The implementation of dialogue-based pedagogy to improve written argumentation amongst secondary school students in Malaysia

Submitted by Aireen Aina binti Bahari, to the University of Exeter as a thesis for the degree of Doctor of Education in TESOL in June 2018.

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Abstract

The purpose of this study is to find solutions on how to improve secondary school students' persuasive argumentative English essay writing. The participants of this study are groups of ESL students aged 13 and 17 who live and study in a sub-urban area in Malaysia. All students and teachers converse amongst themselves using the Malay language on a daily basis while English language is merely used during classroom interaction time. Not only do they have very little opportunity to communicate using English language in their daily lives and for academic purposes, they also have limited opportunity to learn how to argue persuasively in their English classroom. Thus, they have difficulties in writing two-sided argumentative essays in English. The teaching-to-the-test culture has taken its toll on students' writing performance when writing argumentative essays. In order to help students to score well in examination, teachers often overlook the need to teach critical thinking skills for the English subject. They focus solely on writing narrative essays as these essays require less critical thinking skill from the students. The Design-Based Research is employed to solve this problem of writing persuasive argumentative essays. Based on the pre-intervention essays written by the participants, it is believed that their difficulties are because of two major factors; insufficient English language skills and no exposure to persuasive argumentation skills. The initial design framework asserts that students should improve their persuasive argumentative essay writing if they are initially exposed to face-to-face group argumentation. However, the findings from the exploratory study revealed that face-to-face group argumentation is unmanageable in the context studied. Hence, an online learning intervention was considered to support secondary school students to improve their written argument. It was developed underpinned by design principles based on Exploratory Talk to achieve persuasive argumentation. The prototype online intervention was tested and developed through a series of iterations. Findings from Iteration 1 show that only a small number of students manage to write two-sided essays because most of them have an extreme attitude when writing about an issue and display a lack of positive transfer from group to individual argumentation. Prior to Iteration 2, the prototype intervention was adapted to tackle the extreme attitude and negative transfer issues by highlighting five elements: face-to-face classroom practice,

focus more on three main ground rules, argument game, role of teachers during group argumentation and the use of argument map during the post-intervention essay writing. The findings demonstrate that all students in the second iteration wrote argumentative essays which are more persuasive. The final design framework developed in this study suggests a design framework that could be used by future researchers and ESL teachers at secondary school level who are interested in improving students' persuasive argumentative essays.

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Glossary

(a) Cumulative Talk

This type of talk occurs when students only add ideas uncritically to what was shared earlier without discussion. The discussion is mutual where students only make shallow amendment on other's contribution. They merely agree when receiving ideas or opinions of others without putting any effort to provide opposing ideas or challenge the views in order to maintain positive relationship amongst arguers. Hence, the act of critical thinking is invisible during the group dialogue.

(b) Disputational Talk

Disputational talk is characterized as hostile attacking, fruitless disagreement, unsupported, oppositional and challenging responses. Students merely disagree when others provide their ideas and opinions. They do not evaluate the idea but straightly go against the ideas simply because they do not like the individuals who provide the ideas. Besides, they also do not provide any relevant reasons to counter the ideas.

(c) Exploratory Talk

In Exploratory Talk, students are actively engaged with each other's ideas; they examine the topic from all sides. Students propose alternative views, use critical thinking skills and make their reasoning visible. Students purely comment on the ideas, not responding based on their hatred or liking on the individuals who provide the points. When Exploratory Talk occurs, students actively share ideas and ask questions regardless of their English language skill as they feel valued when others give attention to what they share.

(d) My-side bias

My-side bias occurs when students only think through the side of issue they preferred. This is similar with the concept of self-centering where the only thing that matters in their written essay is what they merely like or prefer. When they agree with the issue, they show the tendency to merely focus on the reasons why the agree and vice versa. Opposing ideas do not exist as the reasoning is only one-sided.

(e) One-sided argumentative essay

A type of essay that does not acknowledge and disprove reader's potential opposing ideas. This type of essay is merely straightforward as the writer only provide their stand whether agree or disagree, followed by a few reasons and examples to support their stand. It adheres to the Hamburger approach where the introduction and the conclusion being the two pieces of bread and the reasons as the meat of the burger. Writers usually do not include any opposing idea or counterargument in their essay. This type of essay does not portray writers' critical thinking skill and ability to argue persuasively.

(f) Two-sided argumentative essay

Two-sided argumentative essay is an essay that recognizes and refutes reader's potential opposing ideas. As opposed to the Hamburger approach, two-sided argumentative essay is not linear as it involves reasons, counterarguments and rebuttals to support their agreement or disagreement. This type of essay portrays writers' critical thinking skill and their skill to argue persuasively.

Acknowledgments

Chapter 1- Introduction

1.1   General introduction

Academicians who perceive that teaching and learning activities should be centred on socio-cultural theory, concede that dialogue is the essence of education where students learn from each other collaboratively (Alexander, 2000; Lefstein, 2010; Hennessy et al., 2016; Wells, 2009). This is a genuine concept of learning most teachers (especially in Malaysia) owe to their students. Even though teachers are informed of Bloom's Taxonomy and aware of the importance of inculcating higher order thinking skills (HOTS) in school, it is often devalued in exam-centric education system. This is due to the popular belief in primary and secondary schools in Malaysia that education is nothing more than purely passing examinations which usually curbs students' higher order thinking skills and other qualities crucial for them to succeed beyond their school life. As a former teacher teaching in a school in Malaysia, I have had some years of experience teaching students to pass examinations and it was a real struggle for me as it was for the students. Students sit still at their own places and almost no interaction occurs amongst the students because drills and rote learning are the main activities in the classroom. This kind of learning reflects the 'student-as-sponge' model (Waldstein & Reiher, 2001, p.7) where education is all about the mastery of the science of memory. Memorisation of grammar, vocabulary and spelling is perceived as the only way that will guarantee their success in examinations especially at primary and secondary school levels. Agreeing with Marttunen & Laurinen (2007) that devoting learning merely for examination is a habit that should be expelled, I was fascinated to investigate how a group of secondary school students from a sub-urban school in Malaysia participated in lessons that integrate HOTS as they usually do not have the opportunity to acquire that skill.

I am aware that I cannot change the whole education system in Malaysia, but I am hoping that the results of this study could help me crystallise my view about more effective teaching and learning as far as writing instruction is concerned. I am interested in dialogic approach, for example the 'Thinking Together'

programme where it aims to promote higher order thinking skills amongst students (Dawes, Mercer & Wegerif, 2000). A dialogue that appraises dialogic interaction which is exploratory in nature is one of the most promising methods to support the creation of dialogic space (Wegerif, 2007) for engagement in higher order thinking skills.

In my research, I propose to create these dialogic spaces where students and I would participate in dialogues that discuss social issues related to their daily lives. Social issues are part of their syllabus for the English language subject (YTP, 2016, p. 1-10) as shown in Table 1 below.

Table 1. Topics related to social issues in secondary school

Chapter	Theme	Topic
5	Through Green Eyes	Environment
7	What Eyes See	Literature: Are You Still Playing Your Flute
8	Rights, Wrongs and Responsibilities	Literature: Catch Us If You Can
9	Cloud of Concerns	Health
10	Hidden Voices	Health
11	To Tell or Not to Tell	Health
12	Of Brands and Trends	Literature: In the Midst of Hardship
15	Crossroads	People

Certain chapters of their English textbook covered social issues related to environment, health and the people around them. There are also three chapters of literature lesson that focus on social issues.

My study explores the potential of dialogic teaching to improve students' persuasive argumentation skill. Instead of conducting whole-class discussions typically favoured by teachers, I had decided to use dialogues in small groups. It is hoped that these exploratory dialogues generated amongst a few students in small groups will allow them to argue persuasively with others. Due to the values of Exploratory Talk reported by prominent researchers such as Knight & Mercer (2015), Mercer (2008), Mercer & Littleton (2007) and Wegerif et al. (1999) towards students' learning experience, I would like to explore and experience the process further and investigate how it impacts students' learning. Exploratory Talk is a type of talk that requires students to follow some ground rules to encourage students to share knowledge, evaluate evidence and consider options collaboratively in an equal manner (Reninger & Rehark, 2009). According to

Wegerif (1996b), Exploratory Talk has been part of the National Curriculum for England and Wales where students were assessed based on their quality of explanations and arguments. My study also attempts to show that argumentation is a social process, hence more attention should be given to the impact of the process of collaborative argumentation on students' written argument. By investigating the relationship of the process and product of argumentation, I can possibly design educational interventions to support more successful argumentation. However, my study is distinctive to other argumentation studies as the students' dialogue were conducted using the *WhatsApp* application. Other studies were majorly conducted face-to-face or using computer-supported collaborative learning (CSCL). Hence, my study is also about exploring the potential of dialogic education using the *WhatsApp* application to improve their argumentation skill amongst a group of secondary students in Malaysia.

1.2 My research motivation; going beyond the teaching to the test culture

Asmalffah Zakaria, Abd. Samad & Omar (2013) discovered that teachers in Malaysia are pressured to improve students' scores in standardised English examinations. The education system in Malaysia is centralised in terms of examination. This centralisation is to ensure that all government policies are implemented through education system. Usually, students who have completed their primary and secondary school years in Malaysia would have gone through three national standardised examinations. These examinations are the Primary School Assessment Test (UPSR), the Lower Secondary Examination (PMR) and the Malaysian Certificate of Education (SPM), which functions as a school-leaving examination, a national-standardised school examination, or a university-entrance examination. Teaching-to-the-test is not a new phenomenon. It has been a common practice in most schools in Malaysia since decades ago where teachers pay so much attention to these standardised examinations that they in turn shaped the nature of teaching and learning in the classroom. As a consequence, the instructional practices in most classrooms are more focussed on meeting the demands of the test in order to achieve good results in the standardised examinations regardless of whether or not these practices promote

actual learning. Usually, teachers prepare students for examinations by reviewing past tests, making their students work on test-like worksheets and concentrating their efforts on the types of language and test items that are known to appear on such tests.

The teaching-to-the-test culture is clearly evidenced in this context of study. It was because the students were preparing for the Malaysian Certificate of Examination (MCE) in November 2017 while participating in the study. English lessons were focus on teaching students what they need to master in order to pass tests and meet government examination targets, rather than teaching skills that are important for their future life and profession. Owing to that temperament, the teaching and writing of argumentative essay have often been overlooked in secondary schools in Malaysia. The argumentative essay was firstly included in 2007 for Malaysian Certificate of Examination (MCE) alongside with narrative, expository, factual, reflective and descriptive essay. Students are required to write a 350-word argumentative essay within 60 minutes. In that limited time and lacking in exposure to argumentative essay writing, students always opted for narrative essay. This was based on my informal talk with the 16- and 17-year old students during the school visit when conducting the classroom observation (see Chapter 4 – Exploratory Study). When writing a timed-essay in an examination, it is reasonably tricky for students to write an argumentative essay as it demands more time to think compared to merely narrating a story or event related to their own experience. Argumentative essay writing is least favoured by ESL students, not only in Malaysia but also amongst students whose English is their first language (Andrews, Torgerson, Low & McGuinn, 2009). McCann (1989) also asserts that writing an argumentative essay is often more difficult compared to writing a narrative, a descriptive or an expository essay. This difficulty would justify why school students' performance in argumentative writing is not as good as their performance in narrative writing (Crowhurst, 1990). Knudson (1992) also agrees that commonly students have better skills at writing narrative and descriptive essays as they are exposed to those modes extensively in school curriculum compared to argumentative essays. When attempting to write an argumentative essay, students could not elaborate at length nor develop it well (Ferretti, MacArthur & Dowdy, 2000).

