic product. Monastics, like children,

reproduce targets that are judged by their superiors. The source information of the *doing* is strictly top-down and situational in both contexts. The argument that places monastics' actions as *seeing* (because they must *see* target learning products) is mistaken because they are at liberty to ask more experienced monastics about questions they have and by the often severe reprimands they encounter when mistakes are made. In other words, they repeat mistaken *dos* until they can *do* correctly. Monastics mould their behaviours until they can mimic the traditional ones. In neither case, Zen training nor primary school education, is there a focus on the epistemic truth of a learning target.

In terms of this project more directly, a significant question when studying epistemic cognition centres on the academic socialisation of undergraduates. They have gone through the Japanese education system and will unconsciously have adopted many of the norms and values described above. Do third-year undergraduates remain influenced by the predominant *do* methodology, or has their specialist learning during university altered their perceptions of knowledge along to availing directions?

For example, if participants have mainly experienced algorithmic *do* practices that assume the veracity of any information provided, do participants question their belief that information from a source which is considered to be an authority must be true? Epistemic cognition comprises more than questions of truth. Hofer and Pintrich's (1997) model contains four dimensions: the fluidity of knowledge, the connectedness of knowledge, the source of knowledge and knowledge justification. In such terms, Zen training (in the characterisation given by Hori (1998)) and primary education resemble each other in three ways: 1) an absence of knowledge fluidity (knowledge is correct or incorrect); 2) the source of knowledge is top-down; and 3) knowledge is justified because of its origin. In these aspects, education is interpreted as being towards the naïve end of each dimension. Only connected knowledge may be complex. However, the product of learning is fixed. Issues of knowledge connectivity are subservient to algorithmic goal production. Additionally, when the *do* aspect is considered, each sub-process in a *do* sequence directs the connectedness of informational elements. Whether learners themselves realise the connectivity inherent remains an open question.

The intense focus on memorisation (Mulvey, 2016) explains Japanese first-year undergraduates' lower abilities in terms of epistemic cognition as compared with similar undergraduates in the US (Hofer, 2010b). However, little is currently known about later-years undergraduates' epistemic cognition.

### 2.1.3 Contrastive rhetoric

The third question we must consider is whether Japanese undergraduates are influenced by culturally mediated academic writing patterns. I will briefly survey this issue. Kaplan (1966) instigated the field of contrastive rhetoric by noting:

“a fallacy of some repute and some duration is the one which assumes that because a student can write an adequate essay in his native language, he can necessarily write an adequate essay in a second language” (p. 13).

Quickly, he recognises that:

“ ‘the material is *all here*, but it seems somehow out of focus’ or ‘lacks organisation’, or ‘lacks cohesion’. And these comments are essentially accurate” (italics added, p. 13).

Several points must be drawn from these quotations. Kaplan's (1966) attention is on the organisation and cohesion of elements in foreign language academic writing that are present. He does not criticise student essays as lacking in requisite elements. This point is important to this project because it cleaves a necessary distinction between the ability to conceive academic argumentation and the placing in a paper of academic argumentation elements. This distinction helps avoid the dangers of conflating issues of linguistic determination and rhetorical organisation of higher-order cognitions. The debate surrounding the relationship between culture and thought is complex (Ahearn, 2017), and Kaplan and those who follow him have been criticised for maintaining:

“a present continuity of colonial discourse that has viewed English language learners as the illogical, exotic, and inferior Other, while celebrating the language and culture of the West as superior” (Kubota, 1999, p. 751).

Furthermore, Kaplan's (1966) position has been criticised for presenting a too simplistic duality between English and other languages. Li, Legault, and Litcofsky (2014) summarise this by saying, "other researchers showed a more complex and fluid reality than Kaplan envisioned, where the native writing tradition interacted with that of the West" (p. 104).

In terms of linguistic relativity, Ahearn (2017) discusses many examples of how various languages organise their conceptual systems and recognises how language mediates the relationship with thought. However, she concludes by limiting a strong deterministic perspective:

"the influence of language on culture and thought is more likely to be *predispositional* rather than *determinative* — in other words, the particular language you speak might predispose you to view the world a certain way, but it will not prevent you from challenging that view" (Ahearn2017, p. 87/88, italics in original).

This view is consistent with Kaplan (1966) as Kaplan does not argue that foreign language writers cannot produce the necessary elements of academic writing. Additionally, it avoids the criticism of cultural imperialism; one culture is able to learn about another.

No one, to my knowledge, claims that the Japanese language system is illogical or is incapable of logical thinking. Rubin (1998) is meticulous in his analysis of Japanese and observes its logical nature, once situational implicatures are clarified.

To summarise the contribution of contrastive rhetoric to this present project, once more I note that nothing is argued regarding higher-order cognitions of any type. Contrastive rhetoric, therefore, can offer nothing substantial to this project other than a corrective against conflating participants' linguistic expression of their epistemic cognition with the content of their epistemic cognitions themselves. Some researchers, Tasaki (2001) in particular, argue the opposite case. He observes that East Asian students exhibit tendencies towards passivity and reticence to speak out against professors. Tasaki's warning to Western educators is not to dismiss the cognitive abilities of East Asian students on culturally biased beliefs about outward linguistic expressions. I will review Tasaki's work in more detail below.

A critical assumption in this project is that Japanese third-year undergraduate students are capable of higher-order epistemic cognition. Moreover, taking Tasaki's (2001) advice, I must maintain strenuous efforts to create vehicles that capture participants' epistemic cognition while recognising that direct face-to-face confrontation with me-as-the-researcher is unlikely to happen.

The conclusion after considering these three main areas — role of the university, situational demands on undergraduates and contrastive rhetoric — is that there is a dearth of information about third-year Japanese undergraduates' higher-order thinking. However, to clarify what this refers to, I must elucidate how higher-order thinking can be described. Prior to clarifying higher-order thinking, I present an overview of epistemic cognition.

## 2.2 Overview of epistemic cognition

The field of epistemic cognition began in the US with a research population of predominantly upper-middle and upper-class white American males (Perry, 1970). Belenky and her colleagues (Belenky et al., 1986) purposively investigated the construct in women. Although the women represented various demographics, they were all American. The US-centric focus continued through the major model building first wave (Hofer, 2016) seeing influential frameworks, such as Schommer's (1990) Epistemological Beliefs, Baxter Magolda's Epistemological Development Model (Baxter Magolda, 1992), King and Kitchener's Reflective Judgment (King and Kitchener, 1994). Hofer and Pintrich (1997) note that although these frameworks display divergences, overall they are remarkably consistent. However, researchers around the world sought to investigate epistemic cognition in other cultures. Khine (2008) edited a volume of worldwide studies which is testament to this energy. In 2010, the Pan-Asian Researcher dedicated a volume to epistemic cognition in the Asian context (Wong and Chai, 2010). One finding from the non-US studies is the existence of culturally specific influences on epistemic cognition. For example, Chan and Elliott (2002), Chan and Elliott (2004a), and Chan and Elliott (2004b) argued that the Confucian value of hard work affects epistemic cognition in Hong Kong.

The preceding paragraph strongly suggests that the US-derived models cannot be the sole means of assessing epistemic cognition in non-US cultures. However, none of the studies in Khine (2008) and in the Pan-Asian Researcher (Wong & Chai, 2010) featured Japan. Furthermore, the number of studies in the Japanese context is limited to fewer than a dozen and still fewer when the grey literature of non-refereed, university journals (Xiao & Watson, 2019) is discounted. The Japanese voice is, therefore, largely missing in the worldwide research conversation. The small number of studies in Japan that do exist are reviewed.

### 2.2.1 A contested construct

Epistemic cognition is a contested construct (Hofer, 2016) that is conceptualised variously as a subset of metacognition (Barzilai and Zohar, 2014), a separate set of cognitions, some of which are pre-metacognitive (Hofer, 2004) and as being based on occluded values, motivations and attitudes that influence both cognitions and metacognitions (Chinn, Buckland, and Samarapungavan, 2011). In all cases, the construct encompasses the core idea of investigating the question of *how we know what we know* (Hofer, 2016, p. 19) in individuals.

An example may clarify both the core construct and how it is interpreted in the various conceptualisations. Barzilai & Zohar (2014) define cognition as a “first order level of thinking” (p. 19). A person may think that *Covid-19 is merely a cold*. To Barzilai & Zohar, a metacognition is a recognition and conscious verbal development of the initial thought. In our example, the person may additionally think that *I know that because I saw it on a YouTube channel*. When the additional thought is related to aspects of trust, truth, certainty and justification of the thought, they consider this an epistemic metacognition. Hofer’s (2016) conceptualisation of epistemic cognition includes preverbal notions, such as feelings and emotions. The person may realise a feeling of distrust towards authority figures and not wish to accept information from those sources. This distrust may precede any overt verbal mental cognition. Chinn, Buckland and Samapungavan (2011) extend this preverbal notion to underlying values, motivations and attitudes whose influence may be unavailable to the individual’s introspection. Accordingly, our person may not realise their feeling of

distrust and be predisposed to rejecting authority information without the direct involvement of cognition. In this project, I accept Chinn and his colleagues' characterisation because of its inclusivity of issues that may have relevance to the participant group.

### 2.3 Models of epistemic cognition

Hofer (2016) offers three questions that aptly summarise core issues in the psychological construct of epistemic cognition:

“What is knowledge? How do we know what we know? What influence might this set of beliefs have on how we think, reason, and learn?” (p. 19).

Research into how individuals respond to these questions have led to several models of the construct. I designed a coursebook (to be discussed later) as the backbone of the pedagogic intervention. To retain conceptual integrity, I selected Hofer and Pintrich's (1997) model for that coursebook and will proceed to describe that. However, this model does not include aspects that have been demonstrated to be relevant to East Asian studies, and for this reason I will also describe Schommer's (1990) model which has been used in several East Asian studies. These models separate the construct into dimensions, four in Hofer and Pintrich's case and five in Schommer's.

#### **Hofer & Pintrich (1997)**

Hofer and Pintrich (1997) describe four dimensions (see Table 2.1).

Hofer and Pintrich (1997) described four core dimensions of epistemic cognition. The first two, fluid knowledge and connected knowledge capture information relating to how individuals conceptualise the nature of knowledge. The remaining two, integrated knowing and justified knowing, describe core attributes of the nature of knowing. Dimensional poles characterise, alternately, a naïve position and a sophisticated position.

TABLE 2.1: Hofer &amp; Pintrich's (1997) model of epistemic cognition

Dimension		Definition
Nature of knowledge	Fluid knowledge	(N) Once knowledge is 'discovered', it is known once and for all. (S) Knowledge is fluid, changing, contingent on many factors; it is "tentative and evolving".
	Connected knowledge	(N) Knowledge items can be known independently from others. (S) Knowledge items are related and connected, an "interconnected web of ideas" (p. 107).
Nature of knowing	Integrated knowing	(N) Knowledge comes from Authority with a capital A. Such knowledge is unquestionable. (S) Knowledge is the result of an integration of the objective (outside) and the subjective (inside) worlds, "originating inside the knower through their own meaning making" (p. 107).
	Justified knowing	(N) As knowledge comes from Authority, that is the only justification it requires. (S) The full model is explicitly situated in demonstrable rules of justification, reasoning, evidence, theory and argumentation. Knowledge can be justified according to "multiple criteria, such as fit with evidence, coherence with other knowledge, or credibility of experts" (p. 107).

Note: (N) = naïve belief, (S) = sophisticated belief. This serves to highlight the dimensionality.

### Schommer (1990)

Schommer (1990) pioneered the dimensional focused direction in epistemic cognition. Prior to Schommer, the models presented stages that characterised various types of individual. Each stage comprised several sub-attributes that were considered to operate in conjunction, and development to a higher stage saw the entire set of components change simultaneously. As empirical testing indicated that many

individuals did not demonstrate such neat composite changes, Schommer's dimensional approach offered the possibility of measuring separate aspects of the construct independently. She identified five key dimensions, as shown in Table 2.2.

Several of Schommer's (1990) dimensions mirror that in the Hofer & Pintrich (1997) model. *Certain Knowledge* and *Simple Knowledge* are the nomenclatures at the naïve end of the dimension for Hofer & Pintrich's *Fluid* and *Connected knowledge*. *Omniscient Authority* significantly overlaps with *Integrated Knowing*. Two of Schommer's dimensions were challenged by Hofer and Pintrich (1997). They argued that *Quick Learning* and *Innate Ability* related more to motivation and self-efficacy than to any particular epistemic cognition. Although the textbook I created for this project used Hofer's model, this project remains agnostic regarding precise conceptions of epistemic cognition. Accordingly, any analysis of research participants' statements may necessitate a wider view. This point is emphasised by Chan and Elliot (2002, 2004a, 2004b) who utilised Schommer's (1990) Epistemological Beliefs questionnaire with Hong Kong preservice teachers and argued that four of Schommer's factor structures were present but that the precise nature of dimensions differed. In particular, the East Asian value of hard work was singled out as an *epistemic* issue by Chan and Elliot without explicating their reasoning in full.

In the table for both models, the naïve and sophisticated position is given. Various frameworks in stage-based epistemic cognition theories present different numbers and characterisations of intermediate positions. In this project, I adopt an agnostic view of the theory because of the unknown nature of the participants' epistemic cognition. Instead, I characterise any participant as *naïve* whose broad range of epistemic cognitions generally do not exhibit critical engagement with knowledge items. *Criticality* in epistemic cognition terms refers to a statement that either recognises flaws in the naïve position or acknowledges any of the conditions in the sophisticated position. When criticality is present but does not fully satisfy the requirements for the sophisticated position, I categorise this position as *multiplist*. This term is common in the literature in various frameworks (for example, Kuhn, Cheney and Chandlers' [2002] framework).

To be labelled a *multiplist* after being characterised as a *naïve* thinker, represents a significant development in terms of epistemic cognition (King and Kitchener, 1994).

In my previous studies with earlier Faculty cohorts, pre-*multiplist* thinkers were by far the most common type (Smiley, 2018). Therefore, this term is used in a positive manner in this project.

TABLE 2.2: Schommer's (1990) model of epistemic cognition

Dimension	Definition
Omniscient authority	Concerns the source of knowledge. (N) The notion of an unseen, all-knowing provider of knowledge. (S) Ultimately, knowledge involves a co-ordination of subjectivity and objectivity.
Certain knowledge	(N) Once knowledge is 'discovered', it is known once and for all. (S) Knowledge is constructed and is contested.
Simple knowledge	(N) Knowledge items can be known independently from others. (S) The structure of knowledge entails joint and mutual meaning influences within knowledge items.
Quick learning	(N) Speed of learning is related to one's intelligence. Some people "believe in quick, all-or-nothing learning" (p. 498). (S) People can develop in various ways to overcome initial failures in understanding.
Innate ability	(N) Some people have a knack for certain skills; others do not. If a person does not grasp an idea quickly, they will never understand it. Related to entity/incremental theory (Dweck and Leggett, 1988). (S) Intelligence is only one aspect of learning; effort and motivation also play a role.

Note: (N) = naïve belief, (S) = sophisticated belief. This serves to highlight the dimensionality.

## 2.4 Types of problems and processes

Much research into the development of epistemic cognition has utilised pre-tertiary participants. A representative example is seen in Ryu and Sandoval (2012). measured the development of epistemic understanding using four criteria: causal structure, causal coherence, evidence citing and explicit justification. The classroom teacher

in their study had been collaborating with the researchers previously and was skilled in dialogic exchange with eight-to-ten year old children to elicit epistemic understanding. For example, she may repeatedly ask children “*How do you know? ... How do you convince each other?*” (p. 508). Significant developments in the use of these criteria were recorded using a pre-post-test design. Age-related development can be excluded because the ten-year-olds were older at the start of the study than the eight-year-olds who finished, presumably at nine. Development, therefore, was argued to be a function of the intervention. We must note that none of the four criteria was generated by the children themselves. In terms of argument creation and development, the children’s production aimed to defend arguments that can be verified empirically or through reference to given textbook information. The children produced exemplary epistemic arguments in relation to the Toulmin Argument Pattern in that claims were supported with evidence, theoretical support and logical warrants to connect the evidence and theory to the claims.

However, these cognitive skills must contrast with those required to produce an argument without recourse to given information or when the response type is not fixed as would be the case for a graduation thesis. There is a difference between the self-generation and subsequent metacognitive epistemic cognition of metalogical notions versus those *prompted* by the researchers. Furthermore, in assessing epistemic thinking, participants were required to respond to issues that were presented as either fixed-answer questions or everyday issues. Such a line of investigation cannot assess how specialists-in-training think epistemically. I suggest that the production of an epistemic argument requires different sets of cognitions from assessing existing arguments or claims. To see why, I will describe two critical concepts in epistemic argument creation: the ill/well-structured problem distinction and the dual process theory of the mind.

### 2.4.1 Types of problems

A consensus definition of ill-structured problems is not available. Two broad positions can be discerned that claim, alternatively, that ill-structured problems are fundamentally derivations of well-structured ones (Reed, 2016) or that ill-structured

problems are of a different kind (Maggioni, 2010). In the first view, ill-structure problems are essentially a sub-set of well-structured problems: the initial task being to establish a viable well-structured route to defining the problem (Reed, 2016). The second view characterises ill-structured problems as having no fundamental solution. I have not yet seen an article in epistemic cognition that recognises the former position; all seem to support the latter. In opposition to well-structured problems “that lend themselves to logically correct conclusions” (Moshman, 2015, p. 58), ill-structured problems are “problems with more than one potential solution and no guaranteed ‘correct’ answer” (Michell, 2013, p. 3).

This discussion is relevant to the current project for several reasons. The Japanese secondary education system is predominantly based on well-structured problem solving (Wakita, 2017). If participants’ conceptions of knowledge are shaped by their educational experiences as Tanha et al. (2020) argue, in the Japanese case, the dominance of the well-structured problem experience may influence students’ beliefs about the nature of problems and the nature of knowledge in particular. The absolutist belief in a ‘right’ or ‘wrong’ fact may be a characteristic in the Japanese educational environment, but without detailed research this remains unknown.

## 2.5 Cognitive processes

Furthermore, the lack of theoretical consensus regarding the nature of well-structured problems may limit epistemic thinking in this context. Japanese political views regarding education are partially shaped by results on the Organisation for Economic Co-operation and Development (OECD) three-yearly Programme for International Student Assessment (PISA) results (Ninomiya, 2011). Japan’s ranking in reading for creative problem solving (relabelled as “reading literacy” in the 2018 assessment) in the PISA results consistently score amongst the highest (OECD, 2019). Many observers cite Japan’s relatively high ranking as an indicator of its ability to impart higher-order thinking skills in Japanese fifteen-year-olds (Aoki, 2008; Gottlieb, 2012; Ninomiya, 2011). It is worthwhile to analyse the forms of cognitions that the PISA tests. This may provide valuable information regarding what is valued in the Japanese context and what kinds of cognitions in students are promoted.

The pre-2018 PISA tests define “creative problem solving” within the boundaries of finite-state automata (Buchner and Funke, 1993), that is, the creation of a measuring instrument that employs test items that are answerable with prescribed responses from a list of given states whose elements and relationships can be known. The PISA’s ‘creative’ aspect relies on test-takers’ ability to intuit the appropriate algorithmic heuristic response to the occluded elements in the question and then apply the algorithm. Japan’s 2018 PISA reading literacy test ranking at sixteen is its lowest on record, which although still respectable, arguably may be partially the result of a positioning of the importance of cognitive process in the test paper away from finite-state automata to a more Bloomian focus on abilities to “compare, contrast and integrate information” (OECD, 2019, p. 87) across multiple sources. However, using Anderson and his colleagues’ (Anderson et al., 2001) official revision of Bloom’s Taxonomy (Bloom et al., 1956), these cognitions are characterised as lower-order thinking. Additionally, test-takers need to assume the epistemic validity of test information. States of epistemic cognition are irrelevant.

The 2018 PISA test utilises Perfetti and his colleagues’ (Britt et al., 1999; Perfetti and Stafura, 2015) word-to-text integration model of inference drawing (OECD, 2019). Perfetti and Stafura (2015) distinguish between textual explicit and implicit meanings before placing inferences in their broader model of word-to-text-integration of reading. Figure 2.1 illustrates Perfetti and Staffura’s model by connecting some cognitive processes (on the right-hand side of the figure) with the given category of inferential level on the left-hand side.

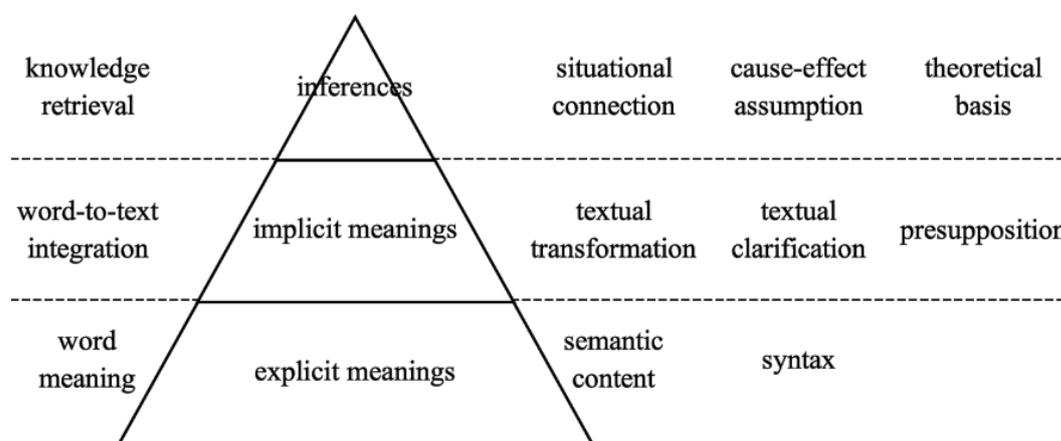


FIGURE 2.1: Levels of meaning based on Perfetti and Stafura (2015)

The cognitive processes required to achieve comprehension in Perfetti and Stafura (2015) successfully may be simple or complex: simple in the sense that retrieval from memory of, for example, word meaning, may be automatic and involve little cognitive load, and complex when the precise representation being constructed in a text necessitates, for example, back-checking with earlier segments in the text to ascertain or reject possible interpretations to “use context to disambiguate word meanings” (Grabe and Stoller, 2011, p. 27). In neither case, cognitive processes focus on ideas such as the text’s truth value or how much the reader trusts the author. In other words, PISA test takers (in either form) must assume the veracity of the test text and their beliefs or alternative knowledge bases are irrelevant to the test.

In neither well-structured problems (Reed, 2016), such as problems based on finite-state automata theory (Buchner and Funke, 1993) or in Perfetti and Stafura’s 2015 model of inference development, is there a requirement for epistemic thinking.

In summary, observers cannot use PISA test rankings to ascertain information regarding ill-structured problem solving, except in Reed’s (2016) narrower conception of ill-structured problems, or to argue that test-takers necessarily utilise sophisticated epistemic cognitive skills. There is a need to distinguish between the subconscious and automatic higher-level (or top-down) processing that is theorised during the comprehension process (Grabe and Stoller, 2011) and higher-order thinking as codified in, for example, Bloom’s Taxonomy (Bloom et al., 1956; Anderson et al., 2001). This fact points to the difficulty in establishing actual epistemic cognition in tertiary-level students. In terms of epistemic cognition in particular, without specifying these cognitions’ general location, conceptual clarity regarding which forms of cognitions are being utilised is problematic. A brief discussion of dual process theory may help locate the place of an idealised sophisticated epistemic cognition within all cognitions.

### **Dual process theory**

Dual process theory, particularly the work of Stanovich and his colleagues (Stanovich, 2004; Stanovich, 2009; Stanovich, 2011; Stanovich, West, and Toplak, 2016), provides a useful model of cognition. Briefly, proponents of dual process theory separate autonomous cognitions from algorithmic ones (Kahneman, 2011). Individuals have

little direct control over their immediate autonomous cognitions whose “execution is rapid” and “their execution is mandatory when the triggering stimuli are encountered” (Stanovich, 2009, p. 22). Autonomous cognitions include overlearned associations, such as the ability to recognise letter patterns in the reading process. Humans are not born with these cognitions but can acquire them through learning. Unlike these rapid and potentially parallel cognitions, “computationally expensive” and “serial” (p. 22) algorithmic processes are controlled and are “the type of processing going on when we talk of things like ‘conscious problem solving’” (p. 22).

Stanovich (2009) complicates the theory’s dual nature by introducing a third type of cognitive architecture that he locates within type 2 yet maintains a critical distinction. Stanovich’s ‘reflective mind’ (p. 20) is characterised as the overall process of how epistemic rationality and instrumental rationality operate to direct us toward our goals most efficiently. Epistemic rationality “concerns how well our beliefs map onto the actual structure of the world” (Stanovich, 2009, p. 16), and instrumental rationality is about “behaving in the world so that you get exactly what you most want, given the resources (physical and mental) available to you” (p. 6). Figure 2.2 describes this third mind and the placing of overall executive cognitive functions as a controlling and regulating system.

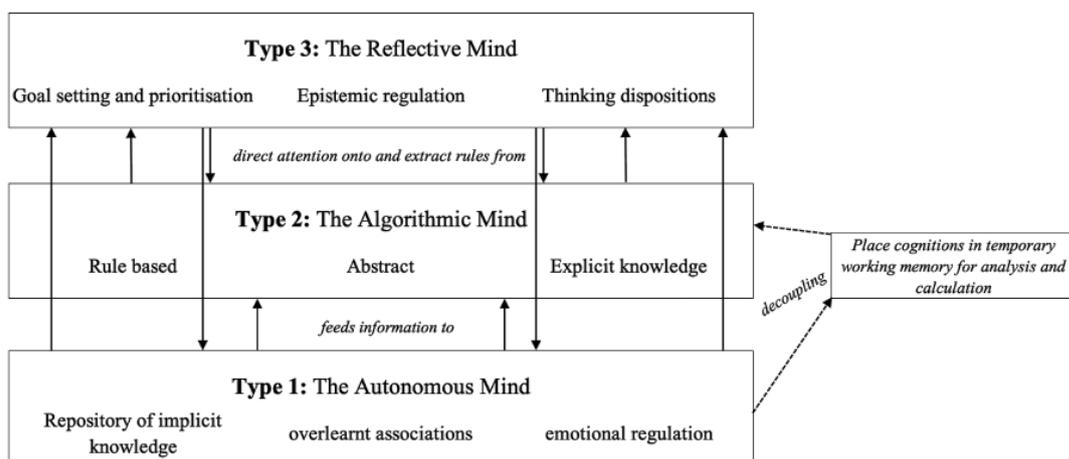


FIGURE 2.2: Dual process model of human cognition (adapted from Stanovich, 2009)

Stanovich (2009) intends to situate what he regards as typical secondary-level school testing as primarily relying on type 1 and type 2 cognitions. Test questions are created by the examining board and utilise Bloomian higher-order thinking within

the question types' narrow contexts. To Stanovich, true epistemic rationality is missing from these tests because they do not assess "adaptive behavioural acts, judicious decision making, efficient behavioural regulation, sensible goal prioritisation, reflectivity, the proper calibration of evidence" (p. 15). He places these cognitive actions in the reflective mind.

### **Contextualising Japanese students' cognitions**

Due to the non-reflective nature of educational testing, Stanovich (2009) suggests the importance of the reflective mind, which is certainly critical in the Japanese case. The washback effect of a highly memorisation-based fixed-answer Japanese university entrance exam (Aspinall, 2013) brings a sleuth of cognitive implications. For example, building on Wakita (2017), the importance of memorisation in preparation for university entrance exam, Dunn (2015) notes the associated lack of preparation for the cognitive demands of the university, expectations which include:

"using contextual information to gain the meaning of a new word, connecting and synthesising information between questions and passages during reading comprehension; recognising situational meaning or context . . . ; and being able to accurately gain information not readily available on the surface of a conversation or reading passage" (p. 4).

The works cited concerning the Japanese university context, aside from one, derive from studies with early undergraduate students. Information about the later undergraduate years is largely missing. In Chapter 1, I explained why this research project is conducted with third-year undergraduates: early-years undergraduates' epistemic cognition is likely to be highly influenced by their secondary educational experience, something that I, as a practitioner, cannot alter. There is more plausibility to the claim that third-year undergraduates' epistemic cognition may be partially shaped by tuition in the first or second year, which is possible in my context. For this reason, information about similar participant groups is essential. Unfortunately, I could only locate one study in English that investigates this. A small number of Japanese and English studies provide some information about Japanese undergraduates' epistemic thinking. It is to these I turn now.

## 2.6 Japanese epistemic cognition

### 2.6.1 Works by Japanese researchers

Buehl (2008) and others (Hofer, 2010b; Khine, 2008; Wong and Chai, 2010) argue for the importance of understanding the cultural aspects of epistemic cognition. Epistemic cognition as a research field is not unknown in Japan although the available literature comprises only a few studies. The number of studies is far too meagre to attempt to make any generalisations. However, it is interesting to note how in this small sample Japanese researchers investigate their populations compared to non-Japanese.

#### Hirayama and Kusumi

Hirayama and Kusumi (2010) translated Schommer's 1990 *Epistemological Beliefs* questionnaire into Japanese and administered it to four hundred and twenty-six first-year undergraduates. They found that of Schommer's proposed five-factor structure (see Table 2.2), *seitokutekina/innate ability* and *tanjun'na chishiki/simple knowledge* were stable in this population, and two other factors emerged; *jiko doryoku ni yoru gakushu/learning by self-effort* and *jikkuri shita gakushu/careful learning* (my translations). Additionally, they examined this factor structure with their own instrument for assessing critical thinking attitudes finding a significant correlation between *innate ability* and *careful learning* with sophisticated critical thinking attitudes. The notion of effort was argued to be related to Chinese students' epistemic cognition in two studies from Hong Kong (Chan and Elliott, 2002; Chan and Elliott, 2004a), leading to the tentative conclusion that beliefs about knowledge, knowing and the self may have cultural aspects.

#### Tasaki and colleagues

The work of Tasaki and his colleagues (Tasaki, 2001; Tasaki et al., 2008) is of interest because it is the only work I could locate in English that studied epistemic cognition that a Japanese researcher wrote. Tasaki et al. (2008) builds on his earlier doctoral thesis (Tasaki, 2001) in which he used Schommer's 1990 survey instrumentation with

a large pool of six hundred and ninety-two undergraduate and postgraduate students at the University of Hawai'i of various nationalities, including East Asian and Western students. I will survey Tasaki's earlier work first because it introduces motifs that are developed in the second. The location of Hawaii is of interest due to the racially mixed population which includes many of Japanese descent and other East-Asian countries and America. Tasaki (2001) concluded that "the particular kinds of epistemological beliefs valued in American schools may be biased in favour of students with Western cultural backgrounds and against students with non-Western cultural backgrounds, such as East Asian Americans" (p. vi).

Tasaki (2001) contrasts a "typical American college classroom" (p. 2) with that in the CJK block (China, Japan and South Korea) and repeats some common differences that are purported to exist. These include the phenomenon whereby "students are allowed to criticise or contradict their professors" in America. The opposite is witnessed in CJK countries where "the expected role of the student is that of the passive recipient of knowledge who does not challenge the quality and validity of the information provided by professors" (p. 2). To Tasaki, a danger presents itself when Western professors "evaluate the cognitive skills and academic performance of students from non-Western cultural backgrounds based solely on their classroom behaviours without knowing their epistemological orientations, creating an underestimation" (p. 3) of East Asian students. This position is understandable, but it misrepresents both an adequate evaluatory nature of higher education and a fuller conception of higher-order cognition. Tasaki's 2001 argument seems to be that even if East Asian students do not demonstrate higher-order cognition, they may still produce it. Unfortunately, in his doctoral paper, Tasaki does not provide evidence that the East Asian students actually can or do demonstrate higher-order cognitions. He discusses Vygotsky's 1978 notion of higher mental processes and appropriately locates much East Asian cognition within these culturally-bound higher cognitions. Again, these do not equate with either Bloomian higher-order thinking skills (Anderson et al., 2001) or dual-process theory's type 3 cognitions. The cognitive skills of inferencing and algorithmic manipulation described by Tasaki do not imply epistemic capabilities.

Tasaki et al. (2008) studied epistemic cognition in forty-three Japanese undergraduates and four graduate students. Their thematic analysis uncovered four main themes in their qualitative data: a relativistic (or multiplist) view of knowledge; criteria for information gathering that is objective and purposive; the teacher as a source of knowledge; and the importance of memorisation in the learning process. This work extends his earlier argument, providing supporting data. The paper is in Japanese, which is unfortunate, as this information in English would significantly enhance the worldwide knowledge base of epistemic cognition. The four themes must be taken as given because only a few participant excerpts were given.

In assessing participants' epistemic levels, we must look at the participant extracts and how Tasaki et al. (2008) characterise them. Characteristic of participants' responses to the notion of relativism of knowledge is the differentiation between physical sciences and mathematics on the one hand as containing fixed and certain knowledge and social sciences as being fluid. Tasaki and colleagues suggest that this is because the participant group is comprised of social studies students. It remains unclear if physical science students would also hold relativist views of knowledge or the researchers consider social science students to be correct. One finding of note is that graduate school students hold a firmer belief about the certainty of knowledge in the social sciences compared to the third- and fourth-year undergraduate participants. This progression reverses what is seen elsewhere, for example, in King and Kitchener (1994).

