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**Empowering Chinese University EFL
Writers with Persuasiveness and Self-
Regulation Through a SRSD-Based
Writing Instruction**

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Abstract

Since argumentation has long been acknowledged for its essential role of enhancing persuasiveness in argumentative writing, writers' ability to evaluate, judge and compose a sound argument has been studied in depth by researchers and practitioners at all educational levels in the academic domain of second language (L2) writing. However, when assessing the success or failure of a piece of argumentative writing, most previous L2 empirical studies focus on overall writing performance evaluated based on a holistic approach. This overlooks the pivotal role of argumentation in the quality of argumentative writing. Therefore, not much consensus has been reached on assessing the quality of reasoning in L2 argumentative writing, and our knowledge on L2 writers' perceptions and behaviors on argumentation and argumentative writing is also limited.

This study aimed to examine Chinese university learners' L2 argumentation and argumentative writing performance with an emphasis on argument soundness before and after a Self-Regulated Strategy Development (SRSD) instruction that integrated self-regulated learning (SRL) and argumentative knowledge and strategies into a general English-as-a-foreign-language (EFL) course, and further explored how students' understandings of argumentation and argumentative writing and reported use of SRL strategies changed with the instruction.

This thesis drew upon an exploratory case study research design implemented with 46 non-English major students at a Chinese Southeastern Tier-1 university who were recruited by purposive sampling. A mixed-methods approach was adopted to collect and analyze data for addressing the research question from multidimensional perspectives to increase reliability and validity of the research. Data were collected via writing tests and semi-structured interviews before and after the SRSD instruction, which was administered for a 16-week semester to

cover the explicit instruction and practice of SRL and argumentative knowledge and strategies.

Quantitative findings indicated that the presence of essay elements significantly predicted essay quality regardless of the intervention, though there was a significant increase in essay length, elements and quality after the intervention. Given this, further investigations on essay elements were conducted in this study. The results revealed that essay quality was significantly influenced by variables of argument soundness, argument elements and reasoning types. There were also positive influences of argument elements and reasoning types on argument soundness and essay quality. There was a significant increase in L2 writers' performance in argument soundness and overall writing quality evaluated from different dimensions after the instruction.

The qualitative results obtained from interviews found that these students reaped the benefits of the SRSD instruction to obtain more knowledge of argumentation in argumentative writing and developed awareness of the effectiveness of SRL and argumentative strategies on achieving good quality of arguments after the instruction. They also reported deploying more effective SRL strategies and argumentative knowledge and skills to enhance their argumentation and writing performance. All these findings led to a conclusion that the explicit SRSD instruction to a certain extent promoted L2 writers' performance and their perceptions of argumentation and SRL.

Keywords: argumentation; argumentative writing; L2 writers; SRL; SRSD instruction

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Chapter One: Introduction

Among all language skills, writing is traditionally accepted as one of the most demanding skills to acquire and develop for learners in all contexts (MacArthur et al., 2016, p. 1). It not only requires the general linguistic competence (Sun & Wang, 2020), the engagement of a specific audience (Baker et al., 2009), but also an integrated skill of formulating and expressing ideas (Zimmerman & Bandura, 1994). Compared to first language (L1) writers, second language (L2) writers are faced with double-dip difficulties as they have to face linguistic and cognitive transferring challenges and manage psychological disadvantages in composing process (Han & Hiver, 2018).

Argumentative writing, compared to other genres, is a particularly demanding writing genre with a specific goal of persuasion to achieve. However, the focus of assessing argumentative writing presented in L1 and L2 empirical studies has mostly been on the overall writing performance which is generally evaluated in a holistic approach in terms of language proficiency, organizational structure and argument quality (Qin & Karabacak, 2010). Due to a primary role of argumentation, which characterizes the process of argument, in constructing a good argument for argumentative writing, the development of this particular sub-variable is worth exploring under a comprehensive and systematic paradigm.

From another perspective, the writing process, no matter in L1 or L2 contexts, is oftentimes self-scheduled, self-performed and eventually self-evaluated to improve techniques and performance (Zimmerman & Bandura, 1994). Hence, there is a vital necessity to develop writers' self-disciplinary and self-regulatory mechanisms for promoting their awareness in autonomous learning. Self-regulated learning (SRL) is a relatively new construct defined as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals"

by Zimmerman (2000, p. 14). This construct has been introduced to assist with enhancing students' self-learning processes (Dörrenbächer & Perels, 2016), demonstrating a positive impact on students' academic achievement in both first (L1) and second language (L2) education (Oxford, 2013; Zimmerman & Schunk, 2011). In the field of writing, researchers have also found that the introduction of SRL theory and strategies play a prominent role in enhancing students' strategy use and writing competence in both L1 (e.g., Graham et al., 2005; Zimmerman & Bandura, 1994) and L2 settings (e.g., Bai, 2015; Teng & Zhang, 2020). Most of the SRL research to date has adopted argumentative writing as a dependent variable to assess the effectiveness of SRL strategies instruction in a L1 (e.g., MacArthur et al., 2015) or L2 (e.g., Rahimi & Norooziasiam, 2013; Sun & Wang, 2020; Teng & Zhang, 2020) setting as this genre requires writers to use goal-oriented self-regulatory processes (Graham & Harris, 1997).

As argumentation performance, self-regulation and strategy use in argumentative writing can be challenging and daunting, it is necessary to draw upon explicit strategies-based instruction with scaffolds of argumentative writing knowledge and SRL strategies in all stages of writing (Ferretti & Lewis, 2013). For English-as-a-foreign-language (EFL) learners, the level of difficulty multiplies in degree as they have to cope with these demanding tasks in a language that is not their mother tongue. In China, writing strategies are not found to be explicitly taught or practiced as part of the English course curriculum in either secondary or tertiary education (Yang & Gao, 2013; Zhang et al., 2016). Argumentation is seldom found as a solely evaluated variable elicited independently from the holistic scoring criteria for L2 argumentative writing and evaluated in a systematic manner (Qin & Karabacak, 2010). This might lead to a lack of argumentation relevant knowledge of both EFL practitioners and learners as they are both not required to be equipped with such knowledge for teaching and learning to attain goals. Concerning these problems, it is meaningful to tailor and implement an instructional model that integrates SRL

and argumentative knowledge and strategies into an EFL course to explore students' changes of argumentation that is evaluated by a scientific approach in L2 argumentative writing, and to further explore students' perceptions on SRL and argumentation in terms of related understandings and strategy use. This study with such aims is expected to provide insights to future EFL practitioners and researchers in teaching and researching argumentative writing based on an integrated argumentation and SRL paradigm.

1.1. Relevant Contexts of the Research

1.1.1. Teaching English as a Foreign Language (TEFL) in China

Influenced by globalization, English has incrementally gained popularity in being taught as a foreign language (TEFL) in China after it was set as a compulsory course in middle schools and universities since the late 1970s (Rao, 2013). With the rapid economic development, Chinese policy makers and educators have been seeking ways that cater to the needs of Chinese students in different levels of education. As Wang et al. (2021) argued, in China, "the landscape of English has changed significantly in the new millennium" (p. 1). Given the theme of this research context, only the tertiary level in China will be discussed. At mainland Chinese universities, the updated official document of *Teaching requirements for college English curriculum* released by Chinese Ministry of Education (MOE, 2007, "Teaching Model" section) states clearly that one of the essential emphases on the reform in college English teaching is on providing students with effective guidance in learning strategies to cultivate them as autonomous learners. This means that teaching philosophy and practices require a focus shift from teacher-oriented to student-centered pattern in which students are expected to be cultivated as independent lifelong language learners through developing their self-regulatory language learning strategies (LLSs). Given this ministerial direction, the core concept of SRL strategies can justifiably be brought into the investigation of this research in higher education of China.

1.1.2. L2 Writing Instruction in China

In mainland China, requirements for college students' English language proficiency, including writing ability, are categorized and elaborated at three different language proficiency levels in the official document of *Teaching requirements for college English curriculum* (MOE, 2007, "Teaching Requirements" section). It requires non-English major students to complete writing tasks on everyday topics for general purposes at the basic and intermediate levels, while at the advanced level, they are expected to write more challenging genres such as expository or argumentative essays on topics in their areas of specialty. However, in the revised version of test syllabus for the national examinations of *College English Test (CET) Band 4 and 6* (Standardized Test Design Team, 2016), writing prompts and evaluation criteria correspond closely to the requirements for the basic and intermediate levels articulated in the official MOE document, with a neglect of examining students' advanced writing ability that requires greater integration of academic knowledge, linguistic competence, learning strategies and thinking skills.

As CET Band 4 or 6 have become a stringent graduation demand in some Chinese universities (You, 2004), teachers and students oftentimes focus teaching and learning on tests and test-taking skills. In the same vein, the writing instruction in China is test-driven and product-oriented, leading to an instructional deemphasis of learning strategies (Teng & Zhang, 2016). Moreover, the CET syllabus emphasizes correct form in language use over thinking ability for writing evaluation (You, 2004), in general resulting in insufficient learning practices to develop thinking skills in and for writing.

Although argumentative writing is not explicitly stated as a required genre for the basic or intermediate level in the official MOE document nor a popular writing prompt of CET, it has become a popular genre in the recent Chinese EFL writing

research at tertiary level for various academic purposes, particularly for cultivating students' critical thinking (e.g. Li, 2011; Liu & Stapleton, 2014, 2018; Lu & Xie, 2019) that is considered essential in EFL students' better performance and achievement (Heidari, 2020). The practices of argumentation skills embodied in written language are of considerable importance in developing critical thinking ability (Liu & Stapleton, 2014). Therefore, more or less, students are instructed with knowledge and strategies of argumentative writing in Chinese EFL writing courses. However, in China, the instructional time of writing is primarily in control of EFL teachers as writing is taught as a discrete skill, as part of an integrated English course for non-English majors with an aim to develop all language skills of listening, writing, speaking, reading, grammar and vocabulary (You, 2004). Due to few explicit writing instructional practices in the general English courses, it may be necessary to develop a scientific syllabus that embodies pedagogical methods that orient the instructing process and forms of assessment with clear objectives to explicitly instruct and effectively evaluate students' relevant writing knowledge and strategies.

When argumentative writing is taught in EFL course or studied in EFL contexts (e.g., Nguyen & Gu, 2013; Teng & Zhang, 2020), the focus of pedagogies or assessment are mostly not on the strength of arguments or critical thinking abilities but on overall writing performance that consists of language, structure and content. Even when the focus of studies is on argumentation, the evaluation draws on primarily counting the number of argument elements (e.g., Qin & Karabacak, 2010) rather than examining the strength of arguments from various perspectives. Little attention has been given to a holistic view of evaluating argumentation in written arguments in EFL contexts.

1.2. Research Questions

Given the problems mentioned in Section 1.1, it is incumbent on practitioners and

researchers to introduce an instructional model, in this study a SRSD intervention, that aims at empowering Chinese university EFL students with argumentative writing knowledge and strategies, as well as SRL theory and strategies, and further to explore students' changes of argumentation in argumentative writing, and their corresponding understandings and strategy use. The research gaps addressed by this study therefore include:

- 1) Exploring how to integrate SRL strategies and argumentative knowledge and strategies for argumentative writing into a general EFL course to empower L2 writers;
- 2) Exploring how L2 writers' argumentation and argumentative writing changes after a SRSD instruction;
- 3) Exploring how L2 writers' understanding of and SRL strategy use for argumentation and argumentative writing change after a SRSD instruction.

This present research, grounded in argumentation and SRL theory, attempted to explore Chinese university L2 writers' academic performance and their perceptions in relation to argumentation and SRL before and after a Self-Regulated Strategy Development (SRSD) instruction. An exploratory case study approach was adopted, and mixed methods were conducted for data collection via writing tests and semi-structured interviews before and after the instruction with an aim to address four research questions:

1. Were there any differences in the performance of participants' argumentation and argumentative writing before and after a SRSD instruction? If so, how did they differ?
2. Were there any differences between high, intermediate, and low argumentative competent students' understanding about argumentation and argumentative essays before the SRSD instruction? If so, how did they differ?
3. Were there any differences between high, intermediate, and low argumentative competent students' reported use of SRL strategies to mediate argumentation

and argumentative writing before the SRSD instruction? If so, how did they differ?

4. Were there any differences of participants' understanding of and reported use of SRL strategies for argumentation and argumentative writing after the SRSD instruction? If so, how did they differ?

1.3. Thesis Structure

There are seven chapters in this thesis. An overview of the research begins in Chapter One. Chapter Two provides a comprehensive literature review on argumentation assessment and its particular relevance to L2 writing, with a specific focus on tertiary education in the Chinese EFL context, SRL theory and its relevance to learners' academic achievement in general and in writing, particularly in the domain of L2 learning in language learning, and SRSD model and its adaption to argumentative writing. Chapter Three focuses on the theoretical framework of argumentation and SRL for the purpose of developing an adapted SRSD instructional model in EFL contexts and understanding Chinese university students' academic performance and perceptions through multidimensional lenses. Chapter Four is the methodology chapter in which an explicit description of the research rationale, context and instruments is offered, and the issues of validity and ethics are discussed. Chapter Five reports findings of quantitative data analysis and primarily discusses the results concerning students' performance in argumentation and argumentative writing before and after the SRSD instruction. Chapter Six focuses on the interview outcomes from the selected cases with an aim to investigate and compare students' understanding of and strategy use for argumentation and argumentative writing before and after the SRSD instruction. Chapter Seven concludes the thesis, summarizes the contributions of this study while pointing out its limitations, finally ends this thesis with suggestions for future research.

Chapter Two: Literature Review

This chapter initially gives a brief introduction to argumentation and its relevance to argumentative writing, particularly, in the assessment of written argumentation in both L1 and L2 contexts. It then follows a discussion of SRL and its relevance to learners' academic achievement. SRSD for argumentative writing as a specific instructional model is finally elaborated.

2.1. Argumentation and its Relevance to Argumentative Writing

Plato, Socrates and Aristotle, the renowned philosophers, all emphasized the significance of reasoned argument construction as the core of human thinking, centralizing formal logic as a preferred thinking mode. Later, Toulmin (1958, 2003) made a distinction between logic and thinking, suggesting thinking as argument. Relying on Toulmin's concepts and framework, modern cognitive psychology started to define *argument* and *argumentation*. Explicit definition of *argumentation* was given by van Eemeren, Grootendorst and Henkemans (1996, p. 5) as follows:

Argumentation is a verbal and social activity of reason aimed at increasing (or decreasing) the acceptability of a controversial standpoint for the listener or reader, by putting forward a *constellation of propositions* intended to justify (or refute) the standpoint before a rational judge.

This definition, as understood by Ferretti and Lewis (2013), highlighted three essential components that a complete argumentative discourse is supposed to contain – argumentation is a social dialogic activity, arguments possess a form, and arguments can be judged through critical standards. Kuhn and Udell (2003) explained *argument* and *argumentation* as product and process respectively. An argument is constructed by an individual to support a claim, characterizing a

product, whereas “the dialogic process in which two or more people engage in debate of opposing claims can be referred to as argumentation or argumentative discourse” (Kuhn & Udell, 2003, p. 1245), characterizing a process. In accordance with these elaborations, fine-grained research defines and assesses argumentation in different contexts (e.g., Ferretti & Graham, 2019).

2.1.1. Assessing Arguments in Argumentative Writing

The presentation of argumentation relies on the form of argumentative writing, thus searching for an effective way to assess written arguments has been a focus in the educational field. Long after Toulmin (1958, 2003) generated a constructed model of argument, research on the evaluation of argument has emphasized the structure, considered as “the field-invariant features of an argument” (Sampson & Clark, 2008, p. 452). However, criticism in this area found this assessment ignored the content of argumentation that judges the quality of reasoning, leading to inaccurate presentation of ideas (Simon, 2008). To conduct argumentation assessment comprehensively, argument soundness is introduced as another essential criterion for assessing arguments from the theoretical perspective of informal reasoning that emphasizes skill in argument generation and evaluation (Driver et al., 2000; Means & Voss, 1996). There are two approaches developed in assessing an argument itself: the fallacies approach and criterial approach (Hughes et al., 2015, p. 129), following a theory of informal reasoning (Kuhn, 1991). Whereas the fallacies approach is negative in nature, the criterial approach is more commonly accepted as a standardized test to justify a good argument. The core concept of the criterial approach is to establish criteria that function as a measuring unit to judge if an argument is good. In this approach, three measuring criteria are generally acknowledged as effective to examine whether an argument is flawless – acceptability, relevance and adequacy (Hughes et al., 2015, p. 132; Schwarz et al., 2003). The acceptability criterion and the second relevance criterion refer to how

all premises in a sound argument must be acceptable and relevant to its conclusion, while the adequacy criterion literally means that the premises should be sufficient to support the conclusion. In this framework, in relation to pragmatic implementation, when assessing the overall strength of argument in argumentative writing, the surface structure and substance should be both considered. As defined, the surface structure is not a single fixed structure. Instead, it covers claims or counterclaims as well as rebuttals supported by adequate and reliable reason or evidence, while substance refers to the quality of arguments that are acceptable, relevant and logical in structure (Stapleton & Wu, 2015). Therefore, the evaluation of argument in an argumentative essay cannot separate the structure from the substance or vice versa for they are always interactively affected.

It is also worth noting that the reasoning quality is constructed based on the types of reasons initiated by Means and Voss (1996) and modified by Schwarz et al. (2003). In their studies, argument reasons were classified into different categories based on text arguments written by the elementary and middle school students. There were six categories of argument reasons developed by Means and Voss (1996), including abstract reasons, consequential reasons, rule-based reasons, authority reasons, personal reasons and vague reasons. Likewise, Schwarz et al. (2003) kept abstract reasons, consequential reasons, vague reasons as the way they were, yet combined the other three categories to make-sense reasons. In these studies, evidence is not evaluated independently as a critical element to the quality of argument, instead, rule-based reasons, authority reasons, personal reasons or other reasoning types functioned similarly as evidence and have been evaluated. Therefore, given the concreteness of evidence, rule-based reasons, authority reasons, personal reasons and other reasoning types were combined for clarification and termed *concrete reasons* in this study (see Section 5.2.2.1). Moreover, regarding the influence of EFL contexts that is considered culturally and socially different from L1 contexts, thought patterns of students in this context

could be influenced by their cultural backgrounds, and affect their writing performance (Connor, 1996; Connor et al., 2008). This is supported by Hyland (2019) who stated that “what is seen as logical, engaging, relevant or well organized in writing, what counts as proof, conciseness and evidence, can all differ across culture” (p. 111). Given that ESL/EFL students have unique rhetorical conventions to impact their L2 writing, there is a need to examine if L1 transfer to L2 argumentation in argumentative writing might bring any changes to the quality of argument. Therefore, this study introduced a new component of *L1 reasons* that is expected to address such need (see Section 5.2.2.1).

Very little attention has been paid to the development of a more comprehensive assessment of argumentation in argumentative writing in EFL contexts, and even less to the potential impact of SRL strategy instruction on argument soundness in the writing output by Chinese college students. Therefore, this study might claim to be original and valuable if it contributes to filling this gap.

2.1.2. Assessing Written Arguments in L1 Contexts

Researchers and practitioners in L1 contexts have examined a variety of ways to assess arguments in argumentative writing. Since Stephen Toulmin’s (1958) model of argument was introduced to the academia, much of the literature has been implemented to analyze arguments in a logical manner according to six elements: claims, data, warrants, backing, qualifications and rebuttals (Nussbaum & Edwards, 2011; Nussbaum & Kardash, 2005; Nussbaum & Schraw, 2007; Yoon & Gruba, 2019). Grounded on Toulmin’s model, some researchers drew upon classical rhetoric that suggests the integration of writers’ credibility, readers’ emotions and logical appeals can possibly lead to effective argumentation and validated this theoretical perspective with empirical studies (Connor, 1996; Connor & Lauer, 1985; Yeh, 1998).

As moving on to informal reasoning theory, researchers in science education initially proposed a qualitative approach to conduct studies that represented learners' informal reasoning (e.g., Sadler, 2004; Sadler & Zeidler, 2005; Yang, 2004; Yang & Anderson, 2003). Later, Means and Voss (1996) adopted a quantitative method to evaluate students' written argumentation in terms of argument soundness, number of reasons and counterarguments, qualifiers and metastatements. Another similar study was from Schwarz et al. (2003) who coded students' argumentative written texts by establishing schemes that incorporate argument type, argument soundness, number of reasons and counterarguments, and quality of reasons. These quantitative measures were believed to provide a more comprehensive understanding of students' informal reasoning on socio-scientific issues to the researchers in science education (Wu & Tsai, 2007, 2011).

Other decisive factors that influence students' written arguments have also been studied. For example, the myside bias that suggests writers' preference to one-sided arguments yet ignoring or excluding evidence against other-sided arguments has been found weaken written argumentation (Wolfe, 2012; Wolfe et al., 2009). Argumentation schemes and critical questions were effective methods to help students produce a greater number of counterarguments, alternative standpoints, and rebuttals (Nussbaum & Edwards, 2011; Song & Ferretti, 2013). Some researchers also demonstrated the effectiveness of the instruction of elaborated goals on the overall persuasiveness and elements of argumentative discourse of students' essays in L1 school contexts (Ferretti et al., 2000; Ferretti & Lewis, 2013) and on the generation of counterarguments in L1 college contexts (Nussbaum & Kardash, 2005).

Fruitful research of assessing written arguments by multidimensional methods in L1 contexts has contributed to related studies in L2 contexts, thus generating useful

discussions and empirical investigations to shed light on L2 teaching and learning.

2.1.3. Assessing Written Arguments in L2 Contexts

Like L1 studies, much of the literature in L2 contexts regarding assessing written arguments has directly followed Toulmin's model as a theoretical framework (e.g., Abdollahzadeh et al., 2017; Marttunen, 1994) or modified the Toulmin model to fit to the purpose of the studies (e.g., Qin & Karabacak 2010; Stapleton & Wu, 2015). Some L2 researchers have explicitly taught the Toulmin model for argumentative writing as an instructional instrument to L2 learners, aiming to assess arguments (e.g., Wingate, 2012).

Many researchers have also compared learners' L1 and L2 argumentation behavior in argumentative writing to explore the effects of L2 proficiency on their argumentative performance. For example, Rusfandi (2015) compared Indonesian EFL learners' L1 and L2 argumentative essays in terms of rhetorical features that included claim, refutation, sub-claim and justification, and found that L2 proficiency level was a possible factor in their use of argument-counterargument structure. Van Weijen et al. (2019) compared students' source use and argumentation behavior in determining argumentation related to text features in L1 and L2 essays, and found that there was no clear effect of L2 proficiency on students' argumentation behavior. There are also researchers who believe that cultural and linguistic differences may affect L2 writers' rhetorical pattern. Their research interests lie in the investigation of L1 rhetorical transfer to L2 argumentative writing that emphasized the quality of arguments (e.g., Hirose, 2003; Wei et al., 2020).

Informed by informal reasoning theory, researchers in L2 contexts have conducted studies regarding the assessment of arguments in a more comprehensive manner. Wu and Tsai (2007, 2011) developed an analytic framework that integrated qualitative indicators and quantitative measures to analyze learners' argumentation

on socio-scientific issues. Stapleton and Wu (2015) developed an analytic scoring rubric for argumentative writing with an emphasis on quality of argument, then used it to evaluate learners' reasoning quality on social issues in terms of two main criteria - acceptability and relevance. Following Stapleton and Wu (2015), Abdollahzadeh et al. (2017) assessed learners' argumentative writing in terms of argument soundness, rhetorical organization and argument elements, and examined the detailed relationship between surface structure and substance in reasoning quality.

Regarding other influential factors to argumentation, Lee et al. (2021) found that there was a significantly positive effect of an extended time limit in an argumentative writing test on the quality of arguments in L2 writing measured by a range of argumentation features. Rahimi and Zhang (2017), as well as Rahimi (2018), discovered that task complexity and planning conditions had influence over L2 argumentative writing in terms of syntactic complexity, accuracy, lexical complexity, fluency, content, organization and writing quality.

Although qualitative methodology has been deployed for some relevant studies of argument assessment, quantitative approaches have taken the lead in the writing domain in L1 and L2 contexts. The triangulation of methodologies is believed to contribute to the increase of reliability and validity of research outcomes and help researchers and practitioners to understand students' argumentation behaviors from multidimensional perspectives. Due to the scarcity of studies that used mixed methods for exploring L2 writers' argumentation performance in argumentative writing, this study hopes to shed light on such problem.

Given the complex nature of understanding argumentation in L2 contexts, it is also critical to develop a systematic and comprehensive framework to evaluate arguments based on multiple theories. This shapes an essential component of this

study and serves as a significant directive conceptual framework for the assessment of arguments.

2.2. Research on Self-Regulated Learning (SRL) in Higher Education

There have been discussions on how students self-regulate as autonomous learners in academic learning and performance since the late 20th century. A term in educational psychology, *self-regulation* originated from cognitive psychology. It was significantly affected by Albert Bandura who in his influential 1980s publications shaped and developed the concept of *self-regulation*, characterizing it in behavioral and emotional dimensions (Bandura, 1989) but recognizing the influence of environment on behavior (Bandura, 1977).

With the development of the construct, increasingly the research focus has shifted away from formulating theories to testing self-regulation theory in academic education domains, contributing to the emergence of a new term *self-regulated learning (SRL)* in the mid-1980s which is deemed to be an integrated theory of learning (Corno & Mandinach, 1983). Theorists illustrated how this new theory is compared with metacognition and self-regulation; this construct has a greater focus gaining popularity generally in academia, combining various contributing factors, including cognition, motivation and context (Dinsmore et al., 2008).

By definition, Zimmerman and Schunk (2001, p. vii) gave the literal meaning of "regulation" as retaining something regularly even in changing situations and "learning" as stably changing performance due to the effects of experience. In other words, research on SRL attempts to analyze and understand the ways that learners adapt to suit dynamic contexts by steadily reinforcing their skills.

Concerns on the effectiveness of SRL on academic achievement have been voiced by researchers in education in the past three decades. SRL is perceived as

particularly essential to postsecondary education for the recognized reason that this particular group of students need to be proactive, and self-plan and -control their study without the help or guidance of parents or school supervisors (Ning & Downing, 2015). Nevertheless, college students are mostly deficient in SRL knowledge in theory and strategies (Foerst et al., 2017) and even teachers feel less competent to give SRL instructions as they have limited access to models that explicitly elaborate what SRL means and how it works (De Smul et al., 2018). On the one hand, it is challenging to conceptualize SRL as it emerged from several research areas with their own history. Thus, one might regard SRL as “a series of reciprocally related cognitive and affective processes that operate together on different components of the information processing system” (Boekaerts, 1999, p. 447). On the other hand, certain students put less weight on the importance of SRL strategies and processes due to their overconfidence and overestimation of own knowledge (Dörrenbächer & Perels, 2016). Additionally, individual differences (IDs) such as personality (Dörrenbächer & Perels, 2016) play a critical role in the achievement level with regards to SRL as well.

Some experts in educational psychology still hold an optimistic attitude towards the connection between SRL and learners’ academic achievement. Ample empirical research results showed a positive correlation between SRL and college students’ academic attainment in general contexts (Lucieer et al., 2016; MacArthur et al., 2015; Zimmerman & Bandura, 1994). Accordingly, it is indicated that college students of high achievement levels tend to adopt more SRL strategies in the whole procedure of test taking than students who are of lower achievement (Kitsantas, 2002). Similarly, those who are categorized as higher achieving students are able to use more types of SRL strategies, while because of the relative lack of metacognitive abilities (Koriat & Bjork, 2006), students of lower achievement levels are reluctant to utilize effective SRL strategies to enhance their learning behavior (Hacker et al., 2000).

Prior research has implied that a large amount of postsecondary learning does not happen in the classroom (Hofer et al., 1998; Pintrich, 2004), which reinforces a pressing necessity in the effective execution of independent learning with the limited study time outside of classroom. However, most college students are evaluated as non-effective self-regulated learners (Nilson, 2013, p. 2). From the perspective of college students, they rarely retrieve the skills or strategies they use for learning, showing unawareness on self-regulation (Nilson, 2013, p. 2). Therefore, it is imperative to understand the learning nature of college students as they often form the habit of seeking immediate help from teachers and peers in secondary education when they encounter difficulties in study. If relevant coursework is provided, students tend to register for learning in an instructional environment (Boekaerts, 1999).

Under this circumstance, it is critical to tailor systematic and relevant SRL courses or training for college students to be aware of the importance of SRL and assist them in the acquisition and application of SRL strategies in their college study, eventually to improve their academic achievement (Masui & De Corte, 2005) and achieve long-term effects (Bail et al., 2008). As the nature of SRL is controllable and changing (Pintrich, 2000, 2004), classroom instructional and scaffolding practices can affect college students' SRL practices, thus various systematic SRL models have become well established, which will be elaborated in Section 3.2.1. Research has revealed that mastering SRL strategies is helpful for undergraduate students to digest the challenging Science, Technology, Engineering and Mathematics (STEM) knowledge because these contextual settings entail the utilization of specific learnable strategies (McCray et al., 2003). However, research pertaining to SRL in college EFL writing is cursory. This study proposed to equip Chinese college students with SRL theory and strategies through a classroom based SRL model that aims to promote students' independent use of SRL strategies to

achieve complex writing tasks and explore the development of students in strategy use after the implementation of the pedagogic model.

2.3. SRL and its Relevance to Learners' Academic Achievement

Fruitful empirical research has proven a positive correlation between SRL and academic achievement in various domains and contexts. A meta-analysis study of empirical research conducted in Turkey in terms of course type, study type, SRL strategies, research design and school level between 2005-2014 was performed by Ergen and Kanadli (2017) with an aim to examine the relationship with SRL and academic achievement, which in general reported a significant effect of SRL on academic achievement. In particular with the context of higher education, this result had long before been found by Robbins et al. (2004) who meta-analyzed the underlying SRL components for students' academic achievement.

Up to now, two main types of empirical studies have widely been conducted regarding SRL – measuring students' SRL through self-report and investigating the effectiveness of SRL strategies-based instruction. Learners' academic achievement is one of the most common dependent variables examined in these relational SRL studies. In other words, students' self-reported SRL strategies through various instruments including questionnaires, interviews, think-aloud protocols and learning diaries (Roth et al., 2016) have been used to predict students' academic achievement at college level (e.g., Chung, 2001; Lucieer et al., 2016). Amongst all instruments, questionnaires in form of Likert scale gained the greatest popularity (Roth et al., 2016). Researchers have developed holistic scales that focus on all typical taxonomies of SRL strategies in general, in which the Learning and Study Strategies Inventory (LASSI) developed by Weinstein et al. (1987) and an academic SRL scale for teacher rating developed by Zimmerman & Martinez-Pons (1988) have been highlighted and applied to correlate with college students' academic achievement (Magno, 2011; Yip, 2009). A component-specific scale – the Motivated

Strategies for Learning Questionnaire (MSLQ) - that emphasizes motivation, a key SRL component, was designed to predict course grades of college students (Pintrich et al., 1993). Another specific component of motivational factors in SRL framework – self-efficacy- has been explored for learning (Zimmerman & Kitsantas, 2007) as a specific SRL scale that has been applied to empirical studies and found predictive of college students' academic achievement (Zimmerman & Kitsantas, 2007). Regarding the domain of language learning that this study targets, the Strategy Inventory of Language Learning (SILL) by Oxford (1990) stands out, which has been widely used to examine the relationship between SRL and L2 learning outcomes from school (e.g., Lan & Oxford, 2003) to college levels (e.g., Riazi & Rahimi, 2005).

Although the aforementioned scales have been applied across educational settings, the necessity to develop domain- or context-specific measures has been repeatedly suggested in the relevant literature (Kızıl & Savran, 2018; Law et al., 2016; Roth et al., 2016; Teng & Zhang, 2016; Tseng et al., 2006). With regard to language learning, specific SRL scales for L2 vocabulary acquisition (Kızıl & Savran, 2018; Tseng et al., 2006) and L2 writing (Teng & Zhang, 2016) have been developed and used to examine the correlation between SRL and students' academic performance in L2 settings (Teng & Zhang, 2018). In regard to the relationship between SRL and L2 writing, Section 2.4.2 provides a more thorough literature review.

Regarding research instruments, except for questionnaires, other instruments are not commonly developed to assess students' SRL capacity or used to enhance students' academic performance at tertiary level. Traced back, a typical measure of structured interview for students' SRL strategies deployment developed by Zimmerman and Martinez-Pons (1988) helped examine the predictive power of SRL in college students' subsequent test performance (Kitsantas, 2002). Moreover, Azevedo et al. (2004) drew on a think-aloud protocol methodology to measure

different college students' academic understanding. The continuous preference to questionnaires over other instruments might fail to lend comprehensive support to researchers or practitioners for understanding the educational phenomena because quantitative data elicited from questionnaires has not been triangulated with other types of data obtained from other instruments of methodology.

In the same vein, various strategy instructions following SRL framework in the past decades have been developed and examined the effects on learners' academic achievement in general contexts, almost always leading to positive and significant results (Donker et al., 2014). Given the context-dependent nature of strategy instruction, the effectiveness of L2 strategy instructions has been examined in a meta-analysis study by Plonsky (2011), who found a moderately positive effect of L2 strategy instruction on learning outcomes of students from all levels of institutions. Amongst all relevant strategies-based instructions, Self-Regulated Strategy Development (SRSD) is the most popular and well-developed instructional model established by Harris and Graham (1996), which has been applied across educational domains, particularly writing, to positively enhance students' academic performance. Section 2.4 provides more details of the relevant literature.

2.4. SRL and its Relevance to Writing

Concerning SRL in relation to language learning, scholars have been largely engaged in researching writing in L1 and L2 contexts. Overall, as the following review will show, the current research of SRL strategies for writing are descriptive and instructional, focusing on the effects of writers' strategy use, writing processes and IDs on writing attainment. Therefore, in this section, the foci of review for such literature will be on the relationship between SRL and writing performance in the realm of L1 and L2 settings.