In Malaysia, teachers and students often perceive that writing an argumentative essay is challenging. If students were to write argumentative essays during the examination, it will have undesirable impact on their grades due to their poor argumentative skills. This lack in argumentative skill makes them unskilled arguers because their teachers only focus on mastering the language expressions for writing narrative essays. Hence, they will write poorly when it comes to argumentative essays. Therefore, in Malaysia specifically, the teaching of argumentative essays is usually neglected by teachers and the writing of this genre is often avoided by students on the test. Typically, teachers will teach the essay type that is mostly preferred by all students. Furthermore, in Malaysian Certificate of Examination (MCE), it is not mandatory for students to write an argumentative essay because they have another five options namely the narrative, expository, factual, reflective and descriptive essay.

Students, since they were in primary school, generally opted to write the narrative essay due to their familiarity and existing skill to write narrative essays. Such circumstances are unconstructive to the teaching and learning of argumentative essays in Malaysian secondary schools as it is traditionally accepted that the argumentation skill is not important for examinations. Hence, secondary school teachers in Malaysia often neglect to teach the skills needed for argumentative essays and when they do teach, they tend to adopt the whole-class teaching approach which is inadequate to instill persuasive argumentation skills. They habitually teach students how to produce arguments or claims merely to support their own opinion, which promotes the tone of one-sidedness in students' essays.

Even though the teaching of argumentation essay is not the priority to prepare students for important examinations like the MCE, teachers should not have the 'hands-off attitude' towards it. They should treat the argumentation skill as equally vital as other skills taught at secondary level. This study is conducted to break the teaching to the test culture that has been practised in the Malaysian education system to this day. There are a few reasons why I firmly believe that argumentation skill should be taught appropriately in secondary schools. Firstly, it is to encourage teachers to stimulate higher order thinking skill (HOTS)

amongst the students and to prepare them for their survival beyond secondary school. It is also to change the teaching-for-examination attitude among teachers. Secondly, I have no doubt that it is crucial to teach persuasive argumentation skill throughout secondary school because students immensely need the skill to do well in post-secondary level and beyond. As an example, Malaysian University English Test (MUET) mainly examine students' argumentation skill in the writing test. MUET is a test of English language proficiency particularly for public and private university and college admissions in Malaysia and Singapore. Besides that, MUET is also compulsory for graduating from local universities in Malaysia. The inadequate approach to teach argumentation skill will restrict students' ability to do well beyond their secondary education. The skill taught and learnt in secondary school is only sufficient to prepare them to succeed in MCE, but they may face some difficulties when they enter post-secondary and tertiary level where persuasive argumentation skill is highly required. Researchers such as Botley (2014) who studied students' argumentative essay writing in Malaysian higher education disclosed that students frequently have difficulties to display good argumentation skill when writing the argumentative essay. This is supported by the report provided by Malaysian Examination Council (MEC) for four consecutive years (2012-2015) in their official online portal (*portal.mpm.edu.my*). It stated the weaknesses students displayed when writing argumentative essay; one of which is the inability to present and argue intellectually a viewpoint with relevant supportive statements.

Therefore, I believe that the initial exposure to writing persuasive argumentation in Malaysian secondary schools is sensible as it will prepare students with significant skills before they enter post-secondary and tertiary level.

Thirdly, mastering argumentation skill permits students to do well in both worlds; academic and social life (Alagoz, 2013; Crowhurst, 1990; Crowell & Kuhn, 2014; Goldstein et al., 2009). Writing persuasive argumentative essays will not only secure students with decent academic results, build up complex linguistic and cognitive abilities (Gárate & Melero, 2005) but it also educates students to be tolerant towards others' opinions especially when they become leaders in the workplace or community. The act of repudiating *'my-side bias'* (Lin & Anderson,

pg. 447, 2008) will encourage probity in their working and social life as they resolve controversies even-handedly (Reznitskaya, Anderson & Kuo, 2007). My-side bias as described by Nussbaum & Kardash (2005, p. 157) is 'the tendency to consider only the side of the issue favoured by the student'. This manner of arguing is also reported by other argumentation researchers such as Knudson (1992), Leitão (2003) and McCann (1989) in their studies.

Another reason to teach argumentation skill attentively is that argumentation is a learning skill that should be exposed to students since their early age. Some researchers have shown that the ability to understand an argument can be observed amongst children of 3 years old (Stein and Albro, 2001; Stein and Bernas, 1999). Stein & Albro (2001) assert that children's early exposure to argumentation was initially originated from parent-child conflict and peer conflict. Students aged nine to 14 years old already possess the slightest form of argumentation too (Gárate & Melero, 2005; Hsu, Van Dyke & Chen, 2015; Jonassen & Kim, 2010; McCann, 1989). Kuhn and Udell (2003) concede that even young adults show some competence in producing arguments in support of a claim and in understanding the structure of an argument. Hence, I strongly believe that the explicit teaching of persuasive argumentation skill should not only be emphasised in post-secondary or tertiary level but should be initiated before secondary school level (13 to 17 years old).

1.3   Methodological choice: Design-Based Research (DBR)

The purpose of the study is to determine the function of dialogic interaction by investigating the influence of Collaborative Reasoning activities on students' argumentative essay writing. It is because, there have been concerns raised by argumentation researchers concerning learners' difficulty to write two-sided argumentative essays. Therefore, through DBR, I initially explore extensive literature which describe workable approaches that help students to write two-sidedly. From the literature, I find that most argumentation researchers opt for Collaborative Reasoning activities which is in contrary with the approach to teach the writing of argumentative essay, conducted by teachers in Malaysia. Then, I worked closely with the practitioners to find out the problems they may foresee if I were to conduct face-to-face group argumentation with their students. Most of

them told me that face-to-face group argumentation is unmanageable in their classroom due to factors such as time and classroom management. I also sought their suggestions for alternative methods to conduct group argumentation since face-to-face is unmanageable. They agreed that online group argumentation is a good alternative. Adhering to the following stages involved in DBR, I designed an educational intervention that blends Collaborative Reasoning and dialogic interaction. DBR allows me to design and develop a suitable educational intervention based on the needs of the context of my study. Prior to testing the prototype educational intervention in Iteration 1, I once again consulted the teachers to obtain their advice and further suggestions related to the lesson plans I have created for the intervention. In DBR, there should be at least two iterations conducted in order to test and develop the prototype intervention. In Iteration 1, I conducted the intervention with the students and evaluated the outcomes. DBR allows me to improve the intervention when I amended the intervention by addressing the glitches found in Iteration 1. The purpose is to help more students to obtain the benefits from the enhanced intervention. In Iteration 2, I repeated similar procedures using the enhanced intervention. Lastly, I generated a final design framework which can be employed as a possible classroom intervention by other ESL teachers who want to improve their approach in the teaching of persuasive argumentative essay for ESL learners.

1.4   Statement of the problem

Argumentation researchers (Leitão, 2000; Reznitskaya et al., 2007; Weinberger & Fischer, 2006) propose that a persuasive argumentation contains basic argument schema such as claim, counter-argument and rebuttal supported by reasons and examples. However, they found out that students' essays are frequently written in *my-side bias* or *one-sided* nature (Crowell, 2011; Knudson, 1992; Leitão, 2003; McCann, 1989). In such essays, students only integrated arguments and reasons that support their viewpoint. It is acknowledged that when there are no contrasting ideas discussed in an essay, it was merely considered as argumentation, not persuasive argumentation. Knudson (1992) argued that students do not master this kind of specialized genre especially the written one due to the lack of explicit teaching of argumentation skill in the curriculum. This is supported by Gárate & Melero (2005) that lack of attention has been given to

the teaching of argumentative writing and teachers often face significant challenges when attempting to conduct argumentation practices within their classrooms (Clark, Sampson, Weinberger & Erkens, 2007). I strongly agree with the literature as the teaching of argumentative essay detected amongst nine ESL teachers, is not adequate to foster persuasive argumentative essay. It is because, the common approach used by all teachers during whole classroom discussion only catered students to write essays that incorporate multiple reasons to support their position. I noticed that when teachers are not aware of the necessary key components of persuasive argumentative essay, they tend to teach based on their intuitions and it is up to them how they want to teach it. The criticism should not be put solely on secondary school teachers as there are no specific and explicit guidance, syllabus, curriculum or training provided for them to teach persuasive argumentation essay. Furthermore, the marking scheme provided by Malaysian Examination Council (MEC) to evaluate argumentative essay does not weighed those elements notified by argumentation researchers. It only evaluates essays based on the components of writing (MCE Marking Scheme, 2017) as stated in Table 2 which does not reward the persuasiveness of the essay.

Table 2. Marking criteria for argumentative essay based on MCE Marking Scheme

Description of criteria	
Language	entirely accurate apart from very occasional first draft slips
Sentence structure	varied and used to achieve a particular effect
Vocabulary	wide and is used with precision
Punctuation	accurate and helpful to the reader
Spelling	accurate across the full range of vocabulary used
Paragraphs	well-planned, have unity and are linked
Topic	addressed with consistent relevance
Interest of the reader	aroused and sustained throughout the writing

Similar marking scheme is also used to assess narrative, expository, factual, reflective and descriptive essay which aroused another assumption that the instructional strategies they employ to teach essay writing are similar across genre. This, according to Knudson (1992), is not appropriate as the approach to teaching narrative or descriptive essay is not applicable to teach argumentative essay.

Based on my belief that there is a crucial need to teach persuasive argumentation skills to students at secondary level, a design framework that involves principles and guidelines to develop the teaching of argumentation skills by means of dialogic teaching to ESL students is sought through the present study.

1.5   Research aims

With the firm belief that teachers should develop their instructional strategy to teach persuasive argumentation skill, this study aims to investigate the influence of dialogic interaction to improve the skill. Using Design-Based Research (DBR) as a methodology, the problems related to the teaching and learning context are explored prior to the implementation of the educational intervention and ongoing evaluations are conducted during the study. This research contributes to the literature as there is a pressing need to provide empirical evidence of how involvement in dialogue affects educational outcomes (Mercer, 2010) and more empirical approach is required to the teaching and learning of argumentation to provide some evidence that such an approach is possible and useful for students in Malaysia (Botley, 2014). Other than that, *more research that investigates teacher adaptation to dialogue-based pedagogies* is mentioned by Reznitskaya et al. (2007, p.44). Hence, it demonstrates that the teaching and learning via dialogue is an important field of research especially in ESL context. Furthermore, Jonassen & Kim (2010) also emphasise the need to test potential methods to enhance counter-argumentation to support students' learning. It would be interesting to find out the most suitable method that can be adapted for the Malaysian learning context. More specifically, there is also a call to investigate the pattern of collective argumentation within online settings (Alagoz, 2013). Hence, this study aims to examine the link between dialogic interactions and written argument to offer a feasible solution to secondary school teachers in Malaysia to improve their students' persuasive argumentation skills.