Tasaki et al. (2008) argue that relativism is culture-bound and that Japanese people see situational context more fluidly than Americans. Tasaki and his colleagues' provide a vague cultural response that does not answer why graduate students hold firmer certainty beliefs. The question regarding epistemic cognition development remains, therefore, open in the Japanese context.

Tasaki et al. (2008) have opened up a wide variety of questions relating to the state of epistemic cognition and its development in the Japanese context. Especially of note is the reversal of the developmental progression in graduate students. Moreover, by working with Japanese undergraduates (mainly) working in the Japanese language, the L1–L2 linguistic and inter-cultural cognition issues are bypassed. My

conclusion, however, is that this paper raises more questions than it answers, especially when Tasaki's underlying cultural agenda is considered. The cultural point is an important one, but extreme care is necessary to avoid substituting one form of cultural imperialism for another.

### **Nomura and Maruno**

By contrast, the work of Nomura and Maruno (2011; 2012; 2014; 2017) with early years Japanese undergraduates remains politically and culturally neutral. They present evidence that largely concurs with similar investigations worldwide: Japanese participants' epistemic cognition influences their views of classes 2014, mirroring Buehl and Fives's (2009; 2016) studies into preservice teachers' epistemic views and how they mediate their epistemic goal setting. Nomura and Maruno (2014) note the role of collaboration and understanding other participants' opinions and assert the social nature of epistemic cognition. Their factor structure comprises three components: knowledge-to-use, applicability of knowledge, and knowledge certainty. This structure is derived from two self-report instruments, and no qualitative follow-up was conducted. Qualitative data is introduced by (Nomura and Maruno, 2017) about the mechanisms that support social epistemic cognition development. One participant explains; "even though we are in the same class, different opinions from one's own come up. I see that there are other ways of thinking so my understanding deepens" (p. 154, my translation). The existence of other opinions is judged to be pleasurable. They conclude by arguing that "these results imply that the 'pleasure' that comes from knowing other points of view is a key for opening the door leading to an amicable settlement of the conflict between the existing and newer views of classes" (p. 159, their original English).

Nomura and Maruno do not develop beyond this. More research is necessary into how the mechanisms of experiencing divergent opinions and pleasure lead to more constructivist views of formal and practical knowledge. Their research is valuable because it provides a rare glimpse into Japanese undergraduates' epistemic cognition. However, the level of complexity reported is low: recognition of difference between oneself and others in terms of holding divergent opinions and the pleasurable sense of knowing others' opinions promotes positive engagement with the

learning experience. These results tell us little about how Japanese students undertake more complex procedures, such as dealing with epistemic issues during the creation of a graduation thesis.

## 2.6.2 Japanese epistemic cognition studies in English

This section describes the two studies written by non-Japanese researchers that explore aspects of epistemic cognition.

### **Hofer**

Hofer (2010b) used her quantitative instrument to compare early years Japanese psychology undergraduates with a similar subject group in the United States. This provided a synchronous snapshot of these two groups, but it did not explore how epistemic cognition may be developed. Hofer discussed secondary school achievement issues, noting that Japan scores high “on any number of standardised measures” (p. 137). She raised a fascinating question:

“Given that sophisticated epistemic beliefs predict higher academic performance in the United States, and that Japanese typically show higher achievement, we must ask: Are the beliefs of Japanese students more sophisticated than those of students in the United States?” (p. 137).

In this review, I have placed one such standardised test, the OECD PISA test, within the bounds of well-structured problem-solving. Hofer (2010) found that the U.S. subjects were significantly more sophisticated in all five aspects of epistemic cognition she studied. She recognised the washback effect of the “purported differences in secondary instruction between the two countries” (p. 142), namely, the need for intensive memorisation for university entrance exams in Japan, which are “typically correlated with low-level beliefs” (p. 142). Hofer’s conclusion with early years undergraduates reinforces the need for this study with later years undergraduates.

### **Pederson**

This section ends with a review of a work that at face-value seems closest to this current project’s purpose. Pederson (2010) studied beliefs and ways of thinking in

year-four English preservice education majors who were preparing to write their graduation thesis. Pederson reviewed several survey instruments, including the Beliefs About Language Learning Inventory (BALLI) (Horwitz, 1988), DeBacker and her colleague's 2008 *Epistemological Questionnaire* and two instruments that derived from Schommer's 1990 work, the *Epistemological Beliefs Survey* (Schommer, 1990) and the *Epistemic Beliefs Inventory* (Schraw, Bendixen, and Dunkle, 2002). Pederson noted serious issues with these instruments. His earlier research with Japanese undergraduates demonstrated that the BALLI failed to return Horowitz's proposed factor structure. The literature in epistemic cognition, particularly DeBacker et al. (2008), had raised serious questions regarding the other instruments they survey. In response to these issues, Pederson elected to adopt an approach that was "to a large extent phenomenological ... since as mentioned above, pre-conceived frameworks have not performed very well" (p. 119).

Pederson's 2010 research question indicates two areas of significant interest to this project: "what level of cognitive complexity can be achieved in answers to ill-structured survey questions combined with repeated exchanges with peers?" (p. 129). Therefore, potentially, Pederson's work may offer information regarding the development of epistemic cognition and capture higher-order cognitions. To these ends, Pederson produced a novel questionnaire. Unfortunately, it is not clear which items refer to epistemic issues, and from the sample items presented, none seem to me to be directly related to epistemic cognition. In summary, Pederson's survey instrument provides information about general beliefs regarding the role and tasks of a classroom teacher more than about epistemic cognition.

Pederson (2010) also collected written answers to these questions by having students discuss their responses four times with other students. Students then composed their answers. Although this process disambiguates personal beliefs from group beliefs, Pederson's "phenomenological" (p. 119) epistemic analysis of the categories of responses is illuminating. He reports three categories of epistemic belief: belief, reason/condition and justified belief. Furthermore, Pederson's paraphrase of students' responses also gives a valuable insight into their epistemic cognition.

The vast majority of the student responses are at the colloquial, lay person's level. For example, Pederson (2010) presents a typical example of a reason/conclusion response, which comprise over 80% of student responses:

"Playing is an effective way to learn especially in elementary school. Children love to play. They are motivated when they play or enjoy themselves so they can learn a lot through playing games or singing songs" (p. 139).

Pederson's (2010) students are in the first semester of their fourth year and have not yet fully developed their graduation thesis research project. He rationalises that "as such the course content would have to be limited to personal beliefs surrounding teaching" (p. 119). This is surprising to me because even by the beginning of students' fourth, and final, year as preservice education majors, they would have taken many classes in their earlier years in, for example, second language acquisition, linguistics and teaching pedagogy. Pederson recorded "only two instances of theoretical reference" (p. 139) providing some indication of students' prior learning. It is unclear from Pederson if theoretical knowledge was expected or hoped for or not. Such an indication would have been extremely valuable.

In my experience at a Japanese National University, the graduation thesis level is often at the personal opinion level. Pederson (2010) provides examples that do not differ radically from this experience. In Chapter 1, I listed several complaints against these theses. These issues also appear to be valid in Pederson's case.

### **2.6.3 Analysis of Japanese epistemic cognition studies**

Concerning the criteria described above, several observations can be drawn. None of the studies in the Japanese context discuss the development of epistemic cognition. Issues of cognitive dissonance or epistemic doubt are circumvented by Nomura and Maruno (2017), who provide two explanations for divergent opinions: they help participants deepen their understanding of an issue, which, in turn, may lead "to an amicable settling of conflict" (p. 159). While these may suggest very flexible beliefs about the certainty and fluidity of knowledge, they may also point to the use of classroom topics that are opinion based and that cannot be settled using more

advanced techniques such as argument analysis and evaluation between argumentative claims. Pederson's 2010 work was not positioned to offer information about how Japanese undergraduates handle advanced subject-level issues.

Furthermore, Pederson's (2010) participants' level of response does not allow for an assessment of their level of epistemic cognition. For example, in the example of a reason/conclusion sequence given by Pederson (2010) above, the participant's belief is of a generalistic and plausible experiential view of children and how playing is motivating during learning. Without further probing into, for example, the source of this belief, the trust the participant has in the belief, and how the belief is justified, little is known about the belief's epistemic state. Moreover, because no complex tasks were utilised in any of these investigations, it is difficult to assess how third-year Japanese undergraduates may approach the complex task of preparing their graduation thesis. As a corollary, much of what must be done as educators remains unknown to aid their preparation.

## 2.7 Academic argumentation and epistemic cognition

The Ancient Greeks considered reasoning to be at the core of sophisticated human thinking (Iordanou, Kendeou, and Beker, 2016). The authors remark that "argumentative reasoning is, therefore, pivotal for academic success and necessary for successful functioning in a democratic society" (p. 39), but add that the skills of recognising valid argumentation and argumentation evaluation elude most secondary school-age pupils, an observation that is resonant in epistemic cognition research (for example, King and Kitchener, 1994; Kuhn, 1990). Accordingly, developing frameworks of assessment and pedagogy to promote academic argumentation skills have gained prominence recently, including in how to conceptualise domain-specific and domain-general concerns (Goldman et al., 2017), differentiation of learner abilities and needs at the primary level (Reznitskaya et al., 2009a), or secondary level (Goldman et al., 2017) and in cross-cultural settings (Stapleton and Yanming, 2015).

Kuhn (1990) examined how individuals' epistemic cognition correlated with their abilities to produce well-formed arguments. Her questionnaire protocol included

items that assess what she terms ‘epistemological theories’ (Kuhn, Cheney, and Weinstock, 2000). Kuhn’s key insight is that individuals’ awareness of argumentation structures offers a method of studying epistemic cognition. More recently, other researchers have made associations with epistemic cognition and argumentation but these deal with primary school children, particularly in the domains of physical sciences and mathematics (for example, Reznitskaya et al., 2009a; Reznitskaya, Anderson, and Kuo, 2007; Ryu and Sandoval, 2012; Nussbaum and Schraw, 2007) and undergraduate pre-service teachers (Bråten, Muis, and Reznitskaya, 2017).

After reviewing several models (for example, Nussbaum and Schraw, 2007; Nussbaum et al., 2017; Reznitskaya et al., 2009a; Kuhn, 1990), I selected the Toulmin Argumentation Pattern (TAP: Toulmin, 2003/1958) as the base model for this intervention. There are multiple reasons for this selection. I do not merely follow Ryu and Sandoval (2012), who noted that “just about every argumentation researcher in science education takes Toulmin’s (2003/1958) well-known argument pattern as an acceptable definition of ‘an argument’ ” (p. 490).

At the micro-level (Nussbaum and Schraw, 2007), that is, the structural elements of an argument, existing models’ structural elements are either reducible to TAP elements or do not contain some of the TAP elements. For example, the ‘chain–evidence–reasoning’ model (McNeill and Martin, 2011) does not elaborate beyond ‘reasoning’. Such reasoning may be theoretical, logical or inferential from the data or evidence and is therefore insufficiently granulated to capture potentially important data regarding participants’ beliefs and uses of argumentation elements.

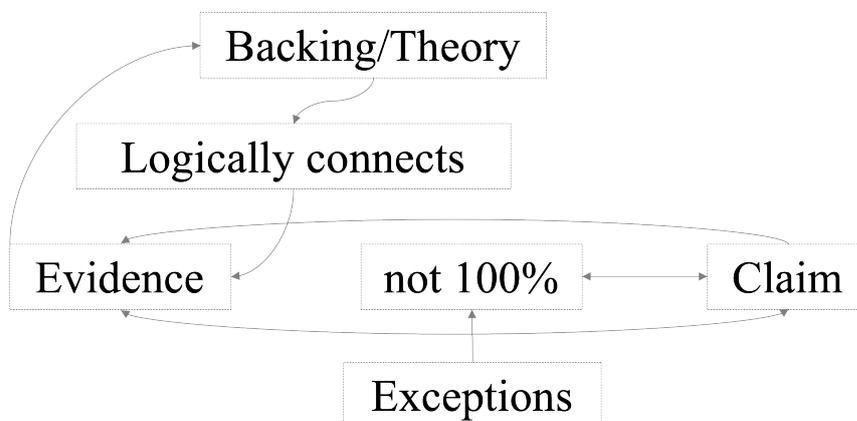


FIGURE 2.3: The Toulmin Argumentation Pattern [based on (Toulmin, 2003/1958)]

The TAP (Figure 2.3) models academic writing as the production of an argument (or a claim) that is evidence-based, is grounded in a generalised theoretical system, of a particular way of seeing the world, and that logically connects the specific evidence to the claim. Exceptions and qualifications exist that modify the strength of the claim or note its limitations.

### 2.7.1 Japanese TAP study

In this section, I discuss one study that investigates Japanese participants' higher-order cognitions that also utilises the TAP.

#### Stapleton

Stapleton (2001) offers an important counterbalance against the notion that Japanese undergraduate students do not think critically. His assertions run counter to those earlier (Armand, 2016; Aspinall, 2015a; Dunn, 2014). He presents many definitions of critical thinking and utilises the TAP as a base metric for analysing critical thinking elements in student essays.

A reader cannot discern whether Stapleton's (2001) student writers merely believe their propositional statements or have justified reasons for believing them. Stapleton (2002) addresses this issue in a follow-up study that utilises a nine-item questionnaire to probe respondents' beliefs about aspects of the argumentation process as a social activity. While demonstrating the falsehood of the belief that Japanese students are necessarily compliant, this study does not tackle any question of how much belief or reflection respondents practise in their knowledge development. Epistemic considerations that explore reflectivity and positioning concerning propositional statements are missing.

In summary, Stapleton (2001) supports the assertion that Japanese undergraduate students have abilities in argument construction. The question of whether or not they exhibit critical thinking is, I argue, redundant. Definitions of critical thinking vary in their coverage of cognitive actions. With such definitional variation, any scholar may support various claims about a participant group's critical thinking abilities.

Without a clear grounding in a core definitional boundary and an agreement about analytical methods, the lack of conceptual clarity surrounding critical thinking leaves many of the claims difficult to interpret. Stapleton (2001), for example, finds utility in adopting Maslow's Hierarchy of Needs to argue that Japanese undergraduates subconsciously use higher levels when arguing over topics about which they have more topic knowledge (rice production) than topics that they know little about (American gun laws). To Stapleton, this is evidence of their critical thinking abilities. However, this phenomenon may also be the result of topic knowledge and have little to do with assessing truth value, questioning information source, reflecting on issues, analysis or synthesis of various informational strands.

Stapleton (2001) produces evidence that Japanese undergraduates do exhibit some forms of critical thinking. However, much remains unknown regarding their ability to reflect on their beliefs' truth values, how they justify their knowledge claims and other epistemic cognitive issues. More focused issues of epistemic cognition are thus required to assess Japanese undergraduate students' beliefs and enactments, such as the nature of knowledge, its fluidity, its connectedness, how knowledge claims may be justified and trust issues about how sources are utilised.

## 2.8 Summary of literature review

Various aspects in the literature were analysed for their potential utility in helping develop epistemic thinking in Japanese undergraduates. The question of age and forms of epistemic thinking is contested, but it is clear that task complexity has not yet been considered a great deal. The content of tasks itself reveals much. To date, the studies in Japan do not reveal any information about reflexivity or epistemic stance regarding the potential truth value of propositional statements. Moreover, the research into Japanese students' higher-order thinking frequently centres on critical thinking (Armand, 2016; Dunn, 2015). Much of this research fails to differentiate forms of higher-order thinking adequately. It often uses proxies instead of empirical testing, such as the PISA (OECD, 2019) scores for testing fifteen-year-olds critical reading problem-solving abilities. Accordingly, the base theory of Bloom's Taxonomy (Anderson et al., 2001) was discussed in relation to finite-state automata

(Buchner and Funke, 1993) and text-bound inferencing (Perfetti and Stafura, 2015). These, by themselves, are insufficient to establish a working definition of higher-order thinking so Stanovich's 2009 tripartite model of dual process theory was introduced to sufficiently isolate cognitions that include a genuine epistemic stance.

Finally, direct information about Japanese students was discussed to disentangle the cultural question from the cognitive question. The current state of knowledge in Japan in English is sparse, and relevant studies contain limitations and need to be interpreted with caution. Ultimately, the studies in English reviewed do not distinguish between an epistemic stance regarding propositional statements even if they do present evidence of Japanese undergraduates' abilities to construct arguments. Studies written in Japanese thus far also do not mention this critical distinction, relying only on unreflective criteria. Much remains unknown, a fact which supports the argument for the need for this study.

## 2.9 Research question

Before presenting the research question, I describe the pedagogic intervention that frames this research project. An academic term is fifteen weeks in duration. This provides the temporal scale for a middling length pedagogic intervention. The pedagogic intervention contains two central foci: the product knowledge of epistemic cognition and the Toulmin Argument Pattern for academic argumentation (Toulmin, 2003/1958). Information about epistemic cognition was derived from Hofer and Pintrich (1997); and a process approach that consistently required participants throughout the course period to interact with others actively and question their own knowledge in group and online (that is, Internet) discussions and reflect upon their sense of knowledge and knowing in homework activities. This approach intends to address the following question:

How do Japanese university English majors experience and think about knowledge in terms of epistemic cognition?

Three data collection instruments (which will be described in detail in the following Chapter 3) focus on the sub-questions:

**Interviews** How do participants' post-intervention interviews differ from the pre-intervention one regarding how participants utilise epistemic cognitive themes?

**Discussion board posts** What are participants' experiences of dealing with learning epistemic and argumentation topics as expressed in their discussion board posts?

**Writing assignments** What are the epistemic characteristics identified in the academic writing samples before and after the intervention?

The methodology of researching the main question and the sub questions will be explored in the following chapter.

## Chapter 3

# Methodology

Because research cannot be value-free (Greenbank, 2003), it behoves a researcher to clarify and justify any ontological, epistemological, methodological, data collection and analytical methods that form the theoretical and technical underpinnings of the research design. This chapter begins by noting the ontological and epistemological implications implied in the research question and proceeds by elucidating those implications.

This chapter begins by reviewing the research aim in relation to how the research question is explored. It continues by explaining the ontological and epistemological position that I adopt in this project. From these bases, I defend the methodology and subsequent methods utilised. Also included in this chapter are discussions on ethical concerns and the trustworthiness and generalisability of the data (Creswell, 2014). The chapter concludes with a description of the pedagogic materials used in the intervention.

### 3.1 Research aim and question

This study explores the participants' lived experiences of epistemic cognition: how they understand, conceptualise and enact their epistemic beliefs. The purpose of undertaking such an exploration is to provide information that may lead to enhanced pedagogic approaches for advancing higher-order epistemic thinking of students in my institution. Although it is hard to generalise from a small scale study in one institution, I hope that the findings will be of interest more widely in the Japanese university sector (and beyond).

Students' beliefs regarding truth, trusting information sources, knowledge justification and knowledge fluidity may be researched deductively by utilising existing measurement instrumentation and assessing the results against a benchmark model of sophisticated epistemic cognition. To do so, however, risks ignoring the issues highlighted in Chapter 2 regarding the unknowns in Japanese university undergraduates' epistemic cognition. An inductive analysis of data that has been collected from participants' own statements about their own lived experiences (Langdridge, 2007) offers a viable method for investigating this unknown. The research aim, therefore, suggests a constructivist approach which Fry, Ketteridge and Marshall (2009) characterise as the researching issues arising from investigating processes "of continuous building and amending of structures in the mind that 'hold' knowledge" (p. 9). Epistemic cognitions, such as beliefs about viable sources of information, reliable methods of truth verification beliefs about the certainty of knowledge and so on, interact with individuals' existing knowledge structures. Interactions include the Piagetian processes of assimilation of new information when the individual perceives no conceptual contradiction between the information and their existing structures and accommodation, that is, alteration of existing structures when cognitive dissonance is perceived (Bendixen & Rule, 2004; Dole & Sinatra, 1998).

The primary focus is Japanese undergraduates' epistemic cognition, so all efforts have to co-ordinate towards capturing appropriate data and selecting viable analytical tools that enable an informed discussion in the later chapters. Therefore, the selection of a methodology needs to be articulated in detail.

## 3.2 Research worldview

Researchers should articulate their philosophical beliefs about the nature of the world and how that impacts their research (Creswell, 2009). The conceptualisation process itself is fundamental to the research process because of how philosophical beliefs influence research either overtly or implicitly. These beliefs "need to be identified" (p. 5) as research data can only be contextualised within theoretical systems of knowing (Moses and Knutsen, 2012). Moreover, our personal bias influences our ways of

knowing (Hofer, 2016). When such biases are known to the researcher, their influence can be minimised or incorporated deliberately into the research process while recognising that research can never be bias-free (Silverman, 2018).

Creswell's (2009) "worldview" is an underlying "basic set of beliefs that guide action" (p. 6) that include both ontological and epistemological aspects. However, in contrast with this, I adopt the position taken by Greene, Azevedo, and Torney-Purta (2008) that beliefs about the nature of matter (ontics) precede and merge within every aspect of people's personal epistemology, their way of knowing the world. Furthermore, a researcher's worldview has implications for broader philosophical considerations in research and more detailed practical methods-level considerations, such as in data collection. An appropriate "worldview" (Creswell, 2009, p. 9) that includes a significant focus on ontology is critical realism, often labelled scientific realism (Moses and Knutsen, 2012).

I reflected on the manner in which my worldview influenced how I conceptualised and enacted this research. Firstly, I accept that there must be a world independent of those who experience the world (Moses and Knutsen, 2012). Concurrently, I also believe that each human being constructs their world in ways that rely on the interaction of factors including their knowledge structures and motivations. I believe that constructivist understanding *per se* is not a random process; it is rooted in neo-Kantian processes that delimit the possible range of human thought to purely human forms of thought (Hedlund, 2016) grounded in discernible circumstances. The neo-Kantian processes themselves must have evolved into modern human thought for human purposes and are as such, rooted in the observer-independent world (Hedlund, 2016). These two beliefs stand at the opposite poles of a continuum: at one end, a naturalist belief in the nomothetic generalist natural laws that underpin human thought, and at the other, idiographic personal conditions that structure thought at the level of the individual (Moses and Knutsen, 2012). I accept both poles without contradiction.

Nevertheless, the poles require bridging. Hedlund (2016) criticises postmodernism for its rejection of the naturalist pole and, expanding on Habermas, argues that the waning of post-modernism's anti-realist stance is due to "its inadequacies

as an intellectual response to the complex global challenges of the twenty-first century" (p. 183). Hedlund contends that postmodernism's focus on the constructivist nature of individual understanding cannot be ignored. The crux of the issue lies in creating a philosophical system that can incorporate the poles, and Hedlund and others (for example, Gorski, 2013; Morgan, 2007; O'Mahoney and Vincent, 2014) have drawn upon critical realism (Bhaskar, 2008) to traverse these poles.

Concerning this current study, several points can be drawn about ontological and epistemological issues. Extrapolating from Scotland (2012) who notes that research paradigms must necessarily comprise their own "ontology, epistemology, methodology, and, methods" (p. 9), I follow a critical realist ontology that recognises objects' existence as the result of their external physical and social properties in conjunction with how each individual construes and constructs these properties to create meaning, that "reality is constructed through the interaction between language and aspects of an independent world" (Scotland, 2012, p. 13). The meaning of participants' linguistic expressions is not entirely subjective as it will be constructed from partially shared beliefs regarding communicative intention. Perfetti and Stafura's (2015) word-to-text model presented in Chapter 2 describes the interaction of word-level meanings with extended meanings derived from inferences drawn by the reader during the reading process. They caution that inferences may also be faulty. Heeding this caution is vital in any analysis of research data, and interpretations of the data must be grounded in plausible inferences: *plausible*, here, meaning a balanced expectation of possibilities imagined between the analyst (myself) and the target reader.

The ontological position assumes that I must believe that participants' linguistic expressions are true statements of their belief as they see it. The existence of occluded themes or deeper meanings must necessarily be an interpretation derived from the data. This interpretation extends the nature of inferencing from more objective word-level meanings, beyond textually integrated meanings, through extended situational and contextual meaning onto aspects of meaning that require a specialist eye to be seen. As inferences can be erroneous, these deeper meanings carry more possibility of error. Therefore, it is imperative that the analyst explicate any analytical process that delivers an interpretive conclusion (Scotland, 2012; Gray, 2009;

Creswell, 2009). However, the meanings in critical realism are not reduced to subjective possibilities but are claims of ontological existence (O'Mahoney and Vincent, 2014) defined as an emergent property of the interaction between person and object.

In this study, I adopt a critical realist worldview as it allows a mixed-methods qualitative approach (Sayer, 2000). Participants' own accounts of their lived experiences of epistemic issues provide information with which to investigate participants' empirical world. An analysis of their academic writing output is consistent with researching actual realm concerns because it indicates participants' abilities to construct social discourse. The coherence of this bifurcation of empirical and actual realms within a critical realist worldview of ontology and epistemology enables this research project to avoid contradictions at those conceptual levels.

### 3.3 Data collection

The three sub-questions (see Section 2.9) require three methods of data collection. The following section explains how and what data was collected.

#### 3.3.1 Overview of the data collection process

The research question investigates how Japanese university English majors experience epistemic cognition. Data is collected to provide information about pre- and post-states. Figure 3.1 shows the staging of the evaluations and the methods of data collection.

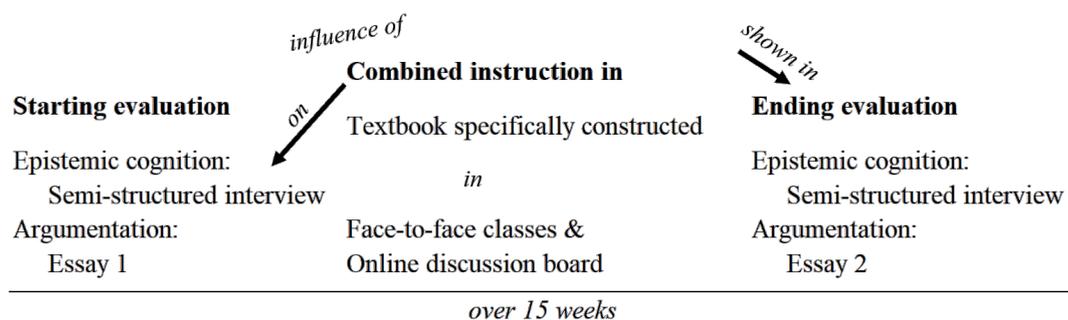


FIGURE 3.1: Data collection process

Briefly, data regarding participants' epistemic cognition were collected and analysed at the start and the end of a fifteen-week pedagogic intervention. At both times

an academic argumentation essay was assigned, and over the period participants engaged in discussions in an online environment which supplemented the face-to-face classes. A textbook was constructed to present information and topics in epistemic cognition and argumentation to participants. The pedagogic materials will be discussed at the end of this chapter (see Section 3.8).

The following section describes how data for this project were collected. It begins with a description of the participant recruitment process before moving on to the three main data collection methods.

### 3.3.2 Participant recruitment

[See Ethical considerations (Section 3.6) for a discussion of ethics approval, data storage and other issues relating to research ethics.]

Participants were recruited from a class that was selected for this project. The *Oyo Eigo* (Applied English) is an elective class for third-year students. Fourth-year students may also take this class. One fourth-year student did join. Participant recruitment consisted of two stages, a notice in the online pre-class schedule and in-class recruitment. The pre-class schedule included the information that the class would be the basis for a research project. Students who were unwilling to be participants could elect not to join the research project and still remain as class members. Also in the first two weeks of the term, I often reminded students verbally, irrespective of their future status as research participants, that they had a right not to participate in the research. All students would complete the same classwork. Only those who volunteered as participants would have their discussion board and essay assignment data further analysed for this project and be invited to be interviewed. I offer eight courses to second- and third-year students, and all students in the *Oyo* class had taken at least three of these classes.

Of the twelve students, nine became participants. Of these nine, eight were third-years and the remainder the fourth-year student. The classes were then conducted without reference to who was a participant. The small numbers are appropriate for an in-depth analysis that does not attempt to make generalisable claims beyond the population studied (Willig, 2013).

The stated goal of the *Oyo Eigo* class is to prepare students to write their graduation thesis in English the following year (for third-year students, or the present year for fourth-year students). Centring the *Oyo Eigo* course on argumentation seemed a reasonable fit with the Faculty's goal and allowed a significant degree of instruction in epistemic cognition. Because all *Oyo Eigo* students write their graduation thesis in English, specialising in second language acquisition, linguistics, literature or communication, they form a non-probability purposive single sample (Blaxter, Hughes, and Tight, 2006) which defines their homogeneous experience (Willig, 2013).

The participants' level of English is middle to upper-intermediate. Matriculation involves passing an English translation and comprehension test. I created a coursebook suitable for this level. However, matriculation was two years prior to the *Oyo Eigo* class, and participants' English abilities are presumed to have risen since. Six of the nine participants were female, and all but one was twenty years old at the start of the semester.

### 3.3.3 Data collection instruments

Any data collection instruments must necessarily match the purposes of the research question while maintaining logical and theoretical consistency (Creswell, 2009). This project's primary aim is to assess the epistemic cognition in Japanese university students to explore how or if their understanding of epistemic cognition can be developed during a single academic semester of fifteen weeks of tuition in epistemic cognition and academic argumentation. The following section provides details about the instruments used to capture information about participants' epistemic cognition. It may be kept in mind that the methods used are qualitative, that is, they attempt to capture some aspect of the quality, not quantity, of participants' epistemic cognition.

The instruments and their rationale originate in the main research question's sub-questions and are as follows.

#### Participants' lived experiences

Greene, Yu, and Copeland (2014) noted the limitations of quantitative "seemingly problematic self-report instruments" (p. 12) and how much research in epistemic cognition relied on these measures. In order to test current models of epistemic

cognition with their American participant group, they adopted a semi-structured interview approach because;

“the open-ended, inductive, and exploratory nature of qualitative research was necessary to investigate the conceptual foundations and assumptions upon which researchers have built their quantitative instruments” (Greene, Yu, and Copeland, 2014, p. 13).

Their goals differ from the ones in this study as I do not aim to test or confirm the conceptual basis of epistemic cognition. However, I share the desire to avoid the limitations inherent in quantitative instrumentation for the reasons mentioned in Chapter 2. This project is exploratory, therefore an open-ended investigation is warranted (Creswell, 2009). Accordingly, I utilise a semi-structured interview protocol on epistemic cognition issues while allowing an open-ended discussion to ensue.

Additionally, exploring the nature of participants’ lived experiences is important. According to the constructivist perspective, meaning does not reside in self-external objects but in the connections individuals draw between their existing self and the objects (Moses and Knutsen, 2012). Moreover, although epistemic cognitions may be inferred from participants’ essays and discussions, such inferencing procedures must necessarily be conducted through interpretative lenses (Moses and Knutsen, 2012). These lenses may introduce “blind spots” (Wagner, 2010, p. 32) caused by the utilisation of “existing theories, methods, and perspectives [that] actually keep scholars from seeing patterns they have not yet noticed” (p. 33). To avoid blind spots, it is vital to allow participants to express their own experiences through their own words.

Langdridge (2007) discusses phenomenological psychology and establishes the phenomenological methods that enable meanings to be uncovered in participant utterances;

“We see not only how experience is the focus but also how this is grounded in our everyday lived experience, experience in which meaning is prioritized, even though it is invariably hidden through the natural attitude. Uncovering this meaning, therefore, requires that we engage in methods

of phenomenology (such as the psychological reduction) to enable us to set aside the natural attitude" (Langdridge, 2007, p. 23).

Langdridge's (2007) method is described below (see Section 3.4.1). It is important to note the distinction between 'everyday lived experience' and 'methods of phenomenology'. The gathering of data about lived experiences is an act of collecting raw data from participants. Participants describe their experiences in their 'natural attitude' absent of specialist perspectives. Scrutinising the data through an interpretive lens is an act of analysis that utilises phenomenological technical methods. These two acts are kept separate.

This project aims to explore possible changes in epistemic cognition after the intervention. Therefore, it is reasonable to have semi-structured interviews at the beginnings and end of the intervention.

### **Interview protocols**

The following sections describe the interview protocols used in this project.

#### **First interview protocol**

The field of epistemic cognition began with Perry (1970) who began his semi-structured interviews with a single question; *What has stood out for you most this year?* Such an open-ended approach was considered for this project, but I rejected that because of the difficulty of maintaining focus on epistemic cognition. I created a semi-structured interview protocol (see Section 3.1) around issues in Hofer and Pintrich's (1997) four-dimensional factor structure.

The questions aimed to elicit personal responses based on participants' lived experiences. This approach differs from, for example, Hofer (2010b), who utilises a Likert-style item to which respondents indicate their degree of agreement. For example, for *Connected Knowledge*, Hofer's item is *What is known in this field is complex rather than a simple set of facts*. This item aims to capture beliefs about the interrelationship of knowledge items. Supposedly, a naïve knower believes that facts are unconnected: a sophisticated knower sees the connections. Subsequently, the naïve knower proceeds to memorise individual facts whereas the sophisticated knower

recognises and learns how facts relate to each other in systems of knowledge (Hofer, 2004). However, an indication of agreement does not inform educators about what respondents do cognitively or why they act in those ways. Additionally, the literature has shown that university undergraduates in the United States are not at the extreme naïve level (Hofer, 2010b; Kuhn, Cheney, and Weinstock, 2000; King and Kitchener, 1994; Baxter Magolda, 1992), and it seems to me that university undergraduates in Japan also are unlikely to hold extreme naïve beliefs about knowledge connections. Hofer (2010b) provides further data to support this view; Japanese first-year undergraduates are less sophisticated in the connected knowledge dimension than the U.S. sample, but they are not extremely naïve. Intuitively, students at the undergraduate level, especially those in the later years, would be experienced enough to know that their own field is highly complex and contains many interconnected knowledge items. For these reasons, the interview protocol question aimed to investigate participants' methods of study based on their beliefs and the beliefs themselves.