2.4.1. SRL and its Relevance to L1 Writing Performance

In L1 contexts, the positive influence of SRL on students' writing performance has been confirmed by a repertoire of research. Regarding the influence of self-regulatory processes on writing performance and its development on SRL, Zimmerman and Bandura (1994) developed a SRL model that consisted of perceived self-efficacy, personal goal setting, verbal aptitude and self-evaluative standards and examined its predictiveness to writers' academic achievement. Zimmerman and Risemberg (1997) proposed a SRL model composed of environmental, behavioral and covert self-regulation and found its positive correlation with writing performance. Santangelo et al. (2016) further meta-analyzed the self-regulation processes for writing in Zimmerman and Risemberg's model and found similar results that teaching students how to self-regulate the writing processes enhanced their writing performance. Regarding writers' proficiency level, Zimmerman and Risemberg (1997) found that the differences between expert and novice writers in their use of SRL strategies were their perceptions on the role of planning and revising and perceived self-efficacy. Harris et al. (2010) found that competent writers were capable of using a repertoire of strategies to manage the complicated writing processes. Harris et al. (2011) indicated that skilled writers were more self-regulated and engaged in SRL processes and using relevant strategies to complete writing tasks than less skilled writers.

Diverse SRL strategies-based instruction for writing have been designed and administered to writing classes by researchers to examine the effectiveness on students' writing achievement in L1 contexts (e.g., MacArthur et al., 2015). Santangelo et al. (2016) reviewed 38 studies of cognitive strategies instruction and found that explicit SRL strategies instruction improved students' writing performance, among which the Self-Regulated Strategy Development (SRSD) model (see Sections 2.4.2 and 2.4.3 for more details of SRSD), compared with all

other types of instruction, produced the most significant effect, as suggested by Graham et al. (2012). However, when Graham et al. (2013) conducted a meta-analysis of the effectiveness of SRSD on writing, of the original 116 SRSD published papers that met the selective criteria, 82 fell into the categories of a true-experiment, quasi-experiment or single-subject design investigation. Due to the popularity of experimental or quasi-experimental research design in examining the impact of SRSD through quantitative data analysis, methodological triangulation for holistically understanding the complexities of human nature of writers needs further discussion. Moreover, though SRSD writing research includes students from all educational levels (Graham et al., 2013), the relevant research of SRSD on university students' writing performance is still insufficient in L1 settings. Despite that writing performance has been used as a typical outcome measure, most research examined the effect of SRSD on three writing performance measures: quality, elements and length for all writing genres such as stories (e.g., Zumbrunn & Bruning, 2013), persuasive/argumentative texts (e.g., Palermo & Thomson, 2018) and opinion writing (e.g., Miller & Little, 2018). Nevertheless, given the differences of emphasis on discourse purposes, genre-specific measures for writing performance needs more extensive elaborations. Overall, although fruitful empirical research has evidenced the salient effect of the SRSD model on L1 writing, it still requires empirical investigation in L2 contexts. This is especially true for EFL writing as the complex nature of writing and IDs in EFL settings (Leki et al., 2010; Matsuda & Silva, 2014) set barriers for direct applying previous findings to the domains in EFL contexts.

2.4.2. SRL and its Relevance to L2 Writing Performance

L2 writing is considered a highly difficult process in L2 learning because many L2 learners are not prone to manage to find an appropriate way to write coherently for various purposes. This is because, compared to L1 writers, students writing in their L2 or foreign language should manage to use writing strategies while acquiring

necessary language ability and relevant genre knowledge (Hyland, 2019; Maamujav et al., 2021). For L2 writers, writing an academic genre like argumentative writing requires formulating ideas through the transformation of information in a more complex cognitive process. In fact, both L1 and L2 writers constantly strive to improve their language skills and genre knowledge (Matsuda & Silva, 2020). This suggests that L1 writers also consider writing such a genre as a cognitively demanding work, if without any support of related instruction or practices.

Many Chinese students, even those in college who have been continuously studying English for years, often feel overwhelmed when asked to start writing on a topic because they believe that English writing requires not only language ability but also critical thinking and a wide range of knowledge of the living environment (Ai, 2015). On the one hand, from the cognitive perspective, the literature of writing indicates that the writing processes require large-scale self-regulation and metacognitive control (Flower & Hayes, 1980). On the other hand, the learning environment – the EFL contexts – in which government policies, college instructors of various cultural background (e.g., international and local teachers), students' IDs and L1 interference play a critical role in influencing learners' learning progress, particularly in L2 writing (Teng & Zhang, 2020). The introduction of SRL strategies to EFL learners for enhancing their L2 writing becomes critical because, for much time in learning, students rely on external guidance or assistance from teachers through instruction and feedback (Andrade & Evans, 2013, p. 149). Students are more likely to use SRL strategies for the process of their learning and become autonomous writers when they are equipped with relevant techniques to attain academic goals.

Although research on SRL strategies on L1 writing performance has flourished as mentioned in Section 2.4.1, research on SRL in L2 learning is scarce, not to mention

in EFL writing, in particular to examine the relationship between SRL strategies and English writing performance in EFL contexts. Most existing studies on the relationship between SRL and writing performance in EFL contexts used the experimental research design to examine the effectiveness of strategies-based writing instruction on L2 writers' performance and use of SRL strategies at school (e.g. Bai, 2015) and college level (e.g. De Silva, 2015; Teng & Zhang, 2020), while few followed the process approach that allows teachers and students to be involved in the complete writing process, and undertook studies of SRL to explore L2 writers' development of writing knowledge and SRL strategy use in the context of EFL process-oriented writing (e.g. Lam, 2014), or used writing SRL strategies to predict L2 writers' performance directly (e.g. Sun & Wang, 2020). The relevant empirical studies confirmed the significant role of SRL strategies in improving L2 writers' performance. Moreover, SRSD in its original model (e.g., Bai, 2015; Teng & Zhang, 2020) or in combination with other specific features, such as revising (e.g., Chen et al., 2021), is mostly adopted and adapted to the EFL contexts as an instructional model for L2 writing. However, for long, the effectiveness of strategies-based instruction in L2 setting has been questioned for many reasons (Plonsky, 2011). One gap existing in the language learning strategy instruction on L2 writing performance is that very few studies (Bai, 2015; Chen et al., 2021) have been found conducting in a triangulated methodology to examine the impact of strategies-based instruction. Although researchers have recognized the significant role of experimental design on L2 strategy instruction in empirical studies given the descriptive and correlational probe (Chamot, 2005), it is still meaningful to explore attitudes or beliefs of EFL students with IDs towards different types of SRL strategies, which might provide pedagogical implications for teachers to adjust the curriculum or teaching methods to improve L2 writers' achievement. Another extensive criticism voiced by Oxford (2017, p. 311) is in relation to the outcome assessment of writing intervention, in which writing proficiency, competence and writing quality are mainly focused with a neglect to other factors. Therefore, it is

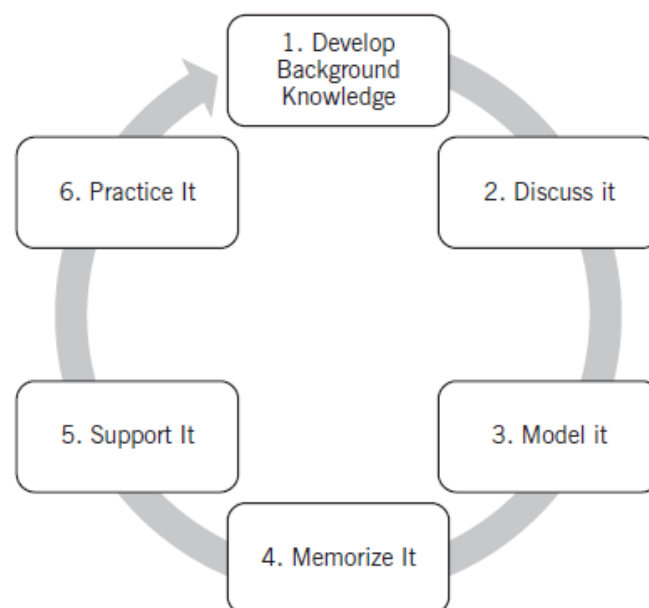
not surprising to find that the measuring outcome in the empirical studies of SRL on L2 writing performance were dependent on primarily writing quality assessed by a holistic or analytic scoring criteria with no specific emphasis on genre, even when different writing genres were used as an essential outcome variable for the research design. Though learners can easily understand grades, it is still necessary for them to understand what the grades they received on writing assessment actually represent (Andrade & Evans, 2013, p. 51). Given that argumentative writing is a typical genre widely used in EFL writing research for general purposes at tertiary level (Huang & Zhang, 2019), in which argumentation plays a pivotal role in the quality of argument, there is a need to design a specific SRSD model for argumentative writing with an emphasis on practicing students' argumentation and use of SRL strategies and writing knowledge for argumentative writing in EFL contexts.

2.4.3. SRSD for Argumentative Writing

Given the challenges of writing, theorists have acknowledged the importance of bringing explicit strategy instruction for different genres, including argumentative writing (Ferretti & Lewis, 2013; Matsuda & Silva, 2020). Using explicit and systematic instructional steps in teaching strategies for planning, revising, and editing essay writing has been proved necessary and effective in improving the quality of essays (Graham, 2006; Graham et al., 2013; Graham & Perin, 2007). Contemporary writing models have directly or indirectly shown positive support to the role of self-regulation in writing processes (Flower & Hayes, 1980; Graham, 2006; Harris et al., 2009; Scardamalia & Bereiter, 1986; Zimmerman & Risemberg, 1997). One of the contemporary models known as "Self-Regulated Strategy Development", or SRSD, refers to an approach to use effective strategy instruction to help students in classrooms across writing domains (Harris & Graham, 2017). Specifically, this model has demonstrated effectiveness to teach argumentative writing in terms of planning, drafting and revising text (Graham et al., 2013;

Graham & Perin, 2007). There are six steps in SRSD instruction proposed to assist students to scaffold their self-regulatory writing processes (see Figure 2.1). Initially, teacher explains the reasons and advantages of using relevant strategies in the *Develop Background Knowledge* stage and then instructional mnemonics are employed to guide students' learning of strategies in the stage of *Discuss It*, in which modeling and scaffolding the strategy use are involved in the *Model It* stage. In the stage of *Memorize It*, students practice memorizing the mnemonics and gradually take more responsibility for implementing the strategies in the *Support It* stage, while teacher in the stage of *Practice It* assists students and provides them opportunities for the internalization and application of strategies in various contexts. Characteristics of SRSD instruction include explicit teacher instruction and criterion-based learning. After the writing and SRL strategies instruction given by teacher, the focus of model is shifted from teacher to students, and students will control their pace in learning to achieve criteria instead of following a strict timeline of learning. Particularly in self-regulatory writing, generally, the instructions cover two aspects – writing strategies and SRL strategies (Harris & Graham, 2017).

Figure 2.1 *Six Stages of SRSD Instruction*



Note. From "Best practices in teaching argumentative writing" by R. P. Ferretti and W. E.

Lewis in *Best practices in writing instruction* (2nd ed., p. 124), by S. Graham, C. A. MacArthur & J. Fitzgerald (Eds.), 2013, New York, NY: The Guilford Press. Copyright 2013 by The Guilford Press.

A repertoire of SRSD argumentative writing strategy models have been experimented with to support writing phases of planning, editing and revising for younger children (e.g., Graham & MacArthur, 1988; Kiuvara et al., 2012; Palermo & Thomson, 2018; Sexton et al., 1998; Washburn et al., 2016) or college students (e.g., MacArthur et al., 2015; MacArthur et al., 2019; Song & Ferretti, 2013) in L1 contexts. Researchers and practitioners have fully examined, from different dimensions, the effectiveness of SRSD on the quality of argumentative writing produced by college students. For example, MacArthur and his colleagues (2015) first found significant positive effects of SRSD on American college students' argumentative writing outcomes in terms of overall quality, length and grammar. In the subsequent studies, MacArthur and his colleagues (2019) then examined linguistic features of college students' argumentative writing based on the instruction of SRSD and found significant positive increase on referential cohesion and lexical complexity and no differences on syntactic complexity. In the empirical study of Song and Ferretti (2003), significant positive changes of overall quality assessed by a writing rating scale and essay structure in terms of reasons for the author's standpoint, counterarguments, alternative standpoints, reasons for the alternative standpoint and rebuttals based on the SRSD instruction embedded with critical questions and argumentation schemes were confirmed. The achievement of research in L1 contexts sheds light on L2 strategy-based instruction and spurs relevant studies in L2 contexts.

Given that context is an often-stressed influential factor to L2 strategy-based instruction research as it "includes cultural influence as well as all the affordances of the immediate environment" (Oxford, 2017, p. 310), fine-grained empirical studies of different SRSD models on L2 argumentative writing at the tertiary level

have been done to test its effectiveness on writing performance and motivational beliefs in various aspects (Chen et al., 2021, Teng, 2022, Teng & Zhang, 2020). For example, Teng and her colleague (2020) initially found that the intervention of SRSD helped Chinese university students perform better in their argumentative writing performance, strategy use and self-efficacy in linguistic knowledge and academic performance. In the subsequent studies, Teng (2022) then found that significant positive effects of an integrated model of SRSD with an emphasis on formative assessment and a process-genre approach on Chinese university students' argumentative writing quality in terms of overall writing score, content, organization, vocabulary, and language and their motivational beliefs. Chen et al. (2021) introduced a SRSD intervention for text revision in argumentative writing instruction and found no influence of the intervention on self-efficacy of Chinese college students in the study. The current study differs from the reviewed studies in two aspects. Argumentation is the core of this study, thus the assessment of argumentative writing mainly focused on assessing arguments rather than a holistic perspective to analyze every dimension of an essay. The introduction of a SRSD model to this study was to empower students with relevant knowledge of argumentation and SRL strategies, therefore, students' understandings of argumentation as well as selections of strategies that affected their performance on argumentation in argumentative writing were primarily investigated.

As aforementioned, few studies have been conducted in designing a SRSD instructional model for argumentative writing in EFL contexts, not to mention the purpose of using this adapted model to examine its relationship with argumentative writing performance. Therefore, designing a SRSD model for argumentative writing in EFL contexts that incorporates all elements of strategies-based writing instructions for argumentative writing with an emphasis on self-regulation in learning argumentation appears to be helpful for stimulating L2 students' interest and engagement. This might be particularly effective in China where students have

been asked to produce argumentative writing since high schools in their mother tongue.

As mentioned in Section 2.4.2, one aim of the current study is to expand the assessment of writing quality in terms of a general grade to the assessment of arguments that essentially shapes argumentative writing. Therefore, the SRSD instruction for this study has been also designed with specific methods of practices for enhancing students' argumentation in written texts. This SRSD instruction initially provided teacher's explicit instruction in argumentative writing and SRL strategies, followed by modeling and scaffolding these strategies for students' independent use in the writing tasks. It involved a series of pedagogical activities, aiming at fostering students as self-directed, strategic and independent writers (see details of the instruction in Section 4.6).

Chapter Three: Theoretical Framework

This chapter provides the theoretical rationales underlying the research design of the current study. It first elaborates argumentation theory informed by informal reasoning theory as well as classical and intercultural rhetoric theories. The sociocognitive and sociocultural theories that the SRSD instructional model is grounded in this study are then discussed. Writing based on cognitive process theory is also discussed and linked to the model.

3.1. Argumentation Theory

3.1.1. Informal Reasoning Theory

Informal reasoning is defined as “a construct that subsumes the cognitive and affective processes that contribute to the resolution of complex issues” (Sadler & Zeidler, 2005, p. 113). It is applied when individuals or societies engage in solving contentious problems “with no definite correct answers” (Kuhn, 1991, p. 10). Individuals need to be able to evaluate, judge and finally make decisions. In the process of decision-making, argument is generated and evaluated (Means & Voss, 1996). Skill of arguing or argumentation plays an essential role in informal reasoning. Good informal reasoning relies on the generation or evaluation of arguments in terms of their soundness that includes the acceptability, relevance and sufficiency of the supporting reasons related to both sides of an issue (Hughes et al., 2015; Means & Voss, 1996; Schwarz et al., 2003). This theory in earlier research has been applied to empirical studies in science education (e.g., Bell & Linn, 2000; Sadler, 2004), then extended to other educational contexts, such as L2 writing (e.g., Stapleton & Wu, 2015). Although how argumentation is expressed in scientific writing is not the same as argumentation in writing from the arts and social sciences, drawing on informal reasoning theory in EFL contexts may benefit writing more generally by promoting critical thinking, augmenting writing quality and equipping students with necessary skills to engage in academic writing.

However, very few studies grounded in informal reasoning theory have been conducted to examine the quality of argument in EFL contexts, let alone at tertiary level. Therefore, one aim of the current study is to fill this gap.

3.1.2. Classical and Intercultural Rhetoric Theory

In modern research of rhetoric, Toulmin's model of argumentative writing stands out, which defines "argumentation as an attempt to justify statements" (Connor, 1996, p. 67). Every argument composes of obligatory elements – claim, data and warrant, and optional elements – backing, rebuttal and qualifier (Toulmin, 1958, 2003). Informed by classical rhetoric, intercultural rhetoric theory assumes that learners of different culture possess different rhetorical or syntactic patterns, which might cause problems to L2 writers (Connor et al., 2008). However, Hyland noticed that it was necessary to be cautious to attribute any writing problems to culture because the transfer of L1 rhetorical patterns will inevitably turn negative to L2 writing (2016, p. 53). Therefore, the transfer of L1 rhetorical patterns to L2 writing in the current study has been examined, informed by intercultural rhetoric theory, but I was attentive to take a neutral but informed stance in the research design and data analysis.

Overall, informal reasoning, classical rhetoric and intercultural rhetoric theories are interconnected for understanding how people engage in argumentation in different contexts, and how cultural differences affect argumentation. These theories complement each other by providing different lenses through which argumentation can be analyzed thoroughly. Therefore, integrating these theories gives a more comprehensive theoretical basis to the current research design for examining the primary outcome variable – argumentation, which might help the researcher better understand the development of L2 writers in argumentative writing.

3.2. SRSD: A Strategies-Based Instructional Model for Writing Based on Sociocognitive and Sociocultural Theories

SRSD, since its emergence, has been defined as “an effective approach to complex learning” (Harris & Graham, 2017, p. 120) that includes “learners’ skills, abilities, self-regulation, strategic knowledge, domain-specific knowledge and abilities, affect, metacognition, and motivation” across educational contexts (Harris & Graham, 2017, p. 121). The multidimensional structure of SRSD determines its intricate nature in theoretical supports. As Harris and Graham (2017) argued, the development of the SRSD approach has been influenced by cognitive, sociocultural and other theories or models, and been continuing being influenced by multiple theories. These theoretical and empirical inquiries address the multidimensional nature of writing that comprises of the cognitive, motivational and environmental factors (Harris & Graham, 2016).

Compared to L1 writers, L2 writers in the composing process require a better orchestration of writing knowledge, regulation of behavior and motivation, and strategy use in the L2 learning environment (Cumming, 2016) as they might face more critical challenges that are likely to influence their performance. Therefore, the combination of sociocognitive and sociocultural theories of SRL and writing for the design of the SRSD model in the current study offers various theoretical perspectives on L2 writing and enables researchers to understand L2 writing comprehensively given the multi-faceted and complex nature of L2 writing (Cumming, 2016). Moreover, there is a relative dearth of information about the effects of a SRSD model guided by various theories on the quality of argumentative writing. Thus, the current study is expected to shed light on these problems.

3.2.1. SRL Theory

3.2.1.1. A Social Cognitive Perspective

In the original background of SRL, the core social cognitive theory offered by Albert Bandura (1977) suggested the crucial theoretical element is reciprocal determinism which indicated that learning is the result of personal, environmental and behavioral factors. This was acknowledged as advantageous of emphasizing not only student academic performance but also the motivational and motoric dimensions of learning and knowledge (Zimmerman, 1983). Based on Bandura's social cognitive theory, SRL has been attempted to be developed in different approaches with a central focus on individual factors. Many studies on this issue can be categorized as the component-oriented and process-oriented approach. The former approach stresses the importance of individual components that shape students' learning behaviors. There are three key components involved – cognition, metacognition, and motivation (Schraw et al., 2006; Zimmerman, 2000) or cognition, metacognition, and management of internal and external resources (Perry et al., 2018; Pintrich & De Groot, 1990), or most commonly described students as "metacognitively, motivationally, and behaviorally active participants in their own learning process" by Zimmerman (1986, 1989). According to Boekaerts (1999) who vividly renamed "components" as "layers", the current models are divided mainly into two kinds - the layer and process models of SRL. The layer model of SRL made a distinction among different characteristics of learning styles and typical ways of managing and manipulating cognitive processes. However, it is argued by Steinbach and Stoeger (2016) that the explanations of layer models cannot fit well for the teaching of SRL in the classroom for it describes neither the interrelations between the three layers nor any characteristic processes of SRL. The introduction of SRL process models has strengthened the preceding deficient points, describing the interdependent connections between all the SRL components and the whole learning process at length (Wirth & Leutner, 2008), which provides its

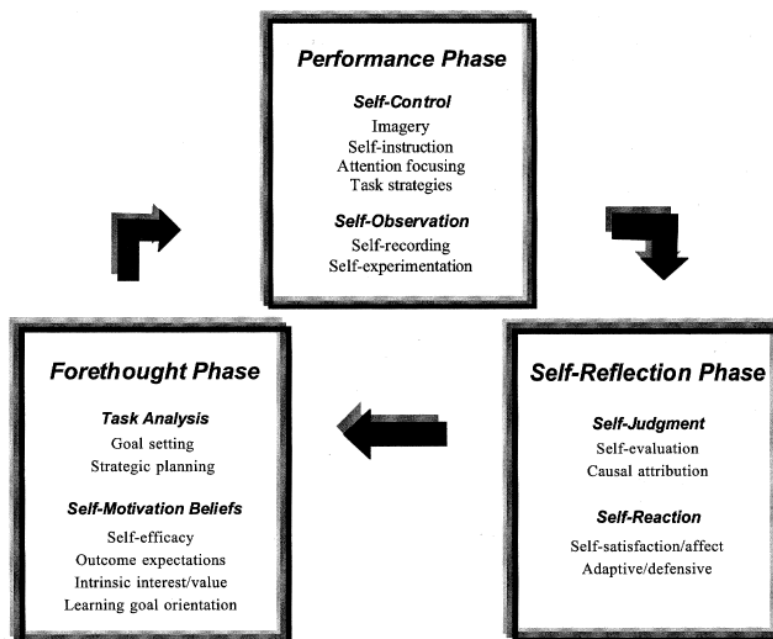
adaptability to the classroom SRL teaching.

It is commonly acknowledged in the literature that the most instructive process SRL model has been proposed by Zimmerman (1989, 2000). This process model (or process-oriented approach) underlies the direct and indirect correlations between all the components in the component-oriented approach mentioned in the previous paragraph. Zimmerman (1990) developed the definition by introducing students' responsiveness to self-oriented feedback on learning effectiveness and completed it as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14). The cyclical model emphasizes that reflection is as important as feedback for effective actions. Therefore, Schon's (1983) ideas of reflection-in-action and reflection-on-action are considered key elements of SRL.

Based on the self-regulatory processes that refer to the cyclical behavioral cycles of self-monitoring, self-instruction, self-evaluation, self-correction and self-reinforcement (Schraw et al., 2006), Zimmerman's model (2002) categorized the SRL process into three phases that include forethought, performance and self-reflection with several subprocesses added to the model until 2009. Accordingly, in the forethought phase illustrated in Figure 3.1, students prepare for tasks and attempt to motivate themselves and choose the best strategies to address a specific learning task. The performance phase is understood as an executing period in which learners utilize the appropriate strategies and self-monitor the learning process to ensure the accomplishment of the task. In the last phase of self-reflection, students assess their attainments in the challenge, not only judging success but also making attributions of any failure, for the purpose of wielding profound influence on the following performance. Another important practitioner Pintrich and his colleagues (1990, 2000) practiced significant empirical and theoretical research on the relationship of motivation and SRL. In line with Zimmerman's model, Pintrich's

model comprised phases raised by Zimmerman (2000); however, it elaborated each phase and its subprocesses at length, making a clearer distinction of their relationship.

Figure 3.1 *Cyclical Model of SRL*



Note. From "Becoming a self-regulated learner: An overview," by B. J. Zimmerman, 2002, *Theory Into Practice*, 41(2), p. 67 (https://doi.org/10.1207/s15430421tip4102_2). Copyright 2002 by the American Psychological Association.

Overall, this SRL structure meets what a general writing process requires and contributes to developing a better understanding of the self-regulatory processes in L2 writing. Therefore, the current study developed an integrated SRSD instructional writing model with an aim toward strengthening Chinese university students' argumentation based primarily on Zimmerman's cyclical phase model elaborated by Pintrich, in which strategies of metacognition, cognition, behavior and motivation are included in each phase of the model.

In addition to sociocognitive theory, this study also sees a more holistic picture of learning process of L2 writers from the sociocultural perspective that takes into account social interactions on learning (see Section 3.2.2). Especially in China,

exploiting SRL with an emphasis on EFL contextual influences should be recognized and further discussed to unravel the answers to L2 writing practice.

3.2.1.2. A Sociocultural Perspective

The work of Vygotsky (1978) contributed primarily to the development of sociocultural theory that argues the mediated nature of human mental functioning. In other words, human cognition develops when learning is situated in “cultural, linguistic, and historically formed settings” (Lantolf et al., 2020, p. 223) such as formal educational contexts. This theory has been widely applied in educational studies by researchers (e.g., Littleton & Mercer, 2013; Mercer & Howe, 2012). Mediation is one essential component of the theory, in which self-regulation is deemed an outcome of this process within a sociocultural context (Oxford, 2017, p. 66) and can be realized through internalization – the process that learners internalize external assistance (mediation) to complete a task (Lantolf et al., 2020, p. 226). When internalizing and transforming the knowledge from more capable others, learners experience social speech, egocentric speech and inner speech, in which self-regulatory behaviors can be found in the processes of egocentric speech (learner self-talk) and inner speech (learner self-instruction). In human mental functioning processes, especially higher mental processes, learners orchestrate a repertoire of learning strategies, including analysis, synthesis, planning, monitoring and evaluation (Vygotsky, 1978), which are essential parts of SRL strategies (Oxford, 2017, p. 66). The Zone of Proximal Development (ZPD), another key component of Vygotsky’s theory, refers to “the difference between the individual’s current level of development and the potential level that can be reached with assistance of a more capable person” (Oxford, 2017, p. 67). With the help of more capable others in various forms of knowledge scaffolding, learners can gradually develop self-regulation with the faded assistance from the external resource. In the scaffolding activities, learners develop their understanding of the task step by step

with the assistance of more capable others through “cognitive disassembly” (Oxford, 2017, p. 67). The sociocultural theory emphasizes not only the constructs of theory and its implications to the development of theory itself, but also the applications of the theory to pedagogical activities, such as intervention, that in turn can further develop the theory (van Compernelle & Williams, 2013).

Different from the sociocognitive perspectives of SRL that emphasize the development of self-regulation relied more on individuals, the foci of SRL from a sociocultural perspective shift from self- to co-regulatory aspects of self-regulation (Winne & Hadwin, 2010, p. 506). The co-regulatory processes of learning take into account the interaction, coordination and negotiation between learners, objects and settings, and instructions of SRL strategies and knowledge. Learning from more capable others, such as peers or teachers, is of great significance in the process of SRL. External support in instructional activities appear more often based on SRL from a sociocultural perspective, compared to SRL from a sociocognitive perspective that focuses more on individuals’ self-observation, self-modeling and self-reflection capabilities in learning.

Informed by the social cognitive and sociocultural theory, the current study underscores the individual and social or contextual impacts on SRL when designing an instructional model of SRL, SRSD (see Section 4.6), to help students develop their awareness of self-regulatory processes and SRL capabilities for L2 writing on a scientific and systematic base.

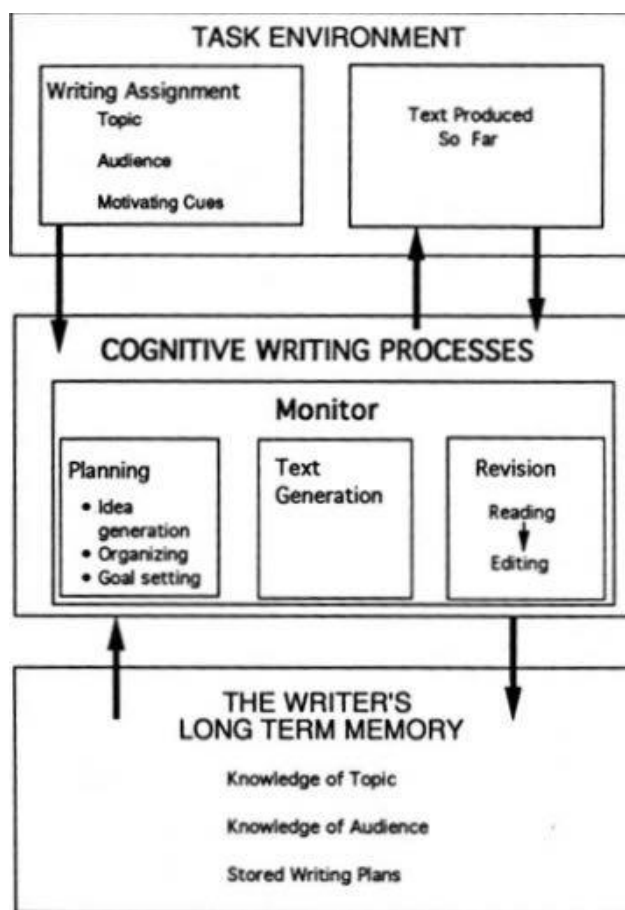
3.2.2. Writing Theory

3.2.2.1. Cognitive Process Theory

Hayes and Flower (1980) developed a cognitive process model for writing with three dominating units: the task environment, the writer’s long-term memory and the

writing process that includes planning, text generation and revision. Grounded in the Hayes-Flower model, an expanded model was proposed by Hayes (1996) by incorporating additional social factors and cognitive processes components, resulting in a more advanced and intricate view of skilled writing (MacArthur & Graham, 2016). Figure 3.2 illustrates the structure of the redrawn writing model and the interrelation between these units. The revolutionary features of this new model are shifting the role of teacher to learner in the writing process, valuing process over product and emphasizing the function of goal setting.

Figure 3.2 A Redrawn Hayes-Flower Cognitive Writing Model

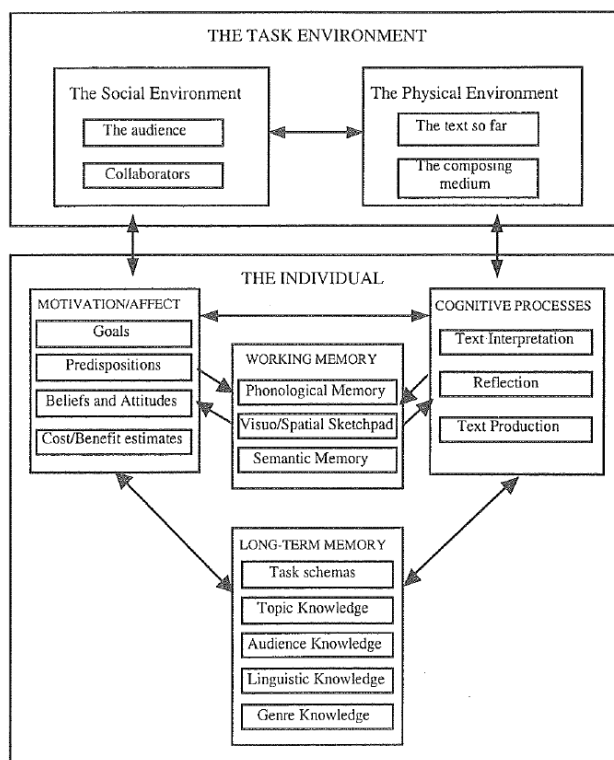


Note. From "A new framework for understanding cognition and affect in writing," by J. R. Hayes in *The science of writing: Theories, methods, individual differences, and applications* (p. 3), by C. M. Levy & S. Ransdell (Eds.), 1996, Mahwah, NJ: Erlbaum. Copyright 1996 by Erlbaum.

Figure 3.3 offers the general organization of this new Hayes model. The new model

regrouped the components to two main categories – individual and environment – with refinements that provided clear depiction of each component and included additional influential factors in relation to contexts (i.e., the physical environment) and IDs (i.e., motivation and affect).

Figure 3.3 *The General Organization of the New Model*

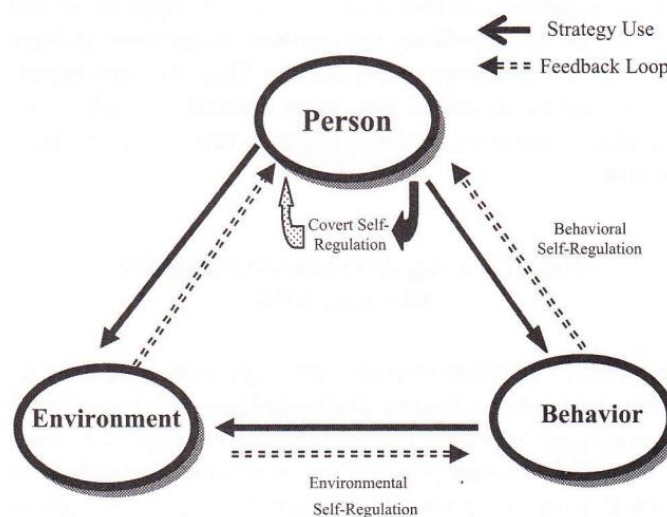


Note. From “A new framework for understanding cognition and affect in writing,” by J. R. Hayes in *The science of writing: Theories, methods, individual differences, and applications* (p. 4), by C. M. Levy & S. Ransdell (Eds.), 1996, Mahwah, NJ: Erlbaum. Copyright 1996 by Erlbaum.

Informed by Hayes’s model that focused primarily on the cognitive processes involved in writing, Zimmerman and Risemberg (1997) developed a new model by emphasizing self-regulation of writing from a social cognitive perspective. In this model, “personal, behavioral, and environmental self-regulatory processes interact reciprocally during writing via an enactive feedback loop” (Zimmerman & Risemberg, 1997, p. 77). Writers in the composing process engage in three self-regulatory behaviors in a cyclical process: covert, behavioral and environmental

self-regulation (see Figure 3.4). In other words, this social cognitive model is determined by writers' personal process that is affected by "behavioral and environmental events in a reciprocal fashion" (MacArthur & Graham, 2016, p. 28). As illustrated in Figure 3.4, in the writing process, writers adaptively use cognitive and affective strategies for *covert self-regulation*, motoric performance strategies for *behavioral self-regulation* and context-related strategies for *environmental self-regulation*, in order to remain fully self-regulatory. Self-regulated writers are more likely to combine all three forms for use simultaneously.