1.6   Research questions

My research questions explore the potential of dialogic interaction to improve written argumentation. The results of my study will shed some light into the link which socio-cultural theory posits between social, collaborative activity and

individual learning and development. Hence, I will investigate the following research questions:

Research question 1: *What effect does the educational intervention have on the persuasiveness of the students' argumentation?*

Research question 2: *What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?*

Research question 3: *Does students' ability to argue persuasively in groups positively affect their ability to write a persuasive argumentative essay?*

1.7   Significance of the research study

This study is noteworthy as it is intended to increase the knowledge of how to improve the teaching of persuasive argumentation skill, which is limited in the Malaysian secondary school context. The studies conducted in Malaysian context by David, Thang & Azman (2015), Ghabool & Kashef (2012), Maarof & Murat (2013), Pour-Mohammadi, Abidin & Fong (2012) and Thulasi, Ismail & Salam (2015) are mostly focussing on identifying the problems that students have in writing, but none has been done on how to improve the teaching of writing. Furthermore, the studies on argumentative essay writing by Botley (2014), De Rycker & Ponnudurai (2011) and Husin & Ariffin (2012) are only limited to higher education context, not at secondary school level. Even though the studies by Foong & Daniel (2013) and Heng, Surif & Seng (2014) emphasise the teaching of argumentation skill in the Malaysian secondary school context, both are related to Science subjects, not the ESL context. The lack of studies related to the teaching of argumentation skill at secondary level for ESL context in Malaysia will clearly permit this study to add to the research field. Besides, this is the first study conducted on the use of Exploratory Talk to promote persuasive argumentative writing in a Malaysian secondary school. Also, this study is immensely significant as limited research has been conducted to explore the appropriate method to teach persuasive argumentative writing amongst secondary school students in

Malaysia. Furthermore, it notably contributes to the argumentation discipline as it suggests the potential of *WhatsApp* application to improve the quality of students' persuasive argumentation skill. Argumentation researchers have successfully developed software and ICT tools to teach argumentation skill, but none has exploited the smartphone and *WhatsApp* application to improve learners' argumentation skill. The intervention developed for the study is tested in two iterations of investigation to evaluate its effectiveness in improving students' persuasive argumentation in terms of group collaboration and individual writing. Another significance of this study is that there is scarce research into the links between group argumentation and argumentative essay writing in Malaysian secondary schools. Hence, the design framework developed from this study will be useful for ESL teachers in Malaysian secondary schools to improve their modus operandi to teach persuasive argumentation skill. This study is also significant as it responds to the account made by researchers who insist that argumentation is a skill that should not be neglected by teachers and students (Alagoz, 2013; Crowhurst, 1990; Crowell & Kuhn, 2014; Gárate & Melero, 2005; Goldstein et al., 2009; Hsu et al., 2015; Jonassen & Cho, 2011; Reznitskaya et al., 2007). I believe by exposing secondary school students to the persuasive argumentative skill, it will help them to do well in post-secondary and tertiary level when such skill is highly needed.

1.8   Organisation of the thesis

Chapter 2 : Literature Review

This chapter discusses the theoretical input that was used as the basis of the framework for the iterations of this study and reviews previous research on argumentation skill. This chapter further shows the initial design framework of this study which derived from the extensive literature review. This chapter ends with a formulation of Design Framework 1 (DF 1) to be tested in the Exploratory Study.

Chapter 3 : Methodology

This chapter introduces the methodology that informs this study; Design Based Research (DBR). A comprehensive review of this methodology is carried out by presenting important aspects of the methodology.

Chapter 4 : Exploratory Study

This chapter tests the DF 1. It describes the process that involved examiners, ESL teachers and students followed by the report of the findings. Based on the input from the participants, this chapter ends with a construction of Design Framework 2 (DF 2) to be tested in the Expert Trials.

Chapter 5 : Developing the Intervention

This chapter shows how the educational intervention is developed based on the literature related to the use of technology to improve students' argumentation skill as well as integrating other two significant approaches.

Chapter 6 : Expert trials

This chapter requires the ESL teachers to review the initial educational intervention. It is important to identify if it is significant to secondary school students' teaching and learning activities.

Chapter 7 : Iteration 1

This chapter provides an in-depth description of how Iteration 1 was conducted and its findings. Based on the findings and important issues which emerged in Iteration 1, the design framework of this iteration was refined to be further investigated in the next iteration. This chapter ends with the formulation of Design Framework 3 (DF 3).

Chapter 8 : Iteration 2

This chapter provides an in-depth description of how Iteration 2 was conducted and its findings. Based on the findings and important issues which emerged in Iteration 2, the design framework of this iteration was refined to be further investigated in the next iteration. This chapter ends with the formulation of Design Framework 4 (DF 4).

Chapter 9 : Discussion

This chapter connects the findings from both iterations conducted in this study and discusses their significance in relation to the literature. It also revisits the research questions of this study.

Chapter 10 : Conclusion

This chapter discusses the contribution of this study to methodology, theory and practice. It accentuates the main findings of this study, acknowledges the limitations and suggests further research to be conducted.

Chapter 2 - Literature Review

2.1 Introduction

This chapter begins with an explanation of the main research terms used in this research, as this understanding is essential to provide the ground of this study. Then, it explains the persuasive argumentation, followed by an analysis of literature which shows the links between group argumentation and written argument. This will shed some light on feasible group argumentation approach to improve the quality of argumentative writing. The following part of this chapter will focus on how Exploratory Talk (Mercer, Wegerif & Dawes, 1999; Wegerif, Mercer & Dawes, 1999) provides a great potential to encourage persuasive argumentation. All these sections will lead into the final section which will be discussing the creation of Design Framework 1.

2.2 Persuasive argumentation

Argumentation as a research topic is receiving increasing recognition worldwide in the education field as it is a skill that needs to be taught to young adults who are mostly secondary school students in order to prepare them for success not only in school but also in life in the 21st century. Mercer (2009a, p. 177) has strongly asserts that "one of the most important aims of education ought to be to develop children's capability for argumentation." It is a universal truth that one can never eradicate the need to argue and persuade other people concerning important issues and contested values. It is a skill that we unconsciously deal with in every single facet of our lives. Laypeople are accustomed to the way arguments or debates have been conducted like the one they usually watch on television talk shows; a debater provides various reasons to convince others with his/her ideas while overlooking to concede any differing idea that may be raised by critical audiences. This is what Nussbaum & Schraw (2007) term as one-sided argumentation. When this way of arguing has been perceived as the meticulous way to argue, teachers are by some means fossilised to teach one-sided argumentative essay. Something needs to be done to help teachers to reconsider the way they teach the students how to argue. Hence, this study was purposely conducted to promote persuasive argumentation amongst ESL teachers and students as Bakhtin (1986) proposes that, persuasive argumentation which

appreciates different voices and perspectives, is a more humane way to argue. It is an important move towards creating an egalitarian society that values all voices equally.

When assessing argumentative essays, most argumentation researchers adhere to Toulmin's argumentation pattern (TAP) as a prime tool to assess the quality of argument (Erduran, Simon & Osborne, 2004; Kuhn and Udell, 2003; Leitão, 2000; McCann, 1989; Weinberger & Fischer, 2006). According to Toulmin (1958), argumentation is composed of the following elements: a) Claim, which is an assertion presented in response to a problem, b) Data, which include the evidences or grounds on which claims are made, c) Warrant, which supports the link between the claim and data, d) Backing, known as support of the warrant, e) Qualifier, which is a term indicating the probable nature of the claim, and f) a Reservation, which refers to the conditions under which the warrant will not hold and cannot support the claim. These elements are the basis of argumentative essay writing. However, TAP has its own flaw that does not fit the nature of this study: it does not explicitly include counter argument (Reznitskaya et al., 2007) as one of the key components to evaluate the persuasiveness of an argument. This is also argued by Clark & Sampson (2007) that the model depicts only the proponent's side, reducing the role of an opponent in the process of argumentation. Besides, TAP exclusively fits to evaluate scientific or history argumentation where the quality of arguments depends on acceptable and valid claims proved from empirical studies or facts (Sampson & Clark, 2008). However, this study is different from scientific or history argumentation as students discuss social issues where their reasoning is mostly generated based on personal experiences and background knowledge. Hence, some components of TAP are found to be unfeasible to assess the quality of argumentation for the purpose of this study.

The persuasiveness of writing depends on its potential to influence readers to take some action or change their thinking about a controversial issue. Following Bakhtin, argumentation researchers such as Leitão (2000) and Reznitskaya et al. (2007) suggest that a persuasive argumentation should contemplate on the opposite side of opinion. This remark is reinforced by the theory and research on

argumentative writing that counter-argumentation is a merit for evaluating the quality of argumentation (Ferretti et al., 2000). Hence, the argument-counterargument-rebuttal structure is evidently more persuasive than an argument that does not embrace counterargument and rebuttal (Kuhn, 2009; Leitão, 2000; Nussbaum & Kardash, 2005; Nussbaum & Schraw, 2007; Walton, 1989). In order to make it more persuasive, each key component must be followed by relevant supporting reasons and examples. This structure is recognised by Stapleton and Wu (2015, p.12) as 'surface structure' or skeleton of the argument. Therefore, following the theoretical framework by Nussbaum & Kardash (2005) and Nussbaum & Schraw (2007), the quality of persuasive arguments in this study will be assessed in terms of:

(a) *Argument:* a statement, reason, or fact for or against a point.
(b) *Counterargument:* a contrasting, opposing, or refuting argument.
(c) *Rebuttal:* A reply intended to show fault in an opponent's argument.

In pursuance of persuasive argumentation, this study accents more on the production of students' counterargument and rebuttal both in group and individual argumentation. The main aim of persuasive argumentation is to encourage two-sidedness in an argumentation where 'alternative propositions' (Ferretti et al., 2000, p.696) are considered. Counterarguments play an important role to keep an argument going (Crowell, 2011) as there will be no argument if there are no differing ideas. Besides, an argument that outlines numerous arguments on both sides of the issue reduces the presence of *my-side bias* (Jonassen & Cho, 2011) which is also known as *confirmation bias* or *confirmatory bias*, a term coined by Perkins (1985). This principle of selective thinking often undervalues and ignores what others are thinking and feeling about an issue. This situation is usually observed amongst unskilled arguers. For competent arguers, they will attempt to provide a counterargument after voicing their own argument (Goldstein et al., 2009). Researchers (Alagoz, 2013; Crowell & Kuhn, 2014; De Fuccio, Kuhn, Udell, Callender, 2009; Felton & Kuhn, 2011; Goldstein et al., 2009; Jonassen & Cho, 2011; Kuhn, 1992; Kuhn, Goh, Iordanou & Shaenfield, 2008; Marttunen & Laurinen, 2007; Nussbaum & Schraw, 2007; Walton, 1989) concur that counterargument and rebuttal are the key elements to an argument and the frequency of their appearance in an essay shows the quality of the essay. When

encouraged to counter the argument of others, not only do students learn to recognise alternative solutions and to rebut other arguments, but also to educate themselves to be considerate people who open their minds to disagreement. However, Reznitskaya et al. (2007) argue that a good argumentative writing does not necessarily follows the argument-counterargument-rebuttal sequence as there are other alternative ways that can be used effectively to promote alternative positions. For example, according to Nussbaum & Schraw (2007), the argument-counterargument-rebuttal sequence can be expanded with a few paragraphs of supporting reasons and a brief final paragraph of reservation which portrays a potential objection or exception of the issue discussed.

2.2.1 Difficulties to write persuasively

When writing an argumentative essay, students must be aware of the various elements that are specific to the genre of argumentation such as counterarguments and rebuttals. Writing a persuasive essay is often thought difficult by students as well as teachers because it is more cognitively demanding than narrative writing. Students' ability to argue or defend their stand is irrefutable but it is not helpful to make their essays persuasive. When writing persuasive essays, they are not only required to provide their own arguments, but they also need to consider the antithesis of their arguments. This appears to be challenging to most students especially in ESL context where the mastery of language is already an issue. Argumentation researchers validate that the trickiest part to writing an argumentative essay amongst English as a First Language learners is providing counterarguments. (Andrews et al., 2009; Crowell, 2011; De Fuccio et al., 2009; Felton & Kuhn, 2001; Furlong, 1993; Gárate & Melero, 2005; Hsu et al., 2015; Jonassen and Kim, 2010; Knudson, 1992; Kuhn & Udell (2003); Newell, Beach, Smith & VanDerHeide, 2011; Reznitskaya et al., 2007; Reznitskaya, Anderson, McNurlen, Nguyen-Jahiel, Archodidou, & Kim, 2001). When they could not provide counterarguments, their essay turns out to be unpersuasive as it is obscured by my-side bias, poorly supported and open to critique (Felton and Herko, 2004). Other difficulties reported amongst English as a First Language (L1) learners are the inability to recognise and apply persuasive argumentative text structures (Reznitskaya et al., 2007), unable to expand their argument due

to limited ideas (Felton and Herko, 2004) and also the lack of support for reasons, poor organization, and immature language (Crowhurst, 1990).