Each category contained a brief introduction and two questions. The purpose of extracting data about relevant lived experiences that inform the structure of the phenomenon was kept in mind as the questions were drafted. To ensure this, the abstract nature of the questions was mitigated by grounding them in concrete terms whenever possible.

TABLE 3.1: First interview protocol

---

Overall, I'm trying to find out *how* you think when you prepare your college essays and reports. This means I want to know what things you think about. Please talk about your actual experiences. Think of *times when you actually thought in that way*. Try to remember the situation, the report, the class, the purpose and—most importantly—what you experienced.

#### **Connected Knowledge**

I want to find out how you learn new information, knowledge, facts for reports. In particular, I'd like to know what you think about when you learn: what's happening in your mind.

- When you learn new things, what do you do? Can you describe what you do?
- Are you good at memorising single facts, or do you prefer to learn some facts together?

**Fluid Knowledge** In the class, we talked about some differences between a six-year-old child and a university student: how they believe or do not believe their parents' information. In these questions, I want to find out about your experiences of changing knowledge.

- Can you tell me about a time when you noticed that your knowledge of something changed in some way?
- Have you ever experienced a time when you have questioned your own knowledge?

**Integrated Knowledge** I want to find out about your experiences of being a thinker, especially in relation to how your feelings and experiences are used in your report writing.

- What is the difference between *subjective* and *objective* knowledge? Have you experienced a time when this difference was very clear, or important, to you?
- Can you tell me about a time when you couldn't understand something new but now you can understand that? What happened?

**Justification** Now, I want to learn about your experiences of when you use evidence in your reports.

- Why do you support your ideas in your essays? Can you explain your thinking and describe what you do?
- How do you select evidence for your essays/reports?

**Any comments?** Perhaps, you have experiences that are relevant to this topic but that we have not yet covered. Is there anything that you can add to this discussion?

---

Note that the interviews took place in the second and third weeks of the semester. This allowed me to remind participants of some classroom topics. For example, fluid knowledge was introduced in the following manner; "In the class, we talked about some differences between a six-year-old child and a university student ...".

The protocol questions may be understood and answered in various ways. For example, for Integrated Knowledge, I ask 'What is the difference between *subjective* and *objective* knowledge?' The key terms in this question have many possible meanings. Cunningham and Fitzgerald (2002) describe ten philosophical positions that each have subtle and gross differences between how these terms are conceived. In the epistemic cognition literature, Kuhn and her colleagues (2000) characterise the

difference as one of outside information (for *objective*) and personal opinion (for *subjective*), while Hofer and Pintrich (1997) see *subjective* as the co-ordination of initially self-external information with internal rationality. In the interviews, I was interested not in *which* definition participants would utilise but rather in *how* they could articulate and support their positions in regard to these key terms.

**Language issues** A note about language and clarity is necessary at this point. The participants were native speakers of Japanese and proficient in English reading. The interview questions were sent to participants before the sessions, and they were encouraged to contact me should they experience comprehension difficulties. In the regular course of my teaching activities, I met with most participants in other classes before the interviews and I inquired about comprehension. No problems were indicated. I did not expect any surface problems in comprehension because I took care to control the lexical and structural items within their known English language abilities.

However, and this next point is vital to understand the flow of information transfer between the participants and myself, I did suspect that every question would need to be rephrased for every participant during the interviews themselves. Explanation from teachers is expected by Japanese students who typically adopt a passive role in teacher-student interactions (King, 2013). This provides a useful opportunity to check comprehension, build rapport and enable a more personalised version of the protocol in order to elicit deeper and personal lived experiences. In this regard, the actual wording of any item becomes somewhat less important. Importance is placed on how well the conversation can draw out experiences.

In each interview, I asked the participants if they would prefer speaking in their native Japanese. None decided to take up this offer completely. Some did phrase some parts of their responses in Japanese before restating it in English. Additionally, I asked them if their responses would have been different if they had used Japanese. All said no.

### Second interview protocol

The flexibility observed in the first interview was maintained in the second. The protocol (see Figure 3.2) contained some items about epistemic cognition and others about the course experience. The inclusion of the latter category was to aid my teaching praxis and to inquire about pedagogic issues relating to the teaching of epistemic cognition and argumentation in this context. Such data is only tangentially related to the phenomena in question and is not reported on in this thesis. As with the first interview, the focus was to collect articulations of beliefs and experiences from participants.

The questions in this protocol seem to differ significantly from those in the first. As with the first, however, these questions served as a springboard for further probing. This protocol was not designed to be a generalisable instrument but rather had my own experience and knowledge of the particular participants in mind. Unlike the first interview protocol, I did not deliberately include categories from Hofer and Pintrich's (1997) framework. This was because participants had by the time of the second interview studied these topics in-depth. I wished to see how, or if at all, the categories were proceduralised (DeKeyser, 2015), that is, be utilised by participants without my prompting. When they did not use the categories, I used probing questions to elicit such information.

TABLE 3.2: Second interview protocol

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In this interview, I want to find out two things: 1) about how your thinking about knowledge and argumentation has changed in the past three months; and 2) about your experience of the course.

#### Knowledge about Knowledge

Let's begin by talking about your knowledge of your knowledge.

- Have you noticed any particular changes in your thinking about your own knowledge since our last interview?
- What kinds of difficulty do you still have in terms of understanding knowledge and how knowledge is made?
- Can you explain the term *argumentation*? Give as much information as you can.

**Course Experiences** You have attended a course on knowledge and how knowing about knowledge helps you write academic papers, your graduation thesis in particular.

- What has stuck out for you the most about this course?
- How would you characterise your engagement with the course? (e.g., Did you think a lot about the course content?)
- What worked for you in this course and why?
- What didn't work for you and why?
- Do you think that this course was helpful or not? (Please be as honest as you can. Negative comments are extremely helpful, too.)

**Any comments?**

Perhaps, you have comments that are relevant to this topic but that we have not yet covered. Is there anything that you can add to this discussion?

**Advice**

The questions are vague. This is deliberate. When you prepare your initial answers before the interview, please feel free to say anything you want. Don't worry about your comments being negative or irrelevant. During the interview, the conversation may go in many possible directions. However, the best way to begin is for you to tell *your story*: your experiences, your thoughts and opinions as openly as you can.

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**Discussion board**

Inspired by the online discussion board system I experienced during the module stage of this ED.D. course, I realised the potential for my participants to interact and develop in a similarly structured asynchronous online environment. In terms of data collection, Stansberry (2006) notes that:

“students exhibit more sophisticated decision-making processes than face-to-face (F2F) students, show an increase in participation and collaborative thinking, learn to articulate and negotiate their developing knowledge structures, and engage in higher-order processing of information by constructing personal meaning through collaborative interaction” (Stansberry, 2006, p. 28).

Furthermore, two other real-time risks may be mitigated by their use. Hall (2015) suggests that in in-class discussions teachers risk missing some students' voices. A discussion board provides an equal opportunity for all to participate in their own time. Moreover, online asynchronous discussions allow for "'think time' [which] is available prior to responding, and students also have the opportunity to respond thoughtfully without interruption" (Hall, 2015, p. 22). This method of data collection promises a deeper level of content from participants than would be possible with online, that is, in real-time, data collection activities, such as think-aloud protocols, which have been used by many (for example, Bråten et al., 2014; Greene et al., 2015; Trevors, Kendeou, and Butterfuss, 2017).

The data itself depends highly on the content and quality of the discussion tasks that are set up. Following Ringler et al. (2015), discussion questions were created that were open-ended, probed participants' experience, elicited reflection and required "synthesis of theory and personal experience" (Ringler et al., 2015, p. 17).

The set discussion questions differ weekly and are linked to the content of the previous class. Therefore, participants' posts cannot be used to directly ascertain qualitative improvements in epistemic cognition. Instead, the posts may provide general information regarding participants' epistemic beliefs, understanding of argumentation concepts and other associated topics. A secure online discussion board on BlackBoard, which was accessible only to me and the students, was set up to run concurrently with the fifteen weekly ninety-minute classes. Of these, ten weeks of discussions were targeted at collecting data about participants' beliefs, knowledge, experience and other aspects of both epistemic cognition and academic argumentation. Each week, three questions were posted by me to which participants had to compose an initial response. Then, they had to interact with other classmates at least twice more. Following Mendoza (2014), a post was considered to be a substantial contribution to a discussion, that is, on-task statements and not social, group management or unrelated off-task statements. Non-participant students' data was deleted from any analysis for this project, including when participants interacted with non-participants.

### Academic argumentation

Iordanou, Kendeou, and Beker (2016) argue that “argumentative reasoning is supported by epistemic cognition . . . [because] individuals’ beliefs about knowledge and how it is constructed are likely to influence their engagement with knowledge” (p. 45). It is reasonable, therefore, to collect data from participants about their engagement with knowledge by having them construct academic arguments. Knowledge, beliefs and attitudes regarding concepts in academic argumentation are explored in real-time in the second interview. In order to assess any changes in argumentation abilities, pre- and post-intervention written essay assignments were established.

The two essay topics utilised themes from second language acquisition courses that all participants had taken and were presumed to be aware of. To ensure rough equality in argumentation and linguistic response, the choice of essay topics centred on issues in which I could presume students had significant levels of knowledge. The first essay question was *How does age influence language learning?* All participants were proficient users of English and they had studied the critical period hypothesis (CPH: Lenneberg, 1967; Lightbown and Spada, 2013; Johnson and Newport, 1989). The CPH was a topic that is often discussed by students in the Faculty and has been the subject of several graduation theses. The second essay question was *Yuki is Japanese and is an expert user of English. Yuki represents the highest level that a Japanese person will reach as a user of English. To what extent is Yuki a model teacher of English?* Both essay topics may be approached at significantly different levels of argumentation, from a simple statement of opinion to a fully worked-out argument that utilises references and theories. For these reasons, I assumed that they are appropriate for the English major participants in this study and are of comparable difficulty.

### 3.4 Data analysis

One research aim is to describe an investigation of participants’ lived experiences concerning epistemic cognition. In this section, I defend the selection and utilisation of King’s (2012) template analysis as a suitable analytical instrument to explore themes that are “hidden through the natural attitude” (Langdridge, 2007, p. 111).

This project does not aim to investigate participants' lived experiences of epistemic cognition in order to describe idiographic relationships to epistemic cognition (which may be useful when the research purpose is, for example, to investigate better pedagogic instruction in epistemic cognition; for example, by utilising Marton's (2015) phenomenography. Instead, it aims to ascertain more nomothetic and within-participants general structures of existing epistemic cognition. Additionally, although I adopt a nomothetic approach, I do not intend to generalise any hidden meanings beyond the current participant group.

My research worldview is a critical realist one as explained in Section 3.2. That entails an approach that uses individual data to ascertain collective realities. Langdridge (2007) describes appropriate steps in template analysis (King, 2012), a branch of phenomenological psychology, which I describe in the following section.

### 3.4.1 Template analysis

Template analysis was developed by King and his colleagues (King, 2012; Brooks and King, 2014; Brooks et al., 2015) and is a phenomenological approach to investigating the lived experiences of participants which may be aligned with many types of qualitative analysis. It seeks "to define themes within the data and organise those themes into some type of structure to aid interpretation" (Brooks et al., 2015, p. 206). Rather than being limited to analytical strategies that are purely inductive or deductive, template analysis "can be positioned in the middle ground between top-down and bottom-up styles of analysis" (p. 430). It achieves this by establishing an *a priori* template of themes before the analysis is conducted. This provides the deductive framework. Deductive rigidity is avoided as the analyst must discard themes not evidenced in the dataset and be sensitive to others that are. The inductive process involves establishing themes only from within the dataset. The principal advantage of template analysis is the use of a *a priori* theme set to process masses of qualitative data within a manageable framework. It is appropriate when a clear research theme and precise aspects derived from the research literature are utilised (King, 2012). As this is the case with the current project, template analysis is an appropriate choice for analysing the data.

In critical realist terms, descriptions of a theme's structure may fall into the *empirical realm* (Bhaskar, 2008) as personal experiential meaning constructions at the personal level or into the *actual realm* as commonalities abstracted across multiple data sources. There is no principled reason why a theme needs to be idiographically empirical or nomothetically actual. Such a decision is taken during data analysis based on the number of participants who share a theme. Template analysis, consequently, is an appropriate selection of method within a critical realist framework. Unlike thematic analysis, with which it shares common ground, template analysis "does not insist on a fixed number of level of coding hierarchy" or "on an explicit distinction between descriptive and interpretive themes" (King, 2012, p. 429).

My epistemological position in adopting template analysis is, as described earlier, a critical realist one. I accept that my interpretations exist in the empirical realm as constructivist interpretations of reality. However, I also maintain that such interpretations have direct and strong bases in information derived from the actual realm. In other words, the possibilities of interpretation are not unlimited, but instead they are more usefully characterised as being limited to a narrower range of probabilities. This assertion is evidenced in the following chapter where the raw data from this study is presented in a structured form.

An approach that investigates participants' lived experiences is necessary. That is, it has a phenomenological intent. I must stress that this project is not a pure phenomenology, only that I utilise a phenomenological method to establish data at the critical realist experiential realm. Accordingly, I follow the analytical sequence of psychological phenomenology described by Langdrige (2007) while adopting an educational psychological attitude (Giorgi, 2012) when interpreting the data.

As I described above (see Section 3.1), qualitative data regarding participants' beliefs were collected from semi-structured interviews and an online discussion forum board in which targeted questions are set and to which participants respond. Thematic analysis itself is agnostic to the epistemological basis of any analysis and is applicable to a number of data collection approaches (King, 2012). In this project, data derived from forum board discussion data were used in parallel with interview data to provide a fuller account of each participants' beliefs and experiences of epistemic cognition.

In an initial thematic template, template analysis allows for *a priori* themes to be included which originate from existing literature (King, 2012). The researcher accepts that these themes “are used tentatively, with the possibility always considered that any *a priori* theme may need to be redefined or discarded” (p. 430). The first data case is analysed alongside this *a priori* set to create an initial template which is then used as a starting point for analysing other cases. The creation of this initial template is a key staging point in the full analysis. While referring to the initial template, more cases are analysed in a “cyclical and iterative” process (Langdridge, 2007, p. 111).

### **The initial *a priori* template**

I established the initial template in the following manner. Themes relating to epistemic cognition from the existing literature were collated. Also, my own beliefs and knowledge regarding epistemic cognition were audio-recorded and transcribed with particular reference to the questions I posed in the semi-structured interview and on the forum discussion board. This reflection was done to place my own beliefs into my consciousness. With these articulated, I was in a better position to realise how my own biases may interact with my interpretations of the data as well as to aid me in the interviewing process to ensure that I could respond *ad hoc* appropriately and sensitively to epistemic cognition issues. The *a priori* theme list is shown in Table 3.3.

Three of Hofer and Pintrich’s (1997) main subdivisions are present, but their fourth one has been superseded by the work of Bråten, Ferguson and Strømsø (2012; 2013) who have further divided the justification dimension into three types. Because I would probe participants’ methods of resolving epistemic issues during the interviews, the tripartite division introduced by Bendixen and Rule (2004) is included. Finally, Britt and Aglinskas (2002) offer further insights into how participants may treat multiple sources of information. This set additionally expands on justification by multiple sources strategy (Bråten, Ferguson, and Strømsø, 2013). It must be emphasised that these *a priori* themes may not necessarily be present in the participant data set and that the actual final theme set may be very different.

I conceptualised these themes in two important ways. Firstly, they comprise a form of bracketing, that is, they are part of my reflection on how I understand the

TABLE 3.3: Initial a priori template for data analysis

<i>A priori</i> Theme	Definition	Source
Certain knowledge	To which degree is knowledge certain?	Hofer and Pintrich (1997)
Fixed knowledge	To which degree is knowledge fixed?	
Source of knowledge	Where is the source of knowledge	
Reflective ability	To which degree do participants articulate their knowledge?	King and Kitchener (1994)/Barzilai and Zohar (2014)
Sophisticated epistemic cognition	A high degree which a participant can articulate their reflective awareness of epistemic cognition, that is, their personal epistemology.	Kuhn, Cheney, and Weinstock (2000)
Multiplicitic epistemic cognition	A personal epistemology that recognises various possibilities/truths without an ability to evaluate between them.	
Naïve epistemic cognition	A personal epistemology that is grounded in black and white statements about truth and in fixed beliefs regarding the source of information.	
Epistemic doubt	How do people experience doubt concerning a truth claim?	Bendixen and Rule (2004)
Epistemic volition	How do people want to change their beliefs?	
Epistemic doubt resolution strategy	How do people experience doubt concerning a truth claim?	
Justification by authority	Relying on authority sources without critical analysis of content.	Bråten, Ferguson, and Strømsø (2013)
Justification by multiple sources	Comparing how different sources treat the same topic.	
Justification by personal experiences	Believing claims because they match the person's experience.	
Source evaluation	Where does the source come from? Who authored the source?	Britt and Aglinskis (2002)
Source corroboration	Finding differences between two or more sources.	
Source contextualisation	Understanding how a text has a historical and localised context.	

subject matter. If a participant were to, for example, talk about comparing two documents on the same topic, I can refrain from assuming certain cognitions on behalf of the participant. Secondly, by cataloguing my technical knowledge, I can comprehend how the psychological phenomenological attitude differs from the natural

attitude. Giorgi, Giorgi, and Morley (2017) stress the importance of adopting a psychological phenomenological attitude during the data analysis procedure instead of the natural attitude, which is “the attitude of daily life and common sense” (p. 178). However, before the analysis itself, a phenomenological analysis needs to be sensitive to potential researcher biases in which meanings are deemed important. The notion of horizontalisation (Langdrige, 2007) responds to this bias threat by urging the analyst to keep all participant data at the same level of importance until the evidence in the data is such that certain meanings carry more weight than others.

I selected what I considered to be the most critical and relevant themes from epistemic cognition. My *a priori* thematic template is necessarily incomplete with regard to the final template, and during the analysis, I needed to retain a psychological phenomenological attitude that is sensitive to epistemic cognitive issues in the data, especially as I probe my reactions to participants’ meanings concerning the topic as a whole. The precise analytic steps involved are described now.

### **Establishing the theme set**

I used the method set out by Langdrige (2007) to establish the initial theme set from the first semi-structured interview. This set was compared with the *a priori* theme set. In this description, I use the term ‘code’ to refer to what Langdrige calls a ‘theme’. This is because the number of meaning units, that is, separate meaningful elements in a text (Giorgi, 2012; Langdrige, 2007) is likely to be vast in this project. The codes can then be organised meaningfully into larger sub-themes and finally into major thematic groupings at the level of the project.

1. **Transcript reading.** The main purpose of transcript reading is to explicate the meaning of the text. However, researcher “associations or interpretations” (Langdrige, 2007, p. 111) are also included in the notes during this stage. I re-read the first participant’s first interview transcript many times in order to minimise the risk of missing information. Sections of the data that comprised single meanings were delineated into meaning groups (Giorgi, 2012). I attempted to maintain an indifference about which meaning groups held more

importance than others. Comments about the meaning groups were noted during reading and rereading.

2. **From meaning groups to theory.** Meaning groups were transformed into descriptive linguistic accounts that did not alter their propositional meaning. The purpose of this transformation was to simplify and abstract the located nature of the single participant to allow a comparison with later participants. At this point, Langdridge (2007) notes that comments on the abstractions “should reflect broader, perhaps more theoretically significant, concerns” (p. 111). Potential codes are listed.
3. **Initial thematic preparation.** An initial code list was now ready. These were listed separately. I utilised TAMS software (see Section 3.4.1) that shows the text that surrounds the code snippet and can navigate to the original document to see the wider context. Many codes of direct relevance to epistemic cognition were noted, collated and reordered hierarchically. From this rearrangement, three levels of importance were distinguished: primary meaning-unit code elements, sub-themes and major themes. All coded meaning-units were retained at this stage.
4. **First participant thematic template produced.** This first ‘final’ thematic template becomes the working template for the next participant’s data analysis. There was a choice to be made regarding conducting analyses on individual participant cases or to treat the whole dataset as a single unit. The method described by King (2012) suggests the latter. I maintained a set of individual participants notes to record any significant differences.
5. **Iterations.** These steps were repeated until all data had been analysed. The data included all of the semi-structured interviews, the online discussion forum board texts and my memos and comments files.
6. **Final thematic template produced.** This template represents the major themes in the data.

This project explores possible changes in epistemic cognition over an intervention period. Accordingly, the first set of interviews was analysed for a first template

analysis, and the procedure was repeated on the data from the second round of interviews. The only difference in the later analysis was that the final template from the first round became the *a priori* template for the second. Information derived from these procedures forms the backbone for the Results Chapter (Chapter 4).

### Example of deriving a theme

In this section, I describe an example of how the analytic procedure leads to the development of a potential theme using data from the first interview with Sakura from the first round of interviews. The five columns in Table 3.4 contain the following information: 1) the first column shows the interview data; 2) the second is a descriptive reduction of the original data; 3) the third is an assessment of the data through the interpretive lens of epistemic cognition; 4) the fourth is a comment showing a [P]ositive epistemic skill and a [N]egative epistemic implication; and 5) finally, the extract is coded. A theme arises when there are multiple codes from multiple participants.

TABLE 3.4: Sample primary data analysis

Interview data	Descriptive reduction	Epistemic cognition	Comment	Potential theme
Basically I read books and if I have a question when I'm reading books, I ask teachers and if I'm not sure if the teacher's answer is right or wrong, I will try to find written source that says same as the teacher's say.	Sakura tries to overcome comprehension difficulties by asking teachers. When Sakura is unsure of T's response, Sakura searches for written sources that corroborate T's response.	Sakura's method of assessing truth value of texts is to search for corroborating information from other written sources. This multiple source technique is limited to finding supporting statements.	P: multiple source awareness N: epistemic doubt limited to supporting statements	multiplicity, searching for support

P:=positive epistemic ability, N:=negative implication

Columns one to three and column five follow Langdridge's (2007) method directly. Column five shows the thematic labels I assigned to the excerpt. Table 3.4 shows the first row from the first interview with Sakura. Sakura's utterances are

presented verbatim. I did not consider vocal inflexions, pauses and other suprasegmental data to be relevant to the research question so these were not transcribed.

### **Computer-aided analysis**

For the data analysis, I used a computer software system called TAMS Analyser 4.0 (Text Analysis Markup System: Weinstein, 2012). This qualitative data analysis software program operates by allowing the user to select and assign codes to a text. Notes can also be created and assigned to any text unit, which may further be treated as a source for additional coding. Thus, this process aids both the abstraction across participants of related themes and the linking of meaning groups to those themes, all of which are searchable and may be extracted and analysed for a variety of purposes.

## **3.5 Argumentation analysis**

### **3.5.1 Assignment scoring**

The initial plan in this project was to utilise an analytic and holistic argumentation scheme by Reznitskaya et al. (2009b) directly. However, I realised during the first round of assignment analysis that this instrument would not reveal detailed information about epistemic thinking. Reznitskaya and her colleagues' instrument counts the number of arguments and counterarguments and the relationship between these elements. A higher numerical score on this instrument means that more elements are present and that they are logically connected. To a limited degree, therefore, this instrument provides some information, albeit tangentially, about participants' epistemic cognition. However, much of Reznitskaya and her colleagues' tool is agnostic to epistemic issues, such as truth value and information sourcing.

Instead, I constructed a simple instrument to respond to this need. There is a significant danger in rejecting a pre-validated instrument in favour of an untested one. However, my instrument is not intended to be a validated instrument. Rather, it is a formalisation of an epistemic cognitive attitude that I would adopt when assessing participants' essays. In other words, instead of creating a list of questions derived from dimensions in epistemic cognition, such as *Does this writer simply accept his/her claims as being true, or does he/she provide some recognition of the truth value of the claim?*

(for *fluid knowledge*) or *How does the writer justify his/her claims?* (for *knowledge justification*), the instrument formalises these questions into a holistic impression of the dimension. I believe that this approach is more integral to the aims of this project because epistemic issues are investigated directly, and it has the benefit of not using academic argumentation as a proxy for epistemic thinking, which would have been the case if Reznitskaya and colleagues' (2009) instrument had been used.

The analytical procedure was to re-read participants' essay texts four times. During each pass, I asked the following questions:

**Pass 1. Fluid knowledge** Does this essay demonstrate:

- an overt recognition that knowledge is contingent on the lens or assumptions used and the way that the writer has interpreted the source (scores *high*, 2 points);
- or, is there some indication that the knowledge presented is not fixed but that is done without overt awareness (scores *mid*, 1 point);
- or, is knowledge is presented as being certain and fixed (scores *low*, 0 points)?

**Pass 2. Connected knowledge** In this essay:

- reasons are presented whose inferences link directly to the main claim. Conceptually, these reasons are non-problematic to an expert reader;
- or, do the reasons selected contain problematic assumptions that are not discussed;
- or, are lists of reasons presented haphazardly (to the expert reader) without linking those reasons explicitly (either conceptually or linguistically)?

**Pass 3. Source of knowledge** In this essay:

- are sources referenced, multiple documents utilised and personal rationality expressed with awareness;
- or, is knowledge presented that, if it has an outside source, it is not given;
- or, is no source given?

**Pass 4. Justification of knowledge** Does this essay demonstrate:

- a link to theory and/or explicit reference to justification method (e.g. correspondence, coherence);
- a correspondence approach; e.g. This is how things are;
- no justification?

A holistic assessment score is given for each of Hofer and Pintrichs' (1997) dimensions of epistemic cognition. The three questions relate to the possible ratings, *high*, *mid* and *low*, following a typical tripartite division in the literature (see, for example, Kuhn, Cheney, and Weinstock, 2000). The ratings are awarded holistically based on the predominant characteristic of the assignment.

### 3.5.2 Comparison

This research project is framed around a pedagogic intervention. I assumed that the fifteen-week intervention will have some influence on participants' epistemic cognition. This influence should be evident in three ways: in the latter weeks of the discussion board post, in the second interviews and the second essay. In all three cases, more sophisticated texts are expected. The method of comparison is twofold. For the interviews and discussion board posts, the first (or early weeks; the cut-off point was week eight) was compared with the second (or later weeks). Similarly, the first essays were compared with the second ones in terms of epistemic cognitive issues only.

## 3.6 Ethical considerations

### 3.6.1 Approval

Research poses serious ethical risks, and these are intensified when the research participants are one's own students. In order to obtain approval to conduct this project from the University of Liverpool, a detailed defence of the reasons my research had to be conducted by me on my students was submitted to the University of Liverpool Virtual Programme Research Ethics Committee (VPREC).

All participants received a Participant Information Sheet and signed a Participant Consent Sheet. (See the Appendices for these documents.) These were prepared in

English using modified language that reflected the second language proficiency of participants. Participants were given time to read both sheets and these were read again immediately before the semi-structured interviews.

### 3.6.2 Data storage

All related paper and electronic documents were stored in my locked office to which only I have access. An encrypted laptop that was dedicated to this project was purchased and used exclusively for data collection, analysis and writing. The online discussion board is archived on a secure USB stick and will be retained for at least five years following the end of this project.

### 3.6.3 Ethical concerns

Maintaining a strict code of excellence in ethical matters is essential for researchers (Oliver, 2010). In this section, I outline three key concerns about this project: implicit power relationships in the interpersonal researcher-researched dynamics (Hammersley and Traianou, 2012); ethical issues in data analysis and interpretations (Clark and Sharf, 2007); and the principle of no harm (Hammersley and Traianou, 2012).

**Interpersonal relationships.** As Oliver (2010) points out, “the researcher is inevitably cast in a role where there is a varying element of power and authority” (p. 110). This dynamic is intensified when the researcher is also the class teacher who is in a position to award lower or failing grades that have the potential to limit future scholastic endeavours due to the lower grade point average. I must take stringent steps to avoid these risks. I did this in three ways. The first was to remind participants of their withdrawal rights; the second was to provide a thorough break-down of students’ grade scores; and the third was to continually adopt a reflexive attitude regarding my concurrent roles as the classroom teacher, discussion board facilitator and researcher.

**Data interpretation.** Clark and Sharf (2007) discuss the ethical responsibility inherent in the data analysis procedure and the ramifications that differential interpretations have on the expression of participants’ experiences. They note that “research

investigators and participants, . . . , each have their own truth or construction of reality" (p. 403). To help eliminate this threat, I provide a detailed explanation of my analytical steps. I believe that my interpretations are valid and can be checked against the data while recognising that there is a possibility for divergent interpretations.

I shared my early findings with the research participants and invited them to comment on the veracity of the descriptions of their experiences. Additionally, three participants also took my courses in the following academic term. I shared many of my interpretations with them, and again I invited them to comment or criticise the texts.

**Principle of no harm.** I did not envisage any physical harm accruing to the participants in this project. However, according to Hammersley and Traianou (2012), the potential for harm in research comes in other forms. Research information dissemination may result in personal knowledge about participants, which in turn may be shameful or at least an invasion of privacy. I followed the steps in Saunders, Kitzinger, and Kitzinger (2015) for anonymising participant data in which information about "1) people's names, 2) places, . . . , and 6) other potentially identifying information" (p. 620) was carefully considered and altered to generic terms wherever necessary.

Hammersley and Traianou (2012) consider other forms of harm, including psychological, material and reputational damage to participants. I considered these facets and concluded that only a slight psychological risk was possible. Perhaps participants may feel uncomfortable during the interviews for whatever reason. My tactics were to remind participants that they do not need to answer any question and I attempted to be vigilant for signs of possible discomfort.

### 3.7 Trustworthiness

Trustworthiness in qualitative research is essentially a relationship between the reader and the researcher (Hammond and Wellington, 2013). It is "established through the marshalling of evidence" (p. 147). They continue, "in particular, a trustworthy account is one that is confirmable, credible, transferable and dependable" (p. 147),

echoing Denzin and Lincoln statement that such terms “replace the usual positivist criteria of internal and external validity, reliability, and objectivity” (Denzin and Lincoln, 2005, p. 24).

Although Hammond and Wellington (2013) argue that “credibility is enhanced if the researcher has had a prolonged engagement with participants” (p. 147), I hope for another form of credibility. When other educators in the Japanese university context read the participants’ voices and my analysis, I hope that they find the content credible and that it partially confirms their own experience. If so, such information may be transferable outside of my narrow context.

Finally, Hammond and Wellington’s (2013) dependability criteria may be assessed by a full account of my data presentation and analysis. In other words, the summary given by Scotland (2012) encapsulates my hope:

“Research is deemed good if it: provides rich evidence and offers credible and justifiable accounts (internal validity/credibility), can be made use of by someone in another situation (external validity/transferability), and the research process and findings can be replicated (reliability/dependability)” (Scotland, 2012, p. 12).

I have presented aspects of my findings to colleagues in Japan on six separate occasions.<sup>1</sup> Feedback received from peers at these events has enabled me to reflect on the processes and results in my data analysis. Cornish, Gillespie, and Zittou (2014) discuss collaboration in research. They underscore the importance of reflexivity because overtly stating “about our ideological, theoretical and methodological predispositions is advocated as a step towards transparency” (p. 83). Peer feedback provided me with a welcome window into some of my taken-for-granted notions in addition to enhancing my ability to “bracket one’s biases” (Hatch, 2002, p. 10). Indeed, the practice of reflexivity has been a constant companion throughout my journey.

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<sup>1</sup>At the: ETJ Tohoku Conferences December 2018 and December 2019; the JALT International Conference, November, 2019; and JALT chapter presentations in Sendai, December 2018, December 2019 and Aomori-Iwate, February 2019.

### 3.8 The course

Before the data collection period, I prepared extensive memos about my own epistemic beliefs. These memos eventually comprised a detailed set of notes about many of the questions I had had about the educational psychological development of epistemic cognition in students and instructional essays centring on the content of epistemic cognition. Furthermore, as the course itself also focused on academic argumentation, I prepared extensive notes regarding the relationships between aspects of epistemic cognition and argumentation. Taken together, these memos, notes and essays formed the basis for a coursebook for the term. The selection, tone and activity instructions that frame the readings derive from my own prior experiences with students' difficulties in comprehending epistemic thinking.

Functionally speaking, the essays became the informational content of the coursebook and the notes and memos informed the activity instructions of how that content was to be approached by participants. I settled on a format of twelve units to allow for an orientation class and the possibility that the class group would work through the textbook slower than I may anticipate. I now describe the coursebook to show how the type and purpose of the key activities in the coursebook aim to develop epistemic cognition and argumentation skills.

#### 3.8.1 The Coursebook

Each unit contained two readings which provided academic content. Hofer and Pintrich's (1997) framework consists of four elements. These elements are considered in units of their own. The intention behind supplying students with this information was to provide students with a framework for their own reflection on thinking. Each reading was preceded by discussion questions which were derived from the literature and my experience of issues in which previous students had faced difficulties. Reading passages were accompanied by post-reading comprehension questions to ensure participants were able to deal with the material. After comprehension was established, participants engaged in discussions on the main points from the text. All questions (discussion and comprehension) were answered in pairs or small groups.