Figure 3.4 *Three Key Forms of Self-Regulation*



Note. From "From cognitive modeling to self-regulation: A social cognitive career path," by B. J. Zimmerman, 2013, *Educational Psychologist*, 48(3), p. 137 (<https://doi.org/10.1080/00461520.2013.794676>). Copyright 2013 by the American Psychological Association.

Hayes (1996) believed that "writing depends on an appropriate combination of cognitive, affective, social, and physical conditions" (p. 5) and illustrated in his model. This reconciles with the current study that emphasized a multifaceted nature of writing instruction. Zimmerman and Risemberg (1997) believed that with the triadic influences of personal, behavioral and environmental process, writers are able to generate thoughts, feelings and actions to "attain various literary goals, including improving their writing skills as well as enhancing the quality of the text

they create" (p. 76). This is in line with the current study that focuses on the self-regulation of writing in an instructional model of SRL for L2 writing. Therefore, the Hayes model and Zimmerman and Risemberg model are used as a pedagogical guide for adapting the SRSD model to the Chinese EFL context for this study.

3.2.2.2. A Sociocultural Perspective

Writing, and other learning in general, is deemed "as first social, then individual; first intermental, then intramental" (Mitchell et al., 2019, p. 319). This means that writing is firstly a social and communicative activity that involves the exchange of ideas between people, then an expression of one's own thoughts. In other words, writing as cognition is insufficient to describe its processes, instead, a multidimensional theoretical basis that introduces sociocultural perspectives is needed for writing research.

Given the emphasis of social and contextual factors to writing performance, the sociocultural theory has been applied to writing research in different contexts. Starting from Frawley and Lantolf in the mid-1980s who advocated the relevance of sociocultural theory to L2 learning (Frawley & Lantolf, 1985; Lantolf & Frawley, 1984), plentiful L2 sociocultural research has been conducted to address a range of aspects of L2 learning, such as L2 vocabulary acquisition (e.g., Rassaei, 2020), L2 listening learning (e.g., Cross, 2010), and L2 writing with an emphasis on peer feedback (e.g., Yu & Lee, 2016), collaborative writing guided by a process approach (e.g., Hanjani & Li, 2014) and strategy use (e.g., Lei, 2008, 2016). However, there is dearth of discussions about developing a strategies-based instruction in classrooms for SRL to L2 writing from a sociocultural perspective, let alone from a perspective that integrates cognitive and sociocultural theories, which is a need for research suggested by MacArthur and Graham (2016, p. 25). Therefore, the current study aims to base on the integrated theories to shed light on this aspect.

To summarize, I proposed multi-dimensional theoretical underpinnings of sociocognitive and sociocultural theory to design a writing intervention grounded in genre pedagogies for a specific genre, i.e., argumentative writing, as a comprehensive framework may offer a holistic view for teaching argumentative writing in the EFL classroom. In the same vein, a better understanding of L2 writers' composing processes for researchers should be acquired based on both cognitive and sociocultural writing theory. Moreover, the interplay of informal reasoning, classical and intercultural rhetoric theory could help the researcher in this study effectively evaluate arguments in L2 writers' argumentative writing.

Chapter Four: Methodology

This chapter first outlines the research design and the rationale for the research methods, then provides the detailed description of research context and the elaborated explanation of research instruments, followed by a brief discussion of ethical concerns.

4.1 An Outline of Research Design

This study aims to explore the influence of a SRSD-based writing instruction on L2 writers' performance and perceptions on argumentation in argumentative writing. Given the exploratory nature and research aim of the study, I employed a case study approach. As categorized as an embedded, single-case design (Yin, 2009), this research focuses one specific case of a Southern Chinese university in which sub-units of 46 undergraduate students were involved and studied. The study of the incorporated sub-units "can often add significant opportunities for extensive analysis, enhancing the insights into the single-case" (Yin, 2009, p. 99). Given the specialties in its unique curriculum design and pedagogical approaches for college English course of this university that I have been working for many years (see Section 4.2), I believe it is worth researching it to "uncover the manifest interactions of significant factors characteristic" (Lune & Berg, 2017, p. 171) of the university.

This research drew on a mixed methodology that involves two main instruments of writing tests and interviews for data collection and analyzes data by quantitative and qualitative methodological triangulation. Mixed methods research helps expand the understanding of a complex issue, verify the research findings through triangulation and reach various types of audience (Dörnyei, 2007, p. 164).

In this study, explicit instruction of SRL strategies and argumentation knowledge

as an integrated SRSD instructional model will be embedded in the curriculum of a general college English course to complete a specific learning task – argumentative writing, which will be illustrated in Section 4.6. Prior to the intervention, a classroom writing test on an argumentative writing topic was administered to 46 participants and their essays were assessed in terms of argument soundness and overall writing quality. All participants were categorized by argument soundness that primarily represented their abilities of argumentation, and 12 were selected and invited for a semi-structured interview before the intervention. Intervention sessions were then be taught during a 4-month semester and 46 participants were required to take a post-intervention writing test on the same topic at the end of the semester, from which their essays were re-assessed using the same criteria for evaluating the pretest essays. Finally, the same group of participants who participated in the post-intervention interview was again invited to the post-intervention interview for the research purpose. Table 4.1 shows an overview of the research design.

Table 4.1

An Overview of the Research Design

Procedure	Research Objectives	Research Instruments	Data analysis	Participants
Stage 1	Examine argument soundness in L2 students' argumentative writing without any intervention	Writing tests	Content analysis (Quantitative analyses – descriptive statistics and inferential statistics)	The research group: Students from non-English majors (n=46), second and third graders
	Triangulate the quantitative findings	Semi-structured Interviews	Content analysis (Qualitative analyses – thematic analysis)	12 students selected from the research group
Stage 2	Implementation of an intervention	A SRSD-based writing instruction (four months)		The research group
Stage 3	Investigate changes of argument soundness in L2 students' argumentative writing after the intervention	Writing tests	Content analysis (Quantitative analyses – descriptive statistics and inferential statistics)	The research group
	Triangulate the quantitative findings	Semi-structured Interviews	Content analysis (Qualitative analyses – thematic analysis)	The same group of students who participated the pre-intervention interview

4.2 Research Context

This study was conducted in a Chinese southeastern Tier-1 level university that had established an English Language Center (ELC) for instruction in college English to students of all years and levels since 2002. Unlike most other universities in mainland China, ELC recruits teachers from all over the world with half native speakers of English and half non-native, and teachers are required to use only English as the instructing language in the classroom. Five principles underlying English language courses – proficiency, autonomy, sustainability, intercultural communication and critical thinking - have been formulated and applied since the establishment of the center. ELC provides an integrated skills program that normally consists of four semesters, and students build English skills and key academic skills through 4 compulsory levels from a basic level - Level 1 to a more advanced level - Level 4. Amongst all levels, Level 4 takes a more specialized format that emphasizes the development of critical thinking skills through the instruction of writing compared with other levels that retain focus on integrated skills. Therefore, the time period of classroom writing instruction accounts for around 60% of the total course instructional time. Students who reach this level have normally passed the previous levels that take a period of three semesters. In other words, Level 4 students are assumed to master a certain level of English writing skills after being trained from Levels 1 to 3 and be able to accomplish more demanding tasks such as argumentative writing that focuses on argumentation. I as an English teacher of ELC have taught Level 4 for 8 years, through which I have participated in designing and reforming the curriculum several times. This experience informs me of tailoring a purpose-oriented intervention that integrates explicit SRL strategies and argumentative writing knowledge into a general English course curriculum for this research. Therefore, I invited two classes of my students as research participants and ensured that the two classes received the same content and quality of instruction, which further benefits the research validity and reliability.

4.3 Participants

Given that purposive sampling “provides greater in-depth to the study” (Cohen et al., 2011, p. 156), the current study adopted this sampling strategy in all stages. First, a total of 46 students who enrolled in a Level 4 course participated in this study. They were allocated to two intact classes taught by me who acted as their teacher and researcher of this study. The benefits and challenges of researching my own students will be discussed in Section 4.5.

The participants reported similar English learning experiences in college, having an average of 12.28 years ($SD = 2.187$) of formal English learning by the time of this study. When they reached Level 4, they had received around 64 class periods of college English classes (45 minutes each) per semester that lasts for 4 months, adding up to 144 hours of instruction through Levels 1 to 3 in total, among which approximately 20% had been used to focus specifically on developing English writing skills. In the English classes, students had received genre-based writing instructions and been required to write essays as practices or tests.

All the participants hold Chinese nationality and Chinese is their mother tongue. None of them had experience in studying abroad. 21 participants are from social science majors and 25 are science majors; none of them are English majors. The group, consisting of 28 second graders and 18 third graders, is equally divided by male and female. The range of age is from 18 to 21 years old with a median age of 19.8 ($SD = .859$) years old. Table 4.2 shows the demographic characteristic of the participants.

Table 4.2
Demographic Characteristics of Participants

Characteristic	<i>n</i>	%
Gender		
Female	23	50.0
Male	23	50.0
Year of College		
Second grader	28	60.9
Third grader	18	39.1
Major		
Engineering	18	39.1
Business	10	21.7
Science	7	15.2
Journalism	5	10.9
Law	4	8.7
Arts	2	4.3

Prior to the intervention but after the pretest writing, these participants were categorized in terms of *argument soundness* elicited from their pretest essays (see Section 6.1). 12 representative students, including 4 high-achievers, 4 average- and 4 low-achievers in *argument soundness* from their pretest essays, were invited to a pre-intervention interview and tracked until the end of the semester, with a post-intervention interview conducted again. 4 students of each achievement level were selected, with 5 male and 7 female who are at the age of 18 to 21 years old. Half of them is from science majors, with another half from social science majors. Only 3 of them are third graders and the rest are all second graders. The interview data showed that two thirds in this group believed that their Chinese argumentative writing ability is at an intermediate level. 50% of them reported that they mastered intermediate English argumentative writing ability, yet around 42% considered themselves weak. Table 4.3 shows detailed information of these 12 cases.

Table 4.3

Demographic Characteristics of 12 Cases

Pseudonym	Gender	Age	Major	Year of College	Self-reported Chinese Argumentative Writing Ability	Self-reported English Argumentative Writing Ability	Researcher's evaluation of <i>argument soundness</i>
Leo	M	18	Engineering	2	Intermediate	Quite weak	High-Achieving
Zack	M	19	Science	2	Intermediate	Intermediate	High-Achieving
Cindy	F	20	Business	2	Intermediate	Quite weak	High-Achieving
Wendi	F	19	Business	2	Quite weak	Intermediate	High-Achieving
Tina	F	21	Science	3	Intermediate	Intermediate	Average
Saba	F	19	Journalism	2	Quite good	Quite good	Average
Henry	M	18	Business	2	Good	Quite weak	Average
Penny	F	19	Business	2	Intermediate	Intermediate	Average
Daisy	F	20	Engineering	3	Intermediate	Quite weak	Low-Achieving
Alice	F	19	Law	2	Intermediate	Intermediate	Low-Achieving
Xylon	M	21	Engineering	3	Intermediate	Weak	Low-Achieving
Ben	M	19	Engineering	2	Quite good	Intermediate	Low-Achieving

4.4. Research Instruments

This study devised two scientific instruments – tests and interviews – for data collection and researching.

4.4.1. Writing Tests

As argumentation is often manifested in written form (Stapleton & Wu, 2015), an argumentative writing test on a given topic was administered to the research group. The writing prompt on the topic of Chinese population-control policy was chosen as it has been controversially discussed for centuries and is familiar to every Chinese citizen (see Appendix A). Before the intervention, students were required to write an argumentative essay within 45 minutes (i.e., one class period) yet no word count limit required, based on the prompt in a classroom setting as a diagnostic pretest. Diagnostic testing is often designed to identify “the initial or ‘entry’ abilities in a student” (Cohen et al., 2011, p. 481). This study aims to explore in-depth information of students, thus this diagnostic test measures detailed starting abilities of the research group by certain levels of criteria that were designed by the researcher. A post-intervention writing test on the same topic lasting for the same time period in the same place was implemented at the end of the semester. Using the same writing prompt enables the researcher to control for the effects of the writing prompt on the participants’ writing performance, and for a fair comparison between the pre- and post-intervention performance as participants face the same task demands. This particularly fits the purpose of this study for an accurate comparison of the intricate argumentation presented in L2 students’ argumentative writing.

To ensure test validity, several sources of unreliability are controlled. First, the writing topic was designed bias-free and less culture-bound though the contextual factors often play a significant role in designing and conducting assessment (Cohen

et al., 2011). A pilot test on the readability and comprehensibility of the writing prompt was done by three Level 4 students who did not participate in this research to ensure that the language of the assessment, especially in this study a L2 for the participants, will not affect their performance. When administering tests, I never intervened while the students were writing during the testing period except for simply telling them the tests began or finished to reduce the Hawthorne effect that might operate negatively or positively on students' behavior due to their awareness that they were being observed (Cohen et al., 2011). The reliability of testing also extends to data analyses, which will be later discussed in Section 4.7.1.

4.4.2. Semi-structured Interviews

To ensure that "the depth and breadth of the respondent's story" (Dörnyei, 2007, p. 136) can be provided and "important but unanticipated issues" (Cohen et al., 2011, p. 205) of the situation can be raised, interviews in applied linguistics research are mostly conducted in a semi-structured pattern, in which the interviewer provides interview guidance, and the interviewees were expected to follow an open-ended format to elaborate on certain issues for interesting development. This interview type is suitable for this study because I am an experienced teacher and researcher of this study who have a good overview of the domain (i.e., argumentation and argumentative writing) in the interview questions and am capable of sticking to the interview guide and offering help during the interviewing process. Therefore, one-to-one semi-structured interviews lasting for about 30-45 minutes were conducted both at the beginning and at the end of the semester in this study in terms of argumentation, argumentative writing and SRL strategies (see Appendix B). Multiple sessions of interviews (i.e., in this study the pre- and post-intervention interviews) with the same participants help researchers obtain adequate participant information in depth and breadth (Dörnyei, 2007, p. 134). Participants were encouraged to use Chinese or English language for communication at their convenience. Interview data obtained in this study were

designed to triangulate the quantitative data, with an aim to understand students' beliefs about and SRL strategies use for argumentative writing.

To control interview reliability and ensure validity, several issues have been considered and tackled to minimize possible bias that might be caused by interviewers, interviewees and interview questions when designing, conducting and analyzing the interviews. In the preparatory stage, an interview guide was developed in terms of question types and wording to help systematically cover the domain. Piloting interviews with the aforementioned three students who helped pilot the writing prompt were conducted to "ensure that the questions elicit sufficiently rich data and do not dominate the flow of the conversation" (Dörnyei, 2007, p. 137). During the interview, I first presented myself as a trustworthy and non-threatening person and attempted to create a relaxed atmosphere and build rapport with interviewees to ensure that the interview flows naturally for reducing the anxieties of interviewees who are less powerful in the interview situation. I also tried to take a neutral attitude without imposing any personal bias in the interview. Respondent validation was also completed by sending the interview transcripts to participants for clarifying their opinion and validation. Finally, the reliability of interview was ensured when analyzing the interview data through the repeated reflection of data and calculation of two analysts' IRR co-efficient (see Section 4.7.2).

4.4.3. Ethical Concerns

Following the code of research conduct of the University of Nottingham, I, as the research designer and conductor, explained the basic research aims to my students following a tailored information sheet (see Appendix C1) and invited them to participate in the study. After students fully comprehended the details of the research and expressed their willingness to participate, an informed consent form (see Appendix C2) was given to these students to sign and filed for record.

Students were informed of the purpose and procedure of the research and their right to join or withdraw themselves or their data at any stage of the study without explanation. Their choice of participation or non-participation or withdrawal, the scores of writing tests and their answers to the interview questions would not affect any part of their normal course such as scores or their relationship with teacher or university. Students were also notified that this research design does not allow anonymity for data collection as their teacher is the researcher, and this research project is part of their teacher's EdD study. Research data of tests and interviews would only be used for the purpose for which the study was conducted, in other words, no data collected from this study will be disclosed to a third party. However, given the size and scope of the research, there is still a risk that participants will be able to be identified, even though the data will be kept confidential. This was made clear to the potential participants before data collection. Discussions on recording the interview was set up between the interviewer and interviewees, and permission was obtained before it took place in the interviewing process. During data analysis, each participant was under a pseudonym and given a number to their essays. An information list was used to link the information to participants, which was known to the researcher only. All data were used and will be used for the researcher's EdD thesis in University of Nottingham Ningbo China, academic publications and conference presentations.

4.5. Research Challenges

Having taught English in Chinese EFL context for several years brings me numerous benefits when conducting this research. It enables me to "identify gatekeepers and gain access into the classroom" (Galloway, 2017, p. 149). First of all, assuming the dual role of both teacher and researcher in this study afforded me the unique advantage of greater access to information because I possessed a more profound and nuanced understanding of my students in the research context. Through

shared experiences, I was able to establish a foundation of trust in launching the study and facilitating data collection. Given that all the participants in the study are of Chinese nationality, my familiarity with their beliefs, values and customs also helped me better interpret the collected data.

Notwithstanding the advantages, it posed some challenges when I assumed the role of an 'insider' researcher. It is widely acknowledged that researcher holds significant power over their students, both as their teacher and as the researcher in charge of the study. This power dynamic may lead to unequal relationships, with the researcher having a greater ability to influence students' behavior and decisions. Therefore, to address these power imbalances, in this study I was mindful of my responsibilities and ethical obligations to my students, and meanwhile took steps to mitigate potential negative effects on my students. First, I attempted to balance my workload of researching and teaching and guarantee that my research did not interfere with my teaching. Second, I have attempted to control validity and reliability of this research by introducing pilot study before the main round of data collection (see Sections 4.4.1 and 4.4.2), examining the inter-rater reliability (hereinafter "IRR") before and in the process of data analysis (see Section 4.7), and approaching different data set from quantitative or qualitative analysis separately. Finally, as an 'insider' researcher, efforts to address 'observer's paradox' (Richards et al., 2011, p. 34) are needed. I attempted to reduce students' anxiety level caused by their feeling of obligation to participate which could lead to their possibly altered behaviors in data collection process, for example, providing answers that they believed were expected by the teacher. It entailed being transparent about the research project, obtaining informed consent from participants, creating an environment of mutual respect and collaboration where students felt empowered to voice their concerns and have their needs addressed, and ensuring that students were not exposed to any physical, emotional or academic harm. I also attempted to distinguish activities for research from actual

teaching, collect data unobtrusively during teaching, and keep my teaching consistent in two participants' classes. Overall, as an 'insider' researcher, I was continually reflective about my own positionality and potential biases or conflicts of interest in conducting research with my own students, and I believe I managed to ensure that the research was conducted in an objective and unbiased manner.

4.6. The Integrated SRSD-Based Writing Instructional Model

A repertoire of research has affirmed the effectiveness of strategies-based instruction, particularly SRSD model, on EFL writing (e.g., Teng & Zhang, 2020). However, the focus of argumentation in argumentative writing was not paid much attention in these studies though argumentative writing as a writing genre was commonly used in research. This study aimed to adapt the SRSD model for argumentative writing to an EFL context, with a focus on argumentation. Therefore, corresponding argumentative writing strategies and SRL strategies were incorporated throughout the process of SRSD instruction.

4.6.1. Selected Argumentative Writing Strategies

Following the course curriculum, the requirements of teaching argumentative essays work in concert with the common argumentative writing strategies that were abbreviated as the mnemonic *STOP*, *AIMS*, *DARE* and *SCAN*, and a newly developed *ART* mnemonic throughout the instructional process. Table 4.4 provides a detailed description of each strategic mnemonic.

Table 4.4

A Detailed Description of the Strategic Mnemonic for Argumentative Writing (Adapted from Ferretti & Lewis, 2013)

Mnemonic	Description	Writing Phase
STOP	<p>Suspend judgement by listing reasons for both sides of an issue</p> <p>Take a side by deciding which side has the strongest support</p> <p>Organize ideas for their chosen side by numbering how they will appear in the composition</p> <p>Plan more throughout the writing process</p>	Planning
AIMS	<p>Attract readers' attention</p> <p>Identify the problem of the topic so readers understand the issues</p> <p>Map the context of the problem or provide background needed to understand the problem</p> <p>State the thesis</p> <p>Develop topic sentence</p> <p>Add supporting details</p>	Composing
DARE	<p>Reject at least one argument for the other side</p> <p>End with a conclusion that reinforces the point</p>	Composing
SCAN	<p>Does it make Sense?</p> <p>Is it Connected to my belief?</p> <p>Can I Add more?</p> <p>Note Errors in language use</p>	Composing and Revising
ART	<p>Is the reason Aceptable?</p> <p>Is the reason Relevant to the point?</p> <p>Can transition words Tie the ideas well?</p>	Composing and Revising

In the planning phase, students were taught the mnemonic *STOP* that helped them prepare for their argumentative writing with an aim of constructing a good argument. During writing, the *AIMS* and *DARE* mnemonic were specifically taught to present all basic elements that the surface structure of an argumentative essay

constitutes. Students were also introduced the *SCAN* and *ART* mnemonic for reflecting argumentation and revising their argumentative writing. In the composing and revising stages, teachers drew on a questioning method to enable students to reflect on their thinking, strengthen their argumentation and review their argumentative essays.

All these strategies were adapted to align with the objectives of the course curriculum that were designed to teach English argumentative writing with a focus on argumentation to the Chinese university students. That was, in other words, embedding genre-specific planning, composing and revising strategies in the general L2 writing strategies (e.g., vocabulary use, sentence structures and grammar rules in relation to L2 writing) throughout the intervention. Explicit instruction, modeling and scaffolding of these strategies by teacher were administered in this study to help students understand and develop the argumentative skills.

4.6.2. Selected SRL Strategies

Except for general and genre-specific writing strategies, SRL strategies that help regulate the writing process and deployment of writing strategies were considered the core component of this SRSD model (Harris & Graham, 2017). Given that writing in this model comprises planning, composing and revising that respectively pertained to the pre-writing, in-writing and post-writing stages, four SRL strategies were selected for this study that included goal setting, self-monitoring, self-instruction and self-reinforcement. These strategies help students manage their metacognition, cognition and behavior in a socio-interactive environment (i.e., with teacher or peers) when accomplishing a complex and challenging academic task. As the instructional stages of SRSD model are recursive, SRL strategies can be used repetitively until students can independently apply these strategies for successfully completing the targeted writing.

Setting writing goals helps students better understand the writing purpose and facilitate their critical consideration of when and how they could use the corresponding strategies to complete a task. This enables students to personalize their writing process and strengthen motivation and self-efficacy for writing. Self-monitoring of writing performance enables students to self-reflect their use of strategies and self-assess their argument and writing quality. Self-instruction, also referred to as self-talk or self-restatements, engages students in a dialogue with themselves, which helps them direct, organize, and focus their thinking and behavior in the writing process. Self-reinforcement rewards students themselves when criterion for performance is reached or even surpassed, which bolsters students' strategy use for better writing performance. With the help of self-instruction and self-reinforcement, students are expected to extend their writing abilities, approaching from what they think they can do to even more demanding tasks.

In this study, all these SRL strategies were explicitly taught, modeled and then scaffolded by teacher in the process of SRSD instruction, with an adaption to a specific domain of L2 argumentative writing. Integrating SRL strategies into SRSD instruction that targets L2 argumentative writing allows students to personalize their strategy use for writing and regulate their writing process in a more effective manner.

4.6.3. Instructional Procedures

In this study, the SRSD model with the selected SRL strategies and argumentative writing strategies was integrated into a regular English class, which lasts for 4 months as Manchón et al. (2007) recommended that having an at least 10 to 15 weeks of intervention is plausible to ensure the reliability of strategies-based instruction. After this 4-month instruction, the goal of this study was to empower

L2 writers with capabilities of independently applying argumentative knowledge and strategies, along with SRL strategies, in the process of their future writing practices.

A trial of this instructional model had been conducted in the previous semester before research data was officially collected and analyzed to validate the set of strategies and steps of instruction. One experienced teacher who shares similar educational and teaching background as the researcher of this study (both possess a master's degree and teach English course to non-English major students in a Chinese Tier 1 university for years) showed great interest in this research was invited to observe the trial class and provide feedback and suggestions on the instructional design for further modifications. Before the trial, this invited teacher was informed of instructional design without knowing the research purpose and complete design. Immediately following this step, the teacher received extensive trainings from the researcher, relevant online courses and reading materials on argumentative writing knowledge (e.g., argumentation and counterargumentation), SRL theory and strategies (e.g., metacognition, cognition and social behavior), and the selected argumentative writing and SRL strategies in relation to this SRSD model. Adjustments were then made according to the feedback of students (e.g., the provision of more time in class for peer learning in argumentation) and observer (e.g., the provision of instructions on the use of graphic organizers and the adjustment of teaching SRL strategies) and self-reflection of the researcher.

As Table 4.5 gives a brief description of the SRSD instructional model for argumentative writing, there are six recursive stages: *Develop and Activate Knowledge*, *Discuss It*, *Model It*, *Memorize It*, *Support It* and *Independent Performance*. Given the fact that Chinese students might lack English argumentative writing knowledge and experience, the SRSD model of this study was separated into two parts to enable students to process their learning gradually.

First, the argumentative writing knowledge in form of different strategic mnemonics embedded in general writing instruction was introduced for the planning and composing stages. Then, the revising strategies for argumentative writing were originally added using a critical questioning approach, which targeted the enhancement of argumentation in argumentative writing. Table 4.6 shows the implementation of the integrated SRSD model in this study.

Table 4.5

A Brief Description of SRSD Instructional Model for Argumentative Writing (Adapted from Ferretti & Lewis, 2013)

Stages in SRSD instruction	Brief Description
<i>Build and activate knowledge</i>	Teacher provides students with a rationale for the instructional strategy and activates students' prior knowledge of argumentative writing and strategy use.
<i>Discuss it</i>	Teacher introduces the strategic mnemonic and SRL strategies for argumentative writing to the students and discusses with students about how the strategy can be used to set manageable goals for their writing.
<i>Model it</i>	Teacher models how the strategy works by thinking aloud through the writing process and demonstrating how to use the strategy to plan and write text with the help of graphic organizer, charts or checklist.
<i>Memorize it</i>	Teacher encourages students to memorize the mnemonic by organizing classroom activities in order to internalize and personalize the writing process. Students start to play a major role in this learning process with teacher guidance.
<i>Support it</i>	Teacher uses scaffolding to support students' independent acquisition of the strategy. Students take responsibility of using the strategy with teacher's waning assistance.
<i>Independent performance</i>	Students independently use the strategy for a variety of argumentative writing tasks provided by teacher.

Table 4.6
Implementation of the Integrated SRSD Instructional Model

Steps of SRSD instruction	Classroom Activities	Time of Implementation
Stage 1&2. Develop and Activate Knowledge Needed for Argumentative Writing and Self-Regulation and Discuss It, <i>STOP+AIMS+DARE+SRL strategies</i>	Teacher-led instruction; Teacher-student interactive discussion; Teacher-led collaborative writing	6 class periods (45 minutes each) Week 2-3
Stage 3. Model It, <i>STOP+AIMS+DARE</i>	Teacher-led instruction; Teacher-student interactive discussion; Teacher-led collaborative writing Games of memorization; Tests of memorization;	4 class periods Week 3-4
Stage 4. Memorize It, <i>STOP+AIMS+DARE</i>	Peer collaborative practices of memorization in small groups or pairs; Individual learning	2 class periods Week 4
Stage 5&6. Support It and Independent Performance, <i>STOP+AIMS+DARE</i>	Teacher-assisted collaborative writing; Peer collaborative writing practices in small groups or pairs; Student independent writing	6 class periods Week 5-6
Stage 1&2. Develop and Activate Knowledge Needed for Argumentative Writing and Self-Regulation and Discuss It; Add <i>SCAN+ART</i>	Teacher-led instruction; Teacher-student interactive discussion; Teacher-led collaborative writing	4 class periods Week 10
Stage 3. Model It; Add <i>SCAN+ART</i>	Teacher-led instruction; Teacher-student interactive discussion; Teacher-led collaborative writing	4 class periods Week 11-12
Stage 4&5&6. Memorize It, Support It and Independent Performance, <i>STOP+AIMS+DARE+SCAN+ART</i>	Peer collaborative practices of memorization in small groups or pairs; Teacher-assisted collaborative writing; Peer collaborative writing practices in small groups or pairs; Student independent writing	10 class periods Week 13-16

4.6.4. Fidelity of Implementation

To ensure the quality and completeness of the intervention that was implemented as planned and designed, two expert teachers who did not know any of the research were invited as classroom observers to record all the steps that teacher took in the classes of 16 weeks. They came to visit the classes whenever the specific intervention was conducted during the semester, in total 10 class observations for each teacher completed. Initially, they were given training from the research about their tasks in checking the fidelity of the instruction by taking notes during classes and checking off the given checklist that covered the lesson plans after classes for comparing and contrasting their observation results and the planned classes. The percentage of this comparison was 98% and interrater agreement on fidelity was 100%.

4.6.5. Social Validity

Regarding social validity, all interviewed participants as representatives of this study were asked by their teacher as interviewer in the post-interview about their feelings on the SRSD instruction as well as argumentative writing with an emphasis of argumentation. Interviewer took notes on each interviewees' responses and compared across students.

4.7. Data Analysis

Qualitative data collected in this research that included students' writing and interviews were first stripped of identifiers to ensure a blind review process. The collected writings were then typed against scoring bias. Data were then coded and analyzed using the technique of content analysis that is considered "a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, assumptions, and meanings" (Lune & Berg, 2017, p. 182). The systematic procedures of analysis were established, in which a

pre-coding phase of data reflections initially took place, followed by the determination of the kinds of codes, and levels and units of analysis were then decided to be used to address research questions.

To uphold the validity for data analysis, the invited teacher mentioned in Section 4.6.3 who was blind to the research purpose and design worked together with the researcher to ensure the IRR in all stages of data analysis. Though it is suggested to have raters who are not familiar with the research design to reduce bias, the researcher is considered a better choice as rater in this case due to the intricate nature of data analysis on argumentation in argumentative writing.

4.7.1. Writing Data

4.7.1.1. Assessing Writing Performance

Following the convention, writing performance in this study was evaluated by essay elements, length, and overall writing quality as dependent outcome variables (Cuenca-Carlino et al., 2017; Palermo & Thomson, 2018).

First of all, a holistic measure is the most widely used direct method to score the quality of writing (Graham & Perin, 2007). Thus, a rubric for argumentative essay, adapted from Qin and Karabacak (2010) and Stapleton and Wu (2015), was used within this study. The rubric uses a weighted scoring scheme, measuring 7 aspects of writing quality: main argument (0 or 8) and its supporting reason (0-60), counterargument (0 or 5) and its supporting reason (0-5), rebuttal (0 or 5) and its supporting reason (0-15), and conclusion (0 or 2). Each category of reason has 5 rating subcategories with clear descriptors of argumentative knowledge and writing proficiency and a corresponding numerical scale. The invited rater received training on the rubric and then was asked to read three sample writing independently. After that, two raters discussed the scores and resolved the differences via discussions,

aiming to eliminate any possible bias in the scoring process. After that, two raters independently scored all the essays (n=92, including 46 pretest essays and 46 posttest essays) following the rubric. IRR co-efficient of 0.98 for pretest essays and 0.96 for posttest essays was reached.

Essay length and essay elements are another two indirect measures of writing performance in this study. The number of written words in an essay is a reflection of writing fluency (Cuenca-Carlino et al., 2017). Moreover, there has been proved significantly positive correlations between essay length and writing quality in the previous studies (Morphy & Graham, 2012). Therefore, it is common to use essay length as one outcome variable to examine the influence of SRSD and other adapted writing intervention across studies (Cuenca-Carlino et al., 2017; Graham et al., 2013; Palermo & Thomson, 2018). In this study, essay length was measured in number of words. In other words, the written words were counted for each essay despite the use of misspelled and Chinese words.

Essays were also evaluated for the inclusion of the basic argumentative essay components. Students were expected to present all the macro-structure elements in their essays, including *introduction*, *body* and *conclusion*. Targeting the special features of argumentative essay, an introduction paragraph is expected to include a main argument, and the body paragraphs cover supporting reasons, counterarguments and rebuttals as well as a conclusion paragraph restates the thesis that briefly summarizes the main argument and rebuttals, as suggested by Hughes et al. (2015, p. 428). Therefore, in this study, the evaluated essay elements were *main argument*, *supporting reasons*, *counterarguments*, *rebuttals* and *conclusion*, regardless the structural labels. Given the restricted number of *main argument* and *conclusion* for an essay, they were respectively scored 1 if presented, otherwise 0. On the contrary, it was possible to include more than one element for *supporting reasons*, *counterarguments* and *rebuttals*; therefore, 1 point was

awarded for each separate and unique element, following the procedure recommended by Palermo and Thomson (2018). Two raters together went through 10 pilot essays in the practice sessions to identify elements and independently counted all the elements in students' essays. The IRR co-efficient for *main argument, supporting reasons, counterarguments, rebuttals* and *conclusion* in pretest essays were respectively 1, 0.92, 0.99, 0.97 and 1. The IRR co-efficient for *main argument, supporting reasons, counterarguments, rebuttals* and *conclusion* in posttest essays were respectively 1, 0.94, 0.96, 0.95 and 1, respectively.

4.7.1.2. Assessing Arguments

One of the most challenging jobs in this study is the standardization of the coding and scoring for the construction of an argument in L2 argumentative writing both linguistically and cognitively. Therefore, after reading through a fairly substantial amount of writing data, two raters again piloted 10 essays in the practice sessions to discuss the discrepancies in interpreting and understanding the meaning of each reason in each essay. Informed by the common criteria for assessing written arguments (Hughes et al., 2015, p. 132; Schwarz et al., 2003; Stapleton & Wu, 2015;), coding was performed sentence-by-sentence to examine, compare, conceptualize and categorize the data in an iterative process, and thematic categories were identified and developed. Information that was considered off-topic or with no rhetorical purpose was categorized as non-functional. Finally, the coding schemes and scoring criteria were adjusted to fit in the context of this research, which will be later illustrated in Chapter Five. Two raters then independently coded and scored all the essays. The IRR co-efficient for coding is 86%, which is considered an acceptable level of agreement as a good reliability score is normally over 0.8 (Smagorinsky, 2008) given the subjective nature of the coding judgement. Efforts to resolve differences were made later in discussions.