Undergraduate students in Malaysia were also reported to have difficulties in writing persuasively in English language. This is because, Shah, Puteh, Din, Rahamat & Aziz (2014) assert that even trainee teachers lack the ability to write a sound argumentative essay. Their skill is limited owing to the teacher-centred and examination-oriented learning environment. Additionally, their learning was confined by time and lack of group-based activities to encourage collaborative learning. Furthermore, Botley (2014) also found that the difficulties are due to lack of English proficiency as English is a Second Language (L2) in Malaysia. Frequent language errors (grammar, spelling and sentence structure) make identifying the arguments difficult. Vague thesis statements are observed as undergraduate students typically hesitate to take either the pro or the con position in an argument. This is because students usually shy away from showing their disagreement directly and explicitly over a certain matter when in real life. It somehow affects how they write argumentative essays (Husin and Ariffin, 2012). Besides, according to De Rycker & Ponnudurai (2011), writing counterarguments are difficult especially in exams where students need to take a position and think of ideas to go against their own position under time pressure. Also, providing counterarguments are practically impossible when students simply refuse to think and lack the effort in providing counterarguments.

2.2.2 Difficulties to provide counterarguments

It is widely acknowledged that the lack of persuasiveness of students' essays is due to their inability to provide counterargument. When students do not provide any counterargument, it will be unlikely for them to provide rebuttal too as they have nothing to refute. According to prominent researchers, there could be multiple reasons why L1 students have difficulties to provide counterarguments. First and foremost, they are incapable to grasp the concept of counterarguments (Furlong, 1993; Jonassen & Cho, 2011). Felton and Herko (2004) along with Lin & Anderson (2008) agree that it is not easy for students to see, appreciate and deal with the other side of an argument. Stein & Bernas (1999) inform that even when younger students are explicitly asked to provide counterargument, they still

provide more reasons to support their own positions and fail to identify points of conflict to rebut others' argumentation. This is because simply asking adolescents to refute others' argument does not guarantee that they are willing to or capable of doing so (Alagoz, 2013; Nussbaum& Kardash, 2005).

Secondly, strong and extreme attitudes towards a topic usually prohibit students from identifying the other side of the topic (Nussbaum & Kardash, 2005). Such extreme attitude may have been originated from their extensive personal experience related to the topic (Kuhn, 1991; Stapleton, 2001) which is likely to decrease the production of counterarguments. Besides, the difficulty to produce counterarguments also emerges because of *self-centering* where students ignore to identify the opposing points of view (Jonassen & Kim, 2010, p.445; Leitão, 2003, p. 275). The concept of *self-centering* is similar to the concept of *my-side bias* familiarised by Nussbaum & Kardash (2005). They also agree that students display some hesitancy to provide counterargument when they have extreme prior attitudes on certain issues as they will have an uneasiness to refute their own beliefs. When they are too fond of a topic, they will predictably provide multiple reasons to support on one side of the issue and have less time, motivation and energy to consider counterarguments. Hence, students merely become more aware of their own positions than dealing with counterarguments (Leitão, 2003).

Thirdly, less counterarguments are expected to be produced by students in writing compared to group argumentation. When arguing alone, the absence of an opponent to challenge one's argument usually causes difficulty to think about the possible opposing ideas hence contributing to less counterargument usage (Crowell, 2011). This is agreed by Ferretti et al. (2000) that to produce more counterarguments, students must have the ability to consider different perspectives in their own heads and imagine others' different perspectives (Anderson et al, 2001). However, students may also have difficulties to provide counterarguments even during group argumentation. It can be caused by social reluctance where students refuse to oppose others' opinions when participating in group discourse (Jonassen & Kim, 2010), which reduce the production of counterarguments.

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Moreover, students especially the younger ones, rarely value counter-argumentation as a strategy to persuade others (Leitão, 2003) especially amongst students aged eight to 15 years old as it is difficult for them to understand the importance of counterarguments when arguing with others. It is also interesting to note that, persuasion goals have a negative effect on the production of counterarguments (Nussbaum & Kardash, 2005). This is because, a persuasion goal such as writing a letter to persuade someone usually encourage students to provide one-sided argument. Even when teachers encourage students to include counterarguments and rebuttals, they only provide insubstantial and non-elaborated ones.

Finally, Gárate & Melero (2005) agree that lack of attention has been given to the teaching of argumentative writing which contributes to the difficulties students have in order to write argumentative essays. Clark et al. (2007) disclose that teachers face significant challenges when attempting to support argumentation practices within their classrooms which prohibits them to teach argumentation skill effectively to the students. As cited from Knudson (1992), Erftmier (1985) concludes that if students do not have a well-developed schema for written persuasion, teachers should not presume that they can purely transfer the persuasive strategies used in group argumentation to their writing. This shows that students must have the ability to argue persuasively during group argumentation and they must also have a well-developed schema to write persuasive argumentative essay to reap the benefits of group argumentation activities.

2.3 The links between group argumentation and written argumentation

The fundamental concern of this study is to evaluate if there is any change of writing behaviour displayed by the students after participating in the collaborative dialogic interactions. Hence, successful studies related to that link will be further explained. The transfer of learning is frequently noticeable when students manage to transfer the skill they have obtained during dialogic interactions to new tasks such as writing longer and meaningful responses on an issue discussed or

in a different context. This is broadly supported by Crowell (2011) that educational intervention that is constructed on group argumentation improves individual student's production of counterarguments and rebuttals.

Previous literature has highlighted the importance of counterarguments and rebuttals to ensure the persuasiveness of an essay. However, most students seldom can generate those elements in written form. Argumentation researchers have validated that there are feasible approaches to overcome this problem. Most of the approaches supported the initial conjecture of this study: before students write argumentative essay, they must argue collaboratively in small groups. The foundation of those approaches is built from Vygotsky's sociocultural theory. Vygotsky asserts that collective thinking (intermental activity) shapes the development of individual thinking (intramental activity) (Mercer & Littleton, 2007, p.83). When group argumentation occurs collaboratively, deep thinking on the part of the students develops and is then internalised individually.

> *Vygotsky proposed that there is a close relationship between the use of language as a cultural tool (in social interaction) and the use of language as a psychological tool (for organizing our own, individual thinking). He also suggested that our involvement in joint activities may generate understanding which we then 'internalize' as individual knowledge and capabilities.*
>
> *(Mercer, 2000 p. 155)*

Most argumentation studies (Alagoz, 2013; Anderson et al., 2001; Crowell & Kuhn, 2014; Kuhn, 1992; Reznitskaya et al., 2001, 2012) were inspired by the notion proposed by Vygotsky to teach argumentation skill. They believe that argumentation is a process that involves higher-order thinking skills (HOTS) which are executed through social interaction and dialogues. Therefore, these social interactions and dialogues should be integrated in students' learning. Their approaches are fundamentally centred on argumentation activities conducted collaboratively to develop individual argumentation skill.

Following Vygotsky's sociocultural theory, it is widely accepted that social interaction is a primary means for promoting improved individual's general argumentation skill. The pedagogical framework that follows Vygotsky are Collaborative Reasoning (Anderson, Chinn, Chang, Waggoner & Yi, 1997; Anderson, Chinn, Waggoner & Nguyen, 1998, Anderson et al., 2001; Reznitskaya et al., 2001) and Collaborative Argumentation (Chinn & Clark, 2013; Jonassen & Kim, 2010). Both involve facilitating discussions among multiple participants. The learning strategies deviate from typical classroom activities as they focus on prompting students for reasons; challenging students with countering ideas; and using vocabulary of critical thinking. Waggoner, Chinn, Yi & Anderson (1995) state that Collaborative Reasoning encourages increased participation from the students to talk about an issue. van Eemeren & Grootendorst (2004) define Collaborative Argumentation as a dialogue where at least two participants exchange statements, questions or replies. It is where participants make claims and support them with reasons. When there is a clash between each other's ideas, the dialogue will move towards solving the disagreement (Chinn & Clark, 2013). This affords more interaction with peers especially when they find that their peers have ideas that differ from their own. This difference in ideas may make them so curious that they wish to find out which ideas are more defensible. According to Marttunen & Laurinen (2007), after participating in online Collaborative Argumentation, students' argumentations are deepened and broadened as they add more arguments and counterarguments. This is because, Collaborative Argumentation not only encourage students to elaborate their previous arguments but also help them to recall and create ideas and arguments. It is not to win a competition for the best argument; proving other people's arguments wrong and one's own arguments right, but to learn together by examining different points of view and arguments for and against each other's positions.

During all these activities, students engage with utterances that consist of arguments, counterarguments, and rebuttals (Reznitskaya et al., 2001). However, the size of group argumentation usually varies. Some researchers conduct it through dyadic interaction (Crowell & Kuhn, 2014; Evagorou & Osborne, 2013; Goldstein et al., 1999; Kuhn, 2005; Kuhn, Shaw & Felton, 1997;

Kuhn et al., 2008; Teasley, 1995), groups of three (Wegerif & Mercer, 1997) or five to nine students in a group (Chinn, Anderson & Waggoner, 2001; Dong, Anderson, Kim & Li, 2008; Reznitskaya et al., 2001, 2007, 2012; Reznitskaya, et al., 2009a). The purpose of each group argumentation is similar; to foster egalitarian dialogue amongst the students. In those approaches, the role of teacher and student is asymmetry because the teacher surrenders his/her authority to provide input to the discussion. His/her role is devoted merely to promote collaboration and thinking skills to the students (Zhang & Dougherty Stahl, 2011). In this kind of open participation discussion, students control all in terms of what to discuss and when to talk without interference from the teacher. Even though those approaches are originally conducted for elementary school students, they are also suitable for mature students in secondary schools who do not have any basic skills related to group argumentation.

The intervention of this study is following Kuhn (2005) and Kuhn et al. (2008) who agree that to further develop persuasive argumentation skill, students need extended opportunities to practise dialogic argumentation over a wide range of issues and content in several occasions. Pontecorvo & Girardet (1993) also agree that autonomous interactional activities can be extremely rich situations in terms of the production of high-level reasoning, even in young children. Recent studies by Crowell & Kuhn (2014) also concur that in order to develop individual written argumentation, teachers must primarily develop group argumentation. It means when students participate in more group argumentations, their persuasive argumentation skill will develop. This is because, the study by Kuhn & Udell (2003) show that when a group of 13- and 14-year old students participated in 16 sessions of argumentative discourse intervention, the frequency of their usage of powerful argumentative discourse strategies, particularly counterargument, increased. The quality of individual verbal arguments and counterarguments also improved. Kim (2001), Reznitskaya et al. (2007) and Dong et al. (2008) conducted four Collaborative Reasoning discussions while Reznitskaya et al. (2001) conducted 10 discussions over a period of 5 weeks. Other researchers also conducted a few episodes of group argumentation such as Kuhn et al. (1997) who conducted five dyadic discussions of Capital Punishment (CP) or death penalty. Kuhn et al. (2008) also conducted seven dialogue sessions over an

entire school year with 11- and 12-year old students. Chinn et al. (2001) conducted 10 Collaborative Reasoning discussions over a 5-week period with students aged nine to 11 years old. Chinn & Clark (2013) point out those students learn more when engaging in extensive counterarguments and co-construction of arguments. But if they do not engage with each other's reasons, they learn less. However, students with different age or learning ability need different levels of exposure. Goldstein et al. (2009) conducted a year-long of dense practise in argumentation with students aged 12 and 13 years old. Middle-school students engaged in dialogues discussing social issues on expelling misbehaving students and promoting home-schooling amongst parents in America. Students demonstrated developed skill both in dyadic argumentation and individual production of persuasive arguments during the whole-class debate. A recent study by Crowell & Kuhn (2014) shows that they have created a 3-year curriculum to improve argumentation skill amongst underprivileged young adolescents. The dense practice in small group and dyadic argumentation help students to integrate both sides of the issue in their essays. Evagorou & Osborne (2013) conducted four sessions of collaborative argumentation where each session was conducted at least for 50 minutes. Reznitskaya et al. (2001) strongly believe that group argumentation exposes individuals to alternative perspectives which eventually will stimulate them to challenge the ideas. Such competencies later will be used by an individual in different contexts with no external support. While most researchers agree that argumentation is best conducted collaboratively, Clark et al. (2003) in their study notice that the major obstacle to conduct Collaborative Reasoning discussions is time. Teachers in their study are majorly concerned with meeting the curriculum demands, which require students to perform well during end-of-the-year tests rather than promoting collaborative learning.