The main reason for this was to allow students the opportunity to see how other students constructed their understanding. Each unit ended with an applied task that provided information to me about the success (or otherwise) of participants' grasp of the material.

A brief description of the coursebook contents is presented here to provide a sense of the topics and complexity experienced by the participants. The opening unit described some key differences between naïve and sophisticated writing and introduced the notions of *opinion-as-end* versus *opinion-as-start* writing. At this point in participants' undergraduate careers, the thesis writing task consisted primarily of deciding on an opinion and proving that the opinion was true. I called this *opinion-as-end* writing. In previous years, such writing had produced unsatisfactory theses due weak reasoning, poor use of supporting literature and little or no criticality in assessment of opinions. The role of opinions was reframed as *opinion-as-start* that inspires questioning and further research to instigate the thesis writing journey.

Succeeding lessons introduced the Toulmin Argument Pattern (TAP) and more descriptions of naïve, multiplist and sophisticated types of thinker. The primary intent of having participants see descriptions of types of thinker was as placeholders for concepts that could aid participants develop their control of essential elements of undergraduate research. For example, the dimension of *fluid knowledge* contains the sub-concepts of *authority*, *black & white thinking*, *multiple competing truths* and *continuity of knowledge*. As participants read about these concepts, they were encouraged to reflect and to see which description most closely matched their own thinking.

Then participants studied three types of evidence: personal experience, empirical and theoretical as a way of developing their abilities of understanding and using evidence in their academic writing. Previously, students had failed to realise a critical difference between empirical and theoretical evidence. Furthermore, many had drawn upon their own experience as a major source of evidence in their academic writing. I did not wish to prioritise any form of evidence, and the readings explained the uses and limitations of each.

Many students in earlier years had held the belief that each individual experiences their world differently and therefore there is no stable truth in the social world. (It is a different matter for physical truths). This view maps onto a postmodernist

perspective, which is rarely utilised in second-language acquisition research. I had thought that this mismatch between students' beliefs and their academic content was a possible explanation for their poor academic writing. In order to bridge this conceptual gap, the coursebook introduced critical realism, a philosophy of science that encompasses both nomothetic and ideographic approaches to research. The coursebook outlined critical realism at a conceptual and linguistic level appropriate to participants. With this conceptual framework, I had hoped to provide participants with a means of understanding how their opinions could be framed within the methods of second language acquisition; that is, participants could realise that their lived experience of language acquisition concepts may or may not be reflected in the general *p*-value statistically based knowledge claims in the literature.

Bloom's Taxonomy was introduced to establish a framework of thinking and to test participants' previous experience of thinking types. A major intent was to (gently) shock participants out of a 'memorisation is learning' belief and to open them up to higher forms of thinking. Previously, many students had reported that they intuitively knew that better ways of thinking existed but that they did not know them. This coursebook was the first time participants had access to a structured form of higher-order thinking.

The coursebook presented technical analytical skills using the syllogism, in both its formal and informal varieties. After this, each of Hofer and Pintrich's dimensions of epistemic cognition received individual attention. Further details and implications of naïve, multiplistic and sophisticated epistemic cognition were explored as were their relationship to the thesis writing process. For example, in the lesson on *connected knowledge*, participants read about Piagetian knowledge schemas and how personal knowledge is constructed. For *fluid knowledge*, a brief biography of Piaget was given and the personal aspect of Piaget's knowing and how that influenced his model of thinking was explored. This led to a discussion on how argument claims are discovered and created, to linking the personal with the academic. Once inside the realm of personal knowledge, the topic of source of knowledge became relevant. Participants studied and reflected on how their own state of knowing influences how they receive information and how their own knowing is the result of both self-external information and self-internal rational processes. During the

course, I emphasised that all knowledge must logically be subjective as it is the result of self-internal processes interacting with information. However, I recognised that many participants could not accept this viewpoint. They insisted that *subjective* referred to opinions and that *objective* to outside information. In the interviews, I was interested not only in what perspective they held but primarily in how they could articulate their perspective. I maintained this agnostic attitude in regard to all aspects in the course. The course concluded with readings on: various methods of knowledge justification; recognising personal bias; relationships between elements in the TAP; and the nature of theory and logic. The inherent limitations on knowledge claims was explored in various ways, including a reading on Bandura's (1999) social learning theory to demonstrate how our thinking influences our world views and a description of WEIRD, that is, Western, Educated, Industrial, Rich and Democratic, (Henrich, Heine, and Norenzayan, 2010) research to question the universality of psychological research. These topics were intended to help participants develop a wider sense of the concept of knowledge.

### 3.9 Summary

In this chapter, the research question was analysed with the view of establishing an appropriate research methodology for its investigation. Arising from this, a set of data collection instruments (that is, the interviews, discussion board and the pre- and post-intervention writing tasks) and how the data would be analysed were explained. Ethical considerations were discussed prior to a description of the pedagogic materials used in this project. These procedures led to a wealth of analysed data. The following chapter presents the main findings in this project.

## Chapter 4

# Findings

This chapter presents the main thematic findings from the template analysis of nine semi-structured interviews. These findings are then compared against information derived from the analysis of participants' academic essay assignments. The chapter begins with a summary of the participants' profiles which give a sense of the range of academic interests, ages and genders of the participants. Following this, the main findings are presented. The research question inquired about the effect of direct instruction in epistemic cognition and academic argumentation on participants' epistemic cognition over the course of a fifteen-week semester. Accordingly, the state of epistemic cognition is described at the beginning and end of the intervention necessitating two descriptions of the thematic structures. During the second description, areas of change are noted. Information from the online discussion board is given that extends the findings. The chapter ends with an account of how epistemic cognition was enacted by participants in their final essay assignment.

### 4.1 Participant profiles

Table 4.1 summarises the biographical profiles of the study participants all of whom were enrolled in a humanities faculty in a national university majoring in one aspect involving the English language. They were motivated and engaged with the course. All of the participants had taken my courses in their second and third years, and many of them had expressed a serious desire to learn to 'think deeply' (to use their expression). All of the participants' academic credits were either marginally or significantly above the expected level for their progress towards graduation, but this feature was not special as many students in the Faculty are diligent and enter

their final year with only their graduation thesis credits required for graduation. Attendance in this course (as with other courses) was perfect or near perfect for all participants. Participants' GPA was not collected because the GPA system had been introduced to the Faculty two years earlier and some technical issues had transpired to minimise the validity of any GPA score. For example, in the first year of the GPA system, many students had enrolled for many more courses than they had planned to attend in order to monitor them for the initial weeks. This led to their GPA being significantly reduced as the GPA was calculated on the basis of all enrolled classes not on completed ones. All participants' English level was at least TOEIC 650 on matriculation and was considered to be higher (although most had not retaken the exam) at the beginning of this project because of the two years of intense English courses. TOEIC 650 is considered to be an upper-level independent score between B1 and B2 on the Common European Framework of Reference (CEFR) scale (Tanenbaum and Wylie 2019; 2008). In terms of L2 proficiency, participants could be expected to comprehend the coursebook materials, which were written at that level while recognising that some language support may be necessary.

Six participants would be taking the National Teacher's Licence examination the following year, two the National Civil Service Entrance examination and one would not take any external exam.

All nine are Japanese: six are women, three are men. Eight were third-years and were twenty years of age at the onset of the study. The remaining participant was twenty-two, a fourth-year student who had completed a year study abroad programme in the United States. Pseudonyms followed Saunders, Kitzienger, and Kitzienger (2015) criteria for anonymisation. The names themselves were taken from the top baby name rankings in Japan for 1997 (Heisei Namae Jiten, 2019), the year of birth of most participants. The pseudonyms have no connection to the actual name except for their gender.

## 4.2 Genesis and description of themes

A theme is an invariant structure that is reliably stable across the participant group. Although neither Giorgi (2012; 2017) nor Langdrige (2007) use the term 'theme',

TABLE 4.1: Participant profiles

Name	Age	Year	Gender	Graduation thesis area
Aoi	23	4	F	Communication theory
Asuka	21	3	F	English literature
Ayano	21	3	F	Communication theory
Kenta	21	3	M	Communication theory
Misaki	21	3	F	English literature
Moe	21	3	F	English literature
Sakura	21	3	F	Second language acquisition
Shota	21	3	M	Second language acquisition
Taiki	21	3	M	English literature

King (2012) allows this to be used according to the research purpose. For the present purposes, ‘theme’ is useful to label the structures due to the inadvisability of attempting to generalise the existence of the structures beyond this particular participant group, as the term ‘invariant’ may imply a wider generalisable potential.

The analytic procedure for establishing potential themes was described in the previous chapter (see Section 3.4). I now describe how those procedures were conducted. In total, nine hundred and eighty-six separate meaning units were identified, and from these, one hundred and two separate codes had relevance to epistemic cognition. Many of these codes aligned with concepts similar to those in the *a priori* set but others did not. The data from the first round of interviews culminated in four major themes. These themes were incorporated into the *a priori* set before the data from the second round of interviews and later discussion board posts were analysed. This second analytical procedure utilised the same methods as the first. A second template was produced that contained four first-level themes, that is, themes that participants discussed directly, and two occluded second-level themes, that is, themes that were inferred by interpreting the data through an epistemic cognitive attitude (Langdridge, 2007).

A brief note about the scope of a ‘theme’ is necessary. In the first round of analysis, I considered a theme to consist of information that was found in all participants. However, in some cases, not all of the participants spoke or wrote directly about the theme, but I judged that the themes would not present conceptually divergent issues if spoken by them. For example, Taiki did not discuss trust in published sources

directly. However, he did say that he would only use published sources in his academic writing. The connection between Taiki's use of published sources and the theme of the *gatekeeper* (see 4.2) is strong enough to make the inference that the *gatekeeper* theme also applies to Taiki. If Taiki had said that he would use any source (for example, an unnamed Internet blog page), this inclusion in the *gatekeeper* theme would be doubtful. Otherwise, idiosyncratic issues were omitted from consideration. The second round of data analysis is discussed below.

Following the description of the theme, a critical realist account is provided graphically. A structure in critical realism is an ontic (Sayer, 2000). Accordingly, it seems to me that without the potential to interpret ontological data in a graphic form, a claim for its existence is doubtful. This is because existence is predicated on discrimination and emergence from other elements (Sayer, 2000) not on purely conceptual claims. Emergence implies a directionality whose graphical portrayal is relatively straightforward. This technique helped me constantly question and verify the nature of the ontological status of any proposed theme.

### 4.3 First interview thematic template

This research concerns the development of epistemic cognition over an intervention period. As such, qualitative assessments are required at the start and end of the intervention. The method of arriving at such assessments is the production of a thematic template at both stages, and differences between the templates may respond to the question. Following King (2012), the first interview was analysed according to an *a priori* template set. Then, each subsequent interview was considered during the creation of the final template.

#### 4.3.1 First interview themes

The process of developing the first interview final thematic set involves comparing and refining the original *a priori* set with new information from the first data set which is then refined as further data is analysed (Brooks et al., 2015; King, 2012).

The labelling method is as follows. The interview data were placed in one single file. [Sakura 1st Int: 717] refers to line 717 in the first interview file which is the

start of Sakura's extract data. All participant language is reproduced as is, with only a few clarifications added in square brackets. This retains the authenticity of the data and aids the reader in ascertaining the level of language and conceptual understanding of the participants. I use round brackets (parentheses) to denote the location of shorter participant excerpts in-line.

Let us now look at the interview data. Four broad themes were identified.

### **The Gatekeeper**

The gatekeeper refers to the existence of a set of beliefs regarding the nature of knowledge, its certainty and stability and subsequent methods of justification. All participants discussed some aspects of this theme.

Participants trusted their teachers who were the first source of information. When Moe was asked how she decided on which information to gather when writing a report, she responded that, "I don't choose. The teacher gives us handouts" (Moe 1st Int: 1068). Moe sensed the complexity of the readings she is given. They are produced by specialists and contain concepts whose genesis and unfolding are unknown to Moe. She continued:

"But other people are experts, specialists. So other people's saying is so deep and there is a thing I cannot find, so I start to believe it" [Moe 1st Int: 1070].

Although Moe may attempt to search for deeper connections and purposes for the given texts she has to read, these lay beyond her understanding. The result was that through the process of comprehension, she began to believe the information, irrespective of any occluded sense she had of questioning the text. She confessed later that she prefers learning single facts at a time because she had difficulty memorising many facts at a time; they "fall out of my mind" (Moe 1st Int: 1078).

Teacher trust acted as the first gatekeeper for Aoi. In a discussion about her use of Wikipedia as a source for academic information, she was aware that:

"not only experts write articles on Wikipedia and just a bunch of people just [put] the information there" [Aoi 1st Int: 1637].

As with Moe, Aoi noted that her purpose for reading was firmly bounded by her role as a student. She did not “really go deep into it” (Aoi 1st Int: 1661). When probed about her reasons, she responded that “because it’s not my expertise or anything” (Aoi 1st Int: 1666). In these excerpts, the demarcation of a pedagogic task as an act of comprehension by a student, as opposed to the act of integrating information into wider knowledge systems, was demonstrated. The reading act is directed by the teacher, who is an expert, and the students’ task is that of comprehension. Moe cannot go deep and Aoi would not do so, partly because of their status as students.

Ayano exhibits a similar attitude regarding her beliefs about teachers. She related a story about two writing classes she attended:

*Ayano:* “Last year, there was a term in which I have two essay classes in English. And one teacher said you should write topic sentence at the beginning of the paragraph. But the other teacher said topic sentence should come after some explanation about that. So, I was confused at that time.

*Interviewer:* What did you do?

*Ayano:* I changed the pattern . . . I changed my of doing it to suit the teacher. To get accepted and get points”  
[Ayano 1st Int: 162].

At this point, a valid interpretation of Ayano’s data may centre on how she may regulate her actions to maximise grades. However, I probed Ayano to ascertain her understanding of the two teachers’ information by asking “Was there a reason connected to these rules?” Ayano responded by saying that “each teacher believed that it’s good for academic writing”. Once more, I probed Ayano’s understanding about the teachers’ reasoning, to which, she said:

“Maybe I couldn’t choose which [reason each teacher gave] is better. Maybe because both reasons for why it’s good are. Maybe [I] could understand both reasons” [Ayano 1st Int: 179].

No further explanations were given after further probing. Ayano believed each teacher's reasons and did not appear to hold any contradiction about the front or back placing of a topic sentence. To her, reversing the placing according to the teacher's wishes made sense. This accords with the examples above where a specialist's information is accepted without a thorough or principled investigation of the content. These further point to the role of the gatekeeper as being a proxy for critical thought. Why this is so was articulated by Ayano who believed that official academic websites "cannot be allowed to tell lies" (Ayano 1st Int: 42), echoing Sakura's assertion that publishers "will lose their job" (Sakura 1st Int: 965) if they do so.

Sakura, however, revealed a more sophisticated set of abilities in how she selects sources. Several criteria must be passed for her to accept the source.

*Interviewer:* "Are there any other reasons that published sources may be better?"

*Sakura:* Usually they have writer's name and published year. But some sources on the Internet, we don't know who wrote it and when it was written.

*Interviewer:* Is the who writing it and the year important?

*Sakura:* I think so.

*Interviewer:* Why?

*Sakura:* The reason why I think the publisher is important is if they review their text, they will have more responsibility to their information because they will care if they make mistakes or if they tell fake information, they will lose their job, they might lost their job or they must, might lost their reputation" [Sakura 1st Int: 965].

In evaluating sources, some facets are important to Sakura: an author's name and the source being published in a particular year. The existence of the author's name promotes trustworthiness and serves as a proxy for evaluating the propositional content of the source. Also, her trust in the mechanisms of publication is highlighted by

her misconception of those mechanisms. Another element that engenders trust in a source document is the amount of detail that the document contains.

The gatekeeper is legally bound by the government to tell only the truth. Failing to do so results in some form of penalisation: for example, loss of status, reputation, or employment. The gatekeeper status is afforded to published texts, handouts given by professors, the professors themselves and, from Kenta, to any text that is written by “people who know some” (Kenta 1st Int: 1209). In summary, the gatekeeper serves to filter out facts from falsehoods. Once through the gate, participants do not attempt to critically analyse the information, and participants accept it at face value.

Taking these strands together, a composite picture emerges of the gatekeeper as a function of social responsibility which is located in the expert and maintained by a system of checks and balances in operation between publishers and academics. The belief that experts cannot “tell fake information” is reinforced by the belief in the system that allows particular access to publication. For this system to have transparency, names are important, and anonymous sources cannot be respected nor trusted. Penalties exist for breaking these rules for both the individual expert (“lost their job”) and for publishing houses (“lost their reputation”).

Figure 4.1 summarises these beliefs and the resultant use in graduation theses by participants.

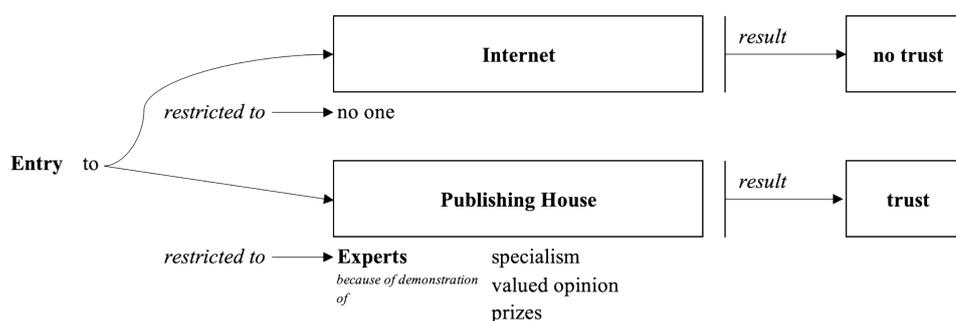


FIGURE 4.1: Entry access to publication

### Subject/Object Divide

In terms of Hofer and Pintrich’s (1997) knowledge source, I investigated how participants viewed forms of knowledge, in particular, how they understood and acted

upon beliefs about subjective and objective knowledge and knowing. Ayano and Shota separated objectivity from subjectivity by relating the former to universal acceptance and the latter to personal preference. To Ayano, “the difference is if my own feelings are included or not” (Ayano 1st Int: 187). She clarified by stating that “objective is something which can be accepted by anyone” (Ayano 1st Int: 191). The inclusion of others as a facet of objectivity is reinforced by Shota, who said that it is based on “many researchs by many people and wrote in words. It’s not my experience” (Shota 1st Int: 415). These statements accord with Moe’s belief that “subjective contains person’s experience and emotion, I think. But objective contains the data or fact, I think”, (Moe 1st Int: 1139). These beliefs are summarised by Aoi:

“Objective is more like, oh, like fact based, evidence based, like, other than just a subjective perspective. I mean, subjective is the people’s ideas or personal preference” [Aoi 1st Int: 1773].

From the participants’ data, the subjective/objective dichotomy seems complete albeit with individual differences in how those are understood. Yet, Aoi refused to accept the existence of objective knowledge. We saw earlier that she could define it, but that did not mean that she believed in its existence. She believed that a professor selecting an informational source is a subjective act in itself:

“Well, I think it’s more likely to be subjective information that I’ve got in his [another professor’s] class. Well, because he is the one who chose the information. ... So, at the level, it’s quite subjective cause I didn’t have right to see the second language acquisition in my own way, so. That’s why he introduced it. And we have no question, like. And we just accumulate the knowledge based off of what he wants to tell us. So, if you think about it, that’s quite subjective” [Aoi 1st Int: 1782].

To Aoi, objectivity exists only in the abstract. She saw the person involved in the knowledge creation process and recognised that the personal nature of knowledge would inevitably lead to the production of subjective knowledge.

Participants demonstrated a clear set of discriminatory beliefs about subjective and objective knowledge. Subjective knowledge is constructed on personal factors while objective knowledge is factual, evidence-based and commonly accepted by

many. This division reinforces the role of the gatekeeper as a reliable source of objective information for use in academic writing. However, a contradiction may be noted when the theme of subject/object divide is considered alongside the notion of the gatekeeper. If information that passes through the gate is fact and facts are reliable and trustworthy, why are some facts rejected? This question is explored in the next two themes.

### Support

In a previous section, the gatekeeper theme was described. In the case of Internet or library searching, we may ask about what forms of information are believed by participants when multiple sources that present conflicting views on a topic are involved. I examined what participants believed about forms of information, in particular, how they viewed the processes involved in providing support for their academic writing.

Regarding beliefs about the actions entailed in the search for support, Sakura indicated that she already has clear ideas about what kinds of information she needs before the search procedure:

*Interviewer:* "You go to the Internet, you find Person A says this,  
Person B says that. You agree with A not B. You reject B.  
Why?"

*Sakura:* Because B is not same idea as mine.

*Interviewer:* Why then do you go to the Internet?

*Sakura:* Because I need someone or something to support my idea"  
[Sakura 1st Int: 799].

The search for supporting information is predicated on the existence of a viewpoint held by the participant which limits the search to locate corroborating information. To Aoi, search results that "most likely support my claim" (Aoi 1st Int: 1944) were the ones to be used. Taiki concurred, stating that evidence is selected "to strengthen my opinion" (Taiki 1st Int: 655). Moe expands on her reason for using the Internet in preparation for writing academic reports. She gets "information to prove

my thinking” (Moe 1st Int: 1177). Other participants also mirrored this purpose, indicating that providing support in their academic writing primarily necessitated the action of searching for writings of other people that reproduced their own existing opinions.

Moe and Kenta discussed providing counter-evidence. Moe added she would “write [about] the evidence against my opinion” but that she would “write more strongly [about] evidence that can prove my opinion” (Moe 1st Int: 1191). Kenta indicated a sophisticated use of propositional and counter-evidence:

“Maybe we might select evidence which support our claims or stand-points, but I also use the contradictory claims or supports and theories and so on, use it because to comparing the contradictory opinion, by doing so, the differences become clear, so. By using difference, it could be easier to tell my ideas or claims to others” [Kenta 1st Int: 1564].

Participants offered more detailed reasoning behind the use of support. Taiki noted that “opinion without evidence is just [an] idea” (Taiki 1st Int: 661), a sentiment that is reduced even further by Aoi who claims that “without supporting your claim with evidence . . . was messed up writing” (Aoi 1st Int: 1882). The role of evidence as a supporting factor in academic writing was not contested in the participant group. Shota offered his belief that by providing evidence his writing “make me believable by others” (Shota 1st Int: 449).

These quotations indicate that to the participant group, support takes on a structural property. Aoi summarised the dominant view:

“Cause without supporting your claim, my claim, the claim, it can’t be a sophisticated essay, I think. Cause it’s just a neutral, If you don’t support your ideas in essay, what’s the point of writing essay? . . . It’s illogical if you don’t support your idea. Because the reason you claim something is that you want to support, that’s your beliefs” [Aoi 1st Int: 1833].

At the beginning of this section, I posed the question, if information that passes through the gate is fact and facts are reliable and trustworthy, why are some facts rejected? A tentative answer from the data set can now be seen that lies in the role

of opinions. Without critiquing information or information sources, the question of acceptable information is reduced to usable information. This effectively means that information that accords with participants' opinions is usable and other information is disregarded.

### **Depth of knowing, *rikai***

As I progressed through the interviews, I attempted to collect data about how participants viewed their academic reading. If they held sophisticated beliefs about knowledge, they will likely read texts in particular ways. The example from Aoi above that indicated her multiplistic views provides a clear case in point. Because she rejected the concept of objectivity, she may read academic texts as exercises in finding subjectivity in information. Alternatively, she may simply reject more valid truth claims that do not accord with her opinions.

Sakura stated that her goal in reading was "to understand all elements written in the book" (Sakura 1st Int: 722). The processes of understanding began to interest me, so I probed her about her purpose of reading. She replied that "if I can explain or summarise the content, I think I can understand the book" (Sakura 1st Int: 726). This use of 'understand' raises an issue. In Japanese, both 'comprehension' and 'understand' are most typically translated as 理解 *rikai*. Although other terms exist, all participants used *rikai* when I asked, both in the interviews and informally in the classroom. In describing the updated Bloomian Taxonomy of thinking skills, Anderson and his colleagues (2001) characterise 'comprehend' as follows:

"This represents the lowest level of understanding. It refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications" (p. 274).

To Anderson et al. (2001), 'understand' is an umbrella term for a more encompassing set of cognitive processes, including summarising, interpreting, classifying and comparing. A significant question arose: how do participants conceptualise the purpose of their reading? Sakura's response placed her target as an act of comprehension

not of understanding in the above Bloomian sense. What would other participants say? Answers to this question help inform my understanding of participants' epistemic cognition, especially in terms of how they see knowledge sources and their relationship to those sources.

The precise status of 'understand' as being either 'comprehend' or connected knowledge was not clear at one point in the interview with Aoi. I probed her to find out how she knows when she has learned a concept. She responded that she did the multiple-choice quizzes in the textbook, "and when I actually was able to answer those questions, I got to know that I understood about it" (Aoi 1st Int: 1614). Aoi, similarly to Sakura, sees comprehension as the target of learning. Moe is more succinct. To her, understanding is "I know [what] the author says" (Moe 1st Int: 1056). There was a potential misconception about how Moe used the information. Might reading be about the collection of information or as a source for critical analysis? I inquired about that, and Moe's examples were about remembering information from particular classes to be used in academic writing as information. Once more, the target of reading was comprehension, mislabelled as understanding. Finally, Shota was completely unequivocal about his target for reading, "remember and read, and remember and read" (Shota 1st Int: 301).

In summary, participants considered comprehension as a primary task in the learning process. Although they used the term 'understanding', their view of this was limited to being able to reproduce texts. The extent to which participants engaged with information that originated with the gatekeeper encompassed memorisation and the ability to recall and summarise. Once more, this set of cognitive actions is coherent with participants' beliefs in the mechanisms of the gatekeeper, how knowledge is created, who has the right to disseminate knowledge and how participants should contend with knowledge.

### **Summary of the four themes**

The four themes link coherently and logically and may be summarised in the following manner: If reading is the act of comprehension in a given text and that text mirrors existing opinions, it will be used to support any academic writing. Furthermore, the information in the text is viewed as being objective and trustworthy as it

TABLE 4.2: The first interview thematic template

Theme	Sub-theme	Definition
1. Gatekeeper	1.1 Teacher trust 1.2 Trust in Authority 1.3 Authority cannot lie	Various criteria and beliefs relating to what kind of information can be presented by Authority.
2. Subject/object divide	2.1 Subjectivity as personal opinion 2.2 Objectivity as external fact	Beliefs and stated reasoning for beliefs that define personal knowledge as subjective
3. Support	3.1 Search for support 3.2 Importance of support	Beliefs and stated reasoning for that has passed through the gatekeeper as objective
4. Depth of knowing ( <i>rikai</i> )	4.1 Meaning as definition 4.2 Understanding as comprehension	The extent to which participants engage with gatekeeper information in terms of <i>rikai</i> (understanding). This delimits participants' scope for reading.

has passed through the gates. Table 4.2 summarises the four themes and provides their definitions.

Now, we move onto the first assignment findings.

### 4.3.2 Assignment 1

The essays were not subject to a template analysis. Instead, as explained in Chapter 3, I utilise the framework given by Hofer and Pintrich (1997) to judge the existence and quality of epistemic issues in the essays. Table 4.3 presents the analysis of the First Assignment using the instrument I described in Chapter 3 (see 3.5.1). The results are numeric summaries of my qualitative judgements of conceptual aspects in participant writing.

As the gatekeeper is a secure psychological structure, the lack of critical evaluation of evidence is expected. In terms of epistemic cognition scoring, this may be demonstrated in several ways. Only one participant questioned the propositional truth value of claims in their first assignments. Aoi, who had self-identified as being a multiplist thinker, failed to make a propositional claim in her assignment, electing instead to show two sides of the argument. No other participant questioned any claim. On these bases, I deemed the Gatekeeper theme to be stable. This is reflected in the *fluid knowledge* scores in Table 4.3 where many participants did not receive

TABLE 4.3: First assignment analysis

	Total (max 8)	Epistemic cognition			
		Fluid	Connected	Source	Justification
Aoi	6	1	2	2	1
Asuka	2	0	1	0	1
Ayano	2	0	1	0	1
Kenta	4	1	1	1	1
Misaki	3	0	1	1	1
Moe	3	0	1	1	1
Sakura	6	1	2	2	1
Shota	2	0	1	0	1
Taiki	2	0	1	0	1

a score. A single point indicates that there is some indication that the knowledge presented is not fixed, but that is done without overt awareness and problematic assumptions are not addressed. For example, Shota writes:

Even if you don't master sound of language you learn completely, you will be able to use language well [Shota 1st Assignment: 1899]

without noting possible objections or conditions to his argument. His text is presented as matter-of-factly. This form of writing scores zero. Although Sakura writes similarly at the sentence level, she presents counter-arguments in subsequent sentences. Unlike Aoi, Sakura did not question the truth value of any of her propositions, leaving them instead juxtaposed in an unstated opposition.

If the subject/object divide is genuinely a structuring device in participants' enactment of epistemic cognition, we would expect to see facts presented as objectively and unquestionably true, and subjective opinions would be clearly labelled. This would be represented in the *source* scores. As discussed above, gatekeeper information was considered as truth by all. Participants utilised three main methods of indicating their subjective stance to their claim. Two participants framed their main claim as their opinion, but they did not explain why they think so directly. Other participants used 'I think' when presenting their stance. A third method was to utilise a thesis statement at the start of the essay and provide a rationale for that in the body of the essay. This is done by Aoi, Sakura and Kenta, who scored the highest. No participant overtly demonstrated any other recognition of their subjectivity either in the claim they proposed or in the selection of evidence to support their claim.

Neither Support nor Depth of knowing can be seen in the essay data. This is expected because participants would have to describe their writing preparation method inside the body of the essay.

### 4.3.3 Sample essay analysis

In this section, I present excerpts from a sample essay, one which typifies much of the writings of the other eight participants. Taiki writes in the first assignment in response to the rubric “How does age influence language learning?”

<sup>1</sup>Now, we are writing an essay in our second or third language, English.

<sup>2</sup>This is because we have been studying English since we were at junior high school. <sup>3</sup>In this essay, I will write about learning mother tongue and new language of each stages. <sup>4</sup>To start my essay, I classify the age group like the following. <sup>5</sup>Baby (0-5), child (6-15), youth (16-22), adult (23-60), elderly (60-)” ...

[Taiki then proceeds to describe each stage before concluding]:

<sup>6</sup>“Because of the development of brain and living atmosphere, I think that youth and adult age is better and appropriate time to learn new things that other age groups” [Taiki Assignment 1.]

Sentence one presents a statement of propositional intention that readers must accept as accurate testimony. Sentence two gives a reason for sentence one and the educational experience must be taken for granted. However, the logical connection between these sentences is not explicit. The key implicit presumptive inference is that ‘because we have studied for eight years we can write in a second language’. This inference is not necessarily definite, but because the writing is the evidence of the ability, the linkage between specific grounds (the writing) and the proposition (the ability to write in a second language) is relatively unproblematic. There is a sense of disconnect when reading such sentences; they are not complete *non sequiturs*, but additional work is required to comprehend what inferences are needed to establish secure meaning links. In other words, while it is not obvious that the ability to write in a second language is the necessary result of beginning in junior high school, a more satisfactory account would read; ‘I am writing an essay in my

own second language. I can do this because ...'. Taiki has generalised his own experience and treated it as a fact.

The illocutionary force of these two sentences is to provide a background prior to giving sentence three which is what seems to be a purely factual signposting of learning stages in the mother tongue. Following this signpost, the body of the essay describes various age groups' abilities to learn various skills. The illocutionary force in these paragraphs is largely informational with a sub-purpose of demonstrating knowledge as a student to a professor. Taiki does not provide any references nor any source of his information. Presumably, the source is Taiki's own reasoning ability based on his life experience. The text is, however, presented as being factual and lacks any critical analysis. The concluding sentence six has no argumentative connection to the preceding information; it is a personal opinion based, seemingly, on the presentation of the information. There is no attempt to break down "better" in the preceding paragraphs and then build up an argument for "better" in the conclusion. It is simply given.

In TAP terms, sentence six is the closest to a claim, and sentences five and the omitted stage descriptions comprise the evidence, which is entirely general in nature. There is no warrant, or any attempt to connect the general evidence to the claim. These features are universal in participants' writing.

In Taiki's text, we witness two forms of generalisation: the first is the generalisation of the personal experience onto the universal; and the second a generalisation of information which is derived from either personal rationalising or from external learning into statements of universal truth. A second type of propositional statement, the opinion, is given after a consideration of the universal information. There is a presentation of facts whose connection is neither explicit nor needs to be explicit and only tied together in a thematic relationship. How any conclusion is arrived at is a private matter based on a student's opinion based on their sense of the information. This accords with the tenor in this thesis that the knowledge structure is limited to facts and opinions. Facts are necessarily correct, and opinions relate to facts at the subjective, personal level. It is my thesis that Taiki's educational experience to date has not provided him (nor any other participant) the cognitive tools to

assess inferences, to properly understand interpretational processes nor to associate argumentative conclusions with the results of interpretations.

The conclusion at the end of the first interviews and assignments was that the four-theme characterisation of participants' epistemic cognition represented their state sufficiently well. The next step was to investigate the second round of interviews and assignments to ascertain what development, if any, had occurred during the pedagogic intervention.