4.7.1.3. Approaches to Quantitative Analysis

Quantitative data transferred from qualitative writing data was first cleaned and normal distribution, missing values and outliers were examined. All the examinations showed that the assumptions for bivariate analysis were met. A series of paired samples t-tests was applied to explore the possible changes of essay length, element and scores for assessing writing performance, as well as argument soundness, reasoning types and argument elements for assessing arguments within the research group between the pre-intervention and post-intervention writing tests. As the Pearson product-moment correlation coefficient “determines the strength of the linear relationship between two variables” (Cronk, 2018, p. 50), bivariate Pearson correlations were used to investigate how the measuring variables correlated with argument soundness and overall writing performance. The multiple linear regression analysis makes the prediction of one variable from two and more variables possible. Therefore, a series of multiple linear regression analyses were applied to evaluate the predictive power of the measuring variables on argument soundness and overall writing performance. Knowing the magnitude of an effect allows us to ascertain the practical significance of statistical significance. Therefore, this study evaluates effect size for t-test, bivariate Pearson correlations and multiple linear regression using Cohen’s d , r and Cohen’s f^2 . According to Cohen’s (1988, 1992) guidelines, $d \geq 0.2$, $d \geq 0.5$, and $d \geq 0.8$ represent small, medium, and large effect sizes in t-test, respectively; $r \geq 0.1$, $r \geq 0.3$, and $r \geq 0.5$ in Pearson correlations; $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ in multiple linear regression, respectively.

4.7.2. Interview Data

Students’ interviews recorded as audios were transcribed and translated by the researcher. Once the Chinese and English transcription were ready, they were sent to students for information clarification, modification or addition. Taken a pre-

coding step to repeatedly read the transcriptions, the researcher adopted a combined inductive and deductive approach to examine the data. Data was initially coded based on the coding schemes generated from the theoretical framework of SRL, argumentation and writing to address the research questions. The coding schemes included understanding about argumentative structure, argument strength, argument elements, argumentative writing in general and L2 argumentative writing, as well as metacognitive, cognitive, social behavior and motivational strategies (see Table 6.3 and Table 6.4).

Codes were continuously adjusted in this iterative process until the latent content manifested and thematic categories were finally determined. Reading and reflecting on the data allowed the researcher for a complete and holistic portrayal of the participants' understanding of argumentation, their use of SRL strategies for argumentative writing as well as their changes of beliefs and behaviors in the writing process after the SRSD instruction.

That trained teacher who participated in the writing data analysis was again invited to engage in the process of interview data analysis. He helped not only check the transcription and translation for accuracy and authenticity, but also evaluate the coding and discuss the discrepancies of understanding with the researcher for amendments. IRR co-efficient of 0.89 and 0.90 for themes generated from pre- and post-intervention interviews have verified the reliability of interview data analysis in this study.

Chapter Five: Writing Data Analysis and Discussion

This chapter reports the quantitative findings of the current study which was designed to investigate the differences in writing performance of Chinese university students' argumentative essays before and after a SRSD instruction, particularly the change of a significant variable – argument soundness – that primarily determine the quality of argumentative writing. Data were collected via a given-topic essay writing test that had been administered twice as formative assessment before and after the intervention to address the first research question (see Section 1.2).

Section 5.1 reports the quantitative results that compared the writing performance students produced in terms of essay length, elements and holistic score used to assess essay quality before and after the intervention. This part also reported the predictive effects of essay length and element on students' writing quality that manifested in score, followed by a detailed description of the correlation between essay quality and other plausible contributors (i.e., essay length and elements) to writing performance. Section 5.2 is divided into two sub-sections that introduce diverse measures to assess argument soundness and compared the variables before and after the intervention. In Section 5.2.1, a critical method that aimed at measuring argument soundness by the degree of acceptability and relevance of any invoked reasons is examined. The differences in the degree of acceptability and relevance before and after the intervention were presented and their predictive effects on essay score were provided, followed by a full report on their correlations with essay score. In Section 5.2.2, two alternative methods (i.e., types of reasons and argument elements) as supporting measures to assess argument soundness were discussed. First of all, the results report the differences of four typical types of reasons (i.e., abstract reasons, consequential reasons, concrete reasons and L1 reasons) measured in numbers before and after the intervention, then presented

the predictive power of these factors on argument soundness and essay score, followed by a summary of the correlations between four types of reasons and argument soundness, as well as essay score. The discussion of argument elements (i.e., supporting reason, counterargument and rebuttal) also follows a similar pattern. Finally, a thorough discussion in Section 5.3 is presented relating to the empirical findings of argumentation evaluation and SRSD practices.

5.1. Assessing Writing Performance

A paired samples t-test is used to “discover whether there are statistically significant differences between the means of two groups, using parametric data drawn from random samples with a normal distribution” (Cohen et al., 2011, p. 642) for related samples. Therefore, a series of paired samples t-tests was applied to compare students’ essay length, elements and overall writing quality respectively before and after the intervention for evaluating their writing performance as a whole. Table 5.1 presents the descriptive results and paired samples t-tests with Cohen’s *d* values. It is apparent from this table that students wrote more elements and total words in their posttest essays, as well as enhanced the quality of writing after the intervention.

Table 5.1

Contrast of Pretest Essays with Posttest Essays for Essay Elements, Length and Scores

Variable	Pretest Essay		Posttest Essay		<i>t</i>	<i>p</i>	95% <i>CI</i>		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
Length	193.783	45.847	372.043	81.987	17.019	<.001	157.164	199.357	2.509
Elements	9.217	2.641	15.326	3.406	13.994	<.001	5.229	6.988	2.063
Main Argument	.978	.147	1.000	.000	1.000	.323	-.022	.066	.150
Body	7.326	2.692	13.543	3.230	15.038	<.001	5.385	7.050	2.217
Conclusion	.913	.285	.783	.417	-1.632	.110	-.291	.031	.240
Score	41.239	14.213	60.283	13.041	10.166	<.001	15.271	22.816	1.499

Note. "Body" refers to the total number of supporting reasons, counterarguments and rebuttals. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit.

First of all, it was directly observable from students' writing scripts and the quantitative data that there was a significant increase in the total number of words of essays from pretest to posttest, $t(45)=17.019$, $p<.001$, with a very large effect size (Cohen's $d=2.509$).

With regard to essay elements, the results showed that significant differences were found in the number of essay elements, including *main argument*, *supporting reasons*, *counterarguments*, *rebuttals* and *conclusion*, before and after the intervention ($t(45)=13.994$, $p<.001$) showing a very large effect (Cohen's $d=2.063$). The intervention produced a very large effect on the part of *body* (Cohen's $d=2.217$) in the essays, but a small effect on *main argument* (Cohen's $d=.150$) and *conclusion* (Cohen's $d=.240$). Notably, only 1 in 46 students in the pretest essay did not present *main argument*, whereas all students wrote their *main argument* in their posttest essays. More interestingly, all students who supplied *main argument* in both the pre- and post-intervention stages placed this part at the beginning of their essays, adopting a deductive reasoning format. Relating to *conclusion*, 4 out of 46 students missed this part in their pretest essays as they did not finish their essays, but 10 students failed to write this structural section in their posttest essays for the same reason in the pre-intervention stage. Interestingly, another 9 students in the pretest essays provided a conclusion yet did not finish the body, in comparison to none of the students in the post-intervention stage displayed such behavior. The detailed argument elements in the section of *body* (incl. *supporting reasons*, *counterarguments* and *rebuttals*) will later be examined when discussing argument soundness in Section 5.2.2.2.

The results also indicated that the overall quality of the essays was significantly better than the pretest essays, $t(45)=10.166$, $p<.001$. The effect size was large (Cohen's $d=1.499$), too.

The relationships between essay length, elements and the scores for overall essay quality were investigated using bivariate Pearson correlations with two tailed significance (see Table 5.2). The results revealed that the scores given for the overall quality of writing were positively correlated with the variables of essay length and elements ($p < .01$). Specifically, the variable of essay scores was strongly correlated with the number of essay elements (pretest essay $r=.958$, $R^2 = .918$; posttest essay $r=.932$, $R^2 = .869$). The R^2 value showed that essay elements accounted for respectively 91.8% and 86.9% of the variance in essay scores that reflected L2 students' overall quality of writing. There was also a significant, positive correlation between essay length and essay scores (pretest essay $r=.504$, $R^2 = .254$; posttest essay $r=.537$, $R^2 = .288$). This implied that respectively 25.4% and 28.8% of the variance in pretest and posttest essay scores could be accounted for by essay length.

Table 5.2
Summary of Intercorrelations, Means, and Standard Deviations for Essay Length, Elements and Essay Scores (N=46)

Evaluation of Writing Performance	Length	Elements	Pretest Essay Score	M	SD
Length	--	.519**	.504**	193.783	45.847
Element	.579**	--	.958**	9.217	2.641
Posttest Essay Score	.537**	.932**	--	41.239	14.213
M	372.043	15.326	60.283		
SD	81.987	3.406	13.041		

Note. Intercorrelations for pretest writing scripts ($n = 46$) are presented above the diagonal, and intercorrelations for posttest writing scripts ($n = 46$) are presented below the diagonal. Means and standard deviations for pretest essay scores are presented in the vertical columns, while means and standard deviations for posttest essay scores are presented in the horizontal rows.

** $p < .01$

Also notable was that essay length had a positively significant ($p < .01$) correlation with essay elements (pretest $r=.519$, $R^2 = .269$; posttest essay $r=.579$, $R^2 = .335$). This result indicated that essay length was also predictive of essay elements

although at a relatively lower level.

Simultaneous multiple regression analyses were used to investigate how essay length and elements predicted EFL learners' overall quality of writing in two separate models before and after the intervention (see Table 5.3). Assumptions of multiple regressions were first examined. Two independent variables – essay length and elements – were then entered as a group. Results showed that essay length and elements, as a whole, explained respectively 91.8% and 86.9% of the variance in the pretest essay scores ($F(2, 43) = 242.088, p < .01, R^2 = .918, R^2_{Adjusted} = .915$) and posttest essay scores ($F(2, 43) = 143.012, p < .01, R^2 = .869, R^2_{Adjusted} = .863$). Individual predictor of essay elements yielded a significant, positive prediction for essay quality before ($B = 5.130, \beta = .953, t(45) = 18.710, p < .01$) and after the intervention ($B = 3.579, \beta = .935, t(45) = 13.824, p < .01$). However, the results also indicated that essay length did not show significance in predicting essay quality before ($\beta = .010, t(45) = .196, ns$) or after the intervention ($\beta = -.004, t(45) = -.060, ns$).

Table 5.3
Summary of Multiple Linear Regression Analysis for Variables Predicting Essay Scores (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	-6.644	2.847		5.676	3.725	
Length	.003	.016	.010	-.001	.011	-.004
Elements	5.130	.274	.953*	3.579	.259	.935**
			*			
R^2		.918			.869	
<i>F</i> for change in R^2		242.088*			143.012*	
		*			*	

Note: ** $p < .01$; *B* = the unstandardized beta; *SE B* = the standard error for the unstandardized beta; β = the standardized beta.

Based on the results of the bivariate correlation and multiple linear regression

analysis, it can be concluded that the use of argumentative essay elements contributed to L2 students' overall quality of writing. Therefore, the investigations of the underlying reasons that influence essay elements will be further conducted to address the first research question.

5.2. Assessing Arguments

5.2.1. Critical Measure: *Argument Soundness*

Argument soundness was judged in terms of the *acceptability*, *relevance* and *adequacy* of the reasons invoked to support the claim (Hughes et al., 2015, p. 132; Stapleton & Wu, 2015). The first criterion *acceptability* is defined as a premise that provides support for its conclusion while *relevance* refers that the acceptable premises "helps to make it reasonable to accept the conclusion" (Hughes et al., 2015, p. 177). The last criterion *adequacy* serves as a third criterion for the reinforcement of the conclusion, defining as all premises, without exception, are supposed to provide adequate support to make the conclusion acceptable. Given the fact that *adequacy* measures the degree of how acceptable the reasons are, the coding combined *acceptability* and *adequacy* to provide a range of scores for statistical analysis later.

Before coding, two raters discussed and reached the consensus on the understanding and interpreting the writing prompt *Should government control the country population?* Two ways are used to justify the argument in this study when students take a stance to support government's control over population:

1. If government controlled the population, ... (something positive would happen). Therefore, government should control the population.
2. If government did not control the population, ... (something negative would happen). Therefore, government should control the population.

Also, two ways are expected to be used to justify the argument in this study

when students take a stance to oppose government's control over population:

1. If government controlled the population, ... (something negative would happen). Therefore, government should not control the population.
2. If government did not control the population, ... (something positive would happen). Therefore, government should not control the population.

This is because the prompt is an argument on public policy; thus, students are expected to use the strategy of *argument from consequences* (Walton, 1996, p. 108), which emphasizes the cost-benefit analysis for decision making in such argument. Although other argumentation schemes were observed to address the prompt, the strategy of *argument from consequences* was overwhelmingly used by the students in this study.

5.2.1.1 How Acceptable are the Reasons?

With regard to the acceptability of the premises, it is essential to justify in accepting them as truth-claims. Table 5.4 illustrates the three categories of unacceptable reasons elaborated by examples. It is not indispensable to provide proofs to make a truth-claim acceptable. Therefore, if any common knowledge as premises is found, none of the proofs is required unless the context sets higher standards. If the statement is not common knowledge, or say, not facts but opinions, relevant evidence should be searched as support. In other words, when the premises are opinions, it is necessary to judge whether they are acceptable using the standard of acceptability.

Table 5.4
The Three Categories of Unacceptable Reasons

Approach to identify acceptability (A=0)	Example quote
Groundless reasoning	Participant 17: "It seems that the pressure of the one who wants to buy a living house in big city could not be solved because of the large number of population." (Posttest essay script)
Erroneous information	Participant 40: "For instance, India is the country with largest population in the world." (Posttest essay script)
Major linguistic errors	
Spelling mistakes of keywords	Participant 10: "To ensure we have a qualified (quality) life, ..." (Posttest essay script)
Primary grammar errors	Participant 29: "If the family like that is also very poor, they <i>can</i> afford so many babies' growing fee, ..." (Pretest essay script)

However, even if the premises are acceptable, they can be insufficient to support the conclusion if they are too weak. Therefore, another criterion is introduced to supplement the *acceptability* criterion. The criterion *adequacy* is different in nature by measuring degree of strength and degree of support to arguments (Hughes et al., 2015, p. 195). Another property that *adequacy* possesses is that it means a group of premises is sufficient when the acceptability of the premises makes the conclusion more likely than alternative conclusions. That means the acceptability of counterargument and rebuttal should be considered and compared with the main argument in order to effectively evaluate the sufficiency of an argument. In a word, *adequacy* is sometimes "hard" to determine because it requires gathering enough evidence to prove the acceptability of the premises. It was in this case determined by the understanding and judgement of the researcher and the other coder who coded all the essays following the rules that were set after several rounds of discussion and negotiation.

To meet these two standards of *acceptability* and *adequacy*, scores were given ranging from 0 to 2 to indicate particularly the level of acceptability for measuring how adequate the reasons are to support the argument. 0 represents a claim that is not true, while 1 to 2 consisted of the claims that were accepted as true but adequate in different degrees by both raters. Tables 5.5 and 5.6 indicate the methods of identifying the degree of acceptability of the reasons in the essays of this case and corresponding examples from participants.

Table 5.5

Approaches of Measuring the Degree of Acceptability (A=1)

Approaches to measure the degree of acceptability (A=1)	Example quote
Language errors: partly affect understanding	Participant 27: "Without controlling population, more and more people in the earth <i>with</i> destroy the whole system and leave less resources for their generations." (Posttest essay script)
General ideas	Participant 14: "It bring lots of benefits [to the country]." (Posttest essay script) Participant 27: "For economic development..." (Posttest essay script) Participant 42: "... improve the life quality..." (Posttest essay script) Participant 44: "pressure of individual reduction" (Posttest essay script) Participant 17: "It's meaningful for human's future." (Posttest essay script) Participant 18: "Nowadays, population problem is getting more and more serious." (Posttest essay script) Participant 11: "It is believe that over increasingly of the population can cause serious pollution..." (Posttest essay script)
Most of ideas are repeated though few are innovative	Participant 27: "The government controls the country population can keep enough number of labors to keep the balance of the development of economy." (Posttest essay script)
Indirect ideas or expressions	Participant 17: "The area for landfill is limited [so if there is a large population, the litter will be increased, as a result, government should control the population]." (Posttest essay script)
Absolute ideas	Participant 37: "It's undoubtedly that increase salary." (Posttest essay script)
Shallow ideas	Participant 17: "...controlling the country population can reduce the populations..." (Posttest essay script)

Table 5.6
Approaches of Measuring the Degree of Acceptability (A=2)

Approaches to measure the degree of acceptability (A=2)	Reasons	Example quote
Specific ideas or points for "overpopulation"	To save or recover natural/social resources or lack of natural/social resources	Participant 16: "... it's really important to control the population because the natural resources are limit, and the pressure of the society will be really huge." (Pretest essay script)
	Difficult to get employed	Participant 25: "As the increase of population, there are not enough work for people, which due to more unemploy..." (Posttest essay script)
	To pollute the water/air/ecosystem	Participant 22: "... the emission from industries increases quickly, which will pollute the air, water and some other resources." (Posttest essay script)
	Unequal distribution of natural/social resources	Participant 23: "if a country have a large population but the country is not big enough, the resource will be scarce and affect people's lives." (Posttest essay script)
	To higher the overall expense of living for the young, especially housing	Participant 15: "People compete to buy things for example, houses...Nowadays, buying a house has become a burden for young people," (Posttest essay script)
	More stress on medical care and pension system	Participant 2: "The government cannot affort everyone fundamental education and medical treatment if the population too much." (Posttest essay script)
	To higher the crime rate	Participant 21: "...if the increase of population out of control, it is possible to cause more crimes in the country." (Posttest essay script)
Specific ideas or points for "underpopulation"	Lack of labors	Participant 31: "When it comes to aging, the society is lack of labor force which does harm to the industry and economic developing." (Posttest essay script)
	Aging society	Participant 6: "If a country has a low birth rate, the old people will be the main part of society gradually..." (Posttest essay script)
Other specific ideas or points	Governments have the rights, abilities and responsibilities. It is the right and nature of humans to decide whether to give birth or not.	Participant 44: "...it's the duty of the government to control the population." (Pretest essay script) Participant 12: "...it will against human's right if government really controlled the population..." (Posttest essay script)
Abstract ideas or points that cannot be specified	To promote environmental/economic sustainability	Participant 45: "...the economy sustainability can be achieved when government control the population." (Posttest essay script)
	To higher or lower the level of happiness	Participant 8: "Thus, government control the population make the society more harmonious and the extent of happiness is high." (Posttest essay script)
	The large population would influence the social stability.	Participant 33: "So, the measures in controlling population from government is for the promotion of country and stability of society." (Posttest essay script)
Specific examples	Use a specific case (e.g., traffic jam problem) a specific country (e.g., China) or a specific area (e.g., North Europe) to illustrate	Participant 8: "For example, in some countries of North Europe, the population of them is so small that people live there feel satisfied and the government merely manage the society by doing basic work." (Posttest essay script)

One particular case is the repeated reasons that are acceptable. On the one hand, in the instruction of writing, essay structure emphasized the explanation to the argument point. Therefore, writers may use other words or expressions to restate the point. Given this, these repeated reasons were not double calculated. On the other hand, if repeated reasons are considered acceptable regardless the structure, they were not counted in as well because they were not double counted in their contribution to the strength of argument. This also applied to the criterion of *relevance* that will be discussed in the next section. For example,

Repeated reason according to the structure:

Paragraph 3: "Secondly, it can save natural resources if government control the population. It is obvious that the population of a country is larger, the natural resources is used more ..." (Participant 8, Posttest essay script)

Repeated reason regardless the structure:

Paragraph 2: "...Maybe some family don't have enough money to support lots of children..."

Paragraph 3: "...We didn't have enough money to support the children ..."
(Participant 4, Pretest essay script)

To compare the degree of acceptability of reasons in the argumentative essays to support the argument before and after the SRSD intervention, a paired samples t-test was conducted. The paired t-test result revealed that the acceptability of reasons in the pretest essays ($M=10.500$, $SD=4.173$) is lower than the acceptability of reasons in the posttest essays ($M=20.978$, $SD=4.919$), $t(45)=-15.739$, $p<.001$, showing a very large effect of the intervention (Cohen's $d=2.321$). This implied that the valid reasons provided in the posttest essays compared with in the pretest essays could be more sufficiently supportive to the main argument and were more likely to successfully persuade readers because they were considered more acceptable as truths.

5.2.1.2 How Relevant are the Reasons?

In general, the criterion of *relevance* is used to judge if the premises can make the conclusion truer. Based on this standard, the level of relevance was divided into three categories: 0, 1 and 2, in other words, if the reason was to some extent or highly (i.e., indirectly or directly) relevant to the claim, it fell into 1 or 2, while if the reason was not relevant to the claim, it was marked 0 and that implied the

premises as part of the argument but has no relationship to the conclusion (see Table 5.7).

Table 5.7
The Categories of Relevant Reasons

Approaches to Identify the level of relevance	Example quote
Directly Relevant (R=2)	Participant 1: "Too many people willn't be provided enough of food or other things." (Pretest essay script)
Indirectly Relevant (R=1)	Participant 17: "The area for landfill is limited." (Posttest essay script)

More specifically, as Hughes et al. (2015) claimed, the standard of *acceptability* has a positive correlation with the standard of relevance (p. 178). In other words, when the premises are able to satisfy the standard of *acceptability*, these premises should be relevant to the conclusion. However, there were few premises categorized as unacceptable though they were still relevant to the conclusion. For example, "India is the country with largest population in the world" (Participant 40, Posttest essay script) is unacceptable because it is not true because of the up-to-now fact; however, it is deemed relevant to the conclusion in some degree.

For evaluating the performance of this criterion, a paired samples t-test was done to compare the degree of relevance of the premises to the conclusion before and after the SRSD intervention. It revealed that there was a significant difference in the level of relevance in the writing scripts before ($M=10.283$, $SD=3.834$) and after ($M=20.283$, $SD=5.799$) the intervention, $t(45)=-12.532$, $p<.001$, showing a very large effect of the intervention (Cohen's $d=1.848$). This result suggested that compared with the pretest essays, the reasons given in the posttest essays were more relevant to the main argument, in other words, they tended to be more supportive to the point. Thus, the persuasiveness of the posttest essays could be stronger.

5.2.1.3. Relationships Between Argument Soundness and Essay Quality

Based on the data collected from 46 undergraduates on the variables of scores on the degree of acceptability and relevance, as well as essay scores given based on an analytical rubric for overall writing quality, bivariate Pearson correlation and multiple linear regression analyses were conducted to examine the relationship between overall quality scores of both pretest and posttest essays and the potential predictors, i.e., the two aforementioned criteria.

As shown in Table 5.8, both of the predictor variables had a positively significant ($p < .01$) correlation with essay scores. Respectively, the variable of essay scores was strongly correlated with the level of acceptability (pretest essay $r=.955$, $R^2 = .912$; posttest essay $r=.886$, $R^2 = .785$). This suggested that 91.2% and 78.5% of the variance in pretest and posttest essay scores could be accounted for by the level of acceptability of all the given reasons. There was also a significant, positive correlation between essay scores and the level of relevance (pretest essay $r=.945$, $R^2 = .893$; posttest essay $r=.916$, $R^2 = .839$). The R^2 value indicated that the level of relevance accounted for respectively 89.3% and 83.9% of the variance in essay scores that reflected L2 students' overall quality of writing.

Table 5.8
Summary of Intercorrelations, Means, and Standard Deviations for Scores on Acceptability, Relevance and Essays (N=46)

Evaluation of Argument Soundness	Acceptability	Relevance	Pretest Essay Scores	M	SD
Acceptability	--	.883**	.955**	10.500	4.173
Relevance	.785**	--	.945**	10.283	3.834
Posttest Essay Scores	.886**	.916**	--	41.239	14.213
M	20.978	20.283	60.283		
SD	4.919	5.799	13.041		

Note. Intercorrelations for pretest writing scripts ($n = 46$) are presented above the diagonal, and intercorrelations for posttest writing scripts ($n = 46$) are presented below the diagonal. Means and standard deviations for pretest writing scripts are presented in the vertical columns, while means and standard deviations for posttest writing scripts are presented in the horizontal rows.

** $p < .01$

Moreover, the scores of the two criteria were reported to have statistical significance in positive correlation with each other (pretest essay $r=.883$, $R^2 = .780$, $p < .01$; posttest essay $r=.785$, $R^2 = .616$, $p < .01$). This result showed that the level of relevance was also predictive of the level of acceptability at a relatively high level.

Simultaneous multiple regression analyses were conducted to investigate how the level of acceptability and relevance of all reasons predicted EFL learners' overall quality of writing in two separate models before and after the intervention. Assumptions of multiple regressions were first examined. Two independent variables – the level of acceptability and relevance – were then entered as a group. It was found from Table 5.9 that the level of acceptability and relevance, as a whole that represents argument soundness, explained a significant amount of the variance in the essay scores before ($F(2, 43) = 501.976$, $p < .01$, $R^2 = .959$, $R^2_{Adjusted} = .957$) and after ($F(2, 43) = 222.764$, $p < .01$, $R^2 = .912$, $R^2_{Adjusted}$

= .908) the intervention. The results indicated that both of these criteria as a whole were a strong factor predicting students' overall writing performance.

The analysis showed that both criteria of the level of acceptability ($B = 1.852$, $\beta = .544$, $t(45) = 8.264$, $p < .01$) and relevance ($B = 1.725$, $\beta = .465$, $t(45) = 7.070$, $p < .01$) were significant predictors of overall pretest essay scores. It happened also in the posttest essays where the level of relevance ($B = 1.291$, $\beta = .574$, $t(45) = 7.867$, $p < .01$) and acceptability ($B = 1.155$, $\beta = .436$, $t(45) = 5.969$, $p < .01$) did significantly predict the essay scores.

Table 5.9
Summary of Multiple Linear Regression Analysis for Variables Predicting Essay Scores (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	4.053	1.263		9.866	2.587	
Acceptability	1.852	.224	.544**	1.155	.193	.436**
Relevance	1.725	.244	.465**	1.291	.164	.574**
R^2		.959			.912	
<i>F</i> for change in R^2		501.976*			222.764*	
		*			*	

Note: ** $p < .01$.

Results of the bivariate correlation and multiple linear regression analysis suggest that argument soundness that takes account of the main criteria of *acceptability*, *relevance* and *adequacy* determines the overall quality of L2 writing. Next, the assessment of other schemes, including the types of reasons and the number of argument elements will be investigated further to see if they also contributed to argument soundness and essay quality.

5.2.2. Supporting Measures

5.2.2.1. Impact of Reasoning Types

Informed by the methods of classification for reasoning types used by the empirical studies conducted in L1 settings (e.g., Schwarz et al., 2003), this study maintained investigating abstract reasons and consequential reasons yet added two more new categories – concrete reasons and L1 reasons – as new variables to see how well they could influence argument soundness, in other words, the level of acceptability and relevance, as explained in Section 2.1.1.

Abstract reasons are literally logical but to some extent general and indirect to the main argument. This definition fits in the construct defined as “they proceed from a general class from which the participant reasons” (Schwarz et al., 2003, p. 233). For example, “Because the sources is limited, like the education, and medical treatment resources” (Participant 2, Posttest essay script) is from a general class like “If the population increases without limit, people will use more resources that nobody can imagine it” (Participant 16, Pretest essay script).

Consequential reasons are “statements in which a direct consequence is stated as an outcome of a particular action” (Schwarz et al., 2003, p. 233) that in this research, specifies the control of government over the country population. For example, “the large number of population would caused more pollutions, the shortage of living house and shortage of society resource” or “if the government do not control the population, it would cost much more money” (Participant 17, Posttest essay script).

Concrete reasons are new concepts constructed based on the make-sense reasons but more specific in using cases or examples to explain the argument. This relies on the nature of a complete structured argumentative essay that requires writers to provide specific evidence to support the conclusion. Therefore, concrete reasons often employ specific examples in which the situation of a country or an area have been elaborated for supporting the claim. For example, “Some jobs in Korea can not be take because there are too less people and some emigrated” (Participant 39, Posttest essay script). The existence of concrete reasons in the supporting evidence strengthens the argument while in the counterarguments may weaken the argument. In a word, concrete cases compared with abstract reasons and consequential reasons might be stronger in the degree of acceptability and relevance if they are well expressed in English language.

The unique category explored by this research is L1 reasons used in the argumentative essays. As previously claimed, the impact of L1 stated as reasons is worth discussing in EFL contexts for the reason that the knowledge of L1 proverbs, habits of translation and L1 cultural ideology direct the writers to adopt reasons and determine the quality of arguments. Table 5.10 shows the categorization of L1 reasons and their examples.

Table 5.10
The Three Categories of L1 Reasons

L1 Reasons	Example quote
Use Chinese proverbs	Participant 3: "Population is the first productivity (人口是第一生产力)." (Pretest essay script) Participant 18: "More people, more power (人多力量大)." (Pretest essay script)
Direct translation from Chinese to English	Participant 5: "Plan born (计划生育)" (Pretest essay script) Participant 7: "Bear is people basic power (生育是人类的基本能力)." (Posttest essay script)
Chinese cultural ideology	Participant 8: "It is easy to make society more harmonious (让社会变得更和谐很容易)" (Posttest essay script) Participant 10: "make sure countries are developing on the right path (确保国家发展走在正途上)" (Posttest essay script)

Paired samples t-tests were conducted to see if there was a significant difference in each variable between the pre-intervention and post-intervention stages. It yielded the result that the number of abstract reasons, consequential reasons and concrete reasons in the posttest essays were significantly higher than the ones in the pretest essays. The intervention produced a large effect on students' use of abstract reasons (Cohen's $d=.776$), consequential reasons (Cohen's $d=.732$) and concrete reasons (Cohen's $d=1.042$). On the contrary, L1 reasons did not show a significant difference before and after the intervention, showing a small effect of the intervention (Cohen's $d=.241$).

Table 5.11
Contrast of Pretest Essays with Posttest Essays for Four Reasoning Types (N=46)

Variable	Pretest Essay		Posttest Essay		t	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Abstract Reasons	3.913	2.239	6.000	2.231	5.262	<.001	1.288	2.886	.776
Consequential Reasons	2.500	1.574	4.804	2.680	4.966	<.001	1.370	3.239	.732
Concrete Reasons	.848	1.135	2.761	1.580	7.068	<.001	1.368	2.458	1.042
L1 Reasons	.370	.645	.630	.903	1.632	ns	-.061	.583	.241

As a supporting measure to the main measure that used the degree of acceptability and relevance to test argument soundness as well as essay quality, Pearson bivariate correlation and multiple linear regression analyses were used to evaluate how well the four different types of reasons predicted argument soundness and essay quality in both pre- and post-intervention stages.

All variables, including the number of abstract reasons, consequential reasons, concrete reasons and L1 reasons were positively correlated with argument

soundness, as well as essay scores that reflected the overall quality of writing (see Table 5.12). Specifically, the number of abstract reasons was strongly correlated with the pretest argument soundness ($r=.653$) and essay scores ($r=.662$) but moderately correlated with the posttest argument soundness ($r=.323$) and essay scores ($r=.315$). The correlations were not that large, indicating the number of abstract reasons only accounts for a portion of argument soundness (pretest essay $R^2=.426$; posttest essay $R^2=.104$) and essay quality (pretest essay $R^2=.438$; posttest essay $R^2=.099$).

Table 5.12

Summary of Intercorrelations, Means, and Standard Deviations for Number of Abstract Reasons, Consequential Reasons, Concrete Reasons and L1 Reasons, Argument Soundness, and Essay Score (N=46)

Evaluation of Argument Soundness	Abstract Reasons	Consequential Reasons	Concrete Reasons	L1 Reasons	Argument Soundness	Pretest Essay Score	M	SD
Abstract Reasons	--	-.076	-.137	.284	.653**	.662**	3.913	2.239
Consequential Reasons	-.219	--	-.156	.011	.536**	.503**	2.500	1.574
Concrete Reasons	-.151	-.090	--	-.013	.253	.227	.848	1.135
L1 Reasons	.154	-.012	.061	--	.220	.259	.370	.645
Argument Soundness	.323*	.694**	.330*	.105	--	.979**	20.783	7.769
Posttest Essay Score	.315*	.665**	.311*	.151	.955**	--	41.239	14.213
M	6.000	4.804	2.761	.630	41.261	60.283		
SD	2.231	2.680	1.580	.903	10.129	13.041		

Note. Intercorrelations for pretest writing scripts (n = 46) are presented above the diagonal, and intercorrelations for posttest writing scripts (n = 46) are presented below the diagonal. Means and standard deviations for pretest writing scripts are presented in the vertical columns, while means and standard deviations for posttest writing scripts are presented in the horizontal rows.

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

In regard to consequential reasons, the result showed that the relationships between the number of consequential reasons and argument soundness were positive, strong in strength (pretest essay $r=.536$; posttest essay $r=.694$) and statistically significant before and after the intervention ($p < .01$). There was a similar pattern between the number of consequential reasons and essay scores (pretest essay $r=.503$; posttest essay $r=.665$; $p < .01$). The strong correlations suggested that respectively 28.7% and 48.2% of the variance on argument soundness in the pretest and posttest essays can be accounted for by the number of consequential reasons. Similarly, the number of consequential reasons was also predictive of overall essay quality at a comparatively higher level (pretest essay $R^2=.253$; posttest essay $R^2=.442$).

Likewise, there was a positively significant correlation between the number of concrete reasons and argument soundness in the posttest essays ($r=.330$, $p < .05$), compared to an insignificant correlation in the pretest essays ($r=.253$). The effect size was minimal in the pre-intervention stage ($R^2=.064$) though increased a little in the post-intervention stage ($R^2=.109$). The findings were similar to the overall essay quality (pretest essay $r=.227$; posttest essay $r=.311$, $p < .05$), showing a rather small effect (pretest essay $R^2=.051$; posttest essay $R^2=.097$).