The Table 3 below shows prominent research studies that demonstrate a link between group argumentation and written argumentation. Table 3 below shows prominent research studies that demonstrate a link between group argumentation and written argumentation.

Table 3. Fundamental studies that linked group argumentation and written argumentation

Focus of literature review	Author	Year of publication
Relations between group argumentation and written argumentation	Knudson	1992
	Kuhn et al.	1997
	Chinn et al.	2001
	Reznitskaya et al.	2001
	Kuhn	2005
	Reznitskaya et al.	2007
	Mercer & Littleton	2007
	Dong et al.	2008
	Kuhn et al.	2008
	De Fuccio et al.	2009
	Reznitskaya et al.	2009a
	Fisher, Myhill, Jones & Larkin	2010
	Chandella	2011
	Reznitskaya et al.	2012
	Evagorou & Osborne	2013
	Foong & Daniel	2013
	Crowell & Kuhn	2014
	Heng et al.	2014
	Kathpalia & See	2016

Generally, those studies demonstrate the impact of collaborative dialogue on written argument. It is important to acknowledge that preeminent argumentation studies attained not only positive transfer but also negative transfer on students' argumentative writing. The positive transfer happens when students manage to apply the skill they have gained during dialogic interaction into a new task or context such as writing argumentative essay individually.

2.3.1 The positive transfer from group argumentation to written argumentation

Overall, diverse studies show positive transfer when students compose argumentative essays containing more high-quality arguments such as counterarguments and rebuttals. One of the pioneer studies that display positive transfer is by Kuhn et al. (1997). They discover that after participating in dyadic discussion with peers, students show two major qualitative improvements; appearance of metacognitive statements and a shift from one-sided to two-sided argument. Their metacognitive statements improve in terms of *self-referring* and *other-referring*. *Self-referring* metacognitive statements include statements of uncertainty or statements that explicitly acknowledge conflicting views within the participant's argument. *Other-referring* metacognitive statements acknowledge the existence of differing viewpoint. This is also identified as *reservation*, a term

used by Nussbaum & Schraw (2007) to display that students have doubts with their own stand when discussing an issue.

The most valuable finding is from Chinn et al. (2001) and Reznitskaya et al. (2001) who find that even though students did not receive any guidance on how to write argumentative essay, they still succeed in writing argumentative essay containing counterarguments and rebuttals after participating in Collaborative Reasoning. The study by both prove that even younger students could write essays that contain more acceptable arguments, counterarguments, rebuttals, and formal argument devices. When discussing a social issue such as Capital Punishment (CP) in groups, Kuhn (2005) identifies that students' individual arguments for or against the issue improve in quality.

In addition, Mercer & Littleton (2007) report that students show improvements in terms of counterarguments and rebuttals in their writing after participating in group argumentation. Their essays shift from purely one-sided to two-sided arguments after extensively arguing the topic. The transfer of skill from group argumentation to individual writing not only occur amongst students who speak English as their mother tongue but also occur in ESL context such as the study conducted by Dong et al. (2008). They find that students in China and Korea also display similar skill after participating in Collaborative Reasoning activities. Students show improvement in considering alternative point of views when writing their responses. Even the students who are not familiar with the approach manage to show improvement in their argumentation skill.

Reznitskaya et al. (2009a) prove the hypothesis that the measures of argumentation during small group discussions are strong predictors of measures of argumentative skills observed in an individual writing task. The elementary school students who participate in collaborative discourse rich in arguments and counterarguments, include opposing perspectives in their writing. De Fuccio et al. (2009) also find similar finding as participants exhibit superior argumentation skills after the intervention. In group argumentation with a peer, more counterarguments and rebuttals are made. Also, when writing to support their own positions, they offer more and higher-quality reasons. Even though the study

by Fisher et al. (2010) do not involve argumentative essay writing, the *Talk-to-Text project* values the connection between verbal talk and writing activity which emphasise the positive impact of collaborative discussion on individual writing.

Thus far, the study conducted by Foong & Daniel (2013) is the only enquiry made to provide evidence that group argumentation is valuable in Malaysian context, namely to improve secondary school argumentation skill when writing argumentative essay for the Science subject. 14-year-old students who participated in scientific argumentation instructional support (SAIS) managed to improve their written argumentation. The argumentation skill acquired during the discussion of genetically modified foods was successfully transferred to their argumentative essays on deforestation.

The transfer of skill is also investigated beyond school context. In a higher education context, mature students replicate similar outcome after participating in dialogic interactions with their teacher. The study by Chandella (2011) approves that discussion improves the writing outcome of the female university students as they wrote better reasons in their post-discussion essays.

Overall, secondary school students in Malaysia who participate in group argumentation tend to perform better than those who participate in individual argumentation. Heng et al. (2014) find that they write better arguments for their scientific essays. Even though it only improves students' mastery of simple argumentation elements, this study provides empirical evidence that Malaysian students gain benefits of group argumentation. However, it must be acknowledged that group argumentation does not improve their performance when constructing complex arguments. Positive transfer also is observed by Kathpalia & See (2016) when most students show positive improvement in terms of structure and quality of their argumentation. The impact is observed when analysing their blogs after participating in class debate.

2.3.2 The negative transfer from group argumentation to written argumentation

However, some studies reported that group argumentation did not always have positive transfer. It was mostly due to the poor design of the learning intervention. Knudson (1992) agrees that collaborative argumentation should help students develop a better understanding of the argument. However, the oral interaction does not succeed to impart elementary school students with a skill to include counterarguments when writing even though the use of other argumentative components improves. Knudson believe that it is due to the type of the oral interaction employed in her study, which involves teacher-led discussions and highly structured problem-solving tasks rather than debates among students. Knudson believes that elementary students cannot simply transfer argumentative strategies used in oral dialogue to written monologues, and they do not have a well-developed schema for written persuasion. Students have difficulty in writing argumentative essays when there are no conversational partners.

The issue of negative transfer is prompted by Ferretti et al. (2000). They raise a concern regarding the difficulty of written argument compared to oral argument. Unlike written argument, oral argument involves immediate dialogue between two or more people who hold different opinions on an issue. Students have the benefit to engage with opposing views presented by their conversational partners during collaborative argumentation. When left to themselves to generate written arguments, it turns out to be more difficult because students not only need to generate justifications for their position but must also consider the justification for the alternative position.

In their study, Reznitskaya et al. (2007) find that only a small number of students benefit from Collaborative Reasoning. They discover that the transfer of argumentation skill from group to individual writing is impeded by the explicit teaching of argument schema. They justify that even though teachers have explicitly taught students how to use the argument schema, it is not probable that the students will master the skill shortly. When students still have insufficient skill to master the argument schema, they could not apply it in their writing. Secondly, less improvement is observed in students' argumentative writing when teachers

are too structured in teaching argumentation skill. Students are overwhelmed with rules of how to engage in argumentation. It affects students' motivation when they need to apply the argument schema in their writing for at the early stage of learning argumentation skill, the learning experience is cognitively demanding. They also identify the negative effects of the explicit teaching of argument schema when students manage to write the essay better at the pre-intervention stage than at the post-intervention stage. However, this view contradicts with van der Meijden & Veenman (2005) who argue that explicit guidance should be provided to students to teach them how to interact effectively and productively in cooperative learning situations.

A study by Reznitskaya, Glina, Carolan, Michaud, Rogers & Sequiera (2012) also find that students, who participate in Philosophy for Children (P4C) do not perform well when writing individually. The lack of transfer from dialogic to individual performance is due to the nature of activities conducted during P4C. Students are only involved in analysing the quality of the group's argumentation. They are not taught how to generate reasons. Furthermore, students in P4C discuss in a whole-class setting where they have no close participation with the discourse of reasoned argumentation.

Evagorou & Osborne (2013) conduct dyadic Collaborative Argumentation with 12 to 13-year-old students in a Science classroom. Students are instructed to write their arguments using Argue-WISE. They find that even though Dyad A and Dyad B receive similar argumentation instruction, only Dyad A shows improvement in the last two lessons. The argumentation skill displayed by Dyad B is static. This is because, Dyad A engages with Exploratory Talk while Dyad B engages with Cumulative Talk. Therefore, students in Dyad B do not improve in terms of their written argument.

2.4 The use of technology to conduct group argumentation

In response to the studies that show negative transfer of group argumentation on individual argumentation, Reznitskaya et al. (2012) invite more researchers to examine the alternative explanations for this lack of transfer so as to find out why inquiry dialogues do not work. This move is to re-examine and improve on the

theory and research on dialogue-based teaching. Besides that, although argumentation skills are important in formal education, they are not always easy to teach in schools due to many complexities such as proper teacher training, developing assessment methods, and coping with overloaded curricula. These challenges have encouraged educational technology researchers to identify how technologies can fill this gap and be employed to improve students' learning of argumentation (Alagoz, 2013).

Other than verbal group argumentation, various forms of technology have been used widely to accelerate the development of group argumentation (Andriessen, 2006). For example, Belvedere 3.0 is an argument map system to support secondary school students who are learning scientific argumentation (Andriessen, 2006) and the use of Collaborative Argumentation-Based Learning (CABLE) internet tools. These tools form a network learning environment in which students can construct argument diagrams individually or collaboratively, engage in chats with each other, and write texts together (Marttunen & Laurinen, 2007). Others also utilise tools such as Interactive Whiteboard (IWB), Evidence-Based Dialogue Mapping software tool and online chat rooms (Topping & Trickey, 2014). This is supported by Wolfe & Alexander (2008) who accord that the use of digital tools offers students opportunities to rehearse argumentation skills in an informal and personal way. Wegerif & Mansour (2010) believe that new media technologies can support in creating new dialogic spaces anywhere and everywhere. Furthermore, Jonassen & Kim (2010) explain that Collaborative Argumentation is frequently conducted via online discussion forums, rather than face-to-face conversations. By giving directions or questions to stimulate argumentation, students can construct arguments and counterarguments and contribute to the threads in the discussion.

2.4.1 Advantages of online argumentation

Researchers also find positive (Kuhn et al., 2008) and negative transfer (Reznitskaya et al.,2001) from online group argumentation to written argument. The burgeoning of online group argumentation is initiated by Reznitskaya et al. (2001) when they exploit Web forum in pursuit of their Collaborative Reasoning activity. However, the use of technology do not transform students'

argumentation skill due to lack of skill to handle the keyboard and communicate using the Web forum. Eventually, the use of online group argumentation evidence a positive potential when Kuhn et al. (2008) implement *FirstClass* instant-messaging software installed on students' individual computer. Similar to successful studies that investigate the transfer from group to individual argumentation, they manage to confirm that online group argumentation is beneficial for students' argumentative essays when writing about Capital Punishment (CP) topic.

Evagorou & Osborne (2013) and Kathpalia & See (2016) integrate the use of technology in their study but the usage is only limited to allow students to produce their written argument. They do not use technology to allow students to argue in groups. Legibly, studies on the transfer of online group argumentation to individual written argument are rather limited to date compared to face-to-face group argumentation. Therefore, the main contribution of this study will be focusing on the use of online group argumentation and secondly on identifying why online dialogues work or do not work to improve students' argumentative essay writing.