#### 4.4 The second thematic template

This section outlines the second thematic template and indicates developments (for there were no regressions) in participants. The themes are presented top-down and described afterwards. The method of arriving at the themes was identical to that used for the first thematic template with the addition of the first template included in the revised *a priori* set.

I made an important assumption about participants' epistemic cognition in the second round of interviews; the characterisation of participants' epistemic cognition as described in the first template would remain valid unless participants provided information to the contrary.

There was a sense of fatigue in the participant group towards the end of the intervention period. I suspect that participants were excited to be involved in an intense research project, but that the reality of weekly classes and the nature of trying to develop one's thinking led to many participants feeling that they could offer less information in the second interview. Accordingly, the length of the interviews was shorter at roughly half an hour on average compared to the forty-five minute to one hour in the first. Subsequently, the number of excerpts that relate to epistemic cognition derived from the second interviews was about half of that of the first. Nevertheless, the quality of participants' comments was such that a new thematic template could be established, one that showed significant developments from the first. I will describe this now. A complete description of this second template is too much for this project. Instead, I focus on areas of development in terms of epistemic cognition.

As the amount of data was lower in the second round of interviews, I decided to regard a potential ‘theme’ when three or more participants discussed it. This introduces some degree of misalignment from the first round of analysis. However, I regard the variety of topics in the second interviews as an indicator of development in participants. The first set of interview data could be summarised with only a small degree of divergence between the participants, but the second set produced much greater flexibility in epistemic thinking. Accordingly, identifying and characterising group-level invariant structures became more complex, and I do not make any claims about the second set of interviews’ generalisability of the themes to the whole participant group. This attribute weakens the findings in this study, but, conversely, suggests that much more remains to be explored in the future with similar third- (and later fourth-) year Japanese undergraduates’ epistemic cognition.

A further difference between this theme description and the earlier one is that I will integrate information from the second assignments into the analysis. I do this because doing so helps better illuminate the themes and the difference between the participants.

## 4.5 Themes

Table 4.4 summarises the four themes and their definitions. These themes are further divided into nine sub-themes.

TABLE 4.4: The second interview thematic template

Theme	Sub-theme	Definition
1. Gatekeeper	1.1 Trust in Authority 1.2 Subjective authorities	Beliefs about the extent to which authority information is reliable.
2. Connecting knowing	2.1 Forms 2.2 Recognition 2.3 Depth	Awareness and beliefs about how occluded information connects and growing targets for deeper thinking.
3. Multiplist	3.1 Knowledge claims	Beliefs regarding the intersubjectivity of knowledge claims in the social sciences.
4. Structure	4.1 Demonstration 4.2 Support 4.4 Primacy of opinion	Beliefs about the structural nature of academic argumentation.

### 4.5.1 The gatekeeper

The outward expression of direct trust in authority figures largely disappeared in the second round of interviews. This marks a significant development from when participants would trust their teacher's judgement without question to realising that authorities' statements are to be considered as items to be memorised. Misaki puts it this way:

“Before I take this class, I thought that knowledge means what the teacher said, what textbook was written or Internet. But now I understand that knowledge doesn't mean the authorities said. I should check or analyse or evaluate the knowledge, ... if the knowledge was said by authority”  
[Misaki 2nd Int: 1432].

The requirement to analyse information is important to Misaki, but that is to see if the source is an authority. To Misaki, therefore, the source being an authority remains important. Yet, she had grown. She added immediately:

“I learned that my experience could be knowledge, but the experience doesn't be subjective” [Misaki 2nd Int: 1435].

Knowledge to Misaki has evolved from being purely external and authority-led to being partially self-generated. Moreover, self-knowledge may not be purely subjective. I am not sure what Misaki means by this exactly, but the coursebook introduced a reading on Kegan's (1982) notion of *subjective-objective* that sees human cognitive development as a process from accepting knowledge as a representation of external truth, through recognising that knowledge is understood through human agents, to seeing one's understanding as a method of knowledge creation. All knowledge is, Kegan argues, subjective in the sense that it must be known by a human agent. How the person knows shapes what is known. The gatekeeper is still present in Misaki although she is more aware of how her own experience shapes it.

Only a few participants directly reiterated their beliefs about the relationship between authority and trust in the gatekeeper. Asuka responded to my question about who is trustworthy in terms of information giving after she brought up the topic of hearsay. She answers:

*Asuka:* “For example, professor, famous author, big name of newspaper company.

*Interviewer:* Why is it important to be famous or big?

*Asuka:* I think famous or big person have a responsibility to society. So they may say or think right way, right think many times”  
[Asuka 2nd Int: 1616].

Asuka used the expression “right think[ing]” and relates that to social responsibility. To her, these concepts are associated. A famous person performs their social responsibility by demonstrating their ‘right thinking’. Asuka continued by stating the logical coherence in right thinking, “And ‘right’ means there’s no jump ... from the evidence to their claim” (Asuka 2nd Int: 1618). ‘Jump’ in this case, I interpret to mean something akin to no logical gap between the evidence and the claim. When pressed on this point, Asuka was unsure.

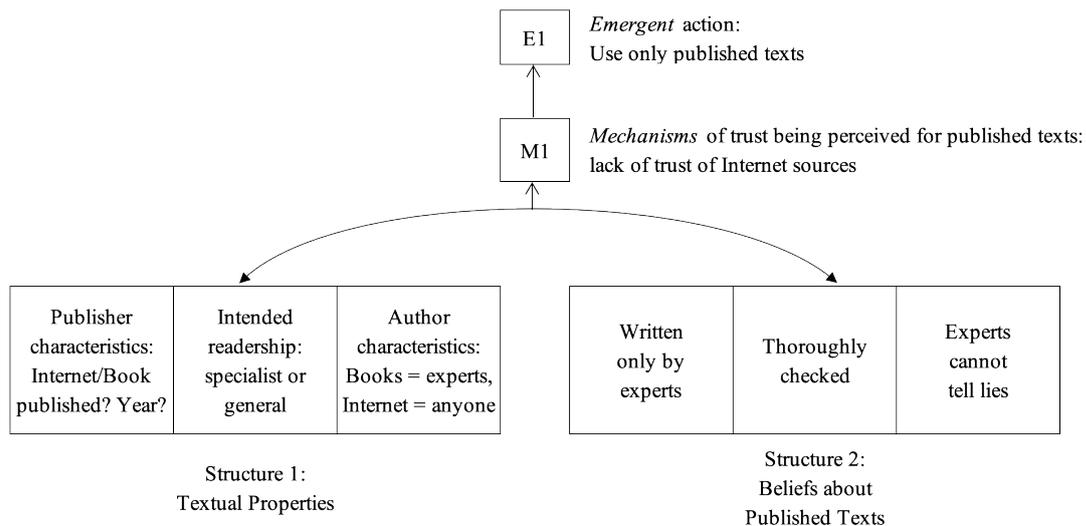
Although some aspects of beliefs about the gatekeeper were unexpressed, participants essay assignments did not indicate a critical assessment of stated facts. However, the shape of the gatekeeper theme did alter in some participants, and this is evidenced in the selection of information used to support participants’ essay claims. In other words, participants’ beliefs about how knowledge connects changed. Further work needs to be done on the notion of the gatekeeper in more advanced participants in this context to characterise a more accurate belief structure and to see how more educationally availing attitudes may be encouraged.

Earlier Figure 4.1 illustrated some aspects of the gatekeeper theme. Here in Figure 4.2, a fuller picture emerges regarding the gatekeeper.

A key difference between the first and second interviews was that the choice of which gate-kept information to use became more subjective. However, the base components of the structure remained unaltered.

#### **4.5.2 Connecting knowing**

The theme of connecting knowing is a multifaceted one that comprises three aspects, which I call forms, recognition and depth. This replaces the earlier subject/object

FIGURE 4.2: The *gatekeeper*

divide. No longer is the simple dichotomy of inside/outside maintained by participants. The aspect of recognition refers to how participants articulated their realisation of how knowledge connections exist in their lived experience. Depth also develops from the first interview theme of depth of knowing.

### Forms

The topic of objective and subjective knowledge arose often in the second interviews. Asuka iterated a common question, framed as a question which is noteworthy as it indicated her confusion instead of any firm beliefs, “Is it connected, objective thing and subjective things, affect each other?” (Asuka 2nd Int: 1594). Taiki offered his insight into how objective and subjective knowledge mutually co-constitute:

“Opinion is emerged from my own. For example, in this living world, I somehow come up in my mind and wondering something. But claim is the outer world from me and some information comes to me and that is caused some idea. So, I think that it is claim” [Taiki 2nd Int: 342].

He did not differentiate opinions as being grounded purely in emotions and considers any knowledge he held to be as potentially subjective or objective, specifying that both are things that “come up in my mind”.

Before the second round of interviews, Sakura visited my office to inquire about a lexical item in the assignment essay assignment. Sakura came to understand that

definitions of key terms may influence how she interprets information. The instability of the propositional intent in the instructions was unsettling to her and she visited my office for clarification. My response was that she was free to interpret the terms as she wished. This indicates an ability to differentiate between her subjective knowing and more objective forms, a development from earlier when her task was concentrated on a single comprehension of a text. Additionally, her selection of terms to qualify revealed more about her sense of knowledge form.

However, it must be noted that the development from the subject/object divide was not uniform. Misaki stated that “subjective means only my feeling. Objective means everybody says the same thing” (Misaki 2nd Int: 1458). This change can be explained by noting that not all participants developed in uniform ways throughout the pedagogic intervention.

### **Recognition of connected knowledge**

Sakura’s excerpt above also demonstrates her growing awareness of her cognitions of recognising knowledge connections. Should one writer present one interpretation, the text’s meaning will be different from that of another presentation. Sakura’s change from reading as comprehension to seeing multiple potentials is noteworthy. Aoi expanded on her sense of recognition. I had asked her about what she had gained most from the course. She replied:

“Connecting arguments is the most important idea for me. . . . What shocked me was that I thought it was just a simple idea of just connecting dots. So easy. But if it’s in a different section, you never realise it” [Aoi 2nd Int: 1723 ].

Aoi experienced shock at the recognition of the existence of more complex knowledge connections. To her, these accumulate into wider forms of meaning into multifaceted and intricate relationships “to become a big one” of connected meaning. Until this intervention, she had not realised that informational items that were not explicitly shown to have relationships were indeed related. Again, this concurs with Sakura’s realisation that reading is not a simple cognitive act of comprehension; or, more accurately, that comprehension itself comprises of subjective interpretations

that when done without awareness fail to aid the reader into deeper understandings of the textual matter. Realising this was shocking, at least to Aoi.

Connecting superficially unrelated information was a discussion point for Asuka who was embarrassed at first when relaying the story of how she noticed that her part-time job's "shop's Wednesday income is really high" from selling ice-cream because of a Wednesday "kid's English class in the seventh floor of" the same building (Asuka 2nd Int: 1553). Asuka noted the inference drawing process to connect two aspects of everyday life and commented that "knowledge two [kid's English class] comes [as a] result of knowledge one [increased sales]" (Asuka 2nd Int: 1556). She said that she had not found similar connections in her academic work.

Aside from the coursebook I had prepared, I also adopted the principle of questioning participants in class as to why they thought in the way they did. One of my intentions was to develop an awareness in participants about how they understood their knowledge connections. Ayano found this to be the most memorable thing about her course experience;

"You often asks us 'why' when we tell you what we think. Why and why and why like that. But I often stopped earlier point. I couldn't give a reply to the way of keep of asking 'why, why'. ...I understood but I couldn't answer, continue to answer why questions. It was difficult for me to think deeper, deeper, deeper" [Ayano 2nd Int: 68].

My repeated whys were a first for Ayano, in whose experience, other teachers had asked her for her reasons "but they don't go so deeper. One why" (Ayano 2nd Int: 80). Ayano expressed discomfort at not being able to "think deeper, deeper, deeper". Thinking deeply was a mark of connecting knowledge.

### **Depth**

Ayano's excerpt echoed a common sentiment among participants either in the interviews or in the classroom. They expressed their desire to learn how to think more deeply. Thinking deeply is a loaded term so it is interesting to see how participants articulated their experiences and beliefs regarding it. Ayano further explained that

deep thinking related to finding purposes for learning. She noted that “while talking with my friends or working on something, I just think, but I don’t think about why I think so” (Ayano 2nd Int: 86). The process of opening up her awareness of knowledge connections through repeating whys and focusing her attention onto her cognitions seemed to have begun her journey into deeper thinking, although the actual shape of that path was not clarified.

Misaki reported a similarly vague but intriguing recent experience in connection with her final essay assignment. After sharing opinions about the topic with other participants in the classroom, Misaki could use the assignment to “think more deeply about the topic”, and when pressed as to what this may mean more concretely she replied that “think deeply means use many time[s] ... think about the topic many times” (Misaki 2nd Int: 1512). Neither Ayano nor Misaki could expand on their self-reflection into how they thought about the topic, but their opportunities to talk with other classmates and be questioned by me, both of which were not common in their educational experience, had led them to see some kind of route towards deep thinking. The erstwhile occluded nature of connected knowledge, now opened up, helped indicate the relationship of depth in the overall structure of connecting knowledge for participants.

Sakura was the most definitive in her articulation of depth and knowledge connection. In a discussion about what thinking deeply means to her, she stated that:

“Usually, I don’t doubt, or I don’t think deeply about the term which is used in the setting or the setting which is written in the assignment. So, most students might do that, that expert user of English is written in the setting, it is the word that they can use, like, teachers and students share the same common definition to the word, so that they don’t need to argue the definition” [Sakura 2nd Int: 704].

The search for terms that have the potential for multiple meanings and therefore multiple misinterpretations in a communicative setting such as a writing assignment was the meaning of deep thinking to Sakura. No other participant did this, although most indicated some recognition that printed materials were no longer believed as is and that materials contained some degree of connection between subjective and

objective knowing. Moe summarised this sentiment well when she said that she now:

“doubts reference material books ... So, until now, when I read books and other stuff, I didn't think about being right or wrong, I just thought, 'oh, that's true'” [Moe 2nd Int: 872].

Taken together, the theme of connecting knowledge represents a significant development from the first round of interviews. This theme is illustrated graphically in Figure 4.3.

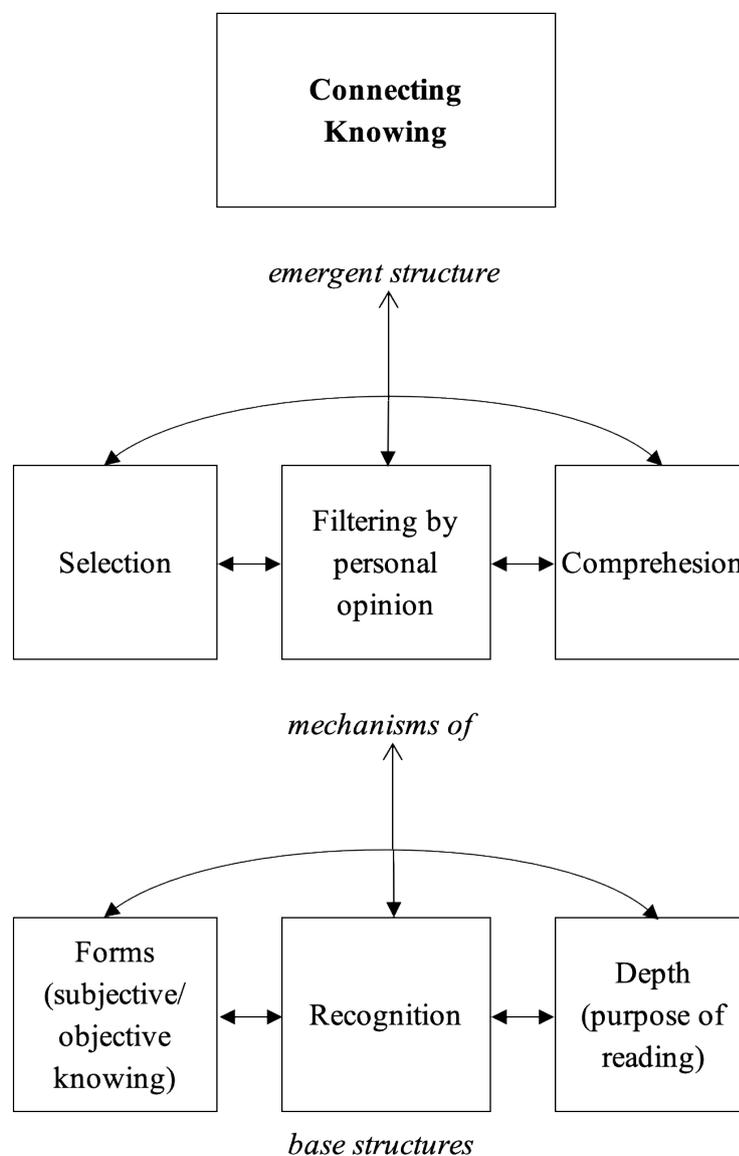


FIGURE 4.3: Connected knowing

The simplicity of the inside/outside dichotomy was rejected in favour of a more complex set of beliefs about how gatekeeper knowledge may be understood. This new sense was overtly recognised by participants, in some cases, as a feeling of shock. Finally, participants' understanding of depth in thinking altered towards more availing beliefs.

### 4.5.3 Multiplist

In the second round of interviews, participants noted the existence of an interlocutor and how this influenced their choices of how to structure their arguments. During the intervention, the topic of how subjective and objective knowing relate and how these influence notions of intersubjectivity between argument interlocutors may have led to an increased awareness of bias inside knowledge claims. The first-round sense of dualist (or black and white naïve) thinking gave way to a multiplist sense in the second. This theme I call multiplist, but not all participants expressed beliefs about it nor did they share the same detailed sense. Nevertheless, the theme of multiplicity (in most participants) represents a noteworthy development during the intervention. Multiplicity is a single aspect theme that refers to an awareness of the social purpose of knowledge claims.

This development was evident in Moe's move from her comments in the first interview that indicated the purpose of reading for her was to "think and remember the information" (Moe 1st Int: 1056) to that in the second, where she "found that I don't need to simply take in information, but I can understand that other people's opinions" and "the change from believing things, looking for truth to knowing everyone has their own opinions" (Moe 2nd Int: 886). This recognition of the other still presented Moe with concerns, though. She now understood that "most problems, it don't have a clearly truth, right answer is, so how people think of it is various", which steered her to saying that "I don't want to force [others] to understand my argument" (Moe 2nd Int: 848). Even in these extracts, the sense of there being a correct response remains. Taiki, similarly, demonstrates an ambivalent attitude towards a single truth within a multiplist mindset: "Because every person's opinion doesn't change a lot. But when I do so, I have to respect the minorities' opinion because minorities might have to grow up to the majority" (Taiki 2nd Int: 381).

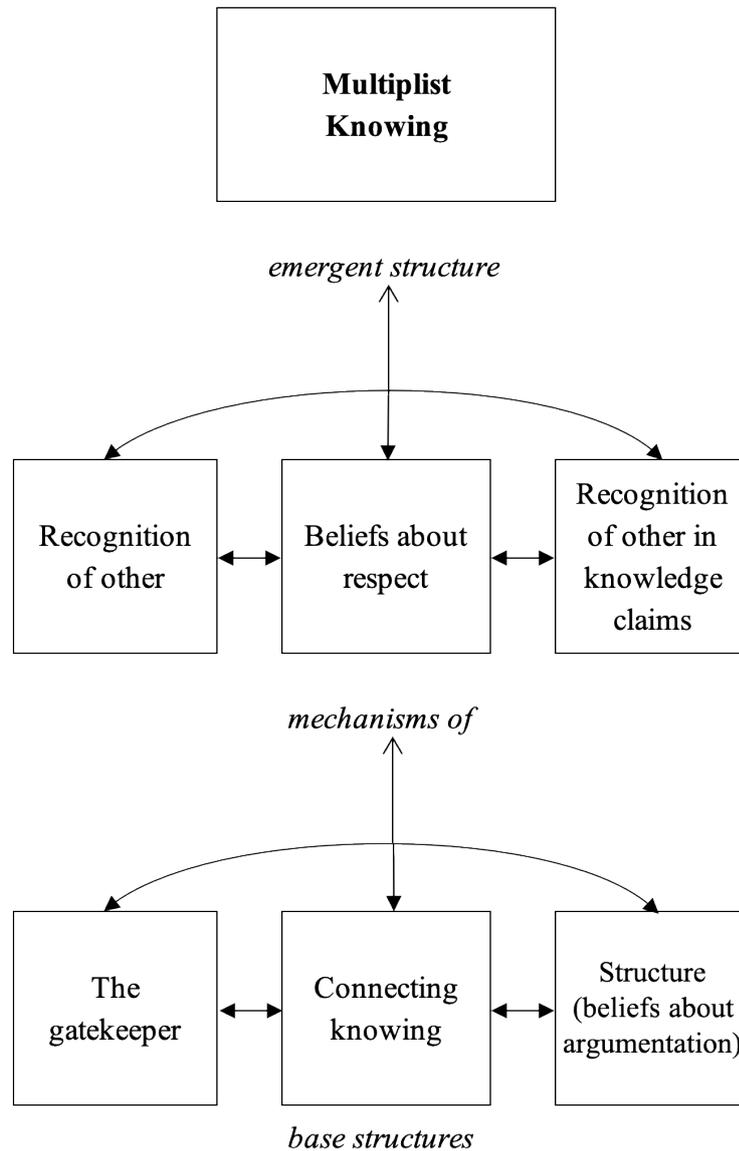


FIGURE 4.4: Multiplist knowing in the participant group

Figure 4.4 has three base structures. I have already discussed the gatekeeper and the third, structure is discussed next.

#### 4.5.4 Structure

The final theme, structure, refers to participants' beliefs about the epistemic nature of academic argumentation. This large theme contains three central elements, the ability to demonstrate structural knowledge, how to support a knowledge claim and the primacy of opinion (see 4.5). Although these are described separately, their meanings influence each other and are co-constituted by the preceding themes.

**Demonstration.** Asuka found the term argumentation “the hardest question for me” (Asuka 2nd Int: 1598). To her, “it’s really close to the area of connected knowledge” (Asuka 2nd Int:1600). Asuka’s multiplicity showed in her statement that argumentation is to “say your claim with the correct reasons . . . correct reason should be correct for claimer, only claimer is okay, I think” (Asuka 2nd Int: 1604).

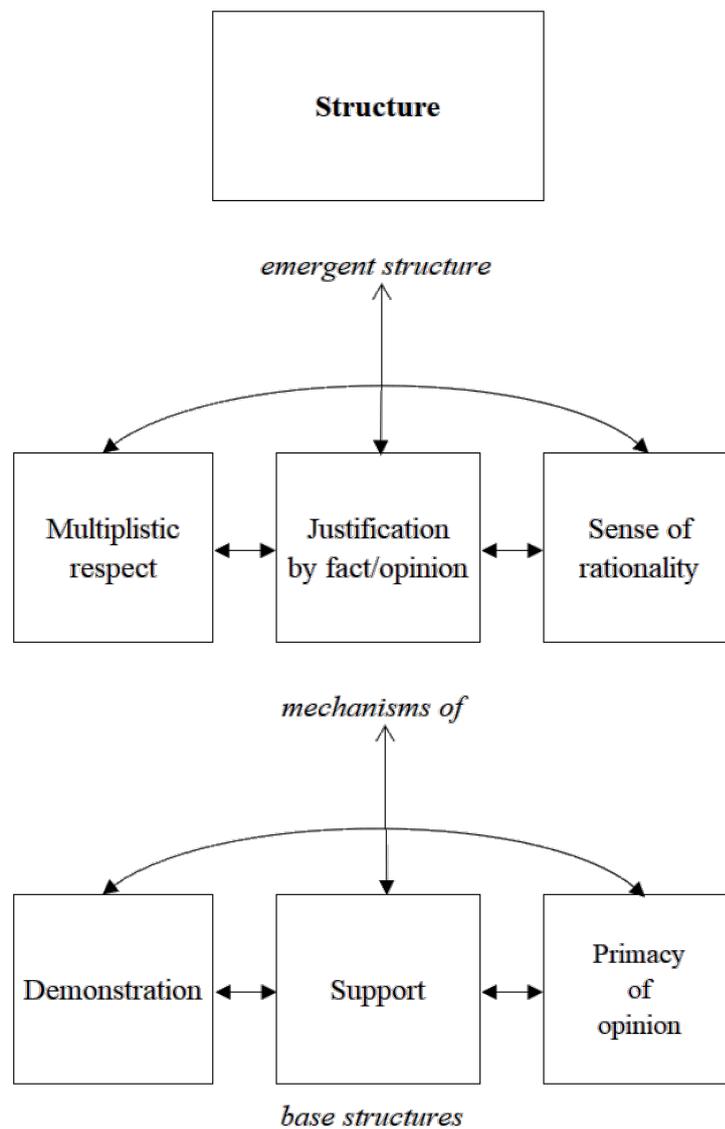


FIGURE 4.5: Structure of academic argumentation

The demonstration of one’s argumentation ability does not include the need to persuade. Aoi even declared a dislike for confrontation saying that “I personally do not like to be against other ideas” (Aoi 2nd Int: 1340) echoing Moe’s assertion that she does not wish to persuade others. Asuka’s connected knowledge was grounded in the relationship between the claim and the reasons for that claim. They do not

necessarily need to be persuasive to others, only to themselves. This notion reoccurred in Aoi, who could list the elements of the Toulmin Argumentation Pattern, and when pressed as to their meanings and functions she noted that “claim means belief based on evidence” (Aoi 2nd Int: 1224). The idea that claims are incomplete without evidentiary bases was clear in the data, and this represents a noteworthy maturation from the first interviews that accepted gatekeeper claims on more rudimentary criteria.

**Support.** I probed participants about the nature of this connection between claim and evidence. Participants who did attempt to discuss this (for many were silent during the interviews upon receiving this question *Can you explain this more?*) did not differentiate between specific and general evidence or between reasons and evidence. The second essay assignment required participants to create an argument about Yuki, a non-native speaker of English who teaches English, and whether or not Yuki would be a model teacher. Sakura realised that she needed to establish a definition before she could respond to the question:

“So, I want to find out what it mean, so I read a paper. The researcher said that the component of good English user is grammatical, discourse and some other competence, four competence, but I forgot. So, I used the theory to support, to say that this the expert user of English. Yuki should have this four competence” [Sakura 2nd Int: 699].

Sakura’s use of one model of native-speaker competence as a standard for assessing Yuki’s potential abilities as a teacher was interesting. As an interviewer and a teacher-researcher into second-language learning pedagogy, I wanted to know how she would use the model (Canale and Swain’s Communicative Competence, 1980) to demonstrate her understanding because Sakura expressed the most complex views and might serve as an uppermost exemplar of how this participant group may think.

The general inability to discuss more precise relationships between the elements involved in academic reasoning was well summarised by Ayano who said, “I just explain in my way. I mean, I’m not good at telling things logically or with enough rationality” (Ayano 2nd Int: 63). Ayano’s awareness of the need for rationality and their purpose represents significant progress from that before the intervention. However,

because the interviews were semi-structured and I allowed them to proceed in directions that I assessed would allow participants to express their epistemic cognition most directly, the exact questions were not used in both the first and second interview rounds. In this light, it remains unknown to me if Misaki's statement, for example, would have been similar in both sessions. When asked to explain academic arguing, she responded with, "I think that academic argumentation is *urazuke*, backing and proof ... backing is giving evidence necessary to strengthen your claim as being true" (Misaki 2nd Int: 1498). I believe that the majority of students would answer in a similar way irrespective of their experiences in this intervention.

**Primacy of Opinion.** The final aspect of the structure theme reflects what the literature in epistemic cognition has often characterised as a movement from dualist beliefs into multiplist thinking when people can recognise multiple standpoints on a topic but cannot evaluate between competing standpoints (Greene, Cartiff, and Duke, 2018; Hofer and Pintrich, 2002; Knight and Mercer, 2016; Kuhn, 2010). In this light, participants demonstrated an advance in their epistemic thinking from the earlier naïve belief structure.

Moe described academic arguing by listing its constituents: "it is statement, concluding, evidence, enough evidence and example" (Moe 2nd Int: 833). When probed further, she displayed her confusion about the purpose of argumentation, wondering if "argumentation not about opinions but about giving opinions from yourself?" (Moe 2nd Int: 839).

Kenta revealed a similar confusion over conclusion and opinion being "exactly the same. There's not difference of meaning, ... Sometimes my conclusion changes from the opinion. The point is the most difficult to explain" (Kenta 2nd Int: 936). Separating the concept of a primary claim in an academic essay and that of one's opinion was, perhaps, one of the most conceptually challenging aspects of the intervention. Participants seem to be aware that there is a difference between an academic claim and a personal opinion at the end of the intervention, but their confusion continues, as Ayano remarks, "I know it's opinion or knowledge will be different things. But I cannot distinguish them so well yet" (Ayano 2nd Int: 58).

## 4.6 Summary of first-level themes

In this final descriptive section, I offer a short composite statement that aims to capture the primary characteristics of the participants' epistemic cognition as it influences their academic writing. This statement is written in the first person, but it is one that is composed based on the above structures to characterise a typical participant. Such a perfect example of such a participant does not exist, though this characterisation is, I believe, accurate:

An essay 'should' look like this. We should demonstrate our knowledge about the topic to the reader. I know that simply providing a viewpoint is insufficient. I know this for several reasons. The first is that the viewpoint is the product of a number of connected statements; at the level of an academic essay, it is not a simple statement of belief or experience. Therefore, I need to explain the contents of my thinking as clearly as possible. Additionally, I provide evidence from the related literature that supports my viewpoint. Ultimately, however, my viewpoint is a personal choice based on my experiences and opinions. All research is like this, and this fact validates my use of supporting literature to prove my own opinion.

Two important questions can be brought to this paragraph:

1. What is the epistemic cognitive view of this position?; and
2. What is missing?

**For question 1.** In epistemic cognitive terms, the four dimensions described by Hofer and Pintrich (1997) may be used to structure a statement about participants' beliefs about the theme. Aspects of knowledge fluidity are largely ignored. Participants aim to produce a single viewpoint that is accurate. This viewpoint contains few nuances concerning its truth value. Knowledge items are connected in meaningful ways. There is a sense of logic in how items are selected and juxtaposed. Knowledge claims are either facts or opinions. For this reason, the source of claims is irrelevant. A multiplist writer can frame personal opinions using hedges such as 'I

think' or something 'may be' without having to explore the matter any further. Facts, on the other hand, are seen as being true and, as such, need no further exploration. Justification need only be the presentation of a gate-kept fact.

**For question 2.** The multiplist connects various informational strands but does not see the need to explicate their relationship in detail or does not comprehend the relationship. More information leads to more credibility. Similarly, the source of knowledge claims is either irrelevant or is unknown. Opinions does not require sources. They are private and because respect for individuals is essential, they must be believed. Whether or not they are utilised, again, is a personal choice by the individual multiplist writer. Facts have a different genesis, but the principle of opinions is such that their use is also a matter for the individual. Finally, the epistemic cognitive facet of justification becomes moot. The existence of the opinion or the gate-kept publication of the fact together with their use by the multiplist writer is sufficient.

## 4.7 Writing assessment

In this section, I present participants' epistemic cognition as evidenced in their second essay assignment.

TABLE 4.5: First and second assignment analysis

	<b>Total</b>		<b>Epistemic cognition</b>							
	<i>(max 8)</i>		Fluid		Connected		Source		Justification	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Aoi	6	7	1	2	2	2	2	2	1	1
Asuka	2	3	0	1	1	1	0	0	1	1
Ayano	2	3	0	1	1	1	0	0	1	1
Kenta	4	2	1	0	1	1	1	0	1	1
Misaki	3	4	0	0	1	1	1	2	1	1
Moe	3	4	0	0	1	1	1	2	1	1
Sakura	6	6	1	1	2	2	2	2	1	1
Shota	2	2	0	0	1	1	0	0	1	1
Taiki	2	2	0	0	1	1	0	0	1	1

Holistic scores from the essay assignments may have the potential to support or rebut the qualitative analytical data, and as such, can be a valuable method of establishing the reliability of this project. Five participants increased their epistemic cognition score, while three maintained theirs, as shown in Table 4.5. One participant's score reduced. This corroborates the qualitative data that supports the overall claim that there was a general positive movement from naïve to multiplistic epistemic cognitive views in these participants.

TABLE 4.6: First and second essay comparisons

Essay	Fluid	Connected	Source	Justification
First	3	11	7	9
Second	5	11	8	9

Note: The maximum score in each category is 18

Table 4.6 summarises each internal component score. Participants' connected knowledge scores did not alter and were moderately high from the beginning (at eleven out of eighteen). This is explained by the degree of control participants have over their subject matter. It validates the essay theme choices in relation to participants' abilities and prior knowledge. However, it must be noted that no measurement of subject knowledge was taken in this project. Future research would benefit from including measures to account for differences in topic knowledge and interest.

Participants' ability to draw upon relevant connected informational strands in their essay writing remained at an acceptable level, but their fluid knowledge abilities only saw a slight rise (from three to five). This echoes participants' marginally improved skills in questioning the stability of facts. Although more participants indicated the source of their information, one did so in the first assignment but not in the second. The justification scores were consistent over the intervention.

These scores, generally, are weak in terms of sophisticated epistemic cognition. Of particular interest are the fluid and source scores. A vital question to ask is concerned with possible reasons why the scores are low. The final section in this chapter (see 4.9) discusses two metalevel epistemic beliefs that characterise the participant group with the same caveats mentioned above about the characterisation not applying to all participants. I call these metalevel beliefs the referencing double-bind and the fact/opinion knowledge structure.