Another interesting finding is that abstract reasons, consequential reasons and concrete reasons were negatively correlated with one another regardless of the intervention, though the effect power appeared minimal.

Also notable is that L1 reasons and argument soundness was positively correlated yet insignificant, observable both in the pretest ($r=.220$) and posttest ($r=.105$) essays. The results between L1 reasons and the overall quality of writing are alike (pretest essay $r=.259$; posttest essay $r=.151$). However, the effect power of these correlations was minimal.

Simultaneous multiple regression analyses were used to investigate how the types of reasons predicted argument soundness in L2 students' argumentative essays and essay quality in two separate models before and after the intervention. Assumptions of multiple regressions were first examined. Four independent variables – the number of abstract reasons, consequential reasons, concrete reasons and L1 reasons – were then entered as a group. As presented in Table 5.13, the results of the standard multiple linear regression analyses demonstrated that there was a significant relationship between the four variables and argument

soundness before ($F(4, 41) = 386.489, p < .01, R^2 = .974, R^2\text{Adjusted} = .972$) and after ($F(4, 41) = 227.335, p < .01, R^2 = .957, R^2\text{Adjusted} = .953$) the intervention. The analyses indicated that the variables – the number of abstract reasons ($B = 2.657, \beta = .766, t(45) = 28.808, p < .01$), consequential reasons ($B = 3.286, \beta = .666, t(45) = 26.051, p < .01$) and concrete reasons ($B = 3.159, \beta = .461, t(45) = 17.941, p < .01$) – did significantly predict argument soundness while L1 reasons ($\beta = .001, t(45) = .043, ns$) did not show significance in predicting argument soundness in the pre-intervention stage. It also found out the same results in the post-intervention stage that the number of abstract reasons ($B = 2.674, \beta = .589, t(45) = 17.190, p < .01$), consequential reasons ($B = 3.282, \beta = .868, t(45) = 25.889, p < .01$) and concrete reasons ($B = 3.191, \beta = .498, t(45) = 14.985, p < .01$) were significant predictors of argument soundness, yet L1 reasons ($\beta = -.005, t(45) = -.163, ns$) did not demonstrate the same attribute.

Table 5.13

Summary of Multiple Linear Regression Analysis for Variables Predicting Argument Soundness (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	-.514	.575		.676	1.487	
Abstract Reasons	2.657	.092	.766	2.674	.156	.589
Consequential Reasons	3.286	.126	.666	3.282	.127	.868
Concrete Reasons	3.159	.176	.461	3.191	.213	.498
L1 Reasons	.014	.316	.001	-.060	.370	-.005
R^2		.974			.957	
<i>F</i> for change in R^2		386.489**			227.335*	

Note: ** $p < .01$

In the same vein, as shown in Table 5.14, all four types of reasons, as a whole, explained respectively 92.3% and 88.2% of the variance in the pretest essay scores ($F(4, 41) = 123.565, p < .01, R^2 = .923, R^2\text{Adjusted} = .916$) and posttest essay scores ($F(4, 41) = 76.756, p < .01, R^2 = .882, R^2\text{Adjusted} = .871$). Individual predictor of abstract reasons yielded a significant, positive prediction for essay quality before ($B = 4.795, \beta = .755, t(45) = 16.502, p < .01$) and after the

intervention ($B = 3.281, \beta = .561, t(45) = 9.914, p < .01$). There was also a significant, positive relationship between consequential reasons and essay quality before ($B = 5.655, \beta = .626, t(45) = 14.233, p < .01$) and after the intervention ($B = 4.044, \beta = .831, t(45) = 14.995, p < .01$). Concrete reasons is also significantly predictive of the overall quality of writing before ($B = 5.361, \beta = .428, t(45) = 8.581, p < .01$) and after the intervention ($B = 3.859, \beta = .468, t(45) = 9.665, p < .01$). However, the results also indicated that L1 reasons did not show significance in predicting essay quality before ($\beta = .043, t(45) = .952, ns$) and after the intervention ($\beta = .045, t(45) = .832, ns$).

Table 5.14

Summary of Multiple Linear Regression Analysis for Variables Predicting Essay Scores (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	3.442	1.813		10.097	3.164	
Abstract Reasons	4.795	.291	.755	3.281	.331	.561
Consequential Reasons	5.655	.397	.626	4.044	.270	.831
Concrete Reasons	5.361	.555	.428	3.859	.453	.468
L1 Reasons	.947	.995	.043	.655	.787	.045
R^2		.923			.882	
<i>F</i> for change in R^2		123.565**			76.756**	

Note: ** $p < .01$

5.2.2.2. Impact of Argument Elements

Before the SRSD intervention that consisted of the argumentative essay structure instruction was introduced, the majority of the essays written by students were one type that is defined as a "one-sided arguments" type as it just covers the pro side to solve the issue, in other words, only supporting reasons to the conclusion (Schwarz et al., 2003, p. 229). Among the 46 collected pretest essays, only two fell into the other type – "two-sided arguments" that consists of both pros and cons to support or oppose the conclusion (Schwarz et al., 2003, p. 229), compared with 2 out of 46 posttest essays *without* counter-argumentation. Moreover, as the writing

intervention required a complete structure, as well as counterargument, rebuttal should also be included in the posttest essays. However, 8 out of 46 posttest essays did not provide rebuttal, while all of the pretest essays lacked this part.

After running paired t-tests for all the variables regarding argument elements in the classical essay structure to compare the differences between pretest and posttest essays, the results revealed that there were significant differences in the number of supporting reasons, counterarguments and rebuttals under the before and after intervention conditions (see Table 5.15). In other words, the results of each element in the posttest essays were significantly higher than in the pre-stage. The intervention produced a great effect on students' use of supporting reasons (Cohen's $d=1.032$), counterarguments (Cohen's $d=1.976$) and rebuttals (Cohen's $d=1.395$).

Table 5.15

Contrast of Pretest Essays with Posttest Essays for Argument Elements (N=46)

Variable	Pretest Essay		Posttest Essay		t	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Supporting Reasons	7.239	2.540	9.913	2.889	6.999	<.001	1.904	3.443	1.032
Counterarguments	0.043	0.206	1.783	0.917	13.400	<.001	1.478	2.001	1.976
Rebuttals	0.043	0.295	1.848	1.264	9.464	<.001	1.420	2.188	1.395

In the same vein, Pearson bivariate correlation and multiple linear regression analyses were conducted to investigate if the argument elements could significantly predict argument soundness and essay quality in both pre-intervention and post-intervention stages. The correlation table (see Table 5.16) below shows that an increase of each argument element was positively correlated to significant increases to argument soundness and essay scores in the pretest and posttest essays, except that the number of counterarguments demonstrated no significant correlation with essay scores in the post-intervention stage.

Table 5.16

Summary of Intercorrelations, Means, and Standard Deviations for Number of Supporting Reasons, Counterarguments and Rebuttals, Argument Soundness, and Essay Score (N=46)

Evaluation of Argument Soundness	Supporting Reasons	Counterarguments	Rebuttals	Argument Soundness	Pretest Essay Score	M	SD
Supporting Reasons	--	.234	.223	.964**	.958**	7.239	2.540
Counterarguments	-.133	--	.699**	.367*	.307*	.043	.206
Rebuttals	-.077	.393**	--	.373*	.305*	.043	.295
Argument Soundness	.768**	.351*	.475**	--	.979**	20.783	7.769
Posttest Essay Score	.845**	.150	.363*	.955**	--	41.239	14.213
M	9.913	1.783	1.848	41.261	60.283		
SD	2.889	.917	1.264	10.129	13.041		

Note. Intercorrelations for pretest writing scripts (n = 46) are presented above the diagonal, and intercorrelations for posttest writing scripts (n = 46) are presented below the diagonal. Means and standard deviations for pretest writing scripts are presented in the vertical columns, while means and standard deviations for posttest writing scripts are presented in the horizontal rows.

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

The number of supporting reasons was strongly correlated with argument soundness (pretest $r=.964$; posttest $r=.768$) and essay scores (pretest $r=.958$; posttest $r=.845$). The large correlations suggested that the number of supporting reasons accounted for a considerable portion of argument soundness (pretest essay $R^2=.929$; posttest essay $R^2=.590$) and overall essay quality (pretest essay $R^2=.918$; posttest essay $R^2=.714$).

In addition, the number of counterarguments also had a significant and positive relationship with argument soundness ($r=.367$) and essay scores ($r=.307$) before the intervention, showing a small effect (pretest essay $R^2=.135$; posttest essay $R^2=.094$). Though there was a significant correlation between the number of counterarguments and argument soundness after the intervention ($r=.351$), this argument element was found positively correlated with essay scores yet insignificant ($r=.150$). The effect power of these correlations was limited (pretest essay $R^2=.123$; posttest essay $R^2=.023$).

Similarly, there was a positively significant correlation between the number of rebuttals and argument soundness before ($r=.373$) and after ($r=.475$) the intervention. The moderate correlations suggested that respectively 13.9% and 22.6% of the variance on argument soundness in the pretest and posttest essays can be accounted for by the number of rebuttals. A similar relationship was also found between this argument element and essay scores (pretest $r=.305$; posttest $r=.363$), showing also a rather small effect (pretest essay $R^2=.093$; posttest essay $R^2=.132$).

Simultaneous multiple regression analyses were conducted to show the relative predictive power of three variables – the number of supporting reasons, counterarguments and rebuttals to predict argument soundness and essay quality in both pre-intervention and post-intervention stages. Assumptions of multiple regressions were first examined. Three independent variables were entered as a group. Table 5.17 reveals that the linear combination of all the three variables was significantly related to argument soundness in the pretest essays ($F(3, 42) = 322.476, p < .01, R^2 = .958, R^2_{Adjusted} = .955$) and posttest essays ($F(3, 42) = 264.297, p < .01, R^2 = .950, R^2_{Adjusted} = .946$). Only the number of supporting reasons ($B = 2.819, \beta = .922, t(45) = 28.371, p < .01$) and rebuttals ($B = 3.181, \beta = .121, t(45) = 2.732, p < .01$) in the pretest essays significantly predict argument soundness, compared to the number of counterarguments ($\beta = .066, t(45) = 1.497, ns$), an insignificant predictive power was found. However, in the

posttest essays, the number of supporting reasons ($B = 2.944$, $\beta = .840$, $t(45) = 24.037$, $p < .01$), counterarguments ($B = 3.276$, $\beta = .296$, $t(45) = 7.829$, $p < .01$) and rebuttals ($B = 3.390$, $\beta = .423$, $t(45) = 11.241$, $p < .01$) were all significant predictors of argument soundness.

Table 5.17
Summary of Multiple Linear Regression Analysis for Variables Predicting Argument Soundness (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	.126	.749		-.022	1.542	
Supporting Reasons	2.819	.099	.922	2.944	.122	.840
Counterarguments	2.500	1.669	.066	3.276	.418	.296
Rebuttals	3.181	1.164	.121	3.390	.302	.423
R^2		.958			.950	
<i>F</i> for change in R^2		322.476**			264.297*	

Note: ** $p < .01$

As shown in Table 5.18, the analyses indicated that the variables of supporting reasons, counterarguments and rebuttals, as a group, explained respectively 92.7% and 90.9% of the variance in the pretest essay scores ($F(3, 42) = 178.556$, $p < .01$, $R^2 = .927$, $R^2_{Adjusted} = .922$) and posttest essay scores ($F(3, 42) = 139.222$, $p < .01$, $R^2 = .909$, $R^2_{Adjusted} = .902$). The number of supporting reasons produced a significant, positive prediction for essay quality before ($B = 5.221$, $\beta = .933$, $t(45) = 21.724$, $p < .01$) and after the intervention ($B = 4.016$, $\beta = .890$, $t(45) = 18.900$, $p < .01$). Although there was an insignificant predictive power of the number of counterarguments ($B = 2.833$, $\beta = .041$, $t(45) = .702$, *ns*) and rebuttals ($B = 3.279$, $\beta = .068$, $t(45) = 1.165$, *ns*) to predict the essay quality in the pretest essays, the number of counterarguments ($B = 1.674$, $\beta = .118$, $t(45) = 2.306$, $p < .05$) and rebuttals ($B = 3.967$, $\beta = .385$, $t(45) = 7.580$, $p < .01$) both showed significance in predicting essay quality after the intervention.

Table 5.18

Summary of Multiple Linear Regression Analysis for Variables Predicting Essay Scores (N=46)

Variable	Pretest Essay			Posttest Essay		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Constant	3.177	1.811		10.155	2.676	
Supporting Reasons	5.221	.240	.933	4.016	.212	.890
Counterarguments	2.833	4.037	.041	1.674	.726	.118
Rebuttals	3.279	2.815	.068	3.967	.523	.385
R^2		.927			.909	
<i>F</i> for change in R^2		178.556**			139.222*	
					*	

Note: ** $p < .01$

5.3. Discussion

One main purpose of this study was to examine the variations in argumentation manifested by students in their posttest argumentative essays after a SRSD intervention, as opposed to their pretest essays. Quantitative evidence lends empirical support to the belief that, with more thorough understanding of argumentation in argumentative writing, EFL writers are more likely to argue with more cogent reasons in their argumentative written texts and are even expected to advance their overall writing performance.

5.3.1. Changes of Writing Performance

The most obvious finding to emerge from the quantitative analysis is that with the SRSD instruction, students might attempt to write a longer essay within the given time in class. This result matches those observed in earlier studies of EFL contexts (e.g., Cuenca-Carlino et al., 2017) as well as general learning contexts (e.g., Palermo & Thomson, 2018). One possible reason may be that students took more heed of the completeness of the generic argumentative form taught by teacher, as argued by Liu and Stapleton (2020). Therefore, students might have increased written words by augmenting additional argument elements required by teacher, as similarly argued by Song and Ferretti (2013). It might also be attributed to the repeated use of writing prompt that familiarized students with the topic and procedure, building their confidence in L2 writing. Due to the Chinese educational environment where students are trained to write longer and longer essays from primary to high schools, Chinese students might believe that writing a longer essay

can better address the need of writing, thus improve writing quality and increase scores. As Husin and Ariffin (2012) argued, native cultural background (i.e., Chinese educational background in this study) to some extent inextricably influences L2 writing.

In terms of *main argument* as a basic argument element, there was no significant change before and after the intervention. This finding is not surprising, and dovetails with the idea of Rusfandi (2015), who showed that the main argument was not a significant predictor to essay scores because “the majority of essays contained this important rhetorical feature” (p. 13). Expressed differently, students are aware that the provision of clear response to the writing prompt is critical. All students in both the pretest and posttest essays adopted a deductive pattern, writing the main argument in the introduction paragraph. This result is in agreement with other studies (e.g., Abdollahzadeh et al., 2017). It is possibly attributed to the pedagogical instruction of L2 writing at mainly high school and tertiary levels in which the emphasis is consistently laid on thesis statement being placed at the beginning of an essay. This corroborates the findings from Abdollahzadeh et al. (2017), as well as Husin and Ariffin (2012), who suggested that the L2 formal writing training and prior academic writing experience influence students’ adoption of writing style.

In regard to *body* that covers all invoked reasons for main argument, counterargument and rebuttal, the significant difference between the pretest and posttest essays indicated that with the intervention, L2 students were apt to produce more argument elements in body. This also accords with the earlier observations, which showed that the mean frequency of supporting reasons went up slightly in the experiment while counterarguments and rebuttals showed a significant increase with an argumentative writing knowledge intervention in an EFL tertiary context (Liu & Stapleton, 2014; Stapleton & Wu, 2015). One possible reason is that with the help of the intervention that integrated SRL strategies and writing knowledge, students might be more metacognitively aware of the importance of producing all argument elements or supplementing more argument elements to enhance the overall persuasiveness of writing. Therefore, Qin and Karabacak (2010) suggested teacher in the pedagogical instruction consciously emphasizing or encouraging the deployment of elaborated reasons for alternative viewpoints, which might help L2 students write more effective argumentative essays. Supporting reasons for the main argument and the part of refutations will be amplified later for discussing them as contributory factors to argument

soundness.

Compared to two basic elements *main argument* and *body* both showing an increasing tendency in the number of words after the intervention, *conclusion* showed a decreasing reverse trend. One possible reason is that Chinese students are used to be trained to finish a completely structured essay with introduction, body and conclusion within a time limit for domestic high-stake tests that draw up essay structure as one essential criterion. Thus, they are prompted to write a conclusion even without completing other parts of the essay, which was reflected in their pretest essays. Moreover, it is probably due to the definition of conclusion given by Hughes et al. (2015) in terms of its function in an essay as “present a brief summary of the main arguments and rebuttals and show how they support the main thesis of the essay” (p. 428). Given the nature of conclusion as a restatement of the thesis in an essay, students may take less note of this part if they consider it duplicating the function of thesis statement or unhelpful to the persuasiveness that is essential to essay scores; therefore, when they faced difficulties like time constraint in the post-intervention stage, they chose to abandon it.

Cardinally, the descriptive analysis shows that these Chinese university students significantly outperformed their pretest essays in terms of the analytical rubric which elaborates the quality of reasoning embedded in the appropriate essay structure as well as language expressions in their posttest essays. However, there is no denying that it remains uncertain whether students’ performance would have improved anyway, if not so significantly, just as a repetition effect as the formative assessment was adopted in this study.

In order to uncover the relationship between essay length, elements and overall essay quality, Pearson correlation tests were performed, using the collected essay data before and after the intervention. It was unsurprising to find that essay length had a significant and positive correlation with essay quality regardless of the intervention. However, the predictive value of the two variables was relatively small, 25.4% and 28.8% respectively for the pretest and posttest essays. This result suggests that even if students write a long essay, it cannot guarantee the overall essay quality. This finding is partly supported by the results obtained from a Morphy and Graham (2012)’s meta-analysis that also indicated a significant and positive relationship between essay length and quality but the effect of essay length on essay quality was large, about 66%. This difference generated from the results of

this study compared to Morphy and Graham (2012)'s study may be due to the writing form, as in this study, students were required to write by hand but Morphy and Graham (2012) researched students who used a word processor to complete a composition. It is plausible that students who write by hand cannot easily add, modify, delete and move ideas, as well as check spelling and grammar in their essays, leading to a possibly weaker quality of writing.

Interestingly, the relationship between essay length and essay elements was also found to be significant and positive, although the predicting value of these two correlated variables was also small, 26.9% and 33.5% respectively for the pretest and posttest essays. This suggests that the use of essay elements was also affected by other factors, not only essay length. One possible factor is the argument type L2 students prefer to adopt. There are four argument types defined by Schwarz et. al (2003), in which one-sided arguments that contain two basic elements, namely, main argument and its supporting reasons, are commonly found in L2 university students' argumentative written texts, though fewer also presented two-sided arguments (Qin & Karabacak, 2010).

Results also indicated that there was a significant and positive correlation between essay element and quality. Also notable is that the effect of essay element on essay quality was very large. This finding is not surprising as students seemed to believe that the more supply of elaborated reasons for two-sided arguments, the more persuasive arguments could be made, supported by Rusfandi (2015). Given the insignificant portions of *main argument* and *conclusion* in essay element, this finding suggests that the significant argument elements in *body* are attributable to the overall quality of writing. The result signals that when assessing the overall quality of L2 students' argumentative writing, an extensive investigation into the effects of argument elements on the persuasiveness of writing should be pursued.

Multiple regression analyses showed that essay length and elements as a group made a significant, large contribution to predicting the scores for overall quality of writing. This indicates that students who write a longer essay that contains more essay elements would have a better essay score that reflects their overall ability of argumentative writing. However, of the two independent variables, only essay elements produced a significant prediction for writing scores. This suggests that learners' use of essay elements is a critical factor affecting their overall quality of argumentative writing as revealed in many other L2 studies (e.g., Liu & Stapleton, 2014; Rusfandi, 2015; Stapleton & Wu, 2015).

In answer to part of the first research question, which inquired into how students performed in responding to an argumentative writing prompt before and after intervention, a conclusion can be drawn that with a SRSD intervention, Chinese EFL writers wrote longer essays with more structural elements within the given time in class. In these ways their writing can be claimed to have improved.

5.3.2. Changes of Argument Soundness in Argumentative Writing

Despite essay elements, including *main argument*, *body* and *conclusion*, as superficial structural elements that influence the overall quality of writing, quality of reasoning is generally accepted as more essential argumentative feature to affect the overall persuasiveness in students' arguments (Sampson & Clark, 2008; Simon, 2008; Stapleton & Wu, 2015). On the other hand, quality of reasoning relies on how well argument elements, including supporting reasons and counterargumentation, support the main argument in a "relevant, accurate and structurally logical" way (Stapleton & Wu, 2015, p. 14). It therefore is holistically assessed by different criteria (e.g., Erduran et al., 2004; Means & Voss, 1996; Sampson & Clark, 2008; Schwarz et al., 2003), among which the acceptability and relevance of reasons (i.e., argument soundness), reasoning types and number of reasons in relation to argument elements are main contributors to evaluate the strength of students' argumentative abilities. Thus, in this case, the scheme based on these three criteria were devised with various degrees of detail for assessing quality of reasoning.

Regarding the strength of arguments, the critical measure that aimed at judging the degree of acceptability and relevance of all the reasons written in students' L2 argumentative essays, the paired samples t-tests show that students provided more acceptable and relevant reasons in their argumentative writing with the intervention. Given this result, it bears repeating that the pedagogical intervention in argumentative writing is considered essential to provide specific insights about argument soundness; therefore, students are more likely to develop a comprehensively metacognitive and cognitive ability to provide valid reasons, thereby enhancing persuasiveness in their argumentative essays. This finding is in some sense confirmed by the view of Stapleton and Wu (2015) who provided evidence to indicate that students at tertiary level were able to make reasonable judgements on the quality of reasoning. Schwarz et. al (2003) also found that the level of argument soundness steadily rose along the successive argumentative

activities. However, as there is hardly any relevant literature that operationalizes the degree of acceptability and relevance of the reasons invoked to assess argument soundness in argumentative writing with a pedagogical intervention in EFL contexts, this result sheds light on this area for future research.

With the help of Pearson correlation tests, the relationship between argument soundness and essay quality before and after the intervention was discovered. Results reveal that both the level of acceptability and relevance of all reasons had significant and positive correlations with essay quality. In other words, the more acceptable and relevant reasons were made, the higher scores of overall essay quality students were found to obtain. It also indicates that argument soundness that is measured by the acceptability and relevance of the reasons invoked had an overwhelming influence over the overall quality of writing. This finding resonates with the contention of Stapleton and Wu (2015) that a fuller picture of an essay's persuasiveness should be captured not only by its argumentative structure but more importantly, argument soundness that was often assessed by acceptability, relevance and sufficiency. A possible explanation for these results may be the weight of quality of reasoning accounted for the largest proportion of the total scores in the adapted holistic scoring rubric. This allocation seems reasonable as the concern about the principal contributor to a good argumentative essay has been shifted to reasoning quality rather than structure (Stapleton & Wu, 2015; Abdollahzadeh et al., 2017) or language (Uccelli et al., 2013).

It is also encouraging to find that the level of acceptability and relevance of all reasons invoked, termed *argument soundness*, as a group significantly contributed to the prediction of scores for overall quality of writing. This finding suggests that when students provided reasons that were found more acceptable and relevant to the point, they achieved a higher essay score that reflects their comprehensive ability of argumentative writing. It is also noteworthy that each of the independent variables made a significant contribution to predicting the writing scores. This indicates that without either of these two criteria, argument soundness cannot be justified (Hughes et al., 2015, p. 133; Means & Voss, 1996; Schwarz et al., 2003; Stapleton & Wu, 2015). This is probably due to the significantly interactive relationship found between these two variables. As a result, students' overall writing quality reflected in their final scores may suffer.

Despite the critical measure that proposed acceptability, relevance and sufficiency to assess the reasoning quality for an argumentative essay, the type of reasons

that students chose to support their arguments was perceived as another contributory factor to influence the quality of argument, and even essay. The results of paired samples t-tests reveal that students wrote more abstract reasons, consequential reasons and concrete reasons in their posttest essays, strongly suggesting a great effect of the intervention on students' adoption of reasoning type. The finding is partly supported by Schwarz et al. (2003) that individual students invoked more abstract reasons along the successive argumentative activities. Means and Voss (1996) also confirmed that students with greater knowledge of what either a good reason or a good argument is generated more abstract reasons and sound arguments. In other words, students who know more about good informal reasoning skills are more likely to produce more and even better reasons. In relation to concrete reasons, the study of Means and Voss (1996) indicated that students equipped with sufficient domain knowledge attempted to deploy reasons that were detailed and societal, perceived as the main features of concrete reasons in this study. Inferred from the aforementioned literature, the SRSD intervention that instructed the writing knowledge and strategies might play a pivotal role in enriching students' understanding of various reasoning types and even influencing their decision making on which types of reasons to be used to support their arguments. Another explanation to these findings is that L2 students are prone to use more acceptable and legitimate reasons and evidence to support the familiar topics (Stapleton, 2001). In this research, the writing prompt related to "Chinese population", a widely discussed topic in Chinese schools and the media, was implemented twice in the pre-intervention and post-intervention stages.

One unanticipated finding was that the effect of the intervention in one aspect seemed less appreciable as before and after the intervention, the number of L1 reasons remained unchanged. The findings are not completely consistent with the research results given by Wang and Wen (2002) as well as Wang and Wen (2004) who quantified L1 transfer in L2 writing and found that overall L1 participation dropped with the improving L2 writing proficiency, though L1 participation persisted at a higher level of thinking reflected in L2 writing that focused on topic understanding, organizing and structuring, idea generating, and process monitoring. On the other hand, the categorization of reasoning types in this study was based on the quality of reasoning; therefore, L1 reasons took more heed of reflecting argument strength than linguistic discourses. This research design was to echo the call of Hirvela (2017) who believed that for most of L2 writing, argumentation should often be at the core of L2 writing instruction than language or other pedagogical instructions. In other words, L1 reasons in this case were used

to examine if Chinese cultural ways of thinking might influence students' argumentative abilities. The result that a very small number of L1 reasons were found from the essays in both stages reveals that in this study Chinese culture exerted little influence on students' argumentative skills for L2 writing regardless of the intervention. This result resonated with Stapleton (2017) who pointed out that all humankind – whether Westerners or Easterners – shared natural similarities in the development of the capacity to reason, and implied that culture played only a “supplemental” role (p. 84) in L2 writing in relation to argumentation.

Based on the results of Pearson correlation tests, all the four types of reasons were positively correlated with argument soundness, as well as essay scores that reflected the overall quality of writing. As expected, the number of abstract reasons and consequential reasons had significant and positive correlations with the quality of reasoning that primarily determined the overall essay quality before and after the intervention. Results indicate that the more abstract reasons and consequential reasons students used, the stronger persuasive ability their essays had. It seems possible that these results are due to the stronger persuasive power of these reasoning types that primarily shaped the argumentation, compared with other types of reasons that were not examined in this case, such as rule-based, authority, personal and vague reasons that were proved less significant to affect the quality of reasoning (Means & Voss, 1996). Given the definitions of abstract reasons and consequential reasons, this result also suggests that students, who fully understood that reasons that were logical – whether direct or indirect – could well support the arguments, were more likely to write an argumentative essay with better quality of reasoning. Moreover, among the four types of reasons, the predicting value of consequential reasons for argument soundness was consistently large, 53.6% and 69.4% respectively for the pretest and posttest essays. This suggests that students were more prone to write reasons that were either general or specific to directly state “as an outcome of a particular action” regardless of the intervention (Schwarz et al., 2003, p. 233). This finding is corroborated by a corpus-based study conducted by Mo (2005) who lent empirical support to the claim that Chinese students compared to Western students are more likely to adopt an inductive writing pattern. That means Chinese students favor a consequential relationship in their writing when showing logical relationship between ideas is needed. These results are likely to be related to Chinese students' inductive way of thinking that is believed to be greatly influenced by Confucianism, Taoism and Buddhism, leading to their preference in indirect and implicit expression (Mo, 2005). In other words, without any pedagogical training, Chinese students tend to adopt a cause-then-

effect thinking pattern.

However, students were not metacognitively aware that specific reasons, in this case namely, concrete reasons, were more likely to be truer in reality and directly relevant to the arguments than general reasons, such as abstract reasons. As a result, the relationship between concrete reasons and argument soundness was not that close before the intervention. It is found that after the intervention, students were inclined to write more concrete reasons as the correlation between this variable and argument soundness became significant. Meanwhile, the significance of the relationship between abstract reasons and argument soundness decreased. These results may be possibly explained by the SRSD instruction that clarified the strength of reasoning types in which quality of reasoning was presumed to decrease over the categories in the order of concrete reasons, consequential reasons, abstract reasons and L1 reasons. SRL strategies also might help urge students to metacognitively and cognitively select the reasoning types that were more logical, direct and true to support the arguments for strengthening the persuasiveness of their essays.

Entered in the multiple regression analyses, all the four types of reasons as a whole were found as a significant contributor to predicting argument soundness as well as overall essay quality. This result indicates that students who used more abstract reasons, consequential reasons, concrete reasons and L1 reasons tended to improve the strength of argument in their argumentative essays, leading to a higher score in their writing. However, of the four independent variables, the number of abstract reasons, consequential reasons and concrete reasons respectively produced a significant prediction for argument soundness and essay quality, yet the number of L1 reasons is an exception. This suggests that L2 writers' selection of reasoning types is another crucial determinant to the strength of persuasiveness that predominantly decides the success of writing.

Another supporting measure deployed to evaluate argument soundness in this study is to observe the changes of argument elements that include all invoked reasons for main argument, counterargument and rebuttal. The results of paired samples t-tests are in accordance with the previous findings of this study in examining the change of essay body with the intervention, demonstrating a significant increase in the number of argument elements. It was possible that if without explicit pedagogical writing instruction, the majority of L2 students favored two basic argument elements – claim and data - yet ignored the elements of

counterargument and rebuttal, as supported by the low mean scores of counterargument and rebuttal in the pretest essays. Thus, given the results of paired samples t-tests, it bears repeating that the effective argumentative writing instruction was likely to stimulate Chinese students to provide more argument elements, especially counterargument and rebuttal (Liu & Stapleton, 2014).

As expected, the results of Pearson correlation tests indicated that there was a significant and positive relationship between each argument element and argument soundness regardless of the intervention. In other words, students who contributed a larger portion of elaborated reasons for both supporting and opposing sides produced better quality of reasoning in their argument. This finding mirrors those of Song and Ferretti (2013) who have conducted similar studies to compare the relationships between elaborated reasons for supporting side and refutation and the persuasiveness of argument under different instructional conditions. However, this outcome is partly contrary to that of Stapleton and Wu (2015) who found from several case studies that it was not typical to link a good argument structure that contains two-sided argument to good quality of reasoning.

Results of the multiple regression analyses also indicated that all three argument elements – supporting reason, counterargument and rebuttal – as a group was significantly conducive to predicting argument soundness and the overall quality of writing. This means that when a complete argument structure that contains the basic argument elements was provided, students tended to write a more persuasive argument that resulted in a higher score for their essay. However, in the pre-intervention stage, only supporting reason and rebuttal were significant predictors to the quality of reasoning. Given the intricate nature of rebuttal that is primarily against opposing views to support main argument, it is unsurprising to find that students were apt to simply produce acceptable and relevant reasons to support the side they had taken and ignored the logic of counterargument. As confirmed by the previous studies (e.g., Liu & Stapleton, 2020; Wolfe et al., 2009), with no requirement or encouragement to counterargument, students in nature tend to show myside bias, i.e., offering reasons for the author's standpoint. Although the supplement of counterargumentation has been confirmed effective to enhance persuasiveness in Chinese university students' written responses (Liu & Stapleton, 2014), Chinese students tend to do less well in this area because they did not have metacognitive awareness of presenting the opposition, and also such experience in learning or practicing in their L2 writing. In mainland China, teaching and learning are often exam driven; therefore, if the domestic compulsory English tests like

Gaokao or College English Tests do not require argumentative writing genre or the writing prompts of these tests do not encourage counterargumentation, students would tend to neglect such knowledge learning.

One unexpected finding was that, of the three argument elements, both counterargument and rebuttal were not significant predictors to essay quality before the intervention. This is probably due to the holistic scoring criteria that interactively evaluated counterargument and rebuttal. Each rebuttal reason should be aligned with each counterargument. That means even if the given rebuttal was logical and relevant to the main argument, without a related and logical counterargument, it might still impair the overall quality of writing. It might be explained by Liu and Stapleton (2020) who believed that the primary requirement for rebuttal is to address the logic of counterargument. In effect, the intervention enabled students to deploy effective SRL strategies to consider alternative viewpoints and rebutting them, thus further enhance persuasiveness in writing, leading to an improvement in the overall essay quality.

In summary, to address the first research question, the quantitative results indicated that there were striking differences in argument soundness and overall performance of participants' argumentative writing before and after the intervention. Regarding writing performance, the predictive factor - essay elements - presented significant increase with the intervention. Given that the reasoning quality and number of presences determine the persuasive power of essay element, further investigations that evaluate argument soundness in terms of the degree of acceptability and relevance, as well as number of reason types and argument elements were pursued. Findings revealed that argument soundness is primarily contingent upon the degree of acceptability and relevance of the invoked reasons, in spite of two other minor contributors - types of reasons and argument elements. Argument soundness is of the greatest significance to the quality of argumentative writing.

Chapter Six: Interview Outcomes and Discussion

This chapter reports findings of case studies via students' interviews. Data were collected from 12 students out of 46 participants. Quantitative analyses shown in Section 6.1 were first implemented to identify these students as high, average and low achievers based on argument soundness in their pretest essays, for the purpose of collecting follow-up interview data to investigate the contributory factors to their performance in argumentative writing, as shown in Section 6.2.1. Due to the quantitative results in Section 6.1 that found the insignificant differences between groups after the intervention, interviews were conducted again to discover changes of determinants that influenced students' attainments in constructing a good argument in argumentative writing, as reported in Section 6.2.2.

Qualitative results are expected to triangulate with the quantitative data and lend a lens to extricate the complexity of students' performance changes with the intervention, even open up new questions and new perspectives, give more depth and understanding, and provide richer context for future studies. Findings are presented in themes to provide a descriptive and analytical response to the research questions 2-4 raised in Section 1.2.