Researchers assert different views regarding online group argumentations. While there are advantages to holding discussions in either setting (face-to-face or online discussion), students most frequently note that using threaded discussions increase the amount of time they have spent on learning activities. Besides, higher-order thinking can and does occur in online discussions (Meyer, 2003). Clark et al. (2007) also assert that asynchronous scenarios provide learners with the necessary time to carefully consider and construct arguments while synchronous discussion enable learners to fluidly co-construct arguments with others. When pursuing CSCL online collaborative argumentation, Stegmann, Wecker, Weinberger & Fischer, (2012) believe it engages students with high-quality argumentation. In contrast to face-to-face environments, learners can take the time they need to reflect on their partners' contributions and think about their own arguments before sending them to their peers. Alagoz (2013) demonstrate that when students participate in online argumentation, more counter-critiques are produced compared to counter-alternatives. It shows that students are closely

engaged with high quality arguments when they do it online. Hakkarainen, Paavola, Kangas & Seitamaa-Hakkarainen (2013) also concur that a technology-enhanced shared space mediates the participants' argumentation and assists in externalizing, recording and visually organising all aspects and stages of their dialogic process.

2.4.2 Disadvantages of online argumentation

Besides the advantages that online argumentation can offer, researchers should not overlook its disadvantages. Compared to online learning, some researchers argue that face-to-face format is more valued because of its immediacy and energy (Meyer, 2003). The effectiveness of online argumentation is challenged when van der Meijden & Veenman (2005) discover that face-to-face dyads engage with more argumentations than the online dyads when solving the mathematics problems. This is because, students spend more time on discussing how to do the task rather than solving the task. Students also are distracted to provide talk that are unrelated to the task when working online. They also find that students take a longer time to complete an online task compared to a face-to-face task. It means talking is faster than typing. They also find that students are more satisfied with face-to-face collaboration than online collaboration.

Another disadvantage of online group argumentation is process losses as described by Weinberger, Stegmann & Fischer (2010). Computer-supported collaborative learners (CSCL) frequently suffer from process losses when distributing roles and activities in online environments when some learning partners dominate the debate and obstruct the production of arguments. Sometimes they have difficulties to engage in meaningful learning activities such as constructing arguments and counterarguments when learning together. Free-riding or lurking is an action where one learner covers major parts of the task and other learners reduce their task engagement. This suboptimal distribution of roles in groups of learners can tremendously reduce the potential of collaborative learning for equal participation in argumentative elaboration activities. Likewise, research on computer-supported collaborative work (CSCW) shows that computer-mediated groups have difficulties to respond immediately and to

convey ideas without using para- and nonverbal social context cues. This difficulty may hamper task performance of the group.

2.5   Argumentation and Exploratory Talk

Another theoretical framework of this study is borrowed from studies in classroom discourse by Mercer et al. (1999) and Wegerif et al. (1999). They find that argumentation can occur in three ways: (a) *Disputational Talk* where students are involved with disagreement and individualised decision making. Their discourse features are short exchanges consisting of assertions and challenges or counter assertions, aggressive attacking, unproductive disagreement, and unsupported, oppositional and challenging responses; (b) *Cumulative Talk* is when students build positive statements but not critical in response to what the other has said. Their discourse is limited to repetitions, confirmations and elaborations and (c) *Exploratory Talk* where students engage critically and constructively with each other's ideas. All these talks are focused on problem solving and to reach a consensus at the end of the dialogue.

Exploratory Talk is a linguistic tool bound with argumentation and reasoning activities which emphasise the aspects rarely found in traditional teacher-led classroom activities (Rojas-Drummond & Zapata, 2004). *Thinking Together* approach and Philosophy for Children (P4C) are examples of method to engage students with *Exploratory Talk* (Wegerif & Dawes, 2004). Following Mercer & Littleton (2007), in *Thinking Together,* students discuss issues in greater depth and for longer periods of time, participate more fully and equitably, more often seek justifications and provide reasons to support their views. This has majorly improved joint problem-solving amongst students. Apart from that, it is also an educational dialogue where group members are invited to contribute to the discussion, learn to make their information and reasoning clear, and try to reach agreement before deciding or acting (Tartas, 2010). Researchers (Fernández, Wegerif, Mercer & Rojas-Drummond, 2001; Mercer & Littleton, 2007; Rojas-Drummond & Zapata, 2004; Wegerif et al., 1999) prove that by teaching students *Exploratory Talk* explicitly, students' individual reasoning develop when tested using Raven's Standard Progressive Matrices (RSPM). The test involves completing a pattern or figure with a part missing by choosing the correct missing

piece from among six alternatives. During the test, it is found that students generate better reasoning abilities and become more competent when solving problems.

Most studies mentioned in Table 3 do not mention specifically how students navigate their dialogue during group argumentation or what type of talk is used during the argumentation activities. The study conducted by Mercer & Littleton (2007), Chandella (2011) and Evagorou & Osborne (2013) only explains how *Exploratory Talk* assists and improves students' argumentation skill. A more recent study by Bryers, Winstanley, & Cooke (2014) observes that when students engage in meaningful discussions, they produce language beyond their level, learn new language from each other and develop new communication strategies. When learners speak from within, discuss issues that are relevant to their lives, they produce richer, more complex language which is more likely to lead to language development.

Argumentation researchers support the theory that argumentative discourse skills develop through authentic practice in argumentation. In order to achieve persuasive argumentation suggested by Leitão (2000) and Reznitskaya et al. (2007), *Exploratory Talk* as suggested by Wegerif et al. (1999) and Wegerif & Mercer (1997) should be taught to students. This is because, the essence of *Exploratory Talk* is the one that promotes persuasive argumentation, not cumulative nor disputational talk. Ferretti et al. (2000) suggest that when students are provisioned with the explicit sub goals about the elements of an argumentative essay, (arguments, counterarguments and rebuttals) students write better developed essays. The explicit sub goals encourage students not only to produce reasons and evidence for their position, but also to rebut reasons that may be offered by someone who disagree with them. The type of talk that can generate the key elements mentioned by Ferretti et al. (2000) is *Exploratory Talk*. Besides that, *Exploratory Talk* involves students engaging critically (yet constructively) with each other's ideas. These definitions correspond with the principles of argumentation in which students are prompted to confront, explain, defend and reframe their views (Asterhan & Schwarz, 2010).

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Exploratory Talk is chosen due to its nature to let students reach a consensus at the end of the dialogue. This kind of task will stimulate students to provide their opinions in order to solve the problems. It encourages students to contribute to the discussion before they decide on the topic and Mercer (2009a) agrees that *Exploratory Talk* is highly related to persuasive argumentation. Hence, the online group argumentation promoted in this study should adhere to this type of talk. Students should be taught how to argue in groups, to discuss real-world social issues and to develop their argumentative skill. The structure of persuasive argumentation is equivalent to how *Exploratory Talk* works. In such talk, challenging other people's ideas is essential as it attempts to resolve differences of opinions. In *Exploratory Talk*, students are trained to challenge other people's ideas and back up their own stand. This will give students an insight on how to deal with persuasive argumentation. Indirectly, it teaches them to be a thoughtful person which is an important trait for future leaders. They must consider two different positions and look at an issue in a balanced way. Students need to be fair by presenting all sides of an argument. They attempt to get others to agree with their stand when they provide strong reasoning to get others recognise their side. Students are taught to acknowledge and appreciate opposing claims, compare ideas to establish position, present two sides of ideas and they are not going to fight for their stand.

According to Hadjioannou & Townsend (2015), during authentic discussions, interlocutors invite the presentation of different ideas, consider multiple perspectives, they ask questions to which they do not have predetermined answers and they deem others' contributions as important to the construction of meaning. In the task, students must explore the different possible answers. They act as inter-thinkers Mercer (2009a) and exchange ideas with a view to sharing information to solve problems.

> *"Young people learn a great deal about how to think collectively from interacting with each other. As the younger generation, there are lessons that they can only learn amongst themselves, away from the guiding or constraining influence of their elders."*
>
> *Mercer (2000 p. 165)*

As mentioned earlier, writing persuasive essay is demanding to most students as they themselves need to think what others may disagree with but when they engage in *Exploratory Talk*, the load hypothetically will be decreased as they are arguing in groups. This idea derives from Crowell (2011) who states that when they argue with other friends, there is a chance that one of the members is opposing to their arguments and they may have the tendency to rebut the opponent's views.

The principle of *Exploratory Talk* is similar with dialectical argumentation. It is also considered more applicable to educational purposes as it represents a dialogue between proponents of alternative claims during a discussion to reach a consensus by resolving differences of opinion. Dialectic arguments may be argumentative, where the goal is to convince opponents of the superiority of one's claim hence there is a chance for students to deal with counterarguments. They may also seek a compromise between multiple claims. One of the prominent models of dialectical argumentation is pragma-dialectics (van Eemeren & Grootendorst, 2004). Critical discussions have four essential stages: (1) confrontation stage, (2) opening stage, (3) argumentation stage, and (4) concluding stage. During the confrontation stage, people present different claims. If there are no differing views presented, there will be likely no argument within the group. During the opening stage, people accept their roles and a set of rules for conducting the argument. In the argumentation stage, people defend their claims and challenge others. In the concluding stage, participants decide who wins and loses.

When talking about rules, Mercer et al. (1999) and Wegerif et al. (1999) suggest a set of ground rules to be established to ensure students achieve Exploratory Talk.

> *"Exploratory Talk is a style of interaction which combines explicit reasoning through talk involving identifiable hypotheses, challenges and justifications, with a co-operative framework of ground rules emphasizing the shared nature of the activity and the importance of the active participation of all involved."*
>
> *Wegerif (1996 p. 52)*

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Ground rules are important due to the fact that Furlong (1993) acknowledges that to reason from multiple and conflicting perspectives invites cognitive conflict and possible emotional discomfort. Chandella (2011) and Kumpulainen & Lipponen (2010) find that it is a highly demanding task to engage students with dialogic interactions. Furthermore, instructing students to work in groups while using the technology, does not guarantee that they will collaborate dialogically. Teachers should not assume that their students already know how to participate in *Exploratory Talk*. This is because, dialogic instruction is rare in secondary English classrooms as it is usually overshadowed by lectures, recitations and seatwork which are usually to prepare students for standardised test (Caughlan, Juzwik, Borsheim-Black, Kelly, & Fine, 2013). They need to be prepared for working together in groups beforehand (Wegerif & Dawes, 2004). Students should be taught how to apply discourse ground rules such as asking open questions and respecting others' opinions (Mercer et al., 1999). This is to allow them to improve their discussion skill, so they can engage with each other in dialogic space successfully. Hence, Rojas-Drummond & Zapata (2004) suggest that the ground rules should require that all points of view are considered, that proposals are explicitly stated and evaluated, that justifications and reasons are provided to back up opinions, and that there is an eventual agreement preceding decision making as to the actions to be followed.

In order to improve students' argumentation skill, the use of argumentative discourse such as *Exploratory Talk* should be integrated with other successful approach such as goal instruction which has been demonstrated to improve the production of counterarguments and rebuttals. One of the examples is a study conducted by Nussbaum & Kardash (2005) who manage to increase the production of counterarguments and rebuttals amongst undergraduate students. Kuhn & Udell (2007) also find that explicit instruction is helpful to motivate young adolescents to attend to other's argument and even generate an argument against it.

2.6   Towards a Theoretical Framework

I develop my initial conjecture based on the extensive literature review that when students participate in group argumentation, their written argumentative essay will improve. Based on the literature review, the trickiest part to write an argumentative essay is producing counterargument. According to Andriessen, Baker & Suthers (2003), when students learn to argue, they learn the language of argumentation. Hence, this study will address this recommendation by teaching students to participate in *Exploratory Talk* in an authentic environment so that they can learn how to be persuasive when writing their arguments. However, the effectiveness of dialogue has been well documented with respect to English-as-mother-tongue students, but it remains an empirical question as to whether this approach is equally useful for students in my study who learn English as a second language and some of them have minimal language proficiency in terms of communicating using that language. Most of the students also lack the exposure to argumentation discourse as well as argumentative essay writing.