## 4.8 Evaluation of epistemic cognition

The final shape of the participants' epistemic cognition is illustrated in Figure 4.6. Two elements have not yet been explored in this chapter; the referencing double bind and the base nature of facts and opinions. These will be discussed in the following section. I present this level of findings at this point to summarise the information that has direct evidential support.

A summary of the evaluation of participants' epistemic cognition is presented in Table 4.7. Overall, the main finding is that sophisticated epistemic considerations are either low or non-existent. In the literature, epistemic virtues fall on a continuum from sophisticated active questioning of truth claims to the unreflective assumptions of truth via epistemic proxies at the naïve level (Chinn, Buckland, and Samarapungavan, 2011). Predominantly, truth is a function of source or experience of being presented by authorities in this participant group, an assessment that would typically lead to them being evaluated at the naïve end of the scale (Greene, Azevedo, and Torney-Purta, 2008). However, these participants self-evaluate as multiplist thinkers who actively aim to 'understand' and 'respect' other opinions. This creates a paradox: the participants may simply be naïve thinkers who reject the notion that their thinking can be classified as non-epistemic and are, as a result, deluding themselves about their real abilities, or there is some other explanation for the existence of a non-epistemic knowledge structure in a participant group of advanced national university-level students. The data strongly suggest that participants grasp the notion of multiplism well, leading to the alternative and stronger conclusion that their knowledge structure itself does not contain enough constituents to allow for epistemic thinking.

Although no final participant-wide characterisation of epistemic cognition levels was possible because, broadly two groups emerged, the degree to which a movement towards multiplism is evident can be seen in a representative second assignment essay. Moe's second assignment exhibits features common to most. It utilises sources and publicly-available data and attempts to rationalise the use of such data

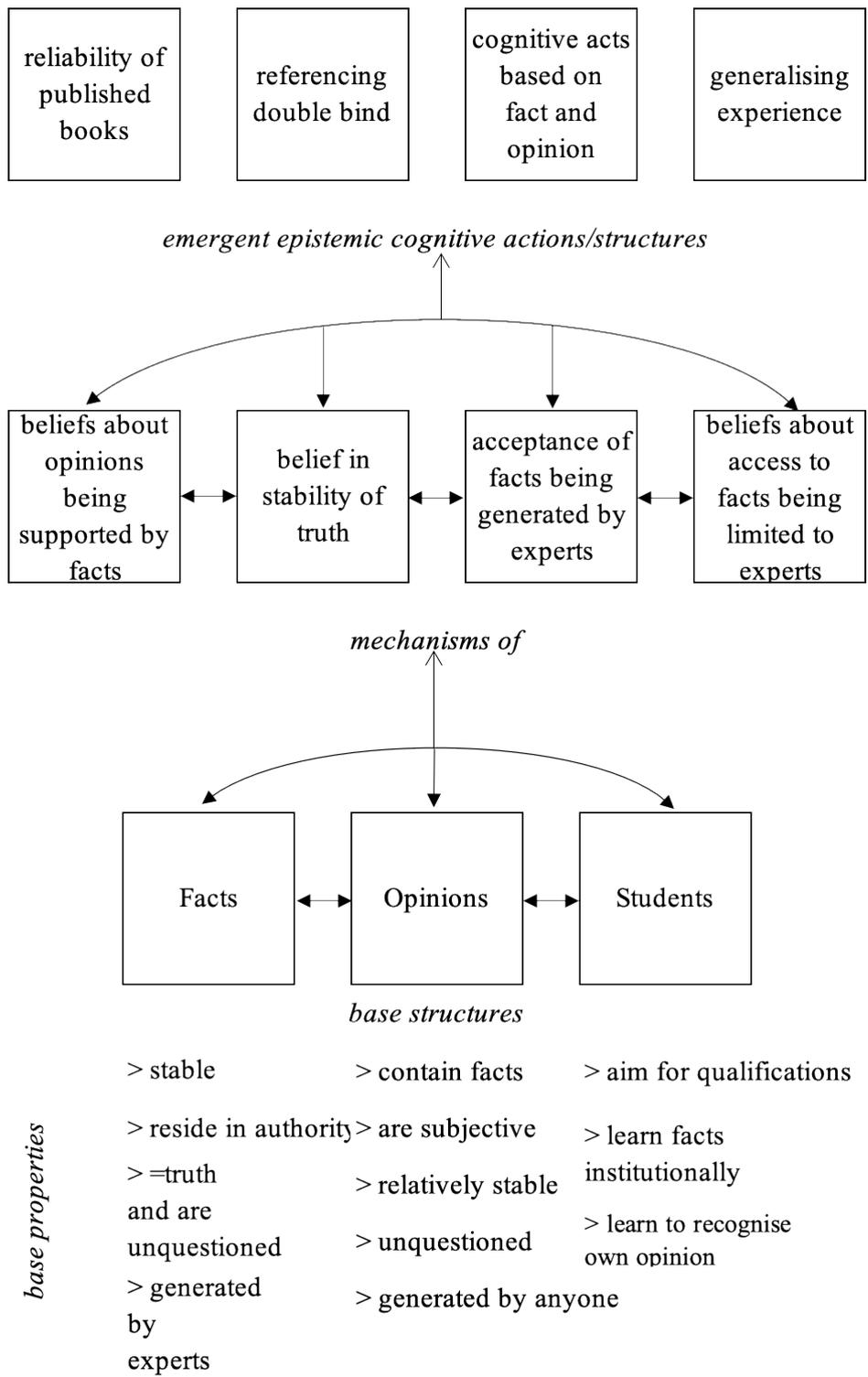


FIGURE 4.6: Final epistemic cognition structure

in the support of a main claim (although Moe is unique in maintaining the term *opinion*, where other participants switched to using *claim*). The first part is reproduced here.

TABLE 4.7: Summary evaluation of epistemic levels

Theme	Evaluation	Summary
TAP	Non-epistemic, superficial attention to structural elements	Functional argumentation is presented but the relationships between elements is not well understood.
Justification & sourcing	Non-epistemic, epistemic proxy used	The gatekeeper decides what constitutes valid knowledge. Students' task is to select that knowledge which agrees with their opinion. No attention given to any epistemic details of truth claim.
Connected & fluid knowledge	Non-epistemic, knowledge is outside-to-in	Informational content is supplied by the professor; students tacitly accept the veracity and stability of that information.

“<sup>1</sup>I think that expert non-native users can be the target model, so Yuki could be a model teacher of English. <sup>2</sup>But it depends on the school type such as junior high school, University and so on. <sup>3</sup>In my research, I found an interesting data. <sup>4</sup>This survey is conducted for 1,000 men and women ages 16 to 69 who have children of minors from the monitors registered at ‘Rakuten Insight’ (about 2.25 million people). <sup>5</sup>In this survey, nearly 90% subjects were not satisfied with the English education in Japan. <sup>6</sup>In addition, “complaints that we cannot use English even if studying” is complained such as there are few opportunities to speak English, there is a gap between examination English and practical English. <sup>7</sup>Certainly, I agree with this opinion” [Moe: Final Assignment].

The assignment rubric centred on the question of who a better role model for Japanese learners of English would be: a highly proficient Japanese user of English or a native speaker of English. The question was left open to allow for an assessment of how participants interpreted the question. Note that the research is a social science one so Moe categorises the result as an opinion. Immediately in sentence two after giving her thesis statement, Moe contextualises the question. Results may be divergent when different populations are considered. Then Moe uses sentences four to six to present the results of a survey. This data is sufficiently related to the thesis statement to be used by Moe, and the use represents a reasonably high degree of

sophistication in connected knowledge. Moe does not, however, dissect the survey data into different populations, and by considering the whole data as being relevant, she misses the necessity to separate the data into school type, an action that would support her thesis statement more availingly.

Moe's agreement "with this opinion", that is, the findings in the survey data deserves some comment. Sentence six contains a quotation that may indeed be considered an opinion. If so, it is entirely reasonable that Moe, too, may concur or reject this. However, the interpretation in this thesis is that the participants do not consider a survey result as findings but as an opinion. Moe's summation of the findings as opinion is concordant with the main finding in this thesis. That Moe selected the term *opinion* is indicative of the general views of how social science findings are received. If Moe had not agreed with this finding, it is unlikely that she would have considered it in her essay. She reports that when she considered how to approach the essay theme, initially she settled on an idea and then reviewed her sources until she could "get the information to prove my thinking". The technique of searching for supporting evidence, undifferentiated in terms of specific empirical or general theoretical material, is common amongst participants. Sakura, for example, says that she searches for information "because I need someone or something to support my idea".

That the idea, or opinion, is the driving force for a position even in the second assignment was frustrating to me as the classroom teacher. I had specifically set-up the notions of *opinion-as-start* and *opinion-as-end* at the outset of the course and had reiterated these notions throughout the course.

## 4.9 Second-level themes

Following a critical realist approach, two second-level themes were identified. These are emergent properties of the first-level themes. As such, participants did not discuss these themes directly. Instead, they arise as inferential interpretations based on the evidence of the first-level themes and how those were enacted in the essay assignments. Two themes are described. The first, the double bind refers to a contradiction that appears when the nature of the gatekeeper is considered alongside a

multiplicity mindset. The second, facts/opinions, acts as a knowledge structuring construct that permeates much of the participants' beliefs.

#### 4.9.1 The referencing double bind

Only two participants provide external academic sources for the claims in their first or second essay assignments. (Moe's excerpt above uses publicly available non-academic statistical data.) Aoi and Sakura are exceptional in this dataset because of their direct reference to external academic literature in both of their assignments. A third, Misaki, directly referred to a classroom teacher in her first assignment and repeated her class notes without any critical reflection in both her assignments. Without providing a reference or an in-line citation, Moe made a reference in her second assignment to an Internet source in which a survey about attitudes to English language learning was described. At all times, however, the content of either external sources or general facts by any participant is treated as being factual.

My classroom pedagogy relating to referencing followed a typical pattern. On numerous occasions throughout the course, students were reminded of what I called "the three referencing rules":

1. reference everything, except,
2. general knowledge that you can find in dictionaries and
3. your own understandings, interpretations and sometimes, opinions.

Given that this instruction was given after the first assignment was completed, it is understandable that participants did not enact these rules then. However, when they did not do so for the second assignment, some questions were raised. Two possible explanations for understanding participants' difficulties are:

1. the distinction between 'general knowledge' and 'research-derived knowledge' is not clear; and
2. a categorisation is made (by participants) between 'established fact' and 'an opinion', leading to a double bind.

I ruled out the first route on the basis that during the classes I repeatedly emphasised the need to reference sources for research-derived knowledge. Participants

were expected to be aware of this requirement. That they maintained a non-sourcing stance must be explained by other reasons. I suggest the double bind. The double bind is that 'facts' are general knowledge (to someone, even if not the participant) and as such do not require referencing and that 'opinions' are not established therefore they should not be referenced. This distinction rests on the absolute nature of the gatekeeper. By the end of the intervention, some participants had questioned this nature, but their understanding of how that could be reflected in their academic writing was not yet in place. Figure 4.7 illustrates the process by which the double bind is enacted.

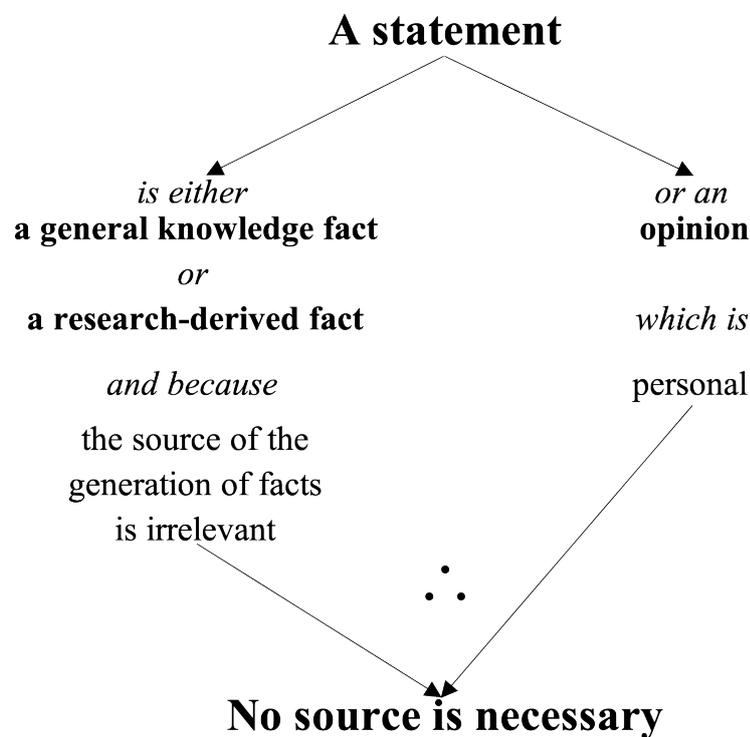


FIGURE 4.7: Double bind in source referencing

The vast majority of second assignment texts do not include sources or any form of referencing. Notions such as mistaken fact, supposition, presupposition, inference and so on are absent. When these participants produce statements that imply such notions, they do so without a reflexive awareness of their differentiated status from propositional meaning. The double bind appears to such participants leading them not to note their sources. Most participants are not referencing because of confusion that fails to grasp the fluid nature of research-derived knowledge.

A generalisation of personal experience or informational content into universal statements that are presented as truth is a common feature of many participant essays. Describing Japanese public-school English education, Moe wrote, “there is no opportunity to use or listen [to English] except [in] the class” [Moe Assignment 1]. This may have been true for Moe and be generally true for a large swathe of the population, but it is uncritically presented as fact. Aoi had the experience of studying in an American university, and her first assignment does include references and differing researchers’ points of view on the question of age and second language acquisition. Yet, even a researcher’s claim, which exists in opposition to another, is evidence for universal truth. In this logic, whether a statement is derived from a specific instance or a collection of generalist theories, it is still a fact; hence, its genesis is of little import.

The “three referencing rules” rubric that I taught may have been an error of judgement on my part. Its illocutionary force was to have students reference most of their writing to clarify to readers what is and what is not original in students’ thinking. Its perlocutionary force, however, was to reinforce notions of fact and opinion which did not require ‘facts’ to be referenced. This is the double bind. It is to facts and opinions that I shall turn to now.

#### 4.9.2 Facts/Opinions

Earlier, the notion of *rikai* was introduced to replace what I felt was an inappropriate translation of ‘understand’. To recap, in the first round of interviews, participants’ target of reading academic texts was to *rikai*, that is, comprehend a text as facts to the point where the information can be repeated either in the exact phrasing or in the participant’s phrasing. *Rikai* mirrors memorisation significantly, but the added components of using the information in one’s academic writing and being able to phrase it in one’s own words places *rikai* more as a summary than as memorisation. It does not fully reach the Bloomian ‘understand’ because components such as comparing, contrasting, inferring and explaining are missing. The content of what was being *rikai*-ed was firmly grounded in gate-kept sources.

By the second round of interviews, participants generally had adopted a more circumspect attitude towards the notion of facts. The gatekeeper was now seen as

partially subjective to the newly developed multiplist thinkers. This subjectivity did not include a critical assessment of the truth value or knowledge genesis of any claim. Rather, the subjectivity was limited to the deliberate selection of gate-kept information that supported participants' essay claims. In other words, the epistemic cognitive development was from a naïve acceptance of gatekeeper information to a more nuanced selection of information.

Of significant interest to me was how participants would deal with opposing perspectives on the same topic. The topic of the Critical Period Hypothesis (CPH) was introduced and elaborated upon many times during the course and presented in the coursebook on numerous occasions because it was an excellent topic to introduce to expose participants to several layers of argumentation. Briefly, the CPH is the claim that age factors influence language learning. Johnson and Newport (1989) argues that second-language learners must be below the age of puberty if a second language is to be acquired to the native speaker level. Johnson and Newport's claim contains many assumptions that if investigated lead to qualifications and limitations. Some opposing perspectives include the questions of learners' motivation and language learning methods, length of stay in or age of entry into the foreign country and about how information derived from studies in *second* language acquisition informs *foreign* language acquisition?

What did participants believe about opposing stances? How would they assess the competing perspectives? Taiki indicated that he would follow the majority, "I just look at the number" (Taiki 2nd Int: 482) of people who believe one way as opposed to another, adding that he did not know much about the topic. This was surprising to me as he had read much about the topic in class. Even so, if ninety-nine per cent of people believed in the CPH, he would too. Moe recognised that she would "feel a contradiction" (Moe 2nd Int: 858) because "each of us have our own way of interpreting" (Moe 2nd Int: 858). Another stance came from Ayano who said that she would "try to make our own side more stronger" (Ayano 2nd Int: 109). The notion of fact, then, had left the stability of the gatekeeper and entered into an open subjectivity, or it was simply accepted when there was nothing subjective at stake, as in the case of Taiki.

Opinions were understood in various manners. Shota remarked that thinking about two sides of an issue is, “like a battle with opinion. There are two sides of opinion, and they argue each other. But they need to understand each other and they should make better opinions” (Shota 2nd Int: 178). Shota saw opinions not only at the level of interpersonal confrontations. Governmental ‘suggestions’ about how to teach English are also opinions. Unlike those at the personal level, though, “teachers carry out this way of teaching” (Shota 2nd Int: 204). Shota’s graduation thesis would promote an argument that shows a ‘better way’ of teaching English. When pressed about evidence that could support this better way, Shota became silent, offering only “it’s difficult” (Shota 2nd Int: 223). These two excerpts are interesting in that Shota presented two separate types of opposing opinions but, when probed, could not offer any way to investigate or resolve them. Opinions are related to feeling not cognition “so it’s too difficult to answer” (Shota 2nd Int: 174).

As mentioned earlier, Taiki has “to obey the opinion of the majority” (Taiki 2nd Int: 378). Once more, when opinions were raised, no discussion about the genesis or method of evaluation of opinions followed. He did recognise the necessity of evidence to make an opinion acceptable. That evidence may simply be the consensus of the majority.

I summarise these positions as a fact/opinion knowledge structure. That is, when a participant has their perspective on a topic, supporting gatekeeper information becomes ‘fact’. Opinions came in two forms. The first was gatekeeper information that validates an opposing perspective. The second reinforced the theme of gatekeeper. Only information that has passed through the gates was acceptable as knowledge. Accordingly, participants did not see themselves as knowledge producers at that level. When they did produce ideas, these were opinions. Kenta summarised this belief when he stated that “I create my own opinion through [applying] the TAP [Toulmin Argument Pattern]” (Kenta 2nd Int: 924). The fact/opinion knowledge structure was a surprising finding in this project, one that deserves a fuller investigation especially to its genesis, meaning and pedagogic implications for pedagogy when preparing undergraduates for a major ill-structured task such as composing a graduation thesis. I will explore some of these points in the following chapter.

## Chapter 5

# Discussion

### 5.1 Responding to the research question

Let us begin this chapter by re-orienting the reader to the research question (see Chapter 2.9). This project's main aim was to investigate how directed instruction influences participants' epistemic cognition. I outlined a practitioner problem (see 1.2 and reviewed the literature in Chapter 2 to see what is known about Japanese undergraduates. The decision to introduce third-year undergraduates to epistemic ideas directly through various pedagogic techniques (such as in-class and online discussions and readings) was taken to improve students' graduation theses. Discussing participants' graduation theses is beyond the scope of this inquiry. However, in line with other research (Bendixen, 2016; Bråten, 2016; Lunn Brownlee et al., 2016), I expected that a single semester's instruction would instigate some form of epistemic change in this present participant group.

In this section, I respond to the research question and sub-questions directly. The research question was:

How do Japanese university English majors experience and think about knowledge in terms of epistemic cognition?

This question was divided into three sub-questions:

**Interviews** How do participants' post-intervention interviews differ from the pre-intervention one regarding participants' utilisation of epistemic cognitive themes?

**Discussion board posts** What are participants' experiences of dealing with learning epistemic and argumentation topics as expressed in their discussion board posts?

**Writing assignments** What are the epistemic characteristics identified in the academic writing samples before and after the intervention?

I proceed by describing the main findings and then by noting several of the main differences between the first and second stages in this project.

## 5.2 Main findings

The main findings in the analysis fall into two opposite categories: developmental possibilities of epistemic cognition and hindrances to development. The first is that participants are able to develop their epistemic cognitions in the time frame of a fifteen-week educational intervention. This supports the findings elsewhere in the literature that demonstrate development in epistemic cognition over the period of an academic term (Bråten, 2016; King and Kitchener, 1994; Greene, Cartiff, and Duke, 2018). However, two major blocks to development were also identified. The fact/opinion knowledge structure is likely to impede a critical attitude towards knowledge claims, and when *rikai* is seen to be the target for reading, creativity in academic thinking is also likely to be hindered. These issues are discussed below.

### 5.2.1 Developmental capabilities

Details of each participant's development is provided in Section 5.5. Here I outline some general trends evidenced in the participant group. A move into aspects of early multiplist epistemic cognition characterised most participants. However, the aspects differed between participants. For example, only Sakura had begun to probe definitions given by experts, realising that subtle differences influence the scope of claims. Moe, however, still accepted authority statements but became amenable to divergent viewpoints. Generally, though, the participant group became able to separate between claims and evidence, although most could not distinguish between specific empirical evidence and general theoretical support.

### 5.2.2 Fact/Opinion

A main finding in this project was the *fact/opinion* structure that permeates participants' beliefs. This meta-structure explains many of the espoused and enacted beliefs as well as the apparent paradoxes produced by the participants. It explains not only the double bind but also many other aspects of the participants' beliefs.

When participants encounter information about the physical sciences it is considered to be a fact. Participants did not critically analyse the function or genesis of facts, merely asserting that facts are true. Their viewpoint is hardly surprising. The Oxford Dictionary define *fact* as "a thing that is known or proved to be true". This definition is given because it maps onto participants' enacted use of the term *fact*. In terms of sophisticated epistemic cognition, this definition is naïve. It presupposes a universal acceptance of *truth* and, by ignoring the constructed nature of knowledge, it assumes an omniscient authority who possess the right to declare facts. Furthermore, it disregards specificity and fluidity. For example, the statement that *It is a fact that a year has 365 days* can be shown to be inaccurate. A more precise definition of *fact* is *a statement that is loosely worded but accurate enough for ordinary everyday purposes*. Sophisticated epistemic cognition understands the practical utility of *facts* while recognising their limitations and genesis. However, participants held the naïve view in relation to the physical sciences even after instruction into the constructed nature of facts. Participants held the naïve view for all types of facts at the beginning of the intervention, and it is a developmental success that some participants were able to modify their understanding.

However, rather than develop a knowledge structure that comprehended the located nature of empirical claims in the social sciences, participants maintained their earlier beliefs that statements were true, that is, were *facts*, or were opinions. The deciding factor was if the participant believed the statement or not. They could not develop an ability to analyse, assess and evaluate claims in their specialised field.

### 5.2.3 *Rikai* as understanding and comprehension

The concept of *rikai* was described earlier in Section 4.3.1. Here, I will connect this in relation to conceptual hindrances to the development of sophisticated epistemic cognition. There is a consistency between learning *facts* and the processes in *rikai*. When the majority of learning consists of memorisation which is tested by fixed-answer questions, the outcome is an attitude that does not critique information (Wakita, 2017). Learners become inculcated to believe that learning equates with memorising and that the proof of knowing is the ability to paraphrase information. The national licensing examinations that most participants would sit in the following year further promotes this belief as they, too, are predominantly fixed-answer memory-based examinations.

In the educational history of the present participant set, Bloomian-style higher-order thinking practice (Anderson et al., 2001) is largely missing. The coursebook contained a chapter on lower-order and higher-order thinking. Participants reported that their previous learning did not include analysis or evaluation. They experienced significant difficulties during the intervention when attempting to analyse argument claims. In the final interviews, no participant was able to describe or demonstrate analysis. My current belief is that although participants claimed to have little difficulty in English L2 language comprehension, they did not realise that their task was ultimately one of understanding. Furthermore, a clear grasp of the notion of understanding was not obtained by any participant.

Yet, a paradox arises in this discussion. If the target of learning is *rikai*, that is, comprehension, there would be no separation of authority-derived information into facts and opinions. The presentation of multiple authority perspectives (for example, on the CPH and other SLA topics) produced confusion in participants (see Section 5.2.5). The epistemic doubt resolution strategy was to segregate such information into facts or opinions without attempting to analyse the information further. When the authorities were classroom professors, one participant's strategy was to use the preferred 'opinion' for each professor. The paradox may be explained by noting that participants' entry into multiplism was incomplete; their journey had

just begun. In King and Kitchener's (1994) *Reflective Judgment Model*, such participants would be labelled as being 'quasi-reflective', that is, being able to hold multiplist epistemic cognitions without the ability to utilise valid forms of technical assessment and evaluation. Incipient forms of understanding (in the Bloomian sense [Anderson et al. (2001)]) are present, but the main cognitive energy is devoted to comprehension.

The dominance of fixed-answer learning, and therefore, the importance placed on memorisation (Aoki, 2008; Wakita, 2017) may help to answer the critics of Japanese tertiary education that were expounded in Chapter Two. Rather than accept McVeigh's (2002) characterisation of the tertiary experience as a "leisureland" (p. 4), the disjunct between Western educators and their Japanese undergraduate students is better explained by the focus the latter place on memorisation and *rikai*. Western professors may be confusing a lack of a critical stance in regard to knowledge claims and sources as a lackadaisical or relaxed attitude towards university study.

In summary, the internal consistency of a fact/opinion knowledge structure with *rikai* as the primary way of knowing leads to significant hindrances to higher-order thinking and more sophisticated epistemic cognition in participants. I present some pedagogic implications and suggestions to address these in the following chapter. This chapter proceeds by describing the main developments evidenced in the interviews and writing assignments.

#### 5.2.4 *Rikai* and active learning

Recently, the Japanese Ministry of Education has promoted the notion of *active learning* as a method of developing educational outcomes of undergraduates (Matsushita, 2018). It has not been accepted without debate. Much criticism of Western-style *active learning* centres on the invisibility of the educational processes that lead to progress (Matsushita, 2018). Mizokami (2018) notes that, "in fact, there are quite a few [Japanese] practitioners who do not see how cognitive processes are involved in students' activities" during active learning (p. 80). Active learning, and the *deep active learning* form that Matsushita (2018b) advocates, may be impeded by the significant focus on *rikai*.

Matsushita (2018) argues that the Japanese Ministry of Education's policy of active learning for undergraduates is likely to be based on a similar one developed by the Association of American Colleges & Universities in the United States. A number of key learning outcomes is listed by the Ministry, including "critical and creative thinking" and "information literacy" (Matsushita, 2018, p. 6). To achieve these outcomes, "group discussion, debate, and group work" should be implemented. However, according to the findings in this thesis, student work is likely to be impeded if divergent perspectives are considered *opinions*. Participants in this study invoked the notion of *respect*, that is, the comprehension and acceptance of divergent opinions while effectively ignoring them in their own study. If the target of learning is *rikai*, the processes in active learning themselves are likely to be at the surface level, that is, comprehension and comparison, that do not enable undergraduates to engage with knowledge claims at the level of analysis and evaluation.

### 5.2.5 The interviews

Several developments were observed in the second interview. The caveats I brought up regarding any attempt to generalise themes fully to all participants in Chapter 4, Section 4.4 remain applicable here. A more detailed description of each participant's epistemic cognitive change is given below (see Section 5.5). However, some general observations may be drawn.

**Subjective/objective understanding** Some participants' beliefs about the nature of subjectivity and objectivity altered significantly. Sakura, for example, came to see how authorities' definitions significantly shaped their meanings. To her, meaning is principally the product of seeing how an author defines their terms. This movement compares with Sakura's earlier belief that the act of *rikai* (comprehension), which she had characterised as 'understanding', was to rephrase an authority's statement in her own words and was the main target of learning which had developed beyond *rikai*. Taiki, however, remained with the view that objective 'facts' are those that the majority of authors accept, a point echoed by Misaki who now described subjective knowledge as being forms of feelings.

**Connected knowledge** Although Ayano still maintained authority-led beliefs about truth in the second interview, she now realised the importance of extending knowledge claims by attempting to justify them. She could not do so in her second writing assignment. It is interesting to see how students may progress from a comprehension of an epistemic facet to an ability to enact that facet. Aoi also stated the importance of connecting claims to evidence rather than merely present opinions as claims. The nature of connection in knowledge expanded to a conscious effort to infer logical associations between claims and their evidentiary bases. She had also become aware of bias, especially concerning the official news media in Japan.

Asuka realised (apparently for the first time) that she could connect events and create verifiable subjective knowledge. She recognised that her part-time job at an ice-cream shop became very busy when a children's after-school English class finished. Asuka seemed delighted to tell me this story which indicated a developed metacognitive awareness of her own inferential abilities.

About connected knowledge, no participant repeated their earlier procedure of searching for support in the writing process. Now, the importance of establishing logical connections between claims and evidence took precedence.

**Authority** The notion of authority separated the participants most in the second round of interviews. Although no one claimed that authority figures could not lie during the second round, Asuka, Ayano, Misaki, Shota and Taiki maintained their beliefs that knowledge was derived from authorities. Conversely, Sakura, Aoi and Kenta now saw some degree of subjectivity in information from authorities. Moe admitted to having become confused during the intervention because she no longer knew who was right. This represents an initial foray into multiplicity for Moe and a leap from her earlier authority-led beliefs. Information about participants' later graduation theses was not collected as a part of this project. However, I can report that all three of the multiplists (Sakura, Aoi and Kenta) received the highest grade for their study, whereas the others received a lower grade. This aspect needs much further exploration in the future.

**Confusion** Several types of confusion were evident in the second round of interviews. In the first round, there was no distinction drawn between specific evidence or theoretical backing to support a claim. All support was seen to be ‘evidence’ irrespective of its type. A main distinction in the TAP is founded on this separation, and the coursebook aimed to inform participants of the nature of theory and how knowledge is contingent on some form of perceptual framework, be it an established theory (for use in academic writing) or a folk theory (to support everyday claims). Participants studied these notions on many occasions, so I would expect them to comprehend their meanings and functions, and I hoped participants would have some understanding of their use in both participants’ reading and writing.

In the second round of interviews, some participants were able to discuss their understanding of specific and general support, but they revealed their misunderstanding of the concept in all cases. Aoi, for example, correctly summarised her meaning of ‘claim’ saying that it “means your belief based on evidence”. However, directly after this, she uses the lay meaning of ‘backing’ to argue that “backing is the background information of the claim” by ‘using news articles, . . . , or research papers to support your claim” (Aoi 2nd Int: 1224). A similar miscomprehension was evident in both Moe’s and Taiki’s use of these terms. A further discussion of confusion in terms of epistemic doubt and resolution strategies is given in the following chapter (see 6.1.2). In the second interviews, only Sakura was able to articulate a technically correct argumentation structure. Her final essay, however, did not demonstrate her ability to utilise that structure in writing.

### 5.2.6 Discussion board posts

Unfortunately, my initial hope for the discussion boards to collect data proved to be unsuccessful. The main research question inquires about changes or development in epistemic thinking. To this end, the discussion board method generated over twenty thousand words of participant text. This data source was analysed both at the individual participant level and as a combined text. However, two factors inhibited the use of this data in this project.

The first is that not all participants felt comfortable using the discussion board. Initially, three participants claimed their discomfort was with using the technology.

However, later they informed me that they were not comfortable expressing their views openly, especially as they felt that the others' English proficiencies were much higher and could describe their thinking more concretely. Of the nine participants, only four became regular posters.

The second factor was that my intention of studying developments was somewhat constrained by various unforeseen research design limitations. The discussion questions posed to participants changed each week to reflect the study unit in the coursebook. I provided three questions from which participants could select one. This choice, I believed following the advice of Ringler et al. (2015) and Stansberry (2006), should increase the quality of posts. Instead, participants regularly bypassed each other and selected different questions. Little discussion was observed. Furthermore, there was no principled way to analyse the text in terms of development because the questions were not designed to do so. I had hoped that development would be evident in the posts without needing to structure a developmental testing question set.

Tentatively, I may proffer a third reason. Researchers in the Japanese context have noted difficulties in introducing Japanese undergraduates to discussion. Smith (2020) found that participants who did not receive targeted instruction in discussion skills of seeking differing viewpoints, actively comparing viewpoints and enumerating advantages and disadvantages over a structured fourteen-week intervention did not produce discussion skills. Iwata (2010) further notes a typical reluctance for Japanese students to self-disclose information. I did not instruct the participants in discussion skills. These studies point to the importance of direct instruction in discussion skills themselves which I did not do for this project. The upshot of this is that the discussion board posts were only used to compare interview and essay data at the individual participant level.

### **5.2.7 Writing assignments**

The main changes between the first and second writing assignments were discussed in Section 4.7. Here I will note some other points of interest.

The most apparent difference between the two sets of essays is the number of words participants wrote from three thousand three hundred in total for all participants in Assignment One to five thousand for the latter assignment. Here again, we note that the three participants I categorised as multipliers (Aoi, Kenta and Sakura) doubled their output in the second essay. Of the others, only Asuka wrote significantly more than in the second.

I did not set a word count for either assignment. I wanted to see what participants would do without prompting and if that output would increase due to the intervention. With so few participants, no generalisation is possible, but a doubling of output connected with more sophisticated epistemic cognition, as seen in these three participants, is an exciting avenue for further investigation.