6.1. Grouping

As mentioned in Section 4.3, 12 out of 46 coded pretest essays were selected as cases and split into three groups in terms of argument soundness elicited from their pretest essays. The groups were classified as *high-achieving* (Group 1), *average* (Group 2) and *low-achieving* (Group 3) students with high, intermediate and low argument soundness. Argument soundness of pretest essays for 3 groups were compared using a Kruskal-Wallis test (see Table 6.1). The results showed that there was a statistically significant difference between argument soundness of the essays in the pretest stage in three different groups ($H(2) = 9.88, p < .01$), with a mean rank of 10.50 for students with a high level of ability in reasoning (i.e., students who gave relatively more relevant and acceptable reasons to support the point in their pretest essays before the intervention), 6.50 for students with an intermediate level of ability in reasoning and 2.50 for students with a low level of ability in reasoning. Pairwise comparisons were further used to investigate if there were any significant differences between each pair of groups. Results show that Group 1 was significantly different from Group 2 ($p < .05$) and Group 2 was significantly different from Group 3 ($p < .05$). However, another analysis result provided no evidence of

a difference between three groups in the post-intervention Kruskal-Wallis test ($H(2) = 1.89, ns$). Post hoc tests were conducted to test pairwise comparisons in the post-intervention stage. There was no significant difference between Groups 1 and 2, or Groups 2 and 3, or Groups 1 and 3 in the posttest essays.

Table 6.1
Results of Kruskal-Wallis Test Comparing Argument Soundness of Pretest Essays and Posttest Essays Between Three Groups

	Group	<i>n</i>	Mean rank	<i>p</i>
Pretest Essay	Group 1	4	10.50	.007**
	Group 2	4	6.50	
	Group 3	4	2.50	
Posttest Essay	Group 1	4	7.75	.390
	Group 2	4	7.25	
	Group 3	4	4.50	

Note: Group 1 = High-achieving students, Group 2 = average students, Group 3 = low-achieving students

** $p < .01$

Using argument soundness of the pretest essays as a baseline, 12 students in 3 different groups that represented different ability of reasoning performed differently compared to argument soundness of the posttest essays (see Table 6.2). The majority of participants, namely, 11 out of 12, made evident and great progress in providing more relevant and acceptable reasons to support the main argument though 1 high-achieving student dropped slightly in the total score of argument soundness but dramatically in the ranking compared with her peers in the posttest essays. Moreover, students in Groups 2 and 3 produced more considerable change in argument soundness compared with students in Group 1.

Table 6.2
Descriptive Statistics of Changes in 12 Cases Before and After the Intervention

Paper Label	Pseudonym	Pretest			Posttest			Change of Argument Soundness %
		Argument Soundness	Rank	Rank in all participants (n=46)	Argument Soundness	Rank	Rank in all participants (n=46)	
G1-1	Leo	36	2	3	51	4	9	29.4
G1-2	Zack	32	3	6	53	3	6	39.6
G1-3	Cindy	24	4	16	48	5	12	50.0
G1-4	Wendi	40	1	1	39	9	28	-2.6
G2-1	Tina	22	5	18	44	6	18	50.0
G2-2	Saba	17	7	33	42	8	23	59.5
G2-3	Henry	18	6	28	43	7	21	58.1
G2-4	Penny	22	5	19	58	2	3	62.1
G3-1	Daisy	13	10	41	30	11	39	56.7
G3-2	Alice	15	9	39	60	1	1	75.0
G3-3	Xylon	7	11	46	24	12	44	70.8
G3-4	Ben	16	8	38	38	10	29	57.9

Quantitative results indicated that before the intervention, the varied natural ability

of reasoning significantly mediated students' performance in argumentation. In other words, the knowledge gaps between students with varied argumentative abilities were rather large. However, after the intervention, these gaps were significantly narrowed, resulting in the non-significant difference between groups. This was probably attributable to a substantially improved performance of students with intermediate and low reasoning abilities in posttest essays regarding argument soundness. It might also suggest that for those who are well equipped with argumentative knowledge and skills, the intervention is less effective in enhancing their argumentation skills. Given these results, it is meaningful to investigate the influential factors that determine students' argumentation and writing performance before and after the intervention in the very next step.

6.2. Interview Outcomes

6.2.1. Comparisons Between Groups Before the Intervention

To seek more explanations to the quantitative results, a writing test before the intervention was firstly implemented. Then, a pre-intervention interview with the selected twelve students was conducted to explore the commonalities of each group and differences between groups. The findings from the interviews are reported according to four main themes related to emergent codes – *argument-related understandings*, *writing-related understandings*, *deployment of SRL strategies to improve argumentation* and *deployment of SRL strategies to improve argumentative writing*. These categories and codes are shown in Table 6.3. In Table 6.3, the column of *codes emerging from the data* provided examples of original codes from the pre-intervention essays that were grouped together to form various subcategories pertaining to larger categories. Take metacognitive and cognitive strategies for example. Metacognitive strategies were approaches that students use to monitor and regulate their own writing processes, while cognitive strategies were specific techniques that students use to complete the writing tasks. *Idea planning* that students planned to adjust their arguments to cater to readers was a typical metacognitive strategy, while *task performance*, a cognitive strategy, refers to how students practiced their thinking through various argument-related activities.

Table 6.3
Categories and Sub-categories of Interview Data Before the Intervention

Categories	Sub-categories	Codes emerging from the data
Argument-related understandings	Understandings about argumentative structure	The inclusion of counterargument and rebuttal
	Understandings about argument elements	The characteristics of (a) argument point, (b) evidence
	Understandings about argument strength	(a) Audience awareness; (b) logic
Writing-related understandings	Understandings about argumentative writing in general	(a) Content; (b) language; (c) essay structure
	Understandings about L2 argumentative writing	(a) L2 essay structure; (b) Differences of L1 and L2 argumentative writing
Deployment of SRL strategies to improve argumentation	Metacognitive strategies	Idea planning – audience awareness
	Cognitive strategies	Task performance – practice thinking through (a) evaluate others’ arguments, (b) reading others’ essays; (c) watching debates
	Social behavior strategies	Dealing with sociocultural contexts and identities – knowing audience
	Motivational regulation strategies	Interest enhancement – behaviors driven by intrinsic interest
Deployment of SRL strategies to improve argumentative writing	Metacognitive strategies	Idea planning - (a) understanding the topic; (b) Thinking and obtaining resources; (c) outlining
	Cognitive strategies	Text processing - Revising
	Motivational regulation strategies	Interest enhancement – behaviors driven by external factors that affect the motivation (i.e., the difficulty level of writing or writing scores)
	Social behavior strategies	(a) Peer learning; (b) Feedback handling – evaluating teacher’s feedback for improvement

6.2.1.1. Argument-Related Understandings

The overwhelming majority of participants from all three groups before the intervention believed that the primary goal of an argument is to persuade audience through an argumentative discourse structure that constitutes a point, its supporting evidence and counterarguments. The example extracts, one from each group, typify this point:

Extract 1

Firstly, to persuade audience, a point should be provided with supporting data that offers a few examples or opinions. A summary is then presented...Counterargument should also be anticipated and rebutted with evidence. (Pre-transcript No G1-1. Leo)

Extract 2

A point or stance should be raised and supported by statistics, examples or experiences. A summary as conclusion is also presented...Opposing others' viewpoints may help emphasize one's advantages. (Pre-transcript No G2-4. Penny)

Extract 3

First of all, the purpose of one's argument is to convince audience. Therefore, one should provide sufficient evidence to support one's own point. Moreover, evidence or argumentative discourse that make audience feel ridiculous is not a good argument...Due to the increased emphasis on critical thinking, now I am inclined to provide both pro and con arguments. (Pre-transcript No G3-4. Ben)

These extracts suggest that the participants believed that it is essential to provide counterarguments and rebuttals for enhancing the persuasive ability. This finding corresponded to Liu and Stapleton's (2014) argument in relation to the significance of integrating counterarguments and rebuttals into argumentation instructions for cultivating critical thinking skills of L2 writers in order to improve their perceived persuasiveness in their essays.

In addition, all participants highlighted the principal characteristics of a point is 'clear and debatable' (Pre-transcript No G1-4. Wendi; Pre-transcript No G2-1. Tina; Pre-transcript No G3-3. Xylon). They were acquainted with the common feature of

a generic argument point; however, for the peculiarities of an argument point, half participants in Group 1 who presented high argument soundness in their pretest written texts stressed that a point should be innovative to attract audience. Leo, for instance, explained that:

Extract 4

Normally when someone reads a reading material, they first look at the title, then read the first paragraph to find the point. They will read the rest if the point is appealing; however, if the point is very ordinary and not attractive, they might not continue. (Pre-transcript No G1-1. Leo)

Three out of four participants in Group 2 who demonstrated intermediate argument soundness in pretest essays believed that a good argument point should be concise with succinctly summarized languages. Penny in Group 2 stated that:

Extract 5

Generally, the point should not be expressed overly complex. The point should be concise and clear, so audience know what to expect. (Pre-transcript No G2-4. Penny)

The interview data suggests that even though the students understand the generic characteristics of an argument point similarly, those with different argumentative abilities are inclined to adopt points with different features and present them in various ways.

In relation to the supporting evidence to argument, most participants agreed that the fundamental requirement that all evidence should meet is to support the point. More importantly, evidence should be 'true' (Pre-transcript No G2-3. Henry) and 'genuine' (Pre-transcript No G1-3. Cindy; Pre-transcript No G3-4. Ben) for 'it is more likely to convince readers' (Pre-transcript No G1-3. Cindy). The participants seemed to relate truths as evidence to persuasiveness. More precisely, they believed that one essential determinant of a successful argument is to adopt genuine evidence for explaining and supporting the point, as supported by Kuhn (1991, p. 45) that genuine evidence turns out the most common and successful form of evidence to respond to the question.

More interestingly, for adopting proper point and evidence to strengthen an argument for target audience, some students in Groups 1 and 2 argued the

importance of audience awareness as influential factors of emotion or value. Two students in Group 1 emphasized that it was essential to collect the background information of audience since it might help audience remain concentrated. Leo, for instance, stated that:

Extract 6

My English teacher fell asleep while reading my essay last semester because he got lost with the Chinese examples. I think it emphasizes the significance of knowing audience beforehand to keep them engaged. (Pre-transcript No G1-1. Leo)

Moreover, Penny in Group 2 again indicated that cultural factors are likely to influence audience, thus the persuasive ability of an argument. She said that:

Extract 7

I think different nationalities and social statuses lead to different cultural backgrounds and information received. When communicating with ordinary people, using personal experiences instead of academic evidence can make audience more easily understand and be persuaded. (Pre-transcript No G2-4. Penny)

They implied that except for the logic factors, emotion or value can also be the underlying reasons for a successful argument. In other words, affect and logic are not strictly separable in thinking (Kahneman, 2011, p. 12) reflected in one's writing behavior (Brand, 1985-1986). This shows the importance of the careful selection of point and evidence in terms of audience awareness, possibly helping improve persuasiveness of an argument.

Referring to another significant factor to a successful argument – the quality of reasoning, three participants in each group emphasized the importance of clear logic when presenting the relation between the point or counter claim and its supporting evidence, as epitomized in the example extracts as follows:

Extract 8

[For a successful argument,] I think the overall logic is one important factor. (Pre-transcript No G1-3. Cindy)

Extract 9

I think logic is the most important determinant to a successful debate. That means evidence must be relevant to the point and be able to prove it. (Pre-transcript No G2-2. Saba)

Extract 10

Debate doesn't have right or wrong answers. It depends on logical reasoning. That means you should be able to logically present your point and evidence. If your logic is strong and cannot be easily attacked, and others cannot find any weaknesses, your point can be well supported. (Pre-transcript No G3-2. Alice)

However, half of the participants in Group 1 provided further explanations on the way of reasoning in terms of logic. They considered it reasonable and logical to argue step by step, from superficial to in-depth level. Cindy, for instance, expressed this idea by stating that:

Extract 11

Evidence should be used to support and explain the point in a step-by-step manner, strengthening the argument. (Pre-transcript No G1-3. Cindy)

This suggests that students with relatively higher argumentative skills think more carefully about the point development for persuasive purposes rather than separately understanding the point and evidence compared with the other two groups.

Compared between groups, students overall have a fairly clear understanding about the characteristics of argument elements and ways of persuasion, though students with high and intermediate argumentative abilities demonstrated comparatively deeper knowledge of persuasion, probably leading to significant disparities of argument soundness between groups in their pretest essays.

6.2.1.2. Writing-Related Understandings

Compared with participants' understanding of argument as part of an argumentative essay, their commonly held beliefs on content, structure and language are expected to be more insightful for understanding their performance on argumentative writing. In general, a greater part of the participants in each group valued content in argumentative writing over essay surface structure or

language use because it might 'provide in-depth support to the point' (Pre-transcript No G1-4. Wendi) and 'help organize a seemingly messy structure' (Pre-transcript No G3-2. Alice) to 'influence audience's viewpoints' (Pre-transcript No G2-2. Saba). The results imply that the students realized that the quality of reasoning is key to a good argumentative essay. These understandings of profound argumentative writing knowledge to some extent might help students produce written texts that focus more on argumentation scaffolded by appropriate organization and rhetoric. Conversely, these students believed that the surface structure and argumentative languages might reinforce the content as readers could be assisted to navigate the way through the structure, and the simple and clear language use could help readers understand the content, as supported by the following example extracts:

Extract 12

A proper structure can guide readers even if the content is not good. At least readers will not feel that the essay is meaningless...I think language requirement for argumentative essays is not very high as it's not literature. (Pre-transcript No G1-2. Zack)

Extract 13

I believe that structure aids content by making it more organized and reader friendly. Poor language use may hinder understanding of good content. I mean clarity of expression is crucial. (Pre-transcript No G2-3. Henry)

Extract 14

Clear structure can help readers understand the writer's message...Even with simple languages, good content and structure can help readers understand the writing. Take us, engineering students, for example. Our language abilities are not that good so when we write experimental reports, we just write with less complicated languages. (Pre-transcript No G3-3. Xylon)

The data above suggest that the students acknowledged that good surface structure might not guarantee a good presentation of argument. This resonated with the research findings of Stapleton and Wu (2015) who found that "despite good surface structure many claims and data made by the students were judged as weak" (p. 19-20). Moreover, in spite of linguistic features for an argumentative

essay, the majority of the interviewed students stressed the function of language is to increase the comprehensibility for readers. That means they all agreed the academic language use for an argumentative essay should be simple in forms in order to enable readers to clearly follow the writer's thinking. However, although common and simple language use might help writers tease out their ideas, argumentative writing as an academic form is often at its best when it blends academic and everyday language (Graff & Birkenstein, 2018, p. 119).

When questioning participants about the similarities and differences between the argumentative essays written in Chinese and English language, it seemed that their understanding between groups differed with each other to some extent. First of all, more than half of the participants in both Group 1 and 2 recognized the main point and its supporting data as the basic argumentative structural elements ought to be included in an argumentative essay despite the writing language. However, the participants in Groups 1 and 2 displayed opposite understanding of the reasoning process in a Chinese and English argumentative essay. Half in Group 1 believed that the main argument in a Chinese argumentative essay normally will be presented as a conclusion in the end, while on the contrary, an English argumentative essay will choose to directly present the point at the beginning. Wendi, for instance, drew on her prior Chinese writing experience to illustrate her point as follows:

Extract 15

I think [the differences between a Chinese and English argumentative essay is] the reasoning process. That means when I write a Chinese essay, I firstly present a lot of reasons and evidence, then the main point...However, I think an English argumentative essay first presents the point, and then the reasons and evidence. (Pre-transcript No G1-4. Wendi)

Conversely, half participants in Group 2 believed both Chinese and English argumentative writing tended to firstly give the main point and its supporting data, and then raise opposing points and rebuttals. Saba in Group 2 stated that:

Extract 16

I think that the most basic elements [of an argumentative essay in Chinese and English] are similar though I am not sure about the differences. That means the writer needs to give a point and find evidence to support it, as well as evidence to oppose others' viewpoints. Basically, I think these

should all be done...In an essay, rebutting the counterargument is also necessary. (Pre-transcript No G2-2. Saba)

The above interview data suggest that students with high and intermediate argumentative abilities are consciously aware of the similarities and differences between Chinese and English argumentative essays based on their prior writing knowledge and experience, in spite of some misperceptions concerning the order of point and evidence in Chinese argumentative essays. However, more than half students in Group 3 who demonstrated relatively lower argument soundness in pretest essays responded clearly that they had no ideas about the English argumentative essays, so they did not know how to compare and contrast the Chinese and English argumentative writing, as depicted in the following extract:

Extract 17

Though I have seen some readings in high school tests and some articles extracted from newspapers, I am still not familiar with English argumentative writing, much less understanding them. (Pre-transcript No G3-4. Ben)

His words reveal that even though low achieving students might have contacts with the argumentative writing in English before, they may not have thought deeply to evaluate the argument or analyze the argumentative essay.

Overall, in this case when students were evaluating an argumentative essay as a whole, they were well aware that the quality of an argumentative essay was determined by the quality of argument, whereas the surface structure and language play a supporting role. However, this understanding is partly contrary to Halliday's functional theory of language (1973), as well as Christie (1989) who claimed that language and content or context cannot be separated as "success in mastering a content area is actually a matter of mastering the necessary linguistic resources with which to deal with that content - this implies knowing how one's discourse is to be structured" (p. 167). Additionally, their existing understanding about argumentative writing is based on their prior learning in Chinese argumentative writing; however, they generally do not have a clear understanding of English argumentative writing though students with high and intermediate argumentative abilities to some extent expressed their ideas on the similarities and differences of the Chinese and English essays.

6.2.1.3. Deployment of SRL Strategies to Improve Argumentation

Argumentative strategies and SRL strategies are another crucial determinant of the quality of reasoning that underlies a successful argument, resulting in a stronger persuasive ability (Song & Ferretti, 2013). The argumentative strategies and SRL strategies were therefore orchestrated in the SRSD instruction of this study. I also found that the interview data related to students' strategy use could be categorized as metacognitive, cognitive, social behavior and motivational regulation strategies directed by the theoretical framework of SRL. This way of categorization has been validated by a questionnaire method designed by Teng and Zhang (2016) to attend to the L2 writing contexts.

First, the majority of participants in all three groups equated 'argument' to 'persuasion', as argued in Section 5.2.1. More precisely, they had clear audience awareness that underlies the persuasive ability of an argument. Simply speaking, understanding audience well is helpful to convince them. Therefore, they believed one effective strategy to improve the quality of argument is to collect the information of audience and analyze them. This may help them prepare a relevant and proper point and evidence that can empathize with audience. Students in Group 1 demonstrated a rather strong audience awareness, as supported by the following extract given by Zack in Group 1:

Extract 18

The point and evidence should definitely be relevant to the life of audience. For example, to emphasize with ordinary people, you should write something close to their life. (Pre-transcript No G1-2. Zack)

This result echoes the metacognitive strategy of idea planning that the interviewed students used to self-regulate their learning on argumentation as they intended to draw on the audience's knowledge to prepare for their argument adequately.

A substantial number of participants also reported that they integrated the cognitive strategies to reinforce their argument. Most participants in all three groups reported that one cognitive strategy is to evaluate other's arguments through different approaches. Wendi, in Group 1, said that she usually self-talked when evaluating the argument presented in debates or written texts to develop her thinking. As Lantolf et al. (2020) defined, self-talk is "people produce when trying to bootstrap themselves through difficult activities" (p. 230). Wendi said that:

Extract 19

[When I try to improve my argument] I normally do self-talk. For example, I question myself on whether the supporting evidence is true, or from what method can this evidence be elicited. I attempt to think from different perspectives to explain in different ways. (Pre-transcript No G1-4. Wendi)

Another student, Henry, in Group 2, mentioned that he was inclined to evaluate others' arguments objectively in order to improve own ability of argumentation. He also had a habit of practicing evaluating own argument through comparing it with others. He explained that:

Extract 20

I watch debates with an open mind and evaluate both sides. If I have a preference, I look for evidence to support it. If I have no prior knowledge, I assess the reasonableness and sufficiency of both sides. If I find the evidence insufficient or unsupportive, I tend to find the logic gaps in the argument...I have a habit of comparing my work to others' to identify my deficiencies and improve my argument. (Pre-transcript No G2-3. Henry)

Also, a Group 3 student, Ben, paid affective attention and argued that the courage to doubt and question when evaluating an argument is necessary, as expressed in his following words:

Extract 21

When reading an argument, one should firstly consider it fake, imagine its feasibility and evaluate its reasonableness. If it sounds reasonable, I may trust you, but think from the beginning about the cause, development and result for evaluation. We should dare to doubt everything. (Pre-transcript No G3-4. Ben)

Though these students expressed their ideas on the significance of evaluating others' arguments from different perspectives, they all acknowledged the effectiveness of metacognitive strategy use to plan ideas concerning thinking long and hard about own and others' argument for the sake of the increase of argument strength.

Accumulating knowledge through reading others' essays critically is another idea-organization cognitive strategy adopted by almost all the students in three groups.

The following interview data supported this result:

Extract 22

I like to collect relevant information for my writing to have a backup when I run out of ideas or have too many to choose from. After collecting, I read and organize the information from which I may sometimes find relevant data or facts that can be used in future articles...I analyze the data and use it if it is suitable in writing. (Pre-transcript No G1-3. Cindy)

Extract 23

To improve my written arguments, I read relevant articles, for example in sociology, written by experts for their viewpoints and content. I analyze the logical connection between structure and content. (Pre-transcript No G2-3. Henry)

Extract 24

I learn from others by reading their articles and watching debates...I check if my point is similar to theirs and if their evidence supports their point or if I satisfy their point. I also read news. All these prepare me for better writing in my study. (Pre-transcript No G3-1. Daisy)

It seemed that students were aware that reading is essential to knowledge accumulation, and it was indispensable to prepare writing through reading - in concert with the empirical results obtained by Lee and Schallert (2016) that there was an integral connection between reading and writing in EFL contexts because their processes share similar cognitive skills.

Students in Groups 2 and 3 who demonstrated relatively lower argument soundness in pretest writing showed other cognitive strategies of linking knowledge for regular daily practice to improve their argumentative abilities. They introduced their habit of practicing argumentative discourse ability through debate or watching others' debate in the media, as supported by these extracts:

Extract 25

I think we can practice debates and watch videos to learn from others. Watching debates exposes me to new perspectives. (Pre-transcript No G2-4. Penny)

Extract 26

I think real practice, or say, debating with others can be helpful for finding ways to get relevant evidence. In high school, I often debated with my classmates and found it useful to obtain useful information for my point. (Pre-transcript No G3-3. Xylon)

It seemed that students with intermediate and low argumentative abilities stressed the importance of debating practices. Cognitive efforts that they made to improve argumentative abilities appeared accumulated bit by bit. They are keenly aware of their weaknesses and thus seeking effective ways to overcome them.

Two noteworthy cases stood out in which participants adopted social behavior and motivational regulation strategies to enhance argumentative abilities. Zack in Group 1 pointed out his use of social behavior strategies for dealing with audience identities, hoping to improve the persuasiveness of his argument. He said that:

Extract 27

I still believe that knowing audience beforehand is crucial for the success of persuasion. I used to try to find ways to identify their identity and if it is possible, find out what recently happened to them. This enables me to prepare evidence that is related to their life to persuade them. (Pre-transcript No G1-2. Zack)

He believed that contact with writing targets is essential to improve the strength of argument because the evidence can be relevant to their life and emotionally affect them. It is noteworthy that there are students like Zack who strongly believe in the combination of logic and emotion or value to strengthen their persuasive ability and the audience-based reasons did enhance logic while appealing to ethics and emotions (Ramage et al., 2016, p. 70).

Another finding fell into the category of motivational regulation strategies. Two students in Group 3 preferred to select only interesting topics to study. One of them, Alice, mentioned that:

Extract 28

I used to only buy interesting books. I remember buying a book on death penalty by a western author. Although I was not against death penalty then, the book advocated for its abolishment, so I bought it. (Pre-transcript No

G3-2. Alice)

It is evident that motivation also serves as one essential prerequisite to the use of other SRL strategies. It means that once students are propelled by their intrinsic motivation like interest, they tend to regulate themselves for learning that may then help develop their argumentative discourse ability.

Generally speaking, all students adopted specific SRL strategies for improving their argumentative skills though they individually demonstrated from different perspectives. Students with relatively lower argumentative abilities, namely students in Groups 2 and 3, rely more on the use of SRL strategies in regular argumentative practices to improve their performance on argument soundness in argumentative writing, debates or other forms of argument, whereas students in Group 1 seem more self-efficacious in mastering argumentative knowledge and catering to the need of audience rather than dependent on strategy use for the purpose of enhancing persuasion.

6.2.1.4. Deployment of SRL Strategies to Improve Argumentative Writing

Students are often expected to use different SRL strategies in different stages of the writing process, for example, prepare in the forethought stage, help themselves concentrate in the writing stage, and improve the writing in the post-evaluation stage. As the effects of SRL strategies have been shown decisive on argumentative writing performance in the Chinese EFL context (Teng & Zhang, 2016, 2018), I wanted to find out the strategies that the interviewed participants used in the writing process.

In the planning stage, more than half of participants in each group said that the initial step they took was to think about their viewpoints and search for relevant materials to help with planning. It means that they adopted the metacognitive strategies when planning for their writing tasks, as illustrated by the following extracts:

Extract 29

I will understand the writing task first and search for materials to see if any background information or phenomenal examples I can use before I write.
(Pre-transcript No G1-4. Wendi)

Extract 30

When I receive a prompt, I will take time to decide which side to take as sometimes initial ideas may change after researching more. So, I will search for relevant materials first to better understand my chosen side. (Pre-transcript No G2-3. Henry)

Extract 31

When I receive a prompt, I will firstly ensure I understand it. If it is a political prompt, I will carefully choose an accurate point. Next, I will search for relevant materials to support my point. (Pre-transcript No G3-1. Daisy)

As the data indicate, students either think about the writing topic first, then search for relevant materials or, conversely, search while thinking. They mostly explained the purpose of doing in such a way to justify the assertion, as well as obtain sufficient relevant evidence before writing. Besides, almost all participants (excluding one in Group 1) declared that outlining, no matter in their first language Chinese or foreign language English, is one essential metacognitive strategy they used to prepare for their writing task. They said that:

Extract 32

I normally will list the reasons first by drawing a graph with Chinese language. (Pre-transcript No G1-2. Zack)

Extract 33

After getting the prompt, I will decide my position and list two to three points on scratch paper in English, like outlining or drawing a mind map. If time permits, I will write down the details of each paragraph. (Pre-transcript No G2-4. Penny)

Extract 34

Receiving the writing task, I will gather information from the Internet or textbooks and outline in Chinese. If needed, I will translate to English and list points and evidence. If examples are needed, I will look for them and note key words for use in essay. (Pre-transcript No G3-3. Xylon)

Even though outlining is one practical strategy students prefer to use before writing, most of them also mentioned time as one necessary condition to make elaborative outline happen, as echoed by Extract 33, 35 and 36. With enough time, a few even

said they would choose to write the first draft before writing the formal task. As one student in Group 2 and one in Group 3 mentioned that:

Extract 35

Given enough time, I will collaborate with classmates and prewrite the essay. If time is not enough, I will create a brief outline. (Pre-transcript No G2-3. Henry)

Extract 36

[After I search for the relevant materials,] I will prewrite and revise the essay if time allows. If not, I will only make a brief outline. I do not have much time for the English subject, but if I have time to prepare writing, I will do my best. (Pre-transcript No G3-1. Daisy)

It seemed that students were not under the overwhelming influence of the language they were required to use for writing in the planning stage, as supported by Extract 32 and 34. On the contrary, considerable time was reported as a crucial factor to the adequate preparation for a successful essay because all the studied cases are not English-major students, so English tasks or examinations would not be their learning priorities, as supported by Daisy who reported in Extract 36.

While in the stage of performance, almost all the students (excluding one student in Group 3) reported their cognitive strategy of revising after writing in classrooms when there was still time left. The overwhelming majority of students in Groups 2 and 3 who presented lower argument soundness in pretest writing said they would examine their essay for mistakes in language, as epitomized by the following extracts:

Extract 37

[I revise] language. Before writing, content and structure are decided so they cannot be easily altered. However, if writing is finished, language can still be refined if it does not flow well. (Pre-transcript No G2-3. Saba)

Extract 38

I do not change my point but the grammatical and vocabulary errors because I normally have no time to revise the content. (Pre-transcript No G3-1. Daisy)

Three students in Group 3 indicated time again as the essential reason to decide whether they would revise the essay content or language given their prior writing experience in classrooms, yet one particular student in Group 3, Alice, also said that she would prefer revising content after writing when she had time left:

Extract 39

[When time permits in the classroom writing,] I normally read and revise the body paragraphs for better reasoning because sometimes I feel I am easily tangled while reasoning. (Pre-transcript No G3-2. Alice)

Like Alice, all four students in Group 1 with relatively higher argumentative abilities was distinguished from the other two groups by revising essay content rather than linguistic errors. Leo, in Group 1 again as an example, mentioned that:

Extract 40

[After writing in class,] I only read the evidence to see if there is anything wrong with the evidence, for example, any repeated or ineffective evidence. (Pre-transcript No G1-1. Leo)

Though students developed the learning approach of revising after composing, students with higher argumentative abilities expressed paramount concerns for essay content. In contrast, students with relatively lower persuasiveness in their pretest essays principally focused on the base of an L2 essay – language for its smooth flow and the accuracy of grammar and vocabulary. This result implies that proficient L2 students are prepared to revise or even rewrite more substantially, while less capable students are likely to change minor details, namely, a few written languages, which has been proven less effective in improving essay quality (Scarcella & Oxford, 1992).

Finally, in the post-evaluation stage, the participants unveiled their comprehensive use of cognitive and social behavior strategies to revise their essays and reflect on their writing performance. All the participants in Groups 1 and 2, as well as half participants in Group 3, stated that they would evaluate teacher written feedback first when receiving from their teachers, as supported by the following extracts:

Extract 41

I will review my teacher's feedback but may not make changes if I disagree. Even if the feedback identifies an issue about my point, I may opt for a

brand-new point instead of following the feedback. (Pre-transcript No G1-2. Zack)

Extract 42

I will definitely consider my teacher's feedback but will not blindly follow it without doubt. I will reflect on why my essay was corrected and admit my mistakes in writing. If it is a linguistic error, I can easily understand it. However, if it is an error in logic or structure, I will think deeply. (Pre-transcript No G2-3. Henry)

Extract 43

In Level 2 [of ELC course], I considered my teacher's feedback on my essay and agreed with one of the problems he identified with my essay structure. However, I disagreed with another problem he mentioned, as I believed it was due to differing perspectives. (Pre-transcript No G3-4. Ben)

It was evident that competent students with autonomy also demonstrated greater awareness of the importance of self-reflection through the evaluation of teacher written feedback. It could be supported by the counterexamples of two students in Group 3 who reported they commonly accepted all the feedback from their teachers without any evaluation. Daisy said that:

Extract 44

I will completely accept [my teacher's feedback]. If I accept someone as my teacher, I will recognize his or her superior knowledge in the academic field and accept all his or her suggestions. (Pre-transcript No G3-1. Daisy)

It seemed that less proficient students were inclined to appeal to their teachers as the authority in the academic field, even including linguistic corrections.

In addition, most of the participants believed that it could be helpful for a future performance like the second draft if they revise their essays based on teacher written feedback on essay structure, content or language. Therefore, they took cognitive initiatives to revise accordingly after the evaluation of feedback, as suggested in the following extracts:

Extract 45

I will revise based on teacher feedback. It is easier to correct language

errors, like grammar mistakes or sentence structure problems. (Pre-transcript No G2-4. Penny)

Extract 46

I will definitely revise my work based on the feedback to increase the marks in my second draft. I will also use it to identify and correct my mistakes if I find it helpful. (Pre-transcript No G3-4. Ben)

These interview data also suggest certain intrinsic motivational factors like “easy correction” and external environmental factors like “marks” influenced students’ learning behaviors. However, it was striking that all students in Group 1 mentioned that they would revise even if teachers did not request them to do so. Wendi stated that:

Extract 47

I will still revise the essay even if not required by the teacher. I think that the feedback will highlight my problems, so I will make necessary changes. (Pre-transcript No G1-4. Wendi)

Compared with students with lower argumentative abilities, students in Group 1 appeared to believe the effectiveness of revision to the improvement of writing skills and reflection on future performance.

As for social behavior strategies, some students acknowledged the importance of seeking external help from their peers or teachers. More than half of the students in both Groups 1 and 2 stated that they preferred to discuss with their peers for understanding better the feedback given by teachers or brainstorming more exciting ideas to improve their future performance, as supported by the following extracts:

Extract 48

When I get the feedback, my first action is to schedule a time to meet a student writing tutor in the writing studio. (Pre-transcript No G1-4. Wendi)

Extract 49

If I understand all the comments from the teacher, I do not think it necessary to discuss with anybody. However, if the comment is about my viewpoint, for some interesting points I will discuss with my classmates.

(Pre-transcript No G2-3. Henry)

Though students believed that it was useful to discuss with others, they set the essential prerequisite - if they could not understand the comments, they would choose to seek help from others to solve problems, or they would rather depend more on themselves. Compared with students in Groups 1 and 2, three students in Group 3 with relatively low argumentative abilities stated that it was not necessary to seek help from peers, instead, the suggestions from teachers were more helpful. Alice again said that:

Extract 50

I would not discuss with peers. If I do not understand the comments from the teacher, I will ask the teacher directly. If I understand, I will revise by myself. (Pre-transcript No G3-2. Alice)

Likewise, students in Group 3 also said they would instead revise their essays based on their understanding first unless they were bewildered about the comments of teachers. Students displayed considerable independence on their learning in the post-evaluation stage of writing.

In this part, all students implemented viable SRL strategies in pre-writing, in-writing and post-writing stages to perform a good written argumentative text. More proficient students (i.e., Groups 1 and 2 in this study) demonstrated less reliance on teachers and performed more effective cognitive strategies to help with the success of writing. By contrast, less proficient students were more likely to depend on teachers.