Compared to young adults, Felton & Kuhn (2001) agree that adults have a high tendency to react to opponents' arguments using counterarguments. This notion strengthens my decision that the skill to promote counterarguments should be taught to secondary school students as they are usually oblivious of the importance of considering other people's views or opinions when engaging in the argumentation process. Furthermore, all argumentation studies in Malaysian context to date are mostly conducted in higher education levels which clearly depict the importance of improving secondary school students' argumentation skill prior to their entrance to any higher education institution.

Design Framework 1

My initial and fundamental conjecture is that if secondary school students are prompted to participate in group argumentation prior to their essay writing, the quality of their essays will be enhanced. From the literature review, it was found out that:

- Group argumentation influences individual written argument (Anderson et al., 2001; Crowell & Kuhn, 2014; Reznitskaya et al., 2001, 2007, 2009a,

2012)

- Persuasive arguments conform to the argument-counterargument-rebuttal structure (Leitão, 2000; Reznitskaya et al., 2007), hence students should be taught to engage in argumentation that is not only dialogic but exploratory in nature.
- Following Mercer, Wegerif & Dawes (1999) and Wegerif et al. (1999), in *Exploratory Talk*:
  - ground rules are important to promote two-sided arguments
  - ideas may be challenged
  - reasons are given for challenges
  - ideas and opinions are treated with respect
  - arguments and counterarguments are justified
  - alternative solutions and perspectives are offered

Those theories determined the pedagogical principles of this study:

Table 4. Design Framework 1

Design Framework 1
Students should participate in group argumentation before they write argumentative essays
Students should involve in persuasive argumentation which embraces dialogic interaction and Exploratory Talk
Students should follow ground rules to encourage them to participate in persuasive argumentation

2.7 Conclusion

This literature review aims to indicate the importance of teaching persuasive argumentation to learners. The literature suggests that group argumentation brings positive impact on students' individual argumentation skill. Lastly, the literature also raises the importance of technology to enhance learners' argumentation skill.

Up until this point, this thesis has offered the rationale as to why a study to investigate the use of dialogue-based pedagogy to improve individual students' written argument should be carried out. It has also presented relevant theoretical input and previous research in Collaborative Reasoning and Exploratory Talk that furnish us with the design of the interventions in this study. This chapter ends with Design Framework 1 to be further refined in the Exploratory Study of this study. The next chapter will provide more details regarding how this study has been conducted using the Design Based Research methodology.

Chapter 3 – Methodology

3.1   Introduction

This chapter describes the methodology of this study. It explains the research framework and design of this study which is Design-Based Research (DBR). It also explains the methods used and the data analysis procedure. This is followed by a discussion of the extent to which the research design and methods used comply with ethical principles and practices. The final section outlines the limitation and also the difficulties encountered while this study is being conducted.

Chapter 4 contains the findings from the exploratory study. In the exploratory study, I consulted with two examiners to find out how they evaluate argumentative essay at secondary and tertiary levels, interviewed teachers to find out how they teach argumentative essay writing and finally observed students' behavior when participating in group argumentation. The results and findings are essential to develop the prototype intervention.

Chapter 5 shows how I developed the prototype intervention. I combined the findings from the exploratory study and literature review on the use of technology to promote dialogic interaction to design the scheme of work for the prototype intervention.

In Chapter 6, I consulted the teachers again to seek their opinions and suggestions on the scheme of work I have designed before establishing the final design of my prototype intervention. This is important as the teachers are the most suitable persons to evaluate the appropriateness of the scheme of work for secondary school students.

3.2   Contextualising Design Based Research (DBR)

This study incorporates designing, developing and evaluating educational interventions for secondary school students in Malaysia improving their persuasive argumentation skill both in group and individual settings: interventions that are enhanced using smartphones and WhatsApp tools. It involves generating

a theoretical framework for design (i.e. design framework) that includes a number of design conjectures that are tested through short interventions.

The construction of meaning in this research relies on the input of the participants and myself as the researcher, and the knowledge gained is through experience that comes from observation and participants' feedback. Other than that, the main objective of this study is to produce a revised design framework that has been trialled and developed through a series of iterations for ESL practitioners who want to adapt the use of group argumentation to improve students' persuasive argumentation skill. Fundamental to this study are the research problems, so suitable data collection and data analysis methods have been chosen to provide insights into the research questions. Therefore, I believe this study falls within the pragmatic paradigm, since, according to Creswell (2009), this paradigm is free to choose suitable methods that seem appropriate because what takes precedence is the resolution of the problem and what matters to the pragmatists is what works. The choice of approach is linked directly to the objectives and the nature of the research questions.

My investigation is to a large extent related to Dewey pragmatism as it focuses on what things will make a difference since I am exploring on 'what works' (Creswell, 2009, p.10) to improve Malaysian students' written persuasive argumentation. It is characterised by an emphasis on dialogic interaction and shared meaning-making in order to create practical solutions to the problem of the study. Based on the principle of pragmatism, I can manipulate any appropriate method as argumentation is an interdisciplinary research that does not relate to any specific paradigm. Besides, Tashakkori and Teddlie (2003) relate pragmatism with mixed methods research. I can independently decide the methods or combination of methods to answer my research questions. Other than that, pragmatism breaks down the hierarchies between positivist and constructivist ways of knowing in order to look at what is meaningful from both.

The research questions for this study are:

Research question 1: *What effect does the educational intervention have on the persuasiveness of the students' argumentation?*

Research question 2: *What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?*

Research question 3: *Does students' ability to argue persuasively in groups positively affect their ability to write persuasive argumentative essay?*

3.3   Methodology

This study proposes to establish the function of persuasive argumentation by examining and exploring arguments generated by students. Examining students' interactions merely based on positivist or interpretive paradigm would be vigorous. This is because, as Van den Akker (1992) argues, traditional research approaches such as survey, case studies, experiments, action research, ethnography, correlational research and evaluation research scarcely provide recommendations that are useful for design and development to solve problems in education. Furthermore, positivist research usually examines learning processes as isolated variables within laboratory settings that provide incomplete understanding of their relevance in more real-life settings as they merely function to describe, compare, explain and evaluate.

Therefore, it is highly recommended for researchers to undertake DBR as its main function is to develop an optimal solution for a problem in context instead of doing more comparative studies. Van den Akker (1992) argues for a systematic research such as DBR in support of the development and implementation processes in a variety of contexts. DBR is suggested for researchers to systematically adjust various aspects of the designed context so that each adjustment serves as a type of experimentation that allows the researchers to test and generate theory in real-life classroom contexts. DBR is chosen for this

study as it is a methodological approach that allows ongoing iterative process to investigate and develop practice and theory concerning the students and their learning environment. Based on views from experts, DBR, as a pragmatic approach which is not specifically constrained to either the positivist or interpretive paradigm, is suitable for my study as it equally values both qualitative and quantitative methods (Abdallah and Wegerif, 2011). Furthermore, DBR is aligned with the broad aim of doing educational research which is to provide insights and contributions for improving practice, and to inform decision making and policy development in the domain of education. DBR involves researchers and practitioners to design and develop an educational intervention, in the forms of programmes, teaching-learning strategies and materials, products or systems in order to solve a complex educational problem. At the same time, DBR allows us to advance our knowledge about the characteristics of the interventions and the processes to design and develop them.

This study mainly concentrates on the field of persuasive argumentation. Specifically, I am exploring the dialogic interaction amongst ESL students to discover if the extensive first-hand experience in group argumentation helps when they express their arguments in written form individually. In this study, I am proposing that when students engage in group argumentation based on dialogic and Exploratory Talk, they can write better persuasive argumentative essays. Based on the assumption that students are never exposed to persuasive argumentation, not to mention dialogic or Exploratory Talk, I am creating opportunities for them to argue collaboratively through an intervention that promotes such dialogues. Only by doing this, I can investigate if there are links between Exploratory Talk and students' written argument. Hence, before I develop the intervention, I firstly need to explore if students participate in dialogic argumentation or Exploratory Talk when given an instruction to discuss a debatable issue, and what are the barriers that prohibit teachers from conducting group argumentation in class. For these reasons, it was decided that Design Based Research (DBR) methodology should fit well with pragmatism because this methodology involves a set of analytical techniques that balance scientific and naturalistic paradigms and aims to bridge theory and practice in education.

Using DBR, I am able to understand how, when and why educational innovation works in practice.

Wang & Hannafin (2005) explain that DBR was originally used to design models to address emerging technological innovations. This practical and comprehensible methodology allows researchers to use appropriate tactics and techniques at different stages of test and modifications. It involves cycles of designs that go through the process of testing, modification, re-designing, making another test and modifying it. As the methodology is mostly used in research related to technological innovations and continuous improvement of education practices, it is relevant to be adapted in this study because it suggests designs that address realistic teaching skills and needs.

3.4   Design-Based Research (DBR)

DBR is a suitable methodological choice for this study as it is pragmatic in nature, and suits my research approach (Wang & Hannafin, 2005). This research adopts the Design Based Research (DBR) approach which is also termed by other researchers as 'design experiment' (Brown, 1992; Collins, 1992) and 'development research' (van den Akker, 1999). However, researchers have agreed on the choice of the name Design-Based Research (DBR) over the previously used terms (The Design-Based Research Collective, 2003). It has received significant attention by education researchers and has served as an emerging framework to guide effective educational research.

According to Wang & Hannafin (2005), DBR has five distinguishing features. Firstly, it is pragmatic where the practical goal enhances both theory and practice. Secondly, DBR is grounded as it takes place in real-world contexts where participants can communicate and interact socially with each other. The theory behind the foundation of DBR is constantly developed and elaborated throughout the research process. DBR is also interactive as researchers and educators work closely to develop solutions to problems that may have arisen. The processes of DBR are constantly developed and polished within an iterative cycle of analysis, design, implementation and redesign. The processes involved in DBR are flexible whereby changes are always implemented when necessary. DBR is also

integrative where it incorporates a variety of approaches and uses a variety of research methods. During the different phases of DBR, methods vary as the focus of the research changes and develops. DBR is also contextual as the research results are linked with the design process and with the context in which the research is conducted. The aim of DBR should be not only to design and test an intervention but also to understand how and why an intervention works within the context in which it is implemented.

The main reason for adapting DBR into this study is due to its motivation to bridge learning research with classroom practices (Reimann, 2011). DBR researchers contend that educational research studies infrequently have significant impact on teaching practices or educational policies in classrooms as educators are not aware of such research studies. Sometimes, educators could not implement the learning intervention when it is too different from the demands and constraints of the classroom. Hence, in DBR, Brown (1992) suggests researchers work closely with educators to align the research with curriculum, teachers' and students' time, logistical and technical constraints. Therefore, Wang & Hannafin (2005) agree that DBR is aimed to solve real world problems of designing and implementing interventions other than adding or improving theories and design principles. By working closely with ESL teachers, I have managed to identify the problems related to students' lack of argumentation skill. The iterative nature of the DBR model also allows me to progressively test and refine the learning intervention I have developed. It is hoped that by working closely to real school context, the intervention will be tested and revised to maximise the impact of the educational intervention thus solving the problems faced by most secondary school students in Malaysia.

Another goal of DBR is to learn about learning and to support the development of learning. Hence, the methods involved usually will be designed to cater specific elements of the learning environment. These methods can be in the form of tasks, materials, tools, patterns of communication and interaction or even instructional sequences. According to Reimann (2011), in DBR, researchers usually will be involved with teaching activities. In this study, I play the role of a teacher where I have directly interacted with the students to teach them how to participate in

argumentation. Due to time constraints of the teachers in secondary schools, I do not have the opportunity to implement the intervention with the teachers.

Another reason to adopt DBR in this study is because it is a suitable methodology for research that exploits technology-enhanced learning environments (Herrington et al., 2007). Educational intervention developed in DBR can be in the form of tools, learning activities or curriculum. Hence, I have combined dialogic learning activities and technological tool namely, the WhatsApp application, to create the intervention.