The second essay did not show any change in connected knowledge or justification score in any participant in epistemic cognition terms. The pedagogic instruction in either epistemic cognition or the TAP did not have any influence in these aspects. Scores for both *fluid knowledge* and *source* rose slightly. Once again, I note with caution against interpreting these figures too strongly because the participant number was low and that the method of deriving the scores was not fine-grained. However, I do believe that the scores reflect participants' levels.

In Chapter 4, I argued that the *fluid knowledge* scores were high because of participants' subject matter control. They produced relatively reasonable points that expert readers (me, in this case) would accept as relevant to the essay's central claim. The notion of justification, however, remained problematic. Further investigation is required to ascertain why justification is challenging. One answer may be a critique of my method of arriving at the scores. Another may centre on the conceptual complexity inherent in the act of justification itself which requires knowledge and understanding of empirical evidence and of the theoretical lenses which were used to generate the knowledge. Additionally, it also requires an epistemic cognitive ability to challenge and question authority information. The two informational aspects complicate the act of justification, with epistemic cognition providing a mediating role.

### 5.3 Advances to theory

Until this project, the late-years undergraduate Japanese voice has been mostly missing in epistemic cognition studies. The few studies that do provide a platform for this voice show minimal examples, such as “even though we are in the same class, different opinions from own come up. I see that there are other ways of thinking, so my understanding deepens” (my translation Nomura and Maruno, 2017, p. 154). This present study offers much more in-depth information that allows for some degree of modelling of participants’ epistemic beliefs. In doing so, this study corresponds to the claims made by Hirayama and Kusumi (2010), Nomura and Maruno (2017) and Tasaki et al. (2008) and offers more details in support.

#### 5.3.1 Effort

Schommer (1990) posited *innate ability* and *speed of learning* as essential attributes in epistemic cognition. Hofer and Pintrich (1997) rejected these as being essentially non-epistemic. However, these appeared in Hirayama and Kusumi (2010) as a function of *effort*. In this present study, the *gatekeeper* theme was explored in-depth. This theme forwards a detailed epistemic connection between effort and truth. At the beginning of the intervention, participants uniformly espoused the belief that information given by a professor or a textbook was true. These are the epistemic notions of truth and testimony. The route to becoming a giver of truth is vital: hard work leads to gaining qualifications and awards validates the source of a truth claim. Taiki summarises this attitude in the following manner:

“If the author is a specialist of his field and has won some prizes, it can be said that his study is reliable because he is admitted a lot” (Taiki DB: 321)

In this excerpt, “admitted” refers to the process of gaining entry into academia as an authority. In this regard, the connection of *effort* and epistemic concerns is visible. The *gatekeeper* becomes, in effect, a proxy for truth value. The pedagogic intervention dispelled this belief in some participants. However, it led to a sense of confusion, made more so in the absence of truth evaluation methods.

The *gatekeeper* also supports the connection between *effort* and epistemic cognition at the level of whom to believe and why. Participants at the start of the intervention unanimously believed their professors (although Aoi did note that professors' selection of texts was a subjective act). Professors had extended the effort to achieve their status. As such, their *effort* is an indication that their words are true.

A grounding question in epistemic research outside of the U.S. has been about the U.S. factor structure's validity worldwide. This question led Chan and Elliot (2002; 2004) to investigate it in the Hong Kong context. They could not replicate Schommer's (1990) proposed factor structure. Instead, they argued that the Hong Kong cultural beliefs included the notion that learning is related to hard work, or effort, "while some teacher education students hold a belief that learning is inborn and cannot be changed; others influenced by the traditional Chinese culture consider learning ability to be changeable and improved by hard work" (Chan and Elliot, 2004, p. 137). The authors associate hard work with an incremental growth mindset, following Dweck and Leggett (1988), but do not provide the precise mechanisms that link to epistemic concerns. This link is explicated in this study.

### 5.3.2 Educational level and multiplism

One fascinating finding in Tasaki et al. (2008) was that while undergraduate students held relativist (or multiplist) beliefs, graduate students' beliefs became firmer in regard to knowledge certainty. This finding stands in direct opposition with the stage theorists' progression in the early U.S. studies (King and Kitchener, 1994; Baxter Magolda, 1992; Belenky et al., 1986). In Japan, we see Hofer's (2010) study with predominantly first-year undergraduates indicating strong certainty of knowledge beliefs. Tasaki et al. (2008) provided evidence that later years undergraduates were more relativistic, and, finally, graduates return to stronger certainty beliefs.

The data in this project is consistent with Tasaki et al. (2008) because the third-year students exhibited opinion-centred beliefs regarding information that did not accord with their beliefs. Yet, a full movement into multiplism was not observed in the participants as a group and much more research is needed into this progression.

One may ask why Tasaki (2008) and colleagues' graduate students held stronger knowledge certainty beliefs. This project cannot answer this question based on the

data alone. However, based on the literature and my participants' experiences, I can propose a reason. The role of rote memorisation in Japanese middle and high schools in preparation for the university entrance exam is well established (Aspinall, 2013; King, 2013; Aoki, 2008; Kikuchi, 2009). At this educational level, questioning information may be counter-productive because it detracts from the time required to memorise masses of information. It may inhibit the memorisation process if informational items are not believed. As Hofer (2010b) noted, it may be a natural consequence of this system that first-year undergraduates' certainty of knowledge is less sophisticated.

As students move through the university, they are encouraged to think more freely. There is very little information in English about the type and quality of Japanese university students' discussion practice and skill levels in their native Japanese. This is an area that urgently needs investigation, and, for reasons outlined in Chapter 1 centring on the autonomy of Japanese universities (Yamada, 2014; Aspinall, 2015a), it may be challenging to obtain such vital information. In my dataset, participants reported that the in-class discussions were rare in their educational histories in subject classes (that is, not English language development classes), and they enjoyed the experience. This accords with Nomura and Maruno (2017), who note "the 'pleasure' [felt by students during discussion] that comes from knowing other points of view" (p. 159).

As students progress to the later undergraduate years, they may be expected to begin to understand a principled way of analysing information at the level of knowledge creation at the theoretical level including elements of bias and contingency on theoretical frameworks. However, this progression may be hampered by the National Examination certification that most participants prepare for in their fourth year. The multiple-choice exams still require vast amounts of memorisation and do not promote the development of epistemic doubt mechanisms. The notion of educationally availing epistemic beliefs being sophisticated epistemic beliefs that predict higher educational outcomes than non-availing beliefs (Muis, 2004) may contain an assumption that does not reflect what educationally availing beliefs may be in the Japanese university context. In other words, in a similar manner to their middle and high school experiences, participants are implicitly encouraged to maintain a strict

dualism between 'facts', which must be memorised for National Examinations, and 'opinions', which allow participants freedom to explore their own belief and knowledge systems. Participants in this study had not experienced learning theory in any subject before this intervention. In their subject classes in second-language acquisition, they learn 'facts' for the National Examinations. For literature classes, participants reported that they read a book with a professor who gives their opinion to them. Whether this transmissionist pattern is typical outside the present participant group is another question that requires further study. It is rare for students to talk at the theoretical level in my practitioner experience. Instead, they offer their experiences. Such information is known for early-year undergraduates who write in English as EFL classes (Rinnert and Kobayashi, 2007), but more information is needed for subject classes in Japanese.

Similarly, Tasaki et al. (2008) offer information that is entirely consistent with the progression seen in some participants in this study. When students progress to the postgraduate level, it might be reasonably assumed that they must necessarily adopt a more theoretical Master's-level approach. In Tasaki et al. (2008), we witness what Chandler, Hallett, and Sokol (2002) and Muis, Bendixen, and Haerle (2006) call cyclic epistemic cognition: in this case, a return to what may appear less sophisticated but which is a more developed certainty of knowledge by putting on those theoretical lenses absent in their undergraduate counterparts. Of significant interest is the late realisation of the subjectivity of 'facts' on their subsequent knowledge structure and patterns of argumentation. This project offers some information about epistemic cognitive developmental progression in late undergraduate participants that is consistent with Tasaki and colleagues' observations (2008). However, they did not specify the subject majors in his populations, and only four graduate students were involved.

### 5.3.3 Multiplism

In Chapter 2, a characterisation of multiplist thinkers was given by Greene, Azevedo, and Torney-Purta (2008) who described two types, *dogmatists* and *sceptics*. Both types

see “knowledge as a human construction, with rationality viewed as an untrustworthy justification” (p. 145). They explain the difference between dogmatists and sceptics:

“Dogmatists believe knowledge can come only from authority figures, whereas sceptics believe knowledge or truth is not possible” (p. 145).

This characterisation of multiplism does not reflect the present participant group.

Because some participants could see subjectivity in authority-led knowledge, they can be assessed as being multiplist (Hofer, 2016). However, the present group did not see rationality as unworthy. Logic and evidentiary support were discussed in favourable terms as targets for learning. Ayano knows that these are worthy goals in thinking, “I’m not good at telling things logically or with enough rationality” (Ayano 2ndInt: 63).

Additionally, the sense that “knowledge or truth is not possible” (Greene, Azevedo, and Torney-Purta, 2008, p. 145) fails to capture these participants’ beliefs. To respond to this assertion, we may note that much of one’s personal definition of ‘knowledge’ is cultural for individuals who have not achieved a fully contextualised and operationalised view of the transience of the knowledge construction process. By this, I mean that one’s cultural beliefs may influence one’s position in understanding the knowledge creation process.

I will illustrate this with a comparison of an American cultural belief with an equivalent one from Japan. Maynard (1997) attempts to clarify some cultural issues that underpin American and Japanese communication styles. Maynard rejects the strong Sapir-Whorfian linguistic determination, in which language dominates and structures thought (Whorf, 1956). Instead, she adopts a weaker linguistic relativist hypothesis that the relationship between culture and language is co-constituting and mutually influencing:

“it seems reasonable to conclude that a social language plays a part in influencing what one expresses in thought and in language” (p. 4).

As such, she rejects the dogmatism of determinism and its associated over-generalisation to all communicative situations.

She describes the image of a lonesome cowboy to illustrate the notion of American individualism. The Japanese equivalent is the equally-lonesome individual samurai. The governing values that underpin the samurai's final ritual suicide and the cowboy's riding off into the sunset to live his solitary existence ultimately originate in the same source: a belief about self and its context in society. Tasaki (2001) and Tasaki et al. (2008) utilise Markus and Kitayama's (1991) distinction that centres on how an individual self-construes their identity as being on a continuum of independence to interdependence. Subsequent research has demonstrated a tendency for the United States to be governed by independent beliefs and Japan to be interdependent (Nisbett and Masuda, 2003; Morling, Kitayama, and Miyamoto, 2002; Nisbett, 2003). The samurai's ritual suicide recognises the self's ultimate connectivity to society, its "self-denial and self-justification" (Maynard, 1997, p. 10). The cowboy "personifies freedom and independence" (p. 10), which takes meaning when juxtaposed with the society he rejects.

I do not wish to exaggerate any cultural claims about self-construal concerning epistemic cognition. However, the interdependent alignment of the self to society does seem to permit a multiplistic set of beliefs that allow authority-led information to be acceptable without contradiction. The corollary is that the nature of independent beliefs promotes questioning and doubt earlier in individuals' development. Note that in neither case is the epistemic cognition a sophisticated one. The expectation in epistemic cognition theory in the U.S. context is that individuals can achieve sophisticated epistemic cognition through education and experience. There is no data in the Japanese context to support or deny this expectation, and further longitudinal research is needed.

One other explanation for the divergent characterisation of multiplist thinkers can be explained by the fact/opinion knowledge structure. Participants did not express any comprehension or understanding of truth claims outside the dichotomy of being 'facts' or being someone's opinion. Even the 'hypothesis' in the Critical Period Hypothesis was considered a fact because its genesis was via the gatekeeper. Other notions, such as suppositions, tentative guesses and speculation, were missing. Partially, this may be explained due to participants conducting their discourse in a second language. However, I invited all participants to use Japanese whenever

they could not express their beliefs and experiences in English. Only Misaki elected to do so. The others reported that the propositional content of their speech would be the same in Japanese. Another possibility, that participants categorised informational claims as being either true ('facts') or opinions remains the Occam's razor explanation. It also accords with many of the expectations placed on participants' expectations during much of their prior learning experiences. I will elaborate on this point about expectations next.

## 5.4 *Shuhari*

One reason for the fact/opinion knowledge structure is the Japanese culturally embedded practice of *shuhari* that serves to structure expectations of who (and when) gains access to the questioning of knowledge. *Shuhari* refers to the tripartite division of learner type into students who strictly obey (守 *shu*) the rules, those who can break (破 *ha*) the rules to some degree and those who have achieved transcendence (離 *ri*) from the rules (Goto, 2018). *Shuhari* has roots in Zen Buddhism, a spirituality that famously opposes theoreticism and espouses the virtues of practice (Oosterling, 2011). Oosterling (2011) describes *shuhari* as follows:

"Different [Zen] disciplines and schools developed their own styles. These were transmitted from master to student, based on the principle of *shuhari*: obey and protect (*shu*) the basics of the school, then break free (*ha*) from these techniques by exploring one's own potential, and finally separate (*ri*) to found one's own school" (p. 106, italics in original).

At the *shu* (obey) stage, students do not question; their role is to internalise the external systems, echoing Tweed and Lehman (2002) who characterise Confucian education systems as a process of memorising outside information (deemed to be objective and true) and internalising it, or 'outside-in' education. In modern Japanese education, Shimada (2018) notes the dominance of the lecture system for the first three years of undergraduates' experience and relates this to *shu*; the fourth and final year begins the *ha*, which is continued at the Master's level of education; and finally, a doctorate is the proof of the *ri* (Shimada, 2018). The constituting nature of

*shuhari* has yet to be explored in the English literature concerning Japanese education so this notion only remains a suggestion.

Indeed, the participants did not know *shuhari* as it impacts on their educational careers. They know the term only as it applies to martial arts. Although many Japanese researchers do see *shuhari* as constituting (a Google Scholar search on February 14, 2021, returned over 8,700 hits for “守破離+教育” /*shuhari* +education), it may operate at the level of expectation. The participants’ educational experience supports this assertion. Furthermore, the memorisation-intense National Examinations in their fourth year also give credence to the argument that the undergraduate years are primarily reserved for *shu*/obeying. Why this may be so is beyond the scope of this project. Very little exists in English (Google Scholar returned no hits as of February 14, 2021 for ‘*shuhari*’), and international comparisons of higher-order thinking at the various undergraduate years would be highly welcome.

How multiplist thinking integrates with educational expectations as students navigate towards specialist fields within the context of *shuhari* is an area that requires much exploration.

## 5.5 Participant development

This chapter ends with a short description of each participants’ utilisation of epistemic cognition themes at the end of the project. It represents a statement of potential developmental trajectories.

**Aoi** Aoi became able to articulate the need for a causal relationship between evidence and claim. Furthermore, she became disillusioned regarding news outlets’ claims, realising that they are steeped in their own value system, which may not be appropriate for everyone. She labels this as brainwashing. Aoi became able to express her understanding of the complexity inherent in asserting truth claims. She embraced the notion of claim evaluation. However, her understanding is still firmly grounded at the level of a single text. Additionally, Aoi continued to miscomprehend the nature of specific evidence and generalise backing.

**Asuka** The central development in Asuka's thinking was her ability to recognise the validity of her inferential processing. She remained unconfident about her abilities, but she demonstrated this self-knowledge hesitantly. This was echoed in her recognition that she had confused areas of epistemic thinking. Again, this was a positive development from her earlier state. Asuka maintained from the first interview a strong belief in the responsibility of authority to society which must only state the truth.

**Ayano** Ayano did not develop significantly during the course. Her authority-driven belief set was repeated in the second interview, but the content of what she 'should' do has been replaced by a new set of teacher-led instructions. By the second interview, Ayano could not separate a statement of knowledge from a statement of opinion. A critical change in Ayano was the understanding of the importance of asking why questions.

**Kenta** The importance of sorting out his thoughts remained with Kenta, although he tried various methods since the first interview. Added to this, Kenta focused on the value of simplicity in the presentation of an opinion. The primacy of opinion remained essential to Kenta as demonstrated by his assertion that an academic paper's conclusion is the act of presenting an opinion.

**Misaki** Misaki learned of the importance of analysing authority-driven knowledge. However, she maintained a solid authority-led approach, having trust in institutional websites and books she read. In other words, her assertion that she should analyse authority was not demonstrated in her beliefs about the reliability of institutional websites. Furthermore, Misaki distinguished physical scientific facts as true but could or would not evaluate a social scientific claim.

**Moe** Moe developed into being a multiplist thinker. This led her into cognitive dissonance as she was unwilling to attempt to persuade others of her opinions. Moe was uncomfortable about writing a thesis because it necessitated showing her opinion to others. She developed from being quick to believe authority statements to recognising that other opinions exist.

**Sakura** Sakura could articulate her knowledge of the TAP elements at the end of the intervention. Furthermore, she realised the importance of questioning authority knowledge. She continued to consider knowledge to be reliant on their definitions and became able to articulate her understanding of the complexity of definitions better.

**Shota** This course was frustrating for Shota. He had entered the course with the expectation of developing himself, but he felt that he has not changed. Instead, Shota realised that he had wanted clear instructions on how to think. He did not like the open-ended nature of much of the course and found the discussion board's open discussions and in-class too vague and abstract. During the time, he realised that he had more in common with his friends in the Faculty of Engineering, who had an algorithmic approach to problem-solving. He felt estranged from peers in his present faculty whom he saw as having a higher level of thinking.

**Taiki** Taiki states that he had developed significantly. He actively searched for support for his claims and considered evidence more carefully. In particular, he embraced the notions of psychological and philosophical knowledge as a measurement of the validity of knowledge. However, Taiki's grasp of the mechanisms of these forms of knowledge remained weak, and he held unformed ideas about specific and general forms of support. He believed in majority opinions and followed them unquestioningly, especially in areas with which he was unfamiliar. In his specialised area of English literature, he held significant misconceptions about the nature of connected knowledge.

## 5.6 Conclusion

The research question aimed to investigate the effect of direct instruction in epistemic cognition and academic argumentation on third- and fourth-year English majors using topics relevant to this major. As such, information derived from this study may inform the broader literature about how domain-specialists in this Japanese national university context approach domain-specific issues in terms of their epistemic

cognition and academic argumentation. I end this chapter with a short six-point synopsis of the research findings.

- The notion of blind allegiance to authority (the first interview gatekeeper) was replaced by a multiplist subjective perspective that saw the gatekeeper supporting one's opinion. Other gate-kept facts could be ignored.
- A general sense of multiplism characterised the second round of interviews. This supplanted the earlier perspective that all gate-kept information was trustworthy. Related to the point above, the search for gate-kept support is a result of multiplism.
- These two items point to the need for more research to know how participants conceptualise divergent information. Does it reduce simply to a matter of opinion versus opinion? Or has the belief that the gatekeeper provides truth disappeared? As mentioned above, not all participants developed uniformly. This limits any attempt to claim that the pedagogic intervention has a uniform effect on all participants. A future case study approach that utilises more rigid interview protocols may help provide more precise data about individual participants' developments concerning these issues.
- One implication of the increased subjectivity is that direct searching for supporting gatekeeper information decreased. Participants in the second assignments explained their opinions or defined their key term more, although this was not unvarying amongst the participants.
- The previous point led some participants to produce longer second essay assignments and make more connections between knowledge items.
- Participants' conclusions were their opinions. In the first interview / assignment data, participants reported primarily on gate-kept facts. In the later data set, they had reformed their beliefs about the social and informative intent of their claims.

- In accordance with the move from dualist belief structures to multiplist ones, participants experienced more confusion about the nature of truth. The certainty they expressed in the earlier data was superseded by a sense of confusion when asked to evaluate between multiple experts' claims. The general strategy was to reduce all claims to the level of opinions and select that opinion which matches their own.

This chapter described some developments in participants' epistemic cognition and areas where development did not occur. It is worth noting that the state of epistemic cognition in participants at the beginning of the pedagogic intervention matches that of many of my previous students and helps explain why the practitioner problem that I faced was also a general issue in the Department (see Chapter 1 Section 1.2). Both states—pre- and post-intervention—are essential for educators to understand. The following chapter expands on this discussion to include recommendations for future research and practice.

## Chapter 6

# Conclusion

This concluding chapter consists of three sections: the first introduces recommendations for practitioners, the second notes several limitations of the study and the thesis finishes with a reflection on my development as a practitioner and researcher resulting from undertaking this study. In common with many qualitative research designs, appropriate literature is discussed after the research findings are established to locate the new knowledge within the broader field (Creswell, 2009). Such literature is discussed in addition to how that helps frame the findings.

### 6.1 Recommendations for practitioners

This project has returned several key findings which were discussed in the previous chapter. These findings have significant implications for pedagogic methodology. Some major implications are discussed below. The main findings centre on the gatekeeper, a developed form of multiplist thinking and a belief about the target of knowing, which I will call *rikai* to separate this from the English *comprehend* or *understand*. Furthermore, participants' epistemic cognition is embedded within a belief structure that bifurcates propositional statements into facts or opinions. This fact/opinion dichotomous structure presents many challenges for pedagogy. Before investigating these issue in depth, I will discuss a major theme in Japanese tertiary education.

### 6.1.1 Critical thinking

In current Japanese tertiary education, critical thinking is commonly discussed. Many educationalists criticise the critical thinking skills of undergraduates (Armand, 2016; Dunn, 2014; Wakita, 2017). This project has assessed a group of nine participants as early multiplists. This characterisation is positive as it represents a development from a lower naïve position. However, Moon (2008) notes in her book on critical thinking that critical thinking cannot occur until learners have reached a multiplist epistemic cognition. The participant group in this study were late-stage naïve thinkers at the start of the intervention. They are in their third year of a national university and were, presumably, naïve thinkers for the first two years also. If these participants are representative of a large swathe of Japanese undergraduates, the difficulty of introducing critical thinking pedagogy to the Japanese university is easily understood. In my own experience, the participant group are much more advanced than many other groups I have taught at other institutions. Yet, even here, participants demonstrated only a modest foray into multiplism.

One possible reason for the failure to implement higher-order thinking may rest with the Ministry of Education (MEXT) itself. Mineshima (2015) reports on critical thinking in high-school textbooks and cites MEXT's hope for critical thinking to foster students' "abilities to evaluate facts and opinions from multiple perspectives and communicate through reasoning" (p. 459). Note the use of *facts* and *opinions* as the only type of propositional statement by MEXT. Mineshima provides three examples of a critical thinking tasks. They are:

- Write 60 words or so about what you consider to be an ideal couple.
- What are the advantages and disadvantages of studying abroad?
- Why do Japanese players bow before they enter the playing area?

The first two items require an opinion based response and the third is answerable with a fact. I conducted an informal survey of Japanese language arts textbooks. The linguistic level of these high-school textbooks was significantly higher than those for English instruction, yet the focus on facts and opinions was similar. Writing in Japanese, Wakita (2017) notes that "Japanese language arts textbooks typically contain no critical thinking activities" (p. iv, my translation).

Critical thinking pedagogy, therefore, faces a serious set of obstacles, and little in the typical Japanese undergraduate educational experience prepares students for it. The recommendation in this thesis is that hindrances to critical thinking are more fully understood by educators prior to introducing the topic at the level of techniques.

### **Hindrances to critical thinking**

Epistemic cognition assesses a system of integrated beliefs, attitudes and values held by individuals in relation to knowing and knowledge (Chinn, Buckland, and Samarapungavan, 2011). Integrated systems differ from educational prerequisites, that is, a simple lack of knowledge, because they are not easily overturned by pedagogic information delivery (Bråten, 2016). They operate in conjunction with each other, and individuals perceive their worldview as being logical as a manifestation of their personal integrity (Kegan, 1982). These personal systems originate in wider systems such as the educational system (Muis, Bendixen, and Haerle, 2006), and an individual's self-esteem is threatened when faced with opposing beliefs (Baxter Magolda, 2010). They present a significant hurdle to educators in terms of introducing critical thinking.

Let us investigate some of these hindrances more specifically using a fictitious naïve thinker, but one who resembles many aspects of the participants at the onset of this intervention. For *fluid knowledge* (that is, *fixed knowledge* from the naïve thinker's perspective), because knowledge is fixed according to the scheme prescribed by authority, subtleties between different authors' meanings are ignored or never realised. Furthermore, a single capital T truth exists, and it is the student's task to memorise this Truth. For *connected knowledge* (*simple knowledge*), connections between information are ignored or never realised. It is the authority's task to create knowledge and provide connections. For *source of knowledge*, self-external knowledge is objective and to be memorised. Self-internal thoughts do not qualify as knowledge and are subjective. For *knowledge justification*, statements are accepted or rejected based on the person (authority claims are to be accepted, personal claims are mere opinions).

In all cases, argument claims are accepted or rejected because of the person (authority or not) not the content of the claim. Additionally, authority claims are accepted without due consideration of their merit and limitations.

For each of these hindrances, a suitable pedagogic technique is required. The coursebook (described above) contained many of these techniques. The principal hindrance, however, is the fact/opinion knowledge structure that permeates the Japanese education system and raises many implications for pedagogy.

### **6.1.2 Implications of 'facts' and 'opinions'**

In the literature, the notion of epistemic doubt is often raised. It is theorised that when someone experiences epistemic doubt, they experience what Bendixen and Rule (2004) call 'epistemic volition', a dynamic sense of needing to know which in turn instigates 'epistemic resolution' strategies (p. 72) which include reflection and argumentation processes. In the participant group, epistemic doubt and associated resolution strategies were not observed. A discussion of epistemic doubt and implications for educators in Japanese higher education is followed by an examination of how the individual is located in the knowing processes.

#### **Epistemic doubt**

Instigating epistemic doubt often involves presenting multiple perspectives on a given topic to students, who may doubt these perspectives' truth. Epistemic doubt resolution strategies include "considering past experiences, the consequences of adopting different perspectives and taking a well-grounded stance" (Ferguson, Bråten, and Strømsø, 2012, p. 106). The experience of epistemic doubt does not seem to be available to all. Dogmatist thinkers in the United States contexts merely reject differing viewpoints on the basis that the originators of the positions are incorrect (Greene, Azevedo, and Torney-Purta, 2008). When pressed for reasons for their beliefs such thinkers resort to authority; dogmatist thinkers do not experience epistemic doubt.

A question arises regarding the degree of exposure to multiple perspectives required to lead to epistemic doubt in a fact/opinion knowledge structure. Alternatively, it may be that the development of epistemic doubt impossible within such a belief structure. In this project, focussing on epistemic cognition and argumentation,

which often entailed studying multiple perspectives, did not produce evidence of epistemic doubt in the discussion board, interviews and assignments. The possibility is that a fact/opinion structure is unlikely to lead to epistemic doubt for reasons that are grounded in cultural practices. When students regularly hear professors discuss the value of opinions and have little or no access to overt interpretational thinking, no mechanism instigates epistemic doubt. The fixed-answer type dominance of national exams in the fourth year of undergraduate studies further promotes a non-epistemic stance. Asuka reported that many teachers do ask her for her reason for her opinion, but never once has she had her reason discussed or critiqued. In principle, a professor could question a reason for veracity, the strength of evidence and reasoning ability. Furthermore, an extended reason could be sought for a given reason. In her experience, I am the only teacher who has ever critiqued her or asked her a chain of why questions.

Participants' opinions dictate which perspective they believe when faced with professors offering opposing viewpoints. They are quiet when the topic is beyond their abilities or cannot form an opinion. On the surface, this resembles Greene and colleagues' (2008) dogmatist thinker. A key difference is seen when the educational level is considered. King and Kitchener (1994) and King and Strohm Kitchener (2004) find strong correlations between educational length and degree of sophistication in their Reflective Judgment Model, which is a form of epistemic cognition. Additionally, Akbari and Nabi Karimi (2013) provide evidence that higher levels of epistemological beliefs correlate with higher levels of foreign language proficiency. Educational levels have also been found to correlate with sophisticated epistemic cognition in other studies (Greene, Cartiff, and Duke, 2018). This participant group in this study represents the elite student body in the prefecture. However, here they demonstrate a level of sophistication comparable with first-year undergraduates in comparable Western institutions such as those in Ferguson et al. (2013).

A tentative conclusion regarding epistemic doubt is that significant efforts need to be made throughout an entire educational experience to aim for two co-ordinated methods. The first is to introduce students to multiple perspectives, and the second is to probe deeper into why students hold particular beliefs. The present participant groups' experience with a single teacher over a single semester is insufficient

to induce epistemic doubt. Students face a choice when they experience different perspectives: to follow their subjective opinions or learn the cognitively challenging methods of evaluating truth claims. If the epistemic climate is low in epistemic concerns, the former is the more likely selection.

**Outside-in** Various scholars characterise the Confucian education system as a process of observing information from outside the self and incorporating the information within (Aoki, 2008). Tweed and Lehman (2002) call this an ‘outside-in’ belief. This characterisation is consistent with the findings in this project, especially concerning the belief that the target of *rikai* is to repeat the outside information in one’s own words. Aoki (2008) discusses the compulsory education levels in Japan, but the predominance of National Examinations also suggests that the ‘outside-in’ beliefs continue throughout the undergraduate years. When one has passed through the gate and become a gatekeeper, one may produce knowledge. Until then, one’s task is to memorise, or *shu* (obey), the outside information.

A complete discussion of precise philosophical beliefs regarding ‘outside-in’ perspectives is beyond this project’s scope. Nevertheless, some comments are necessary to comprehend the nature of epistemic difficulties faced by the participant group. Fitzgerald and Cunningham (2002) discuss ten positions regarding epistemic beliefs of facts within epistemic cognition. I will draw on their work in the following section. Fitzgerald and Cunningham (2002) describe the realist epistemological position (see Figure 6.1) which depicts an external object being perceived directly and brought into the mind, as:

“All realists have held two axioms: (a) that objects of knowledge exist independently of the knower, and (b) that the world is capable of being known” (p. 229).

This echoes Mason’s (2016) “knowledge resides outside the self and is transmitted” (p. 378) to the self.

This position, or “epistemological cluster” (Fitzgerald and Cunningham, 2002, p. 214), of related epistemological beliefs, closely matches the participants’ belief set about facts and accords with Aoki (2008) and Tweed and Lehman (2002). Of interest

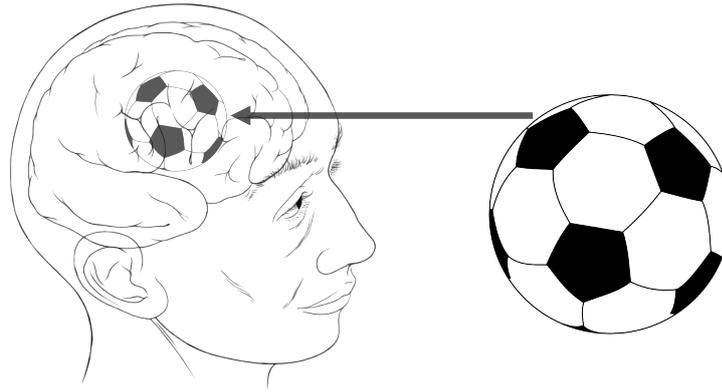


FIGURE 6.1: Direct realist *outside-in* perspective

here is not the deeper philosophical justification for such a belief set but the psychological processes students hold as they become more aware of the underlying epistemic issues in their own thinking as structured by an educational experience grounded in a realist epistemology. Participants may develop a fuller understanding of realist beliefs. However, currently, their beliefs regarding *facts* are *direct* realist beliefs, following Willig's (2013), which accepts information as "accounts at face value and treat[s it] as relatively straightforward descriptions of experiences and events" (p. 130) without epistemic doubt.

Whereas direct realism (Willig, 2013) has its utility in information transmission, this position is discordant with the Department's aims regarding the production of a more epistemic sophisticated position in participants at the time of graduation. Tweed and Lehman's (2002) notion of outside-in captures this perspective well.

The educational process's continued social expectations have produced what Miyamoto and Eggen (2013) call 'an adjustment culture'. This refers to the Japanese's tendency to adjust themselves to the demands of the environment rather than alter the environment to suit personal dispositions, which has been observed in the United States (Morling, Kitayama, and Miyamoto, 2002). Miyamoto and Eggen (2013) do not discuss the genesis of the adjustment culture, but the results of adjustments are consistent with an outside-in mindset. This arises for two reasons. The first is enculturation into a fact-based (that is, unquestionable outside-is-true) mindset. The second is the related condition that if the outside is true, no personal or epistemic gain is derived from questioning it. In this mindset, it makes more sense to adjust oneself in line with the external.

Philosophically, direct realism may be a viable position and is discussed in the literature on epistemic cognition (Greene, Azevedo, and Torney-Purta, 2008; Kitchener, 2011). However, from an epistemic cognition developmental perspective, the issue is not about how well a philosopher can defend a direct realist set of beliefs but about how much reflective judgement a student can bring to their beliefs. Enacting beliefs and the ability to articulate them are also important distinctions to bear in mind. A reasonable target for epistemic cognitive awareness pedagogy is the development of an individual's ability to know the relationship between themselves, which frameworks they employ to see the world and what meanings result because of the interactions of these elements. Figure 6.2 illustrates this four-fold nature: the human sees an object through some interpretative lens and derives meaning, which is not an opinion but an interpretation.