6.2.2. Comparisons Between Stages

After implementing the tailored SRSD intervention, a posttest essay on the same writing prompt as the pretest essay was assigned to investigate if there were any changes in argument soundness and overall quality between the two essays. Then, a follow-up interview on the same twelve students who had been interviewed before the intervention was conducted to explore any changes in the themes of *argument-related understandings*, *writing-related understandings*, *deployment of SRL strategies to improve argumentation* and *deployment of SRL strategies to improve argumentative writing* between the pre- and post-intervention stages, to further explain the quantitative analysis results. Table 6.4 showed these categories and

codes. Since all three groups that were categorized by argument soundness elicited from students' pretest essays did not show significant difference between each other, 12 cases were analyzed as a whole to examine the variations in the categories before and after the intervention.

Table 6.4
Categories and Sub-categories of Interview Data After the Intervention

Categories	Sub-categories	Codes emerging from the data
Argument-related understandings	Understandings about argumentative strength	(a) Impact of logical fallacies; (b) The relevance between the point and its supporting reasons; (c) Adequacy of reasons
	Understandings about argument elements	(a) Importance of counterargument and rebuttal; (b) Difficulty in providing counterargument and rebuttal
Writing-related understandings	Understandings about argumentative writing in general	(a) Importance of essay structure; (b) Controversy about the inclusion of rebuttal; (c) Language use
	Motivational regulation strategies	Interest enhancement – (a) behaviors affected by self-concept in logic; (b) Behaviors driven by intrinsic interest
Deployment of SRL strategies to improve argumentation	Metacognitive strategies	(a) Developing awareness in logic; (b) Idea planning through self-questioning
	Social behavior strategies	Peer learning
	Cognitive strategies	Task performance – clustering (i.e., mind mapping)
Deployment of SRL strategies to improve argumentative writing	Metacognitive strategies	(a) Strategic planning; (b) Developing awareness in plagiarism
	Cognitive strategies	Task processing - revising
	Social behavior strategies	(a) Peer learning; (b) Feedback handling – evaluating teacher’s feedback for improvement

6.2.2.1. Changes in Argument-Related Understandings

With the SRSD intervention, one newly generated commonality mentioned by seven of twelve participants was logical fallacies when they were asked about the determinants to argument strength. Participants' interview outcomes generally fell along these lines, as presented next: the negative impacts of logical fallacies; the reasons why they considered logical fallacies important; the more possible but still difficult identification of fallacies in self-constructed arguments; and the self-conscious prevention of writing logical fallacies in the essay. The first two areas are discussed in this section while the rest will be illustrated in Section 6.2.2.3 that discusses the changes of students' strategy use to improve their argumentation skills.

Some participants believed that the presentation of logical fallacies negatively affected the strength and reliability of an argument, and even an essay. Wendi believed that logical fallacies would 'weaken the argument by making it untrue and unreliable, undermining its credibility' (Post-transcript No G1-4. Wendi). Cindy indicated that the knowledge of logical fallacies exposed the defects in her way of thinking. However, she believed that the identification of logical fallacies would help defend her own argument from possible attack. This argument also suggests that she believed that argument strength was negatively correlated with logical fallacies. She said that:

Extract 51

The knowledge of logical fallacies is different from my common knowledge. I would think that an argument has no logical problem according to my common knowledge, but it may actually be flawed in logic if I use the knowledge of fallacies to analyze it. Others who are familiar with logical fallacies might easily defeat me by using such knowledge. Therefore, I think learning this knowledge is helpful to strengthen my argument. (Post-

transcript No G1-3. Cindy)

Students stated that they were conscious of the importance of their own arguments free of logical fallacies and presented sound reasoning to support their arguments. It is noteworthy that students were conscious of the real meaning connoted in the word 'logic' that they mentioned but did not clearly understand in the pre-intervention interview. As is evident from the above interview data, students could now explicitly endow 'logic' in a sound argument with the quality of free-of-fallacy.

Additionally, ten of twelve participants emphasized the significance of the relevance between the point and its supporting reasons for an argument. Tina defined relevance as 'discussing why the totally different ideas are interrelated and what connects them' and noted paying particular attention to the logical link that connects ideas to 'make the argument sound' (Post-transcript No G2-1. Tina). Penny believed that the relevance determined the success of an argument, as she explained that an argument's failure to persuade could be attributed to 'reasons that are not related to the main point or do not strongly support it' (Post-transcript No G2-4. Penny). Another student, Daisy, felt confused in discovering the connection between the point and its supporting reasons before the intervention as she used to neglect their interrelationship, yet she was able to evaluate her argument in terms of relevance after the intervention. She said that:

Extract 52

I know that it is very critical of the relevance between the point and evidence, but I always stuck there as it is really difficult for me to understand what exactly relevance means in an argument. I used to write down everything I considered relevant in the essay, but upon re-reading, I find that it was all nonsense and had little connection to the point. (Post-transcript No G3-1. Daisy)

These interview data suggest that students obtained new knowledge of criteria that could assess the quality of argument after the writing knowledge instruction. They were aware of the force of the relevance between the point and its supporting reasons to strengthen the argument though it seemed challenging for them to be accustomed to this form of writing.

Moreover, a great number of participants focused on the adequacy of reasons to support the point. Henry noted that the reasons provided to support the argument should be sufficient to justify the conclusion. He further elaborated his argument, stating that 'if the writer uses inappropriate or unsuitable examples, it implies that the supporting reasons may be inadequate to support the point' (Post-transcript No G2-3. Henry). More interestingly, Xylon and Daisy believed that the more reasons provided or the longer the written text is, the more sufficiently that the reasons can support the point. They stated that:

Extract 53

I think the quantity of reasons is critical to the argument because if one can list more reasons to support the point, it is more likely to defeat others [in the debate]. (Post-transcript No G3-3. Xylon)

Extract 54

Literally, for sufficiency, it refers to a long essay that may cover more reasons. In such way, one may explain more elaborately and deeply. (Post-transcript No G3-1. Daisy)

Therefore, compared with the pre-intervention interview data, students with the SRSD intervention expressed mounting concerns about the relevance and sufficiency of the premises to the conclusion in an argument, which enables them

to clarify the assessment approach of the argument strength and eventually construct a successful argument.

Finally, the participants on the whole remarked a more explicit understanding of counterargument and rebuttal in an argument. Ben provided a comment that typified participants' changes in comprehending these argumentative elements. He felt that after the intervention, his understanding of counterargument and rebuttal became more thorough and sophisticated, which helped complement his own argument. He said that:

Extract 55

Before this class, I do not have a clear concept of counterargument and rebuttal. After this class, I think I understand this part in a more comprehensive way. I used to support one side and did not consider from other perspectives to find my own weaknesses. I realize that to persuade others, I ought to play to my strengths. I should help myself in making up my areas of weaknesses to achieve this goal. I think this is the value of counterargument and rebuttal. (Post-transcript No G3-4. Ben)

Wendi believed that counterargument and rebuttal addressed the needs of audience to obtain the information from different perspectives to direct themselves in thinking. She argued that:

Extract 56

I think that readers are inclined to have a counterargument and rebuttal in the essay so they can think about the problem in different aspects given the information provided. (Post-transcript No G1-4. Wendi)

Although the overwhelming majority of participants agreed on counterargument

and rebuttal as one influential factor contributing to the success of an argument, a minority noted that writing a good counterargument and rebuttal was an intellectual challenge to the writer, thus whether to compose this part in an essay relied on the critical thinking abilities of the writer. This view was echoed by Leo who stated that:

Extract 57

For a normal argumentative essay, counterargument and rebuttal is not necessarily provided; however, for a successful one, it is vital if the writer has good logic. Otherwise, it may on the contrary weaken the argument.

(Post-transcript No G1-1. Leo)

As is evident from students' perceptions on counterargument and rebuttal before and after the intervention, students in general agreed the critical function of counterargument and rebuttal in constructing a sound argument though with the intervention, they fathomed out the precise concepts of counterargument and rebuttal and the significance of these parts to an argument. However, they also exposed their lack of confidence in mastering this part.

It is apparent that with the SRSD intervention, students developed a more precisely analytical approach to assess their self-constructed arguments. In other words, the argumentative knowledge instructions brought students a keen awareness of how important the relevance and sufficiency of the supporting reasons are to evaluate the argument and how critical the components of counterargument and rebuttal are to complete and strengthen an argument.

6.2.2.2. Changes in Writing-Related Understandings

Regarding the argumentative essay as a whole, the overwhelming majority of interviewees reported that with the SRSD instruction, the biggest difference they

experienced was that they learnt a clearer essay structure though they still valued argument strength over other aspects like the surface structure and language. Leo discussed the importance of structure from the perspective of readers and believed that 'essay structure helps readers to read writers' mind' (Post-transcript No G3-4. Ben). From the perspective of writers, Alice indicated that the structure enables writers to remind themselves of the idea flow and 'avoid repeating the same idea' (Post-transcript No G3-2. Alice). It seemed that the participants believed that a clear essay structure is like a door to open the world in the writing. In other words, essay structure can guide readers or writers to the content as it helps organize the content and makes it logical.

Speaking of counterargument and rebuttal, most students agreed the necessity of including this part to strengthen the argument, yet they reported lack of consciousness to organize these ideas in the essay structure. For example, Cindy said that she had 'never' thought to introduce the counterargument and rebuttal in her writing before this class and now believed that 'this way of writing can guide readers to easier follow and think about the opposing ideas' (Post-transcript No G1-3. Cindy). However, regarding the inclusion of rebuttal in essay, students expressed their concerns and doubts. Zack questioned whether it was inevitable to include the rebuttal in an argumentative essay as the structural function of rebuttal seemed less essential. He stated that:

Extract 58

I do not think rebuttal is commonly found in argumentative writing. Writing the counterargument is to show readers that I consider the topic from different aspects, but writing rebuttal is not that necessary because its absence would not harm the paper. (Post-transcript No G1-2. Zack)

Tina suggested that rebuttal could be bonded to the other supporting reasons. She

said that:

Extract 59

I think rebuttal as well as the counterargument could be discussed in the previous body paragraphs to support the main argument, but not necessarily separate and present it as an isolated paragraph. (Post-transcript No G2-1. Tina)

Another student, Henry, even expanded the idea to the overall structure. He indicated that the presentation of each component relied on the characteristics of the topic. He particularly doubted the necessity of a rebuttal part and even disapproved of a fixed essay structure. He argued that:

Extract 60

I think when writing, it is not necessary to follow the strict structural rules like writing an Eight-part essay in Ming and Qing dynasty. For example, the rebuttal part could be tentative for some topics and the point-explanation-example-link structure for the supporting details could be more flexible because it is not always possible for writers to find suitable evidence and example to support the point. (Post-transcript No G2-3. Henry)

From the above data, it is known that students in this case generally believed that the surface structure could bring benefits of guidance to readers while for some specific structural components like rebuttal, they expressed a desire for flexibility of organization.

Finally, five informants proposed that language use for argumentative writing should be formal to present 'objectivity'. Wendi felt it 'necessary to use formal language to reduce the subjective words in the essay and try to take a stance of a

third person to express the ideas rather than being too subjective' (Post-transcript No G1-4. Wendi). Daisy echoed this point as she felt that the formal language could help her 'reduce tautological expressions and long sentences in essay' (Post-transcript No G3-1. Daisy). However, Penny indicated that the risk of using formal language is to increase the possibilities of logical defects in the idea flow. She argued that:

Extract 61

Some formal languages like academic words are generally summarized. Therefore, the meaning is not explicitly presented. As a result, the expression of ideas is possibly unclear, leading to logical defects in the essay. (Post-transcript No G2-4. Penny)

With the instruction on language use, the students in this study were inclined to believe that the formal or academic languages are more favorable to clearer clarification of ideas, and further strengthen the argument.

Overall, these views surfaced mainly in relation to students' critical attitudes towards the essay as a whole. They offered an explanation for their favor on the essay structure over other determining factors of an essay, yet they were still critical of the needs for designing a standardized surface structure for the argumentative essay. In the respect of language, students proposed to use the formal languages appropriately and accurately in the essay to improve the persuasiveness.

6.2.2.3. Changes in Deployment of SRL Strategies to Improve Argumentation

Corresponding to Section 6.2.2.1 for the areas related to logical fallacies, this section continues to discuss the changes of students' strategy use to identify

fallacies and prevent using them for improving argument strength after the intervention. First of all, amongst seven who commented the importance of understanding logical fallacies, six in twelve participants mentioned that they were metacognitively aware of the importance of avoiding logical fallacies when arguing. Moreover, they demonstrated confidence and interest in identifying logical fallacies in their arguments. The following extracts echoed this point:

Extract 62

In the past when I wrote, I unconsciously wrote the fallacies in my essays. As the knowledge of logical fallacies have been taught systematically, I think now I am having such awareness to judge if I argue too absolutely or use logical fallacies like strawman and slippery slope while arguing. (Post-transcript No G3-2. Alice)

Extract 63

I think it is interesting to find out logical fallacies in my own argument to see if I make any mistakes in logic that should not appear in a good argument. (Post-transcript No G3-3. Xylon)

However, a few students also felt it difficult to identify the fallacies in their self-constructed arguments, so they were reluctant to discuss the possibility of preventing logical fallacies when making arguments. Zack, for example, expressed his concerns in his interview:

Extract 64

Even though I will be wary of fallacies in my own argument, I still cannot avoid making a few as I already form the habit of thinking. I am not sure if I can find out the fallacies that I wrote by myself. (Post-transcript No G1-2. Zack)

The above interview data reveal that students who were equipped with the writing knowledge developed metacognitive awareness on the significance of fallacy identification and prevention for constructing a better argument, though they expressed their worries over their inadequacy in logic.

Compared with the pretest stage in which only one student from Group 1, the high achieving group, Wendi, mentioned that she used self-talk as another metacognitive strategy to improve her persuasive ability, about half of the participants in the post-intervention interview particularly claimed that they employed self-questioning or self-challenging strategies to test argument strength. Penny introduced that she challenged her own argument by looking for 'logic gaps and insufficient or irrelevant or inappropriate evidence' (Post-transcript No G2-4. Penny) to improve persuasiveness. Tina argued that before she questioned her own argument, she 'repeatedly analyzed each idea in each sentence in mind' (Post-transcript No G2-1. Tina) to ensure that she had clear logic. It seemed that some students realized that there is a metacognitive training process of strengthening the argument, and self-talk is one of the effective ways to identify one's defects in logic or supporting details to the point, then improve the quality of reasoning.

Compared to the pre-intervention interview results, more students emphasized particular interest as one affective factor that enabled them to continue thinking in the process of analyzing the argument. Ben attempted to regulate his interest to evaluate the opposing views against his value. He said that:

Extract 65

If your point is completely against mine, it will interest me a bit and I will urge myself to keep thinking if I agree with you based on your evidence. Sometimes I may be convinced if I understand the point and explanation

thoroughly; sometimes I may not. But it normally makes me think and judge if it is an effective argument. (Post-transcript No G3-4. Ben)

Another student, Tina, claimed that she regulated her interest to simulate herself to expand knowledge on unfamiliar topics. She stated that:

Extract 66

For unfamiliar topics, if I have not read any relevant materials or no relevant common knowledge before I listen to others' argument, I could be influenced easily. If I feel it interesting, I will keep motivating myself to seek for materials to read and think from their perspectives to compare their ideas with mine. (Post-transcript No G2-1. Tina)

It would seem clear that students were deeply conscious that better regulation of the interest generated in the middle of analyzing an argument could more sophisticatedly affect their thinking, judgement, and even behaviors to improve the quality of reasoning.

Last but not least, clustering, or termed mind mapping, gained in growing popularity after the intervention amongst over half of the interviewees as they considered this cognitive strategy was helpful to explicitly present their clear thinking. Ben, for example, believed this approach helped clarifying his own thinking, as he claimed in his interview:

Extract 67

If you have an idea and you want to present that idea, you should know what to do for each step. Therefore, I prefer using mind mapping as a supplementary tool to present not only the content but also the structure, showing myself my logic for further clarification and improvement. (Post-

transcript No G3-4. Ben)

Given this, the approach of clustering contributed more than just organizing ideas but also preparing students for writing or speaking in their real performance in terms of content, structure and language.

As for social behavior strategy, some students reported that they invited their peers to evaluate their argument together. Henry claimed that he and his class partner spent substantial time working on the assignment of evaluating arguments. He said that:

Extract 68

My partner and I spent an entire evening together questioning each other on our respective argument for homework... We reviewed the arguments together and took turns to question each other. We both anticipated possible questions and prepared responsive and relevant answers. (Post-transcript No G2-3. Henry)

However, a few students believed that the approach of questioning each other had little effectiveness on the improvement of argument strength. Zack mentioned that his partner had difficulty finding pertinent questions to challenge his argument. He said that:

Extract 69

When we questioned each other, my partner had confusions on which questions were appropriate to use. When he could not find one, he just asked me a random question in his mind. I felt very confused. My answers mostly became similar as he asked similar questions and he forgot. (Post-transcript No G1-2. Zack)

Although working with peers could bring benefits to the promotion of ideas for the sake of argument strength, it is often likely in practice to lead to an unsatisfactory result because of the disparities of peers' argumentative abilities.

In sum, after the intervention, a majority of students reported that they implemented broader SRL strategies to develop their argumentation skills though they expressed their concerns on the effectiveness of strategy use from different perspectives. It is noteworthy that they demonstrated deeper understanding on strategy use in the time of analyzing argument rather than planning.

6.2.2.4. Changes in Deployment of SRL Strategies to Improve Argumentative Writing

When asked about the changes of strategy use in the pre-writing stage after the intervention, three students reported a focus of strategic planning as one metacognitive SRL strategy. Ben emphasized the importance of time management in the classroom writing after experiencing the pretest writing in class. He said that:

Extract 70

I felt that in the first writing I did not manage the time well so I did not have enough time to write a complete essay that I planned to write. I had to delete a lot, as a result, the quality of my essay was bad. Therefore, for the second writing, before writing, I told myself to manage the time well and prevent from thinking too long. I told myself to stop hesitating and write the ideas I came up with immediately, so the structure of the second essay was way better than the first one and the score was higher. (Post-transcript No G3-4. Ben)

Alice felt that keeping the composure during writing was essential to help her

complete what she planned to write in the posttest essay. She stated that:

Extract 71

I did not do my first essay well because after I wrote the counterargument and rebuttal paragraph, I suddenly forgot what I prepared and became confused and unclear in mind. When it came to the second writing, I thought I had to first finish the structure calmly and compared with the first essay. (Post-transcript No G3-2. Alice)

It was interesting to find that both Ben and Alice believed that the completeness of essay structure influenced the quality of writing, so even if they had no time to finish or polish other features, they would still rather be spending time on completing the structure. It seemed that the focus of SRL strategies these students reported using to improve their argumentative writing skills was markedly on metacognitive strategies after the intervention. They were prompted to solve both psychological and physical problems that they had when experiencing the process of writing.

In the performance stage, four interviewees reported that they paid special attention to the referenced part when they cited ideas from others as their evidence when writing the posttest essay. Saba stated that she cognitively paraphrased the ideas she cited from others. She said that:

Extract 72

When I wrote, I carefully paraphrased others' ideas. I believe that one's perspective and ideas are inevitably influenced by the articles or books they have read or their personal experiences. When presenting an argument, it is unavoidable to use others' viewpoints or words to support our own argument. Therefore, using paraphrasing skills could help avoid any

suspicious of plagiarism. (Post-transcript No G2-2. Saba)

In terms of the citing format, Alice developed her metacognitive awareness on following an English reference style in writing after the intervention. She stated that:

Extract 73

I think citation is useful because in my major classes, my teachers also require citation for assignments. English papers are different from Chinese. After I learnt from this class, I felt self-conscious on developing a better reference list following the English style, like APA. (Post-transcript No G3-2. Alice)

More than ten participants mentioned that they meticulously reviewed the relationship between the point and its supporting reasons again and again during writing. This view was supported by Tina as follows:

Extract 74

After the first writing, I paid more attention to the part of explanation and examples which I seldom wrote in my essays before. In my second essay, I particularly focused on this part which I did not write well in my first essay. (Post-transcript No G2-1. Tina)

In general, students developed metacognitive awareness and performed disciplinary actions towards the content in terms of logic and credibility as they learnt the writing knowledge of reliability and relevance in the intervention.

Finally, one particular SRL strategy that all participants adopted after writing was to read the feedback given by teacher about the pretest essay. Six students

mentioned that they took initiatives to search more relevant examples or evidence based on teacher feedback. What the participant Daisy reported corresponded with this result as follows:

Extract 75

From your feedback to the first essay, I realized that I was very poor in understanding the relationship between the point and evidence. But when I planned the second essay by correcting the first one, I did find a new point and looked for relevant materials to support it. I did a better job.

(Post-transcript No G3-1. Daisy)

Moreover, eleven out of twelve participants agreed with the comments that were given by teacher after critically evaluating teacher feedback, then accordingly revised their posttest essay. Wendi felt that the feedback on the counterargument and rebuttal paragraph was critical, so she revised this part in her posttest essay. She said that:

Extract 76

From the feedback you gave in the first essay, I felt that the counterargument and rebuttal paragraph was poor because I did not use good supporting evidence. I did not rebut that counterargument well. Therefore, I particularly revised this part accordingly in my second draft.

(Post-transcript No G1-4. Wendi)

Cindy reported that she revised the example that was commented irrelevant to the point to improve persuasiveness. She said that:

Extract 77

I changed the example that had little relationship with the topic sentence

in that paragraph because you commented irrelevant to the point. I agreed.

(Post-transcript No G1-3. Cindy)

Additionally, almost all the students reported seeking help from their peers after they received teacher feedback if they were not certain about how to understand feedback or revise the essay, compared with a smaller number of students reported the same results in the pre-intervention interviews. Saba claimed that she discussed with her classmate about the sufficiency of the supporting reasons she wrote to improve her second draft. She said that:

Extract 78

One feedback you gave on my essay was whether the reason could support the point. I thought it was fine, but I was not very sure. Therefore, I asked my classmate if she felt it fine. We discussed in class, and I went back to my dormitory then read it again and again to improve it, hoping to get a better score in my second essay. (Post-transcript No G2-2. Saba)

Alice sought help from her classmates in a major class on the relevance of the supporting examples. She stated that:

Extract 79

In one major course, the teacher required us to write several academic papers as final assessment. Therefore, I had discussions over the supporting evidence and its relevance to the topic with my classmate from that class about this argumentative essay because I thought she knew how to argue. (Post-transcript No G3-2. Alice)

Seen from the changes of adopting post-writing strategies, it can be concluded that it was more likely for students to take alternative viewpoints on their work from

different communities after the intervention as they understood the importance of critical thinking.

Compared with the pre-intervention stage, all students equipped with the writing knowledge as well as SRL strategies in this case were driven to employ certain comprehensive strategies in the pre-writing, in-writing and post-writing stages to accomplish their writing task. It is apparent that students no longer simply separated the strategy use from argumentative writing as they revealed in the post-intervention interviews. Instead, they were inclined to establish a closer connection between the strategies they used and the argumentative writing knowledge.

6.3. Discussion

In answer to research questions for case studies, an investigation of 12 selected cases was conducted to examine how students performed in argument soundness of their essays, and whether their understanding and strategy use evolved over a 16-week intervention. Interview data indicated that students with varied argumentative competence reflected the differences in the pre- and post-intervention stages in four dimensions: (a) argument-related understandings; (b) writing-related understandings; (c) deployment of SRL strategies to improve argumentation; and (d) deployment of SRL strategies to improve argumentative writing.

6.3.1. Changes in Argument-Related Understandings

As noted in Section 6.2.1.1, Chinese university students, in general, have a preconceived idea as they expressed a holistic view on the knowledge of an argument and argumentative writing despite the fact that they possessed different levels of abilities to reason. A possible explanation for this result may be the Chinese instruction of argumentation in the period of senior high as this

competency is tested in such writing genre required in the exams, especially College Entrance Examination. This is probably why, in the interviews, students gave elaborative opinions on the characteristics of and relationships between argument elements which are generally considered conducive to the strength of argument. These opinions could partly explain the quantitative results from this study in answer to the first research question. For example, the majority of students provided a clear and arguable standpoint in the argument, and a number of acceptable and relevant reasons to support their standpoint, between which to some extent demonstrated a logical relationship. However, one unanticipated finding that contradicted the quantitative result was related to counterargument. Interview data indicated that students are metacognitively aware that good quality of reasoning relies on the presentation of both supporting and opposing side, yet hardly any students in this study provided counterargument to enhance the persuasiveness before the intervention. This suggests that there is a gap between students' understanding and application of knowledge. In other words, even if students believe that the involvement of counterargument develops the power of persuasion in an argument, they mostly might still choose to avoid it. A probable reason for this is that "the relationship between beliefs and actions is intrinsically mediated by affordances, one's interpretation of one's own actions, emotions, and self-concepts" (Barcelos & Kalaja, 2011, p. 286). This can be explained by four folds based on the interview data. First, it is cognitively challenging for students to provide a counterargument as it requires higher order thinking processes (Abdollahzadeh et al., 2017; Qin & Karabacak, 2010; Rusfandi, 2015). Next, L2 students might feel risky, unconfident and difficult to include a counterargument section; therefore, they might attempt to simplify the argument structure to compensate for the uncertain English use in writing (Rusfandi, 2015). Lack of confidence might also be a reason for students to exclude a counterargument if they have not received explicit or adequate instruction on such knowledge in L1 or L2 settings. Finally, students might underestimate the strength of the

counterargument element to a compelling argument and consider it “optional or unnecessary for writing argumentatively” (Abdollahzadeh et al., 2017, p. 655). Given the complex nature of the argument-counterargument structure in an argument, students in nature might display the myside bias in an argument if no requirement or encouragement to the opposition even when they are aware of the importance to supply such element to a good argument.

Noting the varied level of argumentative abilities that students acquire can also help to better understand the influential factors that contribute to their contrasting performance. Students with high and intermediate argumentative abilities, compared with those with relatively lower abilities who might have partial, narrow or inappropriate concepts of argument, might be able to perceive the value of argument elements and skills, resulting in their careful selection for effective points of view and sufficient explanations for logical reasoning processes. It seems possible that this may be related to students’ perception that the effectiveness of standpoint and reasoning quality outweigh other factors to the success of argument. Hence, these students might attempt to take heed of the features of standpoint and the concept of logic. Additionally, students’ differences of cognitive ability in argumentation may also influence their sensitivity to the affective contributors that might persuade audience when they hesitate about the outcome. Regarding the emotional connections between writer and reader as a way to help students better attain the argument might prompt students to supply audience-based points and evidence.

It is observable that the SRSD instruction facilitated the development of argumentation in several aspects. Most importantly, students embodied the concept of argumentation. Students’ perceptions of argumentation were developed, including not only the characteristics and relationships of the basic elements mediated by argument structure based on the prior L1 experience, but also the

quality reasoning criteria that assess argumentative performance. This view dovetailed with the quantitative results in this study, as the relevance and acceptability of reasons to support multi-sided arguments were significantly improved in the post-intervention stage. This suggests that explicit instruction that integrated clear criteria for the qualities of a good argument is helpful for students to better attain the goal in a general setting (Jonsson & Svingby, 2007; Nussbaum & Schraw, 2007), and in EFL writing contexts (Turgut & Kayaoğlu, 2015). A probable explanation is that students might be conscious of what is most important when their performance is judged, then corresponding learning objectives could be established (Arter, 2000).

The significant increase of counterargument and rebuttal in posttest essays is also essential to the supply of adequate reasons that are relevant and acceptable to the two-sided argument as indicated in the quantitative data of this study that the number of counterargument and rebuttal did significantly predict argument soundness (see Section 5.2.2.2). This finding is corroborated by the interview data, suggesting that with the effective and sufficient intervention, students extended their knowledge of counterargument and rebuttal from the role of structural assistance to their argumentative functions and relationship. If students are only encouraged to fill in an argumentative form, they probably would not give deep consideration to those views through higher order thinking processes. Therefore, they might provide reasons that are untrue, irrelevant and illogical (Liu & Stapleton, 2020; Stapleton, 2001). Thus, if teachers in an effective intervention encourage students to go through a cognitive process of examining their viewpoints and the relationship between them, the outcome of the final argumentative product could be more satisfactory (Liu & Stapleton, 2020). This view has been verified by the interview findings of this study. However, although it is positive to find that students improved their performance of including such elements after the intervention, from a motivational perspective, it is implausible to draw a conclusion that students in

their future performance will write such part to increase argument strength if they are not required or encouraged to do so. As pointed out in the post-intervention interview data, students still felt it was cognitively demanding to supply such elements even they were aware of the necessity and effectiveness of including them in an argument.

6.3.2. Changes in Writing-Related Understandings

Regarding argumentative writing in general, the students interviewed have a clear notion to value the importance of three conventional evaluation criteria – content, structure and language. They believe that enhancing the quality of content, i.e., argumentation, is overarching in comparison to linguistic or structural features. This is backed by the quantitative results in this study that argument soundness significantly predicted essay quality that was assessed by an integrated rubric of content, structure and language regardless of the intervention. The students interviewed also believed that the primary linguistic feature of argumentative writing should be conciseness. These beliefs are rather surprising because Chinese students in senior high school time receive the training for Chinese argumentative writing that focuses on “the fluency, elegance, and expressiveness of the language use...[and does] not emphasize the power of persuasion and the use of evidence” (Ji, 2011, p. 88). On the other hand, the guidance that Chinese students receive in preparing English argumentative writing for Chinese Entrance Exam leans more on the narrative and descriptive genres, as evidenced by the writing prompts given in the English test of 2020 Chinese Entrance Exam (Ye, 2020). It is noteworthy that under such learning circumstances, students still properly distinguish English argumentative writing features from Chinese ones in general. Therefore, other influential factors that affect students’ writing cognition from other perspectives (e.g., self-regulation) are worth exploring.

The proficiency level to some extent enables students to differentiate L1 and L2

argumentative writing. High-achieving students with relatively higher argumentative abilities in this study were able to perceive the differences between L1 and L2 argumentative essay, but low-achieving students had no such awareness at all. One possible explanation is that students rely on their prior knowledge or experience obtained from secondary school education or other sources. Referring back to the fact in the previous paragraph that Chinese students received insufficient instruction on either Chinese or English argumentative writing, a lack of consciousness on this topic that students with low argumentative abilities showed was understandable. Interestingly, students with high and intermediate argumentative abilities provided similar comparing outcomes on L2 writing pattern (i.e., deductive pattern) yet different ones on L1 structure. Students with high argumentative abilities believed that Chinese writing may not get directly to the point, presenting more in an inductive pattern, resonating with the finding of Ji's work (2011). Thus, it seems that this result is unable to address the question concerning students' perceptions of the relationship between L1 instruction of argumentative writing on L2 writing performance because students even have different beliefs in L1 argumentative writing that might be affected by different writing instructions and reading materials they have accessed.

Equipped with the relevant knowledge from the SRSD instruction, students shaped a more precise idea about the surface structure of an argumentative essay. They believed that it is indispensable to organize ideas in a clear generic argumentative form in order to guide readers though they maintained the argument that content is superior to structure and language in determining the success of an argumentative essay. This result is empirically supported by their post-intervention writing data in which a better organizational structure that ensured the related sections were linked and the ideas progressed in a logical and orderly manner was found. This belief might be influenced from the explicit rubric instruction in which the surface structure as one evaluating criterion was introduced. Students' self-

perceived proficiency is likely to reinforce their tendency to rely more on the surface structure that they perceive 'easier' or more possible to help them achieve better scores in their essays, as supported by Chen et. al (2015) who concluded that students' academic achievement is predicted by their academic self-concept in EFL setting.

The interview data also revealed that the most controversial essay component was the part of rebuttal in terms of its position and even existence. Surprisingly, with the knowledge intervention, students acknowledged the importance of including such part for enhancing the persuasiveness of an argument but questioned its existence in a written form for an academic writing. It seems that they tended to dissociate their understanding of argumentation and argumentative writing. One possible explanation is that their rooted idea of a good argument in an argumentative essay given by their prior experience in L1 instruction which mostly emphasize the importance of counterargument to an argument yet ignoring the opposition of counterargument. A more cogent reason is the difficulty of logically thinking rebuttals to be aligned with counterarguments (Liu & Stapleton, 2020) and of cognitively writing such demanding part in a L2 language that they lack confidence in.

Another surface feature – linguistic accuracy and lexical appropriateness - received the least attention among these three contributory factors to overall writing evaluation. Students, however, generally developed a sense that formal language helps polish argumentative writing to look 'academic' to readers, enhancing the persuasiveness. One student raised a contradicting idea that the academic use of certain language forms (e.g., academic words) might on the contrary weaken the argument because the ambiguity in logic between ideas may be caused. As Wingate (2012) argued, the use of vague language by students makes the fact that argumentation is a key requirement of essay writing obscure. Therefore, it might

lead to an unmindful attitude of students towards the development of argument.

6.3.3. Changes in Deployment of SRL Strategies to Improve Argumentation

Students in this study reported using typical idea planning strategies to prepare for argumentation, among which audience awareness was one overriding concern of all as they believed knowing audience in advance was the prerequisite of successful persuasion, which mirrors those of the previous studies (e.g., Hays et al., 1988) that have confirmed that attending to audience improves the quality of argument. This belief has long been influenced by the Chinese philosophy of Sun Tzu, a famous ancient military strategist, who summarized his military tactics in his book *The Art of War*, saying that “If you know the enemy and know yourself, you need not fear the result of a hundred battles” (Sun, 2008, p. 13). Given this, students might believe that if their audience are better analyzed, goals that attend to these audience can be set to influence their thought or even behaviors, which was empirically supported by the work of Flower and Hayes (1980) and Berkenkotter (1981). This is probably due to the special attention Chinese students devote to the result of essay evaluation, leading to their careful treatment for the needs of audience. Once students consider their argumentative abilities as weak, they might expect other appeals, like emotion, as an effective complement to enhance the persuasiveness. As Ramage et al. (2016) argued, appeals to emotion “engage the imagination and feelings (of an audience), moving the audience to a deeper appreciation of the argument’s significance” (p. 56). Consequently, the argumentative performance that affects the overall essay evaluation could be improved, even if the ability in providing an argument with good quality is weak. Moreover, students with high argumentative abilities, compared with the other two groups with relatively lower argumentative abilities, demonstrated more audience awareness. This result is corroborated by Flower and Hayes (1980) and Sato and Matsushima (2006) who found that skilled writers are more mindful of their

audience than less skilled writers as they spent more time planning the written texts for affecting their audience. Meanwhile, Berkenkotter (1981) also found the similar result as skilled writers used their conceptions of audience to solve specific writing problems and constantly revise their work and Rafoth (1985) found that skilled writers attempted to collect information about audience, hoping to take greater advantage of audience to persuade them. These findings could be the probable explanations to the better argumentation and writing quality students with high argumentative abilities presented, compared with the other two groups.

One viable cognitive strategy for improving argument strength students adopted was to evaluate others' argument for the sake of sharpening their own thinking skills. In other words, students expected to generate more ideas to clarify the argument and its supporting or opposing reasons and understand the logic in between through higher order thinking processes. One possible reason may be that students might believe that learning from external voices through analytical thinking activities helps them think more in breadth and in depth. Students formed the habit of extensive reading that enabled them to develop their argumentative abilities, as empirically supported by Genç (2017) who concluded that the reading habit of learners influences their critical thinking ability as it develops "the ability to question, to recognize different perspectives, and to anticipate many possible conclusions rather than demanding a single correct answer" (p. 63). More precisely, the focus of students' reading in this study is more to critically analyze, interpret and evaluate the written text than merely discovering and memorizing the facts. As Din (2020) argued, critical reading helps assess the argument strength and thus, college students read critically in hope of developing their logical reasoning abilities. Under such circumstances, reading extensively and critically is expected to play a contributing role to students' development of argumentative abilities. As Krashen (2004) has argued, reading positively influences cognitive development of thinkers and reduces the apprehension of writers when mastering the composing process

(p. 36).

Regarding SRL strategies that students with varied argumentative abilities deployed, one obvious difference is that students with lower argumentative abilities in this study doubled their cognitive attention to regular debating practices with external help such as media. It seems that less skilled students were aware of their weaknesses, thus laid a greater emphasis on practicing regularly and seeking assistance to resolve difficulties. However, these students did not show the ability of taking advantage of their argumentative knowledge when completing tasks even they reported an attempt to internalize the knowledge through practices. It is probably due to the fact that students with lower argumentative abilities in this study lacked the ability to integrate knowledge or obtained insufficient knowledge, leading to a limited application, as echoed by other previous studies (e.g., Saddler & Graham, 2007). Students with high argumentative competence might be more knowledgeable than their less skilled peers as they have better abilities or deploy more effective strategies to integrate knowledge and thus overcome challenges and make applications (Saddler & Graham, 2007; Zumbrunn & Bruning, 2013). Moreover, it seems that students with low argumentative abilities were more in need of intrinsic motivation to regulate their learning behaviors towards argumentation. One possible reason might be that their prior learning experience limits their argumentative knowledge and abilities. It is also possible that their low level of self-concept and self-efficacy may affect their confidence of dealing with unfamiliar topics and performing different types of analytical thinking tasks, as argued by Diseth (2011) and Liem et al. (2008) that self-concept and self-efficacy could significantly predict academic performance.

Adding the SRSD instruction in this EFL course to the body of research, the inquiry explores if students' deployment of SRL strategies was altered. First of all, students developed metacognitive awareness of the significance of logic to argument

strength. As a result, they tended to deliberately prevent or identify logical fallacies when performing argumentation. One probable reason is that the writing knowledge instruction seems to enable students to embody the ambiguous concept of 'logic' that might be controlled by an effective evaluation criterion 'fallacy'. Therefore, students might believe that deploying effective cognitive strategy to manipulate this component of logic could help improve the quality of reasoning. In other words, it could be claimed that the intervention turned students to proactive users of writing strategies (Teng & Zhang, 2020). However, although it is possible to enhance the strength of argument through the reduction or elimination of logical fallacies, given the thorny nature of fallacy, identifying fallacies of argumentation in relation to social issues for prevention can be challenging (Stapleton & Wu, 2015). Meanwhile, though the intervention contributed to encourage students' use of SRL strategies, it appeared less effective to enhance students' self-efficacy in the management of complex thinking processes as they expressed concern about the difficulty of this fallacy-identifying behavior. This outcome, in a certain degree, is contrary to that of Teng and Zhang (2020) who found that students' self-efficacy to regulate their writing performance could be increased with the SRL strategies-based writing instruction. One plausible reason might be that the level of students' self-efficacy is not only affected by the intervention but also other factors such as self-concept and the difficulty level of task.

Another increasingly deployed cognitive strategy after the intervention was to critically question themselves about the normative standards of evaluating argument strength. This indicated that students exercised their critical thinking skills as they questioned their "own beliefs and assumptions" (Barnet et al., 2016, p. 49). It might be due to students' beliefs about the benefits of critical questions for the strength of argument, which has been confirmed by the study of Nussbaum and Edwards (2011) that suggested that critical questions would improve the quality of students' argumentation. However, given the complex variability of

appropriate critical questions for different topics and content areas, it would be helpful for students to receive dialectical scaffolding from teacher or peers (Nussbaum & Edwards, 2011) to ensure the effectiveness of this cognitive strategy use on argumentation.

The strategy of clustering in students' interviews was reported as a more common method employed by students to enhance the rhetorical impact of their argument after the intervention. This is probably due to the graphical nature of mind map that demonstrates ideas and their relationships in a visually structured diagram, thus facilitating students' recursive analysis on the argument (Polat & Aydin, 2020). Rico (1983) argued that the visual patterns enable students to brainstorm and innovate ideas relevant to a topic, thus enhancing creativity. As a result, learning becomes more in width and in depth (Mayer & Gallini, 1990) and students' thinking abilities could be improved (Polat & Aydin, 2020; Wu & Wu, 2020).

In addition, interest as one essential motivational factor in learning has been better regulated after the intervention. After the SRSD instruction, students became more strategic in controlling their emotions to mediate their engagement in completing a task. This is probably because students were more aware of the complexity of completing a successful argumentation task; therefore, they might seek for intrinsic motivation to get enjoyment in the face of setbacks in the arguing process. This accords with the earlier observations of Deci and Ryan (2000), who found that individuals are inherently inclined to explore when facing challenges for developing competence. Bai and Wang (2020) found that students with higher level of intrinsic motivation were more likely to expend their efforts to regulate their learning, and McEown et al. (2014) proved that the student's intrinsic motivation significantly predicted their learning engagement and academic achievements. It is believed that if students are able to engage themselves in a difficult task, their learning goals might be effectively attained, thus improving performance.

The intervention also helped develop students' awareness of using peer learning strategies in enhancing their academic performance, as echoed by the findings of Teng and Zhang (2020). The effect of actively employing social behavior strategies has been proved to be positive on students' learning achievement (Hadwin & Oshige, 2011). One plausible reason is that peer interaction and learning help creating a cooperative learning environment which contributes to students' relief from cognitive load and psychological burden (Zimmerman & Schunk, 2011). Notwithstanding, students expressed their concerns about the effectiveness of peer interaction and learning because of the disparities in argumentative competence. Previous studies have found that the mixed-proficiency peer learning could produce positive learning effect on low proficiency students but adverse effect on high proficiency students; therefore, it is more favorable for high proficiency students to work with their fellows in order to optimize the learning outcome (Kowal & Swain, 1994; Leeser, 2004).

6.3.4. Changes in Deployment of SRL Strategies to Improve Argumentative Writing

There are three SRL phases – forethought, performance and self-reflection – for task completion, which corresponds with the planning, composing and revising stages in the writing process. In the forethought stage, students expend their efforts to analyze a task for its difficulty, complexity, and conditions (Robinson, 2005). Therefore, students devise elaborated plans to improve topic knowledge and generate ideas to construct written text. As reported by students in the present study, they demonstrated metacognitive awareness of planning their writing through analyzing the writing prompt. A writing prompt with the typical rhetorical function that requires students to take a stance on an arguable issue and support it is prone to elicit more diverse critical thinking skills (Liu & Stapleton, 2018). Thus, analyzing the writing prompt that involves such thinking processes helps cultivating

students' argumentative writing abilities (Liu & Stapleton, 2018). Students also believed that searching topic-related materials as an effective planning-for-writing strategy contributed to the success of writing. One possible explanation is that students were aware of their inadequacies in topic knowledge that might lead to a failure of argumentation mostly embodied in written discourse. Another possible reason is that students' lack of confidence in unfamiliar topics may drive them to seek for external help in order to improve their performance. Moreover, in this writing stage, students favored outlining as a cognitive pre-writing strategy to achieve a systematic organization of ideas. This is due to the attractive benefits of using outlining as a pre-writing strategy to students' writing performance in their prior learning experience, as well as their beliefs in the effectiveness of outlining. L2 learners believe that outlining as "an invaluable piece of scaffolding, helping them to see how ideas become points that are connected in different ways, ..., helping them to organize their text effectively" (Hyland, 2019, p. 259). In Kellogg's study (1990), outlining was found effective on writing quality in terms of writing style and content, and it might become more effective as tasks became more cognitively demanding. Moreover, although the effectiveness of outlining on the writing quality remains controversial as it may vary according to the writing genre and tasks (Slotte & Lonka, 1998), the writers' dispositional choices or beliefs (Baaijen et al., 2014) and writing abilities (Galbraith et al., 2005), it helps achieve a better fluency of drafting (Kellogg, 1990).

Except for the planning strategies adopted in the pre-writing stage, students also reported a self-revision strategy for self-reflection in classroom writing. In the present study, students with different argumentative competences reported evaluating their writing differently in terms of linguistic, organizational and meaning levels of knowledge. More proficient students, compared with the ones with lower proficiency in argumentative discourse, presented a tendency to revise content over language, which was corroborated by the previous studies (Flower et

al., 1986; Kehagia & Cox, 1997; McCutchen et al., 1997) that demonstrated that competent writers focused more on revising higher-level errors in their written texts, namely, structure and argument, whereas novice writers were apt to revise surface-level errors. More precisely, as for undergraduate students, Campbell et al. (1998) who used an interview method found that undergraduate students reported revising the mechanics of an essay rather than its structure and content. This may imply a cognitive incapability of students in detecting higher-level errors for text-reflection, owing to the insufficient metacognitive knowledge and skills students possessed to effectively revise these aspects of the essay (Adams et al., 2010; Hayes, 2004). This result has partly been confirmed by the qualitative data from the present study in which undergraduate students with lower argumentative competence reported revising language over others. Moreover, Silva (1993) summarized that L2 writers focus revisions at the levels of words and sentences. This differs from the findings presented here that students with high argumentative competence reported focusing revisions on discourse rather than word or sentence level.

After receiving teacher feedback, a majority of interviewed students reported their self-reflection strategy of evaluating the given feedback. This is probably because the increased awareness of Chinese college students about the significance of critical thinking in learning, owing to the Chinese educational reform that has included the cultivation of critical thinking ability as an essential goal for all majors in the tertiary education (Chinese Ministry of Education [MOE], 2019). This result is contrary to that of Kurihara (2016) who found that students accepted all teacher feedback without questioning the validity. However, the present study found that writers with low proficiency tended to behave in a similar way when treating teacher feedback, while higher proficient writers adopted more independent metacognitive skills. The thorough evaluation that deepens students' understanding of written texts might result in competent writers' better internalization of teacher feedback

and writing knowledge. In addition to evaluating teacher feedback, students also reported they used teacher feedback for different purposes of revision. This result is in line with those of Hyland (1998) who found that students attempt to use usable feedback they are given. Further, the revisions based on the given feedback seem to result in text improvement. One possible reason is that after the careful evaluation of teacher feedback, students might be better motivated to use the feedback that they agree and accept to revise or edit their essays, thus improving the writing quality. Moreover, competent students in the present study demonstrated higher level of learner autonomy in revising compared with the other two groups of students with relatively lower proficiency. This might be due to higher level of independence learning and confidence (Wenden, 1991). Another probable explanation is that students with high proficiency might possess better metacognitive abilities, enabling them to reflect upon their learning process and employ learning strategies to complete the task (Cotterall, 2009).

Regarding social behavior strategies, students reported seeking help from their peers or teacher when they felt in need. This finding is consistent with that of Newman (2006) who defined this behavior as adaptive help seeking which may be triggered when students believe there is a need for seeking help, and they know what type of help to seek and whom to ask. Help-seeking is a strategy of self-regulation and the majority in the present study demonstrated a certain level of SRL abilities regardless of their competence, probably owing to their prior learning experiences. The differences between students with high and low competence were their beliefs in peers and teacher. Students with low competence seemed to rely more on teachers rather than peers as they appealed to authority, namely, their teachers. One probable explanation to L2 students' preference for teacher feedback might be their limited linguistic abilities (Zhang, 1995). However, more proficient students tended to discuss with their peers for a clearer purpose of improving their performance. This is probably due to capable students' recognition of peer response

and their better SRL abilities.

With the intervention, students reported that they became active in employing SRL strategies in the classroom composing process. In the pre-writing stage, students were prone to adopt strategic planning strategy for a variety of writing purposes, including managing time, controlling emotion and mastering essay writing. Moreover, students reported that when writing, they also demonstrated better metacognitive abilities to monitor their writing in terms of different aspects, such as essay structure and content. These results are consistent with that of Teng and Zhang (2020) who found that students with the SRSD intervention tended to deploy more metacognitive strategies to regulate and monitor their writing processes. This is probably because the positive effects of such strategies-based instruction might "have raised students' awareness, enhanced their understanding, and encouraged their use of these strategies" (Teng & Zhang, 2020, p. 11). Regarding the effects of the SRSD instruction on the SRL strategies deployment after writing, students did not report any significant change in deploying SRL strategies to cope with teacher feedback for revising, which echoed the research finding of Teng and Zhang (2020), despite the fact that their focus on revising was embodied. One possible reason I think may be that teacher in the intervention emphasized writing knowledge, which left deeper impression to students because of its difficulty level compared with writing strategies. Another significant difference was found in students' reported use of peer learning strategy after the intervention, with an increased number of peer consultations from almost all students interviewed. Moreover, they tended to orient a clearer goal to improve their writing performance that focused more on essay content, namely, argumentation in this study. One possible reason is that the intervention may contribute to developing students' metacognitive awareness of how peer learning strategies can help them improve their academic performance, particularly students with low competence in this study.

Chapter Seven: Overall Discussion and Conclusion

This final chapter first presents general conclusions that serve research purposes followed by a summary of the key findings of the current study. Then theoretical and pedagogical implications for the field of knowledge are suggested. Lastly, limitations of this research and recommendations for further studies are discussed.

7.1 Summary of Key Findings

This exploratory case study aimed to examine and report L2 writers' academic performance from the perspectives of argumentation and SRL abilities for argumentative writing. The first research question was to discover the differences of written texts in terms of argument soundness and overall performance before and after a SRSD instruction, and the probable factors that determine argument soundness and writing performance. The quantitative findings showed that L2 writers' argument soundness and writing performance both showed a significantly increasing trend in strength with the help of the SRSD instruction. Moreover, the results indicated that a good argument was shaped by multidimensional forces, eventually leading to a better quality of argumentative writing.

Semi-structured interviews were then conducted to explore the differences of students' perceptions on argumentation in argumentative writing before and after the intervention, using qualitative method to triangulate with the quantitative data and lend some support to extricate the complexity of argumentation and argumentative writing development. More precisely, this part of research attempted to explore how a group of Chinese university students of different argumentative abilities differed in understanding argumentation and argumentative writing and deploying SRL strategies for constructing an argument and argumentative writing, and how they changed in these dimensions after the instruction. The interview data from the pre-intervention stage revealed that Chinese students of different

argumentative abilities showed different understandings in argumentation and argumentative writing and reported using different types of SRL strategies for developing an argument or writing an essay. After the instruction, they reported orchestrating a richer repertoire of argumentative knowledge and SRL strategies to enhance their argumentation and writing performance.

7.2. Implications

7.2.1. Theoretical Implications

Several theoretical implications arise from this exploratory case study. First, this study lends credence to a multidimensional measurement of argument strength that includes the degree of *acceptability* and *relevance* of all invoked reasons as a critical measure, and *reasoning types* and *argument elements* as two supporting measures. The significant and successful interplay of these measuring variables lends empirical assistance to a more comprehensive framework to measure the quality of argument in EFL settings. The quantitative results reveal students' ability to regulate these dimensions to perform argumentation in L2 argumentative writing. The significant predictive correlations of *argument soundness*, *reasoning types* and *argument elements* on writing performance, theoretically, supports the claim that the content of argumentation that goes beyond the simple argumentative structural framework is central to successful argumentative writing (Stapleton & Wu, 2015).

This empirical research that successfully applies the adapted SRSD instructional model also supports a critical theory in relation to argumentation that the generation of opposing views or counterarguments is of crucial importance to the persuasiveness of an argument (Ferretti et al., 2000; Kuhn, 1991; O'Keefe, 1999; Wolfe et al., 2009), and the integration of argument-counterargument that reflects students' critical thinking abilities logically strengthens written arguments (Nussbaum & Schraw, 2007; Voss, 2001).

Third, it is also worth noting that students' limited use of L1 reasons that reflects their culturally mediated reasoning skills regardless of the intervention supports an increasingly strong argument that for all humankind, "while there may be different ways to argue a point, the ability to reason and think critically is universal" (Stapleton, 2017, p. 83). In this study, the Chinese cultural background does not seem to make a significant difference in students' selection of reasons for argumentation.

The qualitative findings reveal that students, particularly the ones with higher proficiency, tended to appeal to emotion that reflects in their emphasis on attaining to audience needs for enhancing persuasiveness. Such tendency reflects a holistic perspective that a successful argument is determined by the conjunction and co-function of logic and affect (Kahneman, 2011). Motivational beliefs and self-efficacy as two contributors to SRL writing in L2 contexts has been examined in previous studies (Teng & Zhang, 2018, 2020); however, this study goes a step further to dig deep in the content of argumentative writing, seeking the effects of these two factors on students' performance in SRL of argumentation and argumentative writing.

Students' reported use of SRL strategies to learn from external materials or people for argumentation also highlights the critical role of observational learning with the prominent features of imitation and modeling through a continuous interplay between behaviors, personal factors (e.g., cognition) and learning environment from a sociocognitive perspective (Bandura, 2006). The integrated SRSD instructional procedures also reveal a similar learning pattern, which extends further for a SRL purpose that is elaborated as a process that is "moving from observation, through emulation of others usually involving guided practice, to self-control, and finally to self-regulation" (Winne & Hadwin, 2010, p. 506).

The SRSD model in this study also strengthens the integration of social and cultural factors into the development of argumentation in argumentative writing performance. Teacher scaffolding and peer mediation that features in the SRSD model applied in a classroom environment play an essential role in developing students' capacity of language, cognition and self-regulation. As a result, students reported an increased SRL strategy use of seeking help from teachers and peers after the intervention.

It should also be noted that the qualitative findings reveal that the learning process of students towards argumentation is recursive as they might repeatedly monitor, instruct, evaluate, correct and reinforce their own argumentation until they are content with the result. This research provides a lens to explore SRL process for argumentative development as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000).

Overall, although SRL theory has been substantially introduced to L2 writing research, the contribution of SRL to the area focuses on the overall writing performance rather than the content or quality of the piece (Nguyen & Gu, 2013; Teng & Zhang, 2020). This project, as a whole, contributes to advancing the field of L2 writing research by introducing SRL theory from educational psychology to the field of argumentation. This empirical study examines how the behavior of EFL learners and their regulation of cognition and affect interact and influence their academic attainment, in this study, argumentation in L2 argumentative writing performance.

7.2.2. Pedagogical Implications

Given the robust research evidence, some tentative pedagogical implications for

EFL teaching on argumentation and SRL strategies are worth pondering for a practical purpose. First of all, regarding argumentation, the findings suggest that although students were aware of the necessity to provide counterargument and rebuttal to complete an argumentative task, they failed to present these argument elements before the intervention. As such, teachers can enhance students' awareness of the elements of counterargument and rebuttal contributing to an effective argumentative essay by introducing the argumentative classical model or emphasizing these mostly neglected elements. In the classroom scaffolding activities, teachers can design tasks prompting students' use of these elements, as evidenced by Qin and Karabacak (2010). Collaborative learning between peers encouraged by teachers can also be organized in the classroom learning. Teachers' continuous scaffolding (e.g., using think-aloud to model SRL and argumentation strategies) and peers' modelling mediation might help sustain the effect of learning. Moreover, the results of this study implied that confidence building as well as practice is needed for achieving such goal.

Moreover, after the intervention, though the quantitative results indicated that there was a significant increase in the provision of counterargument and rebuttal, students reported in their interviews that they felt less self-efficacious to offer such intellectually challenging elements. Therefore, teachers can help students nurture their self-efficacy and develop their positive self-concept for accomplishing complex tasks of argumentation. Caring for students' psychological and affective states, teachers should recognize students' efforts paid to their learning and encourage or praise them when they make any progress, making them feel interested in learning and capable of achieving goals. In terms of academic development, teachers can design pre-writing activities such as brainstorming, debating and small talk for students to practice arguable topics that are categorized from easy to hard step by step through written or verbal tasks. Teachers can afterwards together with students critique a sample argumentative essay written by students or others.

Meanwhile, in classroom environment, teachers or peers can offer immediate and constructive feedback on students' performance. By doing so, students might become cognitively willing to include counterargument and rebuttal to achieve more effective argumentation. Regarding EFL students' this myside bias, Liu and Stapleton (2020) also argued if students received repeated instruction at the primary stage that focuses on the development of "a real open-mindedness" (p. 10), it might reduce a biased mindset that is likely to influence students for life. Holistically, teachers need to encourage students to provide their arguments and counterarguments aligned with rebuttals, then examine these viewpoints for persuasiveness enhancement.

Teachers could use the measuring criteria for argument strength developed in this study as a diagnostic tool to evaluate the strengths and weaknesses of students' argument in classroom activities. The criteria could also help develop an analytical scoring rubric for L2 argumentative writing as an assessment tool for teacher or students. Teachers can use the rubric to examine students' essays and design activities that are tailored for each individual to improve argumentation, while students can use it as a self-assessment tool to appraise the degree of, and foster their awareness of, argument strength from a holistic perspective. It is noteworthy that while the rubric can be used as an evaluative tool, teachers might have to explicitly articulate the criteria to students in the pre-writing stage to ensure that they understand what is expected from them.

It is also worth mentioning that the successful implementation of the adapted SRSD instruction in this study shed light on the feasibility and effectiveness of incorporating explicit SRL strategies instruction into the typical EFL course syllabuses or pedagogies at the tertiary level, as the design of this SRSD model is modified in the consideration of L2 writing contexts. This practical SRSD instructional model might be effective for potential replication on future studies in

a similar cultural context. Findings that compare students' performance with this intervention could extend the understanding of researchers and practitioners on SRL theory and the utility of the SRSD approach to appraise EFL students' academic attainment and self-regulation development. The role teachers play in this process are facilitators and collaborators as teachers can raise critical questions to challenge students' critical thinking skills and mediate students' use of SRL strategies in the learning-to-write process. Teachers can also scaffold argumentative writing tasks that gradually increase in complexity, meanwhile stimulate students' self-regulation through the encouragement of reflective writing, having students to reflect on their writing process and identify areas for improvement based on self-evaluation, peer learning and teacher feedback. On the other hand, given the cognitively demanding nature of this instructional model, teacher training in SRL theory and argumentation should be required at the preliminary stage for successfully implementing the model in the classroom, and thereby a virtuous cycle of the instruction can be guaranteed to sustain positive effects.

The quantitative results of Kruskal-Wallis test in this study that suggested that there is a significant change in students' competence before and after the intervention. Stated precisely, low proficient students presented an important step forward while high proficient students showed a relatively small improvement in argument strength, resulting in an unclear distinction between three groups of students who demonstrated significant differences before the intervention. In other words, low proficient students might be mediated or motivated in the learning through the adapted SRSD instruction that provides pedagogical activities for different purposes. Therefore, teachers might be suggested to improve the classroom instruction by offering tailored activities for students of different proficiency levels with regard to their argumentative competence or SRL strategy use in their English argumentative writing. More precisely, low proficient or average students seem to be more in need of intrinsic motivation for accomplishing difficult

tasks, and thereby teachers can design teaching materials and methods that are interesting yet less challenging to stimulate their learning. For high proficient students, teachers can provide more challenging materials or activities as these students are often with high self-efficacy, but low interest. Unless the tasks are difficult enough, it might be difficult to boost high proficient students' confidence or interest. When the instruction is individualized, students can be encouraged to regulate their own learning process recursively from planning before learning, monitoring during learning to reflecting after learning, thus marginalizing then even removing teachers' responsibilities and mediation in this process to cultivate self-regulated learners.

In summary, this research suggests the likely value of teaching argumentation and SRL strategies explicitly to students (Wingate, 2012; Bai, 2015). The integration of such knowledge into a regular EFL course may equip teachers with enhanced confidence in teaching such intricate writing tasks through deploying multifaceted teaching strategies for students of different proficiency levels to meet the teaching goals effectively.

7.3. Limitations and Recommendations

The present study is considered limited in four dimensions. Firstly, the implication for generalizations of this research results is questioned because the research examines the findings from a limited scope - one Chinese university. In addition, the representativeness of the sample was limited to 46 cases of quantitative research and later 12 cases of qualitative research. Further studies should take a wider research scale, for example, larger samples from the other age groups or different cultures, into account for the purpose of more valid generalizations.

In regard to the assessment of arguments, it is only based on a classroom writing test with a topic implemented twice. Under such circumstances, it may not reflect

students' real performance. Further studies are recommended to include writing tasks on different topics or in off-class environment for evaluating students' performance from different sources.

The third limitation I have concerned the interview. This process requires participants with a high level of metacognition to accurately judge their use of SRL strategies while those with a relatively modest level of self-awareness might have inflated perceptions of their own competence in using such strategies (Ehrlinger & Dunning, 2003; Kruger & Dunning, 1999). Therefore, multi-methods of qualitative research for data collection such as think-aloud protocol, classroom observation, reflective notes and stimulated recall after pre- and post-intervention tasks should be considered for the purpose of triangulating qualitative data and to improve validity and reliability of the research.

In relation to the SRSD intervention, future studies are recommended to include a control group to further validate the success of this instructional model using different research methods, and a delay writing test to examine the sustainable effect of the intervention is also a necessity. The short time span of a four-month treatment in this study is another concern as it is challenging for researcher to document a systematic performance change in students' higher levels of proficiency in argumentation and strategy use in such a short period. Therefore, longitudinal studies that examine the length of study on the development of argumentation and SRL strategy use are recommended for future research to provide richer evidence to supplement this study.

In general, researcher being teacher is the biggest limitation of this study. Even as the researcher, I managed to control potential variables that might cause biases or conflicts of interest in researching my own students (see Section 4.5), I still have to acknowledge that the challenges of this insider research cannot be completely

overcome. The teacher-researcher wields the authority to grade, assess, and counsel students academically, while also possessing the power to oversee research projects, regulate resource access, and make decisions that may affect students' academic outcomes. The power imbalance between researcher and students might lead to greater influence of researcher over students' behavior and decisions in the study. Therefore, seeking effective strategies to mitigate and even overcome the challenges should be always the focus of the insider research to promote objectivity, ethical conduct and scientific rigor.

These limitations, conversely, can be transformed as useful insights for future research directions regarding the relationship between SRL and language learning, and applied to exploring the argumentative and L2 writing techniques and strategies of Chinese college EFL students.

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Appendix B. Protocols for Students' Pre- and Post-intervention Interviews

Questions for Students' Pre-intervention Interview

Questions about General Writing Strategies:

1. Please describe your English writing habit in the pre-writing, in-writing and post-writing stages.
2. When writing in classrooms, how would you do to manage your writing?
3. When finished writing in classrooms, would you read your essay from the beginning to the end again if time permits? If so, would you focus on content, language or structure?
4. When you get the teacher feedback on your writing, would you revise accordingly? What would you revise, content, language or structure?
5. Would you discuss with your peers, teacher or others about teacher feedback? What is the focus of your discussion?

Questions about Argumentative Writing:

1. What elements should be included in a good argumentative writing?
2. Rank the level of significance for content, language and structure for an argumentative writing and explain.
3. When you finish writing an argumentative essay, what would you do to improve the essay quality?
4. Are there any similarities and differences between Chinese and English argumentative writing? If so, what are they?
5. Do you think your prior knowledge of argumentative writing would affect your learning of English argumentative writing? If so, is the impact positive or negative?

Questions about Argumentation:

1. What elements should be included in an argument?
2. What is the purpose of an argument?
3. What kinds of argument are successful and unsuccessful? Give examples.
4. What are the influential factors that determine a good argument?
5. Read the following texts about *year-round school*. Analyze and explain which text provides better argumentation.

Excerpt 1

Year-round schools can improve on students' academic skills. Drawing from evidence, during summer break, most students neglect to steadily remind themselves, as in school, of things they learned. Even though some may say summer break is a "break from education" and give students a chance to relax, education should never be on hold, especially since it controls their futures. Also, year-round school calendars provide sectional frequent breaks throughout the year giving short breaks for the students. Year-round school calendars are just like summer break, instead of missing long periods of time they allow small breaks to reinforce learning.

Excerpt 2

Having a year-round school calendar doesn't provide any benefits. However, it's not the only solution to students losing memory of past lessons. Adding school days will only make a child's life more boring. However, homeschooling can provide learning for student's while they enjoy the lost weather. So year-round school calendars won't help anyone really since there are other options.

Questions for Students' Post-intervention Interview

Question about Writing Strategies/SRL Strategies:

1. Are there any changes of your English writing habit in the pre-writing, in-writing and post-writing stages after this course instruction? If so, what are they?
2. Do you have a better understanding about writing strategies/SRL strategies and how to use these strategies in the writing process after this course instruction?
3. When writing in classrooms, are there any changes of the ways that you manage your writing after this course instruction?
4. When finished writing in classrooms, are there any changes of your reflecting or revising behavior on the essay after this course instruction?
5. When you get the teacher feedback on your writing, are there any changes of what you revise in the essay after this course instruction?
6. Are there any changes of seeking help from others after receiving teacher feedback after this course instruction?

Question about Course Instruction:

1. Do you think this course is effective in teaching argumentative writing and strategy use? Why or why not?
2. Do you have any comments or advice on improving this course?

Question about Argumentative Writing:

1. Is there any change regarding your understanding of what elements should be included in a good argumentative writing after this course instruction?
2. Rank again the level of significance for content, language and structure for an argumentative writing and explain.
3. When you finish writing an argumentative essay, are there any changes of what you would do, including argumentative knowledge and strategy use, to improve the essay quality after this course instruction?

Question about Argumentation:

1. Is there any change regarding your understanding of what makes a good or bad argument after this course instruction?
2. Do you think you are weak in argumentation? Why or why not?
3. What do you think you should do to improve your arguments?
4. Read again the two texts about *year-round school*. Analyze and explain which text provides better argumentation based on the knowledge instructed in the course.

Note: The provision of detailed questions in the interviews are the most appropriate approach for both interviewer and interviewees who are L2 learners to remember and comprehend.

Appendix C. Participant Information Sheet and Participant Consent Form

Appendix C1: Participant Information Sheet



Project Title: Empowering Chinese University EFL Writers with Persuasiveness and Self-Regulation Through a SRSD-Based Writing Instruction

Student Researcher: Xiaoli Wang

Profile of Student Researcher:

I am an EdD candidate at the School of Education and English, Faculty of Humanities and Social Sciences, University of Nottingham Ningbo China. I am conducting research on Chinese college students in an English course with a focus on argumentative writing.

Aims of the Project:

You are cordially invited to join my EdD research project that aims to investigate EFL students' argumentative competence and understanding of argumentative knowledge and SRL strategies before and after an adapted Self-Regulated Strategy Development (SRSD) instruction.

Requirements of Participants:

All participants will be taught a normal ELC4 course that lasts from 09/2018 to 1/2019. The tailored tasks in the course for the researcher include:

- pre-intervention and post-intervention writing tests (one class session - 50 minutes for each)
- writing instruction that follows the SRSD model to explicitly instruction argumentative knowledge and SRL strategies
- pre-intervention and post-intervention semi-interviews (30-45 minutes for each participant)

If you do not take part in the research tasks, it is assured that you will not be disadvantaged by this. The results of the research tasks are only for research purposes and are not related to your course or university performance.

Rights of Participants:

Participation in the research is completely voluntary, that participants are at liberty to withdraw at any time without prejudice or negative consequences, that non-participation will not affect an individual's rights.

Confidentiality and Security of Information:

Any information provided will be confidential. Your identity will not be disclosed in any use of the information you have supplied during the project. However, given the size and scope of the research, there is still a risk that participants will be able to be identified, even though the data will be kept confidential.

Ethical Approval:

The research project has been reviewed according to the ethical review processes in place in the University of Nottingham Ningbo. These processes are governed by the University's Code of Research Conduct and Research Ethics. Should you have any question now or in the future, please contact me or my supervisors. Should you have concerns related to the conduct of the research ethics, please contact my supervisors or the University's Ethics Committee.

Contact details:

Student Researcher: <Xiaoli Wang and Xiaoli.WANG@nottingham.edu.cn>

Main Supervisor: <Geoff Hall and Geoff.Hall@nottingham.edu.cn>

Second Supervisor: <Jane Evison and Jane.Evison@nottingham.ac.uk>

University Research Ethics Committee Coordinator, Ms Joanna Huang

<Joanna.Huang@nottingham.edu.cn>

Thank you for taking time to read this information sheet. If any query, please feel free to contact me or my supervisors.

Yours sincerely,

Xiaoli Wang

Appendix C2: Participant Consent Form



Project Title: Empowering Chinese University EFL Writers with Persuasiveness and Self-Regulation Through a SRSD-Based Writing Instruction

Researcher's name: Xiaoli Wang

Supervisor's name: Geoff Hall, Jane Evison

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
- I understand that the interview/data collection will be recorded.
- I understand that data will be stored in accordance with data protection laws.
- I understand that I may contact the researcher or supervisor if I require more information about the research, and that I may contact the Research Ethics Sub-Committee of the University of Nottingham, Ningbo if I wish to make a complaint related to my involvement in the research.

Signed (participant)

Print name **Date**

Contact details:

Student Researcher: <Xiaoli Wang and Xiaoli.WANG@nottingham.edu.cn>

Main Supervisor: <Geoff Hall and Geoff.Hall@nottingham.edu.cn>

Second Supervisor: <Jane Evison and Jane.Evison@nottingham.ac.uk>

University Research Ethics Committee Coordinator, Ms Joanna Huang

<Joanna.Huang@nottingham.edu.cn>