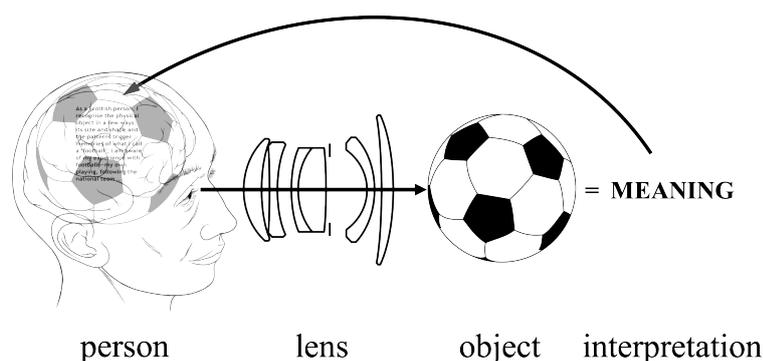


FIGURE 6.2: Interpretational epistemology of interpretation

A direct outside-in realist perspective does not concern itself with the extra layers of person, lens, and interpretation. There is no distinction between the object and the meaning because meaning is said to reside in the object (Moses and Knutsen, 2012). Direct realist learners need to adjust their comprehension towards a degree of specificity of meaning. This degree is typically set by exam content. Learners' engagement with the specific interpretation of an object is limited to examination specifications which are occluded to learners. When this process is applied not only to particular objects but to the whole learning curriculum of science, history, mathematics, foreign languages, native language and social sciences and are tested in fixed-item, well-structured questions in mark sheet answer formats and this process comprises much of a person's secondary educational experience, it is hardly

surprising that direct realism takes a serious hold over university students' unreflected personal epistemologies. However, without interpretational thinking, academic thinking (which includes critical and epistemic thinking) cannot adequately take root.

**Epistemic climate** Feucht (2010) discusses the importance of establishing an epistemic climate in the primary school classroom that utilise constructivist pedagogies. He invites educators to ask about "the nature of knowledge and knowing [as] presented by teachers, instruction, and educational materials" (p. 55). Muis, Trevors, and Chevrier (2016) also discuss 'epistemic climate' (p. 334) describing it as the general educational context in which students operate. Muis and colleagues' (2006; 2016) TIDE framework (Theory of Integrated Domains in Epistemology) states that "in the TIDE framework, it is the dynamic interaction of cognitive and brain capacities with environmental demands that characterise advancement in epistemic beliefs" (Muis and Sinatra, 2008, p. 140). The environment consists of general beliefs which inform academic and then domain beliefs. These aspects are further informed by the socio-cultural milieu, the precise academic context and the instructional context that individuals display epistemic cognition (Muis, Bendixen, and Haerle, 2006).

From this perspective, my participants' educational epistemic climate may be characterised as focusing on memorising facts and allowing participants to disagree with notions that differ from their opinions. To overcome this, I have been working towards establishing a more sophisticated epistemic climate in our Department and have conducted two Faculty-wide seminars on this topic at the Faculty's professional development seminars. While there is broad agreement in principle about the desirability of an epistemic climate, many professors lament that their lectures must focus on providing students with the prerequisite information for exams. Overcoming the fact/opinion knowledge structure by oneself is unlikely to be successful.

This project has uncovered several critical aspects of the task context and epistemic climate. The general lack of sourcing and justification expectations is partly a result of participants not doing these for other courses. It is not unfair to characterise the general situation of participants' epistemic climate as being relatively impoverished. The more localised conditions in my own pedagogic intervention

were unlikely to overcome a wider set of beliefs that typify participants' educational epistemic climate.

### Facts and opinions from a Kegan's perspective

To help participants realise that academic knowledge creation is contingent on systematic applications of objective frameworks and on both the application of the frameworks and the creation of the frameworks themselves, I wrote a passage in the coursebook to introduce Kegan's (1982) constructive developmental theory.

I selected Kegan (1982) because his notion of *subjective* and *objective* knowing is at the heart of development in epistemic thinking. Kegan develops on Piaget (1971), who demonstrated that children think in categorically different ways to adults. I hoped that if participants could comprehend Kegan's theory, they may begin to question their own belief in the fixedness of knowledge.

Kegan's (1982) theory explains several epistemic cognitive dimensions, *fluid knowledge*, and *knowledge source* in particular. Figure 6.3 summarises Kegan's (1982) subjective-to-objective shift in knowledge construction utilised in the first wave of epistemic cognition theory (Baxter Magolda, 1992; Perry, 1970). Kegan argues that naïve knowers see knowledge as emanating from outside. However, as their understanding of the co-constructive processes of knowledge develops, the awareness of the self in the process arises. Erstwhile subjective knowledge aspects become available for introspection and are conceptualised as separate from the knowledge item itself.

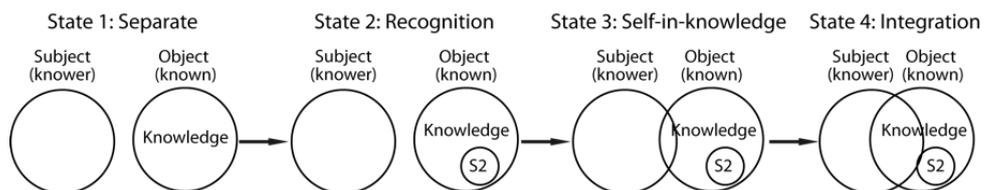


FIGURE 6.3: Integration of subjective to objective knowing (based on Kegan, 1982)

Figure 6.3 also shows the discovery (State 2) of a human knower (S2) involved in creating knowledge. At the start of this intervention, participants may be assessed as being at State 1. They maintained that knowledge (that is 'fact') is objective and neglect the importance of human agency in knowledge creation, either their own or the knowledge item's instigator, which they reduce to opinion. Figure 6.3 was

created before the dataset being collected and was a part of the pedagogic material used in the course. However, none of the second rounds of interviews, second assignments, nor the later weeks in the online board discussions revealed any indication of this feature being understood by participants. Once again, the binary fact/opinion knowledge structure is likely to be at the base of this difficulty. This is because of the logic that if something is a 'fact', it does not matter who discovered it and that the naïve knower's role is to comprehend facts as separate from any personal identity.

### Summary of implications

Participants could reject multiple perspectives on the grounds that facts can be selected from the available resources and no consideration of opposing facts is needed. In this way, one's position can be supported without contradiction. In the first interviews, three participants discussed their beliefs about *respect*. This topic did not become a theme in the first interview set because it was limited to only three participants. However, these texts provide a culturally located possibility for focusing only on one side of an argument. Sakura defined *respect* as "to listen, understand, accept and ... like seeing the positive way" (Sakura 1st Int: 1000). This topic was brought up in the third class in the intervention and was fresh in participants' minds at the interviews. Ayano and Kenta reported similar definitions. It was not mentioned in the second interviews. The limitation of *understand* has already been discussed, and the notion of respect may be a factor in how participants engage with multiple perspectives. They comprehend the other perspective but do not feel the need to believe it. Conflict avoidance is well-established in Japanese communication (Maynard, 1997). When facing a divergent perspective *respecting* it is a viable option. It is not necessary to engage with the divergent perspective beyond this level. Recall Ayano's willingness to accommodate two teachers who gave her different advice about the placing of a topic sentence in a paragraph.

"I changed the pattern ... I changed my of doing it to suit the teacher. To get accepted and get points" [Ayano 1st Int: 162].

“Maybe I couldn’t choose which [reason each teacher gave] is better. Maybe because both reasons for why it’s good are. Maybe [I] could understand both reasons” [Ayano 1st Int: 179].

Ayano’s epistemic engagement with the teachers’ advice is limited to *rikai* and is at the level of *respect* which does not include epistemic evaluation. The possibility that participants’ beliefs surrounding *respect* incorporated *rikai* but not evaluation remains an enticing notion that requires further investigation.

For similar reasons, seeing the self as a knowledge creator remains a problematic bridge to cross. The gatekeeper produces true knowledge not the lowly student. It is enough to respect others’ opinions and perspectives, which entails an adequate level of *rikai*. However, participants’ beliefs that other students are not knowledge creators so their input in discussions may similarly be compartmentalised through the process of *respect*.

The above suggests several recommendations for pedagogic practice at the level of in-class discussion with students and preparing curricular materials.

- Pay heed to terms such as ‘understand’, ‘comprehend’ and ‘fact’. The possibility of teachers and students talking at cross purposes is high.
- Wherever possible, show current disagreements at the theoretical level. Students need to see that fluid knowledge is the result of questioning at the expert level.
- Do not present ‘facts’ directly. Instead, show the theoretical framework used to generate the ‘interpretations’.
- Encourage students to see themselves as knowledge creators, as being a part of the continuum of knowledge.
- Insist on sources of knowledge, even if students initially reject giving sources for common knowledge.
- Reject ‘opinions’ and insist on students clarifying their evidence and reasoning for their interpretations.

- Establish an epistemic climate wherein students expect to question epistemic aspects of knowledge.

## 6.2 Reflection

The interpretational epistemology (see Figure 6.2) provides a useful framework to structure my reflection on this project. The four aspects of *person*, *framework*, *object* and *interpretation* create a seven-dimensional matrix with which to explore various relationships. In the following section, I discuss these seven in order to demonstrate how I adopted a critically reflexive approach during all stages of the research process to collecting and examining the data, following Cohen, Manion, and Morrison (2011, p. 141) who note that:

“highly reflexive researchers will be acutely aware of the ways in which their selectivity, perception, background and inductive processes and paradigms shape the research” (p. 141),

whilst following Greenbank (2003) by reflecting on how personal values and identity shape the research process.

**Personal attributes** My dual situation as a practitioner and a researcher was clear to me from the onset. The tension between my needs as a teacher and a researcher may have been in conflict. However, I endeavoured to maintain a strict division between these roles, and in the case of any potential role confusion, I supported my students’ needs before my own researcher needs.

There is another layer of complexity in my role division. I began the doctoral course to develop my abilities to become more beneficial to the Faculty and the wider community. An implication of the doctoral process is the delivery of an improved practitioner practice. Compared to my knowledge at the start of this ED.D. course, I feel that I have understood the nature of ‘new knowledge’ sufficiently better to prioritise genuinely new information over any other form of interpretation that may negatively influence my analysis and interpretations. In practitioner terms, because of the paucity of information, especially in English about Japanese undergraduates’

epistemic cognition, I felt that investigating epistemic cognition in my context would lead to sufficiently 'new' information, whatever the actual results may be.

My motivation to develop my abilities as a researcher and create more available educational products informed this study. Of course, I am not fully aware of myself, and there remains the possibility of much that is subject (in the Keganesque sense) that has influenced me.

**Frameworks** The first link in the matrix involves the relationship between the person and the framework. Knowing and utilising complex frameworks such as epistemic cognition, descriptive phenomenology and critical realism is a never-ending process. How well I comprehend and understand these frameworks is evidenced in several ways: 1) the appropriate selection of the frameworks; 2) the relevance to the research question; and 3) their utilities to respond to the research question and what types of analysis they allow. These issues have been discussed thoroughly in the Literature Review (Chapter 2) and Methodology (Chapter 3) chapters. At the end of this project, I am satisfied that all three of these frameworks were sufficiently responsive and appropriate to the research question. This is evidenced in the final analysis by the discovery of the fact/opinion knowledge structure and in the Findings chapter (see Chapter 4) where participants discussed many beliefs regarding knowledge. I hope that such descriptions may be of use to other practitioners in similar contexts.

**Object** The next linkage considers how the person interrelates with the object. How I have understood my participants' texts through the frameworks of epistemic cognition, phenomenology and critical realism must be incomplete. Doubtless, given additional time and more data collection in repeated rounds, more detailed analysis and interpretations would become available. The critical question here is to consider if the current data set and results comprise a sufficient response under the available circumstances. Upon reflection, I consider these results preliminary at best, pointing to so many other areas of study.

**Interpretation** While I strived for my interpretations with this particular participant group to be plausible, this decision rests with the reader. I hope to have provided sufficient support for my interpretations in data analysis methods and excerpts from the dataset. Furthermore, I have presented my findings to peers in the Japanese context on five occasions allowing me to reflect on peer reactions, advice and comments on my findings. I received a criticism. To one peer, participants' English language seemed too high. I have presented their excerpts verbatim. I have made it clear that the participant group comprise a subset of highly proficient English users in a national university. As such, their English level both allows them to communicate their beliefs about epistemic issues and me to conduct this project. However, it needs to be noted that, similar to the peer above, other practitioners in Japanese universities who teach foreign language academic writing may experience disbelief at the level of these participants' English. More research is needed with EFL students at lower ability levels. The participant group avowed that there was no language impairment in articulating their beliefs. Their beliefs may have been expressed more fully in their native language, but the beliefs' propositional substance is unlikely to be significantly different.

**Framework and object** The relationship between the frameworks and the object, that is, participants' proposed epistemic cognition, is a critical one. The case for phenomenology as an appropriate method to capture participants' epistemic cognition must be made. That was the intention of Methodology Chapter 3.

**Framework and interpretation** The interplay between framework and interpretation is a matter of technical expertise, one that entails research notions such as validity, generalisability and trustworthiness. I will discuss these issues in this section.

If I have used the frameworks appropriately, the findings will necessarily be acceptable, if not plausible. This speaks to the notion of research reliability, which "is present when the same results would be obtained if the study were conducted again" (Johnson and Christensen, 2017, p. 609). However, some interpretational leeway is present as the person doing the analysis will bring personal variables into the interpretational process. Vagle (2018) invites "the researcher to try to see what frames

their seeing” (p. 223). This act is predicated on the ability to see those frames. One method I employed consistently was Argyris’s (1976) double-loop model in which the search is for governing values.

Whenever I arrived at an interpretation, I compared it alongside other rejected interpretations. Rather than favour one interpretation, the others were defended at the level of opposing values and assumptions. Whenever I could not evaluate in favour of my actual interpretation, I would locate the governing value and begin again. Only interpretations that survived this procedure were retained in this project. An example illustrates this point. When I first realised the possibility that participants may hold a dualistic fact/opinion knowledge structure, I was “shocked” (Vagle, 2018, p. 244). I had assumed that participants’ knowledge structures included hypotheses and suppositions and could temporarily hold potentially incorrect information for analysis. Certainly, these terms were used in the intervention and participants informed me during classes that they knew the translations of these terms. I asked myself *What frames my own beliefs regarding the interpretation of object using the framework of epistemic cognition?* This question sharply and uncomfortably probed my own expectation, based on years of partially unreflexive beliefs that Japanese undergraduates do not exhibit, and therefore do not hold, sophisticated epistemic beliefs.

A paradox emerged. If participants know the translation of the terms, how can they not enact and know the practical meanings of the terms? I had to consider the possibility that perhaps they do and I am not seeing it. At this point, two options become available. The first is that there is no sophistication in participants’ epistemic beliefs. The second is that there is no demonstration of those beliefs echoing Tasaki’s (2001; 2008) assertion. Considering these options equally, I needed to accept that there could be no evidence in the interview data to evaluate in favour of either option unless a participant was exceptionally self-aware and could articulate their deeply enculturated notions regarding knowledge. In this case, the participant could be evaluated as being epistemically sophisticated. This was not evidenced in the dataset. The essay data, however, could provide information in favour of the first option.

Nevertheless, I was shocked. I experienced a sense of ‘this explains much’. If hypotheses and other non-stable knowledge claims are merely someone’s opinion, they may be rejected or accepted based on one’s sense of plausibility. If developing one’s sense of plausibility is the aim of undergraduate education, then technical evaluation or sophistication in epistemic thinking is unnecessary. The notion of *shuhari* (Shimada, 2018) limiting undergraduates’ practice of epistemic issues until late in their careers feeds into this learning sequence. Of the nine participants, eight were preparing for national licensing exams in foreign language teaching or for the civil service exams. Their preparation consisted primarily of memorisation of masses of information for fixed answer multiple-choice tests. Even at their undergraduate late career stage, the main task did not include an epistemic focus. Indeed, it is possible to argue that developing students’ abilities to question knowledge claims may be unethical. It potentially leads to them faring less well on the fixed answer tests. In other words, it may be practically easier and more profitable to adopt a simple dualism of facts and opinions.

Johnson and Christensen (2017) caution against inferring interpretations from data as being from the effect of the intervention when confounding variables may be present. As the intervention spanned an entire semester, there may have been a “maturation effect” (p. 621) created by the influence of other educational experiences in other classes during the intervention. While this cannot be ruled out, some participants reported in the second interviews that they only rarely had discussions, and one participant said that I was the only teacher to ask for extended reasoning from them. Additionally, the “reactivity effect” (Johnson and Christensen, 2017, p. 635) potentially reduces the validity of a research project because participants are aware that they are being researched and may act differently from usual. The current data set cannot confirm my assertion that the participant group’s output mirrors many others in my experience. However, in terms of referencing (Yoshimura, 2015) and in their reliance on subjectivity (Rinnert and Kobayashi, 2007), these participants’ cognitions echo what is known elsewhere in Japan, albeit at a diverse academic and disciplinary level. Not all participants were available after the intervention, but four were regularly consulted about the accuracy, plausibility and meanings of my interpretations of their data.

Finally, the object and interpretation relationship returns to the notion of plausibility and relation to the literature. This project's principal finding is the description of a different dualistic epistemic pattern of facts and opinions, but this dualism is not yet described in the existing literature. Greene, Azevedo, and Torney-Purta (2008) and Greene, Cartiff, and Duke (2018) describe a naïve dualism in which the principles for rejecting opposing beliefs is a dogmatic view concerning authority or personal experience. Greene and his colleagues categorise such thinkers as naïve. However, this particular participant group display more sophisticated reasoning and epistemic abilities that place them above the naïve level. However, these participants cannot be labelled as true multiplists in any existing categorisation (e.g., Kuhn, 1990; Baxter Magolda, 1992; Belenky et al., 1986) except in King and Kitchener's (1994) Reflective Judgment model. In that, the participants would be categorised as being quasi-reflective. However, even according to this model, the argument that participants are 'quasi' reflective does not match the data, as participants could reflect well on personal knowledge and knowing. It is for these reasons that the fact/opinion duality makes the most sense to me. Participants display articulate reasoning about their epistemic beliefs. However, the strength of the fact/opinion duality remains high and structures their belief system at the highest level.

### 6.3 Limitations

A few limitations beyond those mentioned above need to be articulated. One limitation is not generalising beyond the purposive sampling technique (Creswell, 2009; Willig, 2013). In order to target a specific population of students, a purposive sampling technique was used. Especially in the second round of interviews, a more diverse set of beliefs was uncovered. This points to the difficulty in generalising beyond the present sample. Instead, I aimed to capture "rich data" (Easton, McComish, and Greenberg, 2000, p. 703), which was in-depth and accurately reflective of these nine people.

A serious limitation of the present study concerns the notion of validity. Cohen, Manion, and Morrison (2011) define this as the study measuring what it claims to be

measuring. The instruments that aimed to capture the construct in question (epistemic cognition) were not validated before this study. This project is exploratory. Much of the interpretation that I arrived at depends on the combination of my aspects, the participant group and the methods I selected to explore epistemic cognition. In particular, the interview protocols used in the two interview rounds were different. I have explained my rationale for this (see Section 3.3.3), but this constitutes an “instrumentation threat [to validity] when the measurement instrument that is used during pretesting is different from that used during post-testing” (Johnson and Christensen, 2017, p. 623). However, I endeavoured to retain a constant reflective approach in order to remain objective.

## 6.4 Contextualising

This project’s impetus sprang from my experience of conducting academic literacy courses in Japanese universities for over sixteen years. My experience was that the typical instructional sequences produced unsatisfactory results. My initial training in Teaching English as a Foreign/Second Language to adults utilising methods typically introduced in a CELTA (Certificate of English Language Teaching to Adults) and the modules of a Master’s in Education in TESOL had led me to believe in the theory and practice of instructional design as that relates to academic writing in a second language. I actively and optimistically embraced various products of writing, such as the five-paragraph method, compare-and-contrast, locational, notional and pros and cons. However, none of these produced a satisfactory essay in the sense that the problem statement in the opening chapter described.

I began my present position five years ago coincidentally in the second year of my ED.D. course. My remit was to educate the same cohort of students over two years. The students themselves consisted of the highest level of English users in the prefecture. They were self-selected, motivated and able English majors who saw their future selves as English users. I found myself in a position where I could apply any ideas I had about developing language and thinking to the highest levels over two years.

### 6.4.1 The intervention

A consequence of my new employment situation was the ability to explore issues in cognitive development over two years. Issues in epistemic cognition that were relevant to student development could be incorporated over this span, and knowledge from the literature could inform my pedagogic decisions concerning academic literacy development. I produced a coursebook that has now been published by a local publishing house that summarised the principal elements of epistemic cognition and the Toulmin argument pattern (Smiley, 2019). This book was taught in the belief, or hope, that direct instruction in these topics combined with having participants reflect on epistemic issues would lead to higher degrees of sophistication in epistemic cognition and better graduation theses.

The intervention produced a moderate move from high dualistic, or unreflective multiplistic thinking to reflective multiplistic thinking in most participants. Nevertheless, high levels of sophistication were neither observed in the second assignment nor the second interview. The lack of an epistemic consideration became apparent early in the intervention, and the findings themselves have raised more questions than answers.

## 6.5 Conclusion

This project provides detailed and nuanced evidence that Japanese national university third- (and one fourth-year) English majors' epistemic cognition may be developed over the span of a single fifteen-week semester. These participants' English levels are advanced, and many questions remain about how less able students would reflect on their higher-order cognitions while grappling with a foreign language. Furthermore, the final shape of participants epistemic cognition diverged in several ways. Not all demonstrated subjective multiplistic thinking; one participant expressed deep frustration upon realising that deeper thinking entailed less certainty not more as he had hoped for. Some participants (notably Sakura, Aoi and Kenta) exhibited sophisticated beliefs in some areas of epistemic cognition, while others hardly moved from their initial position. Nevertheless, the conclusion that I draw from this experience is that positive development is possible.

However, no participant demonstrated what I call interpretational thinking. In other words, tuition in Toulmin's argumentation pattern failed to aid participants to realise the subtle yet vital relationships between general and specific evidence, thus obscuring the nature of how academic claims need to be warranted by such linkages. I propose that this is due to a fact/opinion knowledge structure limiting participants' scope of cognition. This result arrived after the intervention had ended, so I was unable to collect data about other aspects of participants' knowledge. Three of the participants continued to take classes with me in the following semester in their fourth year. I inquired further about their ability to translate terms such as 'hypothesis' and 'supposition'. They could do so. However, when I invited them to define, for example, what a hypothesis was, I was told that it is an opinion.

If I were to redo this project, I would prepare a much more structured semi-structured interview, one that would direct all participants into answering particular questions directly before allowing the interview to become more open. I would target terms such as 'fact' and 'opinion'. I would also provide far more examples of 'good' academic writing. I may even insist on a minimum number of external sources and precise reference formatting. The principal remaining question is how to help students move from an ingrained fact/opinion knowledge structure towards interpretational thinking.

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## Appendix A

# Participation Information Sheet

## **Argumentation instruction on epistemic cognition**

### **Participant Information Sheet V2 (August 31, 2018)**

You are being invited to participate in a research study. You can decide to take part or not take part in the study. Please understand that the decision is yours. This document gives you information to help you decide.

This document explains the purpose of the research and how the research will be done. Please take time to read this carefully. If you do not understand any part, please feel free to ask for more information. Also, please feel free to discuss this study with your friends, classmates and family if you want to. Remember that the decision to be a part of this study is up to you.

Thank you for reading this.

#### **1. Title of Study:**

An Exploratory Study Investigating the Efficacy of Argumentation Pedagogy in Developing Japanese University Students' Epistemic Cognition (Short form: Argumentation instruction on epistemic cognition).

#### **2. What is the purpose of the study?**

Researchers know a lot about high-level thinking. They also know a lot about what good academic writing. However, there is much that is not known about how students develop better ways of thinking and writing. The aim is to improve students' abilities to write good graduation theses, but in order to improve those abilities, researchers need to know more. In particular, researchers need more information on how students improve (their thinking processes) and what kinds of activities help their progress. Furthermore, much of the research that has already been done into high-level thinking and academic writing has been done in English-speaking countries. Until now, little has been studied about how Japanese students think and write at the level of the graduation thesis.

In this study, high-level thinking is called 'sophisticated epistemic cognition'. This means good thinkers have skills that help them understand the nature of knowledge and how they know their knowledge. 'Academic writing' is defined as 'using structured arguments in writing'. This study aims to study students' development during the development of high-level thinking alongside good academic writing.

Results from this study may be valuable to researchers and teachers who wish to create better courses for students. Your participation in this study will be useful to future students and teachers.

### 3. Why have I been chosen to take part?

You have been chosen to take part because you will write a graduation thesis next year and you have registered on Mr Smiley's Oyo-English Academic Writing class. The purpose of this class is to develop academic writing. This class focusses on and therefore involves learning about higher-level thinking and academic argumentation. For these reasons, members of this class are ideal participants for this study.

### 4. Do I have to take part?

The decision to take part is **entirely up to you**. If you decide not to take part, nothing negative will happen to you. You will be treated in exactly the same way as any other student in the class. Your grades will not be affected **in any way**.

However, if you do decide to take part, your writing will become data that will be analysed. The more data the researcher (Mr Smiley) collects, the better quality the analysis can be. Please understand that **no personal information** will be collected, and that all data will be **anonymised**. This means that your name will not be connected to any data.

Please understand that Mr Smiley is both the researcher and the teacher of the class. The choice of whether you decide to participate or not is **up to you**. This will not affect your grades **in any way**.

### 5. What will happen if I take part?

All students in the class (whether they take part in the study or not) will be required to do the following:

1. Complete a starting writing assignment (1) in weeks 1-3
2. Write discussion board posts during the semester from weeks 2-14
3. Complete a final writing assignment (2) by the end of week 15

If you decide to take part, these extra steps will happen:

1. You will be invited to be interviewed in the first few weeks of the semester
2. You will be invited to be interviewed at the end of the semester
3. Your written papers and discussion board posts will be analysed as study data

The interviews will take place in Mr Smiley's office (or a place that is more comfortable for you if you wish). They will last for approximately 30-45 minutes. The topic will be your beliefs about knowledge. Interviews will be recorded on an audio recorder and transcribed into a text document. Except for these interviews (which you can decide **not** to do even if you allow your data to be used for analysis), you need to do nothing more than what is required for the class.

This study uses a qualitative research design. This means that the aim is to study the experiences and nature of the topic of knowing and writing. You will study qualitative research in this course, and being a part of this research will give you a

deeper insight into the meaning and doing of qualitative research. The principal researcher is Jim Smiley, and this research forms a part of his doctoral thesis.

## **6. Expenses and/or payments**

There are no costs involved for you to be involved in this study. Accordingly, you will not receive any payment.

## **7. Are there any risks in taking part?**

Your work as a participant in this study (except for the interview) is similar to your other classes. No risks are expected.

However, if you feel emotional discomfort being a participant, you should let Mr Smiley know immediately. This applies to the interview as well. You are free to stop your involvement at any time. If you want to discuss your feelings of discomfort, you may contact the Gakusei Shien Bumon (Student Support Group) in the Student Centre A-Building.

## **8. Are there any benefits in taking part?**

There are no direct advantages to you as a participant. All students in the class will be treated in the same manner, whether they are participants in the study or not. However, participants will have a **debriefing** session after the study. This extra lesson should be beneficial to you in terms of your continued learning. Furthermore, as your data will be used for analysis, you may ask about your own personal thinking styles and abilities beyond such information that is available in the regular class feedback.

The major benefit that is expected is for future students.

## **9. What if I am unhappy or if there is a problem?**

If you are unhappy, or if there is a problem, at first, please feel free to let Mr Smiley know (via email: [jsmiley@iwate-u.ac.jp](mailto:jsmiley@iwate-u.ac.jp)). If you remain unhappy or have a complaint which you feel you cannot come to Mr Smiley with, then you should contact Research Governance Officer at [liverpoolethics@liverpool-online.com](mailto:liverpoolethics@liverpool-online.com). When contacting the Research Governance Officer, please provide details of the name of the study (An Exploratory Study Investigating the Efficacy of Argumentation Pedagogy in Developing Japanese University Students' Epistemic Cognition), the researcher's name (Jim Smiley) and the details of your complaint. You should also inform the Dean of the Faculty of Humanities and Social Sciences (Professor Hidenobu Yokoyama).

## **10. Will my participation be kept confidential?**

Your participation will be kept confidential. Your name will not be used in any paper that is based on this study. Your name will be replaced with a code (such as 'PA', for 'Participant A').

Data is collected in three ways (as described in section 7). This following section describes how your data is kept confidential.

1. All students in the class must contribute to the online board discussions, and in the same way that you know your classmates, you will see their discussion board posts. This data will not be given to anyone outside of this class. The online board is private and can only be accessed by you and Mr Smiley. Data from non-participants will not be used in any data analysis. It will be removed manually before any analysis is done.
2. Interview data with Mr Smiley will be anonymised (that is, your name taken off any papers used for analysis). No one will know the identity of any participant.
3. Interview recordings will be destroyed after they have been transcribed.
4. The written assignments will be treated in the same way. Names will be removed from participants' papers.

All physical data will be stored in a locked cabinet in Mr Smiley's office. All electronic data will be stored on USBs that are stored in that cabinet. No one has access to that office except for Mr Smiley. Data will be kept for the duration of the study and until the University of Liverpool storage deadline is met at five years after the study has finished. After this time, all data will be destroyed.

#### **11. What will happen to the results of the study?**

The results of the study will form a part of Mr Smiley's doctoral thesis to be submitted to the University of Liverpool. This thesis will be stored in the University of Liverpool's library and on any other relevant thesis library.

Participants may ask Mr Smiley for a copy of the thesis if they so wish. The exact date of publication is not known, but please feel free to contact Mr Smiley (jsmiley@iwate-u.ac.jp) at any time to find out.

#### **12. What will happen if I want to stop taking part?**

Participants may withdraw at any time, without explanation. Data up to the period of withdrawal may be used, if you are happy for this to be done. Otherwise you may request that they are not considered as data and no further use be made of them beyond the regular use for the course.

Data will be anonymised after the course has ended for the purposes of data analysis. You cannot withdraw after the course has ended.

#### **13. What is a 'duty to report'?**

The interview and class content is about your knowledge and argumentation. If you should reveal any criminal actions, Mr Smiley has a 'duty to report' such actions to the appropriate authorities. The interviews are completely confidential, but there is an ethical limit to this confidentiality.

#### **14. Who can I contact if I have further questions?**

If you have any further questions, please contact the principal investigator (Jim Smiley) at jsmiley@iwate-u.ac.jp.

## **Appendix B**

# **Participant Consent Form**

## Committee on Research Ethics

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### PARTICIPANT CONSENT FORM

**Title of Research Project:** An Exploratory Study Investigating the Efficacy of Argumentation Pedagogy in Developing Japanese University Students' Epistemic Cognition

**Researcher(s):** Jim Smiley

**Please  
initial box**

1. I confirm that I have read and have understood the information sheet dated [DATE] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is **voluntary** and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.
3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish.
4. I agree to take part in the above study.

Participant Name	Date	Signature
Name of Person taking consent	Date	Signature
Jim Smiley Researcher	Date	Signature

**Principal Investigator:**

Name  
Work Address  
Work Telephone  
Work Email

**Student Researcher:**

Jim Smiley  
Faculty of Humanities and Social Sciences, Iwate University, 3-18-8 Ueda, Morioka, Japan  
019-621-6748  
Work Email

**Version 1, July 20, 2018**

## Optional Statements

- The information you have submitted will be published as a report; please indicate whether you would like to receive a copy.

- I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications.

- I agree for the data collected from me to be used in future research and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee.

- I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings for data analysis.

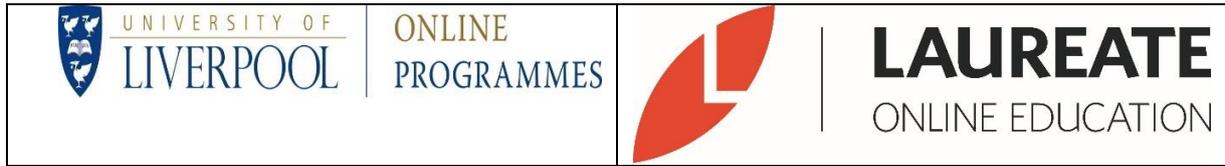
- I agree for the data collected from me to be used in relevant future research.

- I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.

- I understand and agree that once I submit my data it will become anonymised and I will therefore no longer be able to withdraw my data.

## **Appendix C**

# **Ethics Approval Document**



## Liverpool Online Research Ethics Committee

DATE: 11<sup>th</sup> October 2018

Application Reference Number: 2018/00008

Project title: An Exploratory Study Investigating the Efficacy of Argumentation Pedagogy in Developing Japanese University Students' Epistemic Cognition (Studying the effect of learning argumentation on students' ways of thinking)

Dear Jim Smiley,

I am pleased to inform you that the above application has now been approved by the Committee.

Please ensure that you inform the Committee if any changes are made to your research project, and note that this may require you submit a revised application for a further review.

If you have any further queries, please contact [liverpooethics@liverpool-online.com](mailto:liverpooethics@liverpool-online.com)

Good luck with your research project!

A handwritten signature in black ink that reads 'Victoria L O'Donnell'.

**Dr Victoria L. O'Donnell**

**Chair, Liverpool Online Research Ethics Committee**