3.5   Criticisms and challenges of DBR

One of the challenges of conducting this design research is that it is naturally risky due to its exploratory nature (Edelson, 2006). In this study, I have explored and adapted ways of how to solve problems regarding the difficulty of writing persuasive argumentative essays based on previous studies conducted by other researchers in the argumentation field. What appears successful in their studies might not have similar impact on the context of my study. In fact, design research may lead to designs that are worse than existing practices because they either lead to unsatisfactory outcomes or they are not feasible to implement. If the proposed design is grounded in existing research or sound theory, then it can be innovative without being overly risky. If it is not well grounded, then, it may, in fact, be too speculative and carry too much risk. On the other hand, if the design concept at the heart of a design research proposal is not sufficiently innovative, it may not be worth the investigation. Another criticism is that DBR methodology usually generates a lot of data, but researchers are aware that some of the data may never be used.

3.6   Overall research procedures

DBR involves a number of stages. Figure 1, adapting the Plomp (2007) model, explains how this study is conducted using DBR methodology.
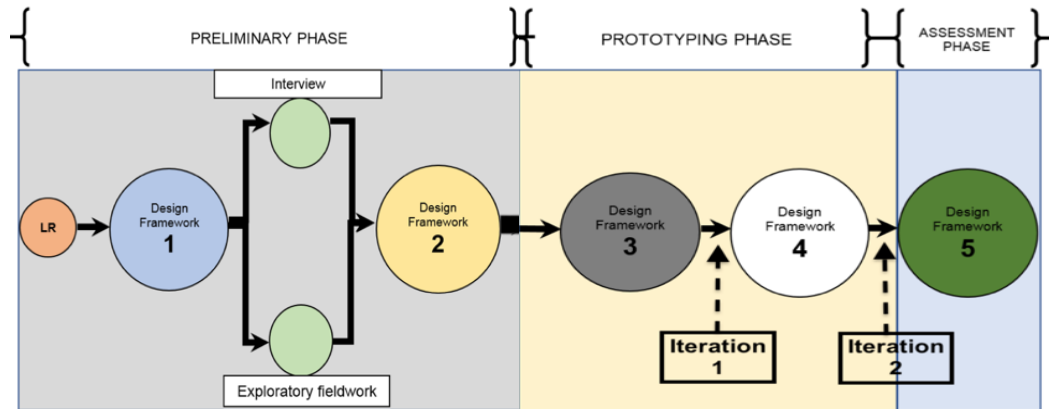
Figure 1. Stages involved in this research

Plomp's model is selected as it uses Wademan's (2005) Generic Design Research Model (GDRM) which demonstrates the continuous, iterative cycles of research, design and evaluation. Following Plomp (2007), this study is to be conducted through a series of iterations which explore and develop the theory throughout the research process through a series of design frameworks.

The study begins with the Preliminary Phase. This phase acts as a theoretical and empirical foundation of the whole study. A comprehensive review of literature is conducted to construct Design Framework 1. The conceptual framework of this study is presented at the end of Chapter Two (Literature Review). In Preliminary Phase, an exploratory study has been conducted with two examiners, nine teachers and 33 students to refine and develop the initial design framework (DF 1). The procedure and findings of the exploratory study is explained in Chapter 4. Based on the literature review and the feedback from the participants in the exploratory study, Design Framework 2 has been designed and presented at the end of Chapter 4.

Prior to the Prototyping Phase, I have conducted a pilot testing, involving nine ESL teachers who have evaluated and commented on the scheme of work. This is essential to see if this intervention suits the standard of secondary school students in Malaysia. In the Prototyping Phase, I test and develop the intervention through a series of two iterations. The first iteration tests Design Framework 2. Based on the findings from this iteration, Design Framework 3 has been

developed. Iteration 2 is then conducted to test Design Framework 3 in order to generate an improved design framework, which is Design Framework 4. Each iteration is conducted with different sets of participants in terms of age, English language attainment level and level of schooling. The purpose of using different sets of participants is to help me to test the theory developed in Iteration 1 in a different context or environment.

The last stage of this study is the assessment phase. The findings from Iteration 2 are reported and used as a guide to shape the revised version of the framework. Based on the input from the Prototyping Phase, a summative evaluation is carried out to conclude whether the intervention meets the pre-determined specification and to suggest recommendations for further improvement. The final design framework produced suggest implications for argumentation curriculum design and contributions to theory, practice and methodology.

3.7   Participants

Overall, 65 secondary school students, nine English language teachers and two examiners were the participants of this study. Teachers and examiners only participated in the exploratory study (chapter 4) and expert trial (chapter 6). 33 students were involved in the fieldwork studies while 32 students participate in the main iterations. The first phase is Iteration 1 which involved 18 students (eight males and ten females) while the second phase is Iteration 2 consisting of 14 students (two males and 12 females). Each student participating in this study was identified by an anonymous identification code for their written essays and WhatsApp profile. For example, students in Group 1 was coded as 'G101', 'G102' and 'G103' while students in Group 2 as 'G202', 'G202' and 'G203'. 'G101' means Group 1 Student 1, 'G202' means Group 2 Student 2 and so on. This code is applied to all students in Group 1 until Group 6.

Table 5 shows the participants involved in this study. The total of 76 participants including examiners, teachers and students participate at four different stages of the study (Chapter 4, 6, 7 and 8). The same nine ESL teachers participated in two stages of this study (Chapter 4 and 6). More details of the participant can be found in subsequent chapters.

Table 5. Participants of this study

Exploratory Study (Chapter 4)	Expert trial (Chapter 6)	Prototyping phase	
		Iteration 1 (Chapter 7)	Iteration 2 (Chapter 8)
One secondary level examiner	9 ESL teachers	18 upper secondary school students (17 years old)	14 upper secondary school students (13 years old)
One post-secondary examiner			
9 ESL teachers			
24 students (classroom observation)			
9 students (online observation)			

3.8   Procedures of Iteration 1 and Iteration 2

The overall research procedures have been described extensively at the beginning of this chapter. Here, I provide an in-depth explanation of the procedure for both iterations conducted in this study. Iteration 1 and 2 adhere to similar research procedures.

3.8.1   Pre- and post-intervention essays

Students were required to write argumentative essays prior and following the intervention. Students' written essays from both stages (pre-intervention and post-intervention) were compared to examine any improvement in relation to the frequency of counterarguments and rebuttals offered in the post-intervention essays. This procedure was administered in both Iteration 1 and 2. All essays were retyped in word processor to ensure smooth analysis as some students' handwriting were illegible but all errors from original writing were retained. The conventions of writing such as spelling, punctuation, capitalisation and grammar were not taken into analysis as the main purpose was to merely evaluate the type and frequency of arguments presented by the students. The outcome is important as it is used to directly measure the impact of the educational intervention on students' argumentative writing. In Malaysian context, students' argumentation skill is only evaluated in written form. It is a rare occurrence to evaluate students' argumentation skill in verbal form. Hence, it is sensible to assess the outcome of the educational intervention based on students' argumentative essay writing.

3.8.2 Students' dialogic interactions

Students' interactions were obtained from the online interactions which occurred during the WhatsApp group argumentations. All students worked collaboratively with their group members discussing the topics given by the teacher and selected by them.

3.8.3 Structured observations

I observed discussions through the lens of sociocultural theorists, which allows me to consider discussions as socially situated events. I conducted observation as Merriam & Tisdell (2016) agree that it is a primary source of data in qualitative research. The main purpose of observation is to observe the important events that transpire during the activities. This later can help me refine my intervention. I recorded the issues that have arisen during Iteration 1 so that I can improve the intervention prior to Iteration 2. Similar steps were taken in Iteration 2 so that I can improve the intervention in the following iterations that might be conducted in the future by myself or other researchers who are interested to tackle similar issues. The advantages of observation according to Denscombe (1998) is that the data gathered from observation are reliable because they have been observed directly from the setting where the actual activity takes place, not from what others think they are doing. Direct observation of students' behaviours have helped me to gather a better understanding of the hindrances that impede persuasive argumentation amongst the students, as well as the encouraging factors that promote persuasive argumentation. Denscombe (2007) and Cohen, Manion, & Morrison (2007) assure that observation is better to assist the researcher on what is actually going on rather than having to rely on what people say they are doing. It demonstrates that data generated during observation are more authentic even though they could be overwhelming as the observations are being carried out within an online environment where so much is going on during the group argumentations. However, there are ways to counter this by using systematic and structured observations. The form of direct observation used in this study is continuous monitoring (CM) (Bernard, 2017). Even if this method waives communication between researcher and participants, I managed to obtain a lot of data from the students' electronic conversations. I believed that CM is the

most suitable method for this study as I conducted various group argumentation activities. Hence, the issue of reactivity problem where students are expected to alter their behaviours as I was watching them could be prevented. Students were expected to act naturally after a few group argumentations activities as it is impossible for them to constantly cope with my impression.

3.8.4 Semi-structured questionnaire

Different sets of questionnaire were used in this study for Iteration 1 and 2. The questionnaire was non-structured because they contained open-ended questions. It is a purposive sampling where participants were selected by accessibility. Only students who wanted to participate were given the questionnaire. It was a simple descriptive questionnaire as it was just a one-shot survey where the data were collected at one point in time. The purpose of using semi-structured questionnaire is to identify students' perceptions and suggestions on how to improve the intervention. Students' opinions and views are important as they were the ones who participated in the intervention. The questionnaires were distributed after students participated in all the three stages (pre-intervention, intervention and post-intervention) in Iteration 1 and 2. The teacher provided each of the students who volunteered with a copy of questionnaire (see Appendix 1) to be answered. They were asked to provide their comments related to the implementation of the intervention. The questionnaire generally invited students to elicit the advantages and disadvantages of participating in the intervention and their suggestions on how to improve the intervention. It took them approximately 30 minutes to reflect and comment on the intervention.

3.9 Data analysis

The main findings of this study were derived from students' pre- and post-intervention essays, students' online interactions, structured observation and semi-structured questionnaire.

3.9.1 Analysis of argumentative essays

The analysis of argumentative essays was conducted in three stages for Iteration 1 and Iteration 2. Each stage has its own purpose to be conducted.

3.9.1.1 Essay coding

Some researchers use exclusive software to analyse argumentative essays. Reznitskaya et al. (2001) and Lin, Anderson, Hummel, Jadallah, Miller, Nguyen-Jahiel & Dong (2012) use a computer software called *QSR NUD*IST 6* as a coding system to code argument, counterargument and rebuttal in the essays written by students while Ghosh, Muresan, Wacholder, Aakhus & Mitsui (2014) use *Araucaria* software for automatic argument analysis. Weinberger & Fischer (2006) combine the use of human coders and a tool called *TagHelper* for analysis of discourse corpora on the multiple dimensions of argumentative knowledge construction. However, I have manually coded all essays based on the coding rules found in Nussbaum & Schraw (2007). Similar coding is used by other argumentation researchers (Ferretti et al., 2000; Kuhn, 1991) as shown in Table 6 below.

Table 6. Components of persuasive argumentative essays adapted from Nussbaum & Schraw (2007).

Category	Description
Final claim (FC)	An opinion or conclusion on the main question
Primary claim (PC)	A claim that supports the final claim
Counterargument (CA)	A claim that refutes another claim or gives an opposing reason to the final claim
Rebuttal (RB)	A claim that refutes a counterargument
Supporting reason / example (SR/E)	A separate idea or example that supports another claim in a line of reasoning
Reservation (Res)	A brief qualification serving as rebuttals to short or implicit counterarguments.

There are six important categories that determine the persuasiveness of a written essay. The purpose of coding is to provide quantitative measure of students' argumentation skill and its objective is to measure students' ability to construct various arguments, counterarguments and rebuttals relating to an issue. It should

be noted that the analysis does not assess quality of writing in terms of spelling, grammar and organization (Reznitskaya et al., 2007).

I followed this standard model of coding rather than Toulmin's (1958) TAP as it focuses on identifying arguments, counterarguments and rebuttals. Besides, TAP is more complex, and it will complicate my coding. Firstly, all essays were coded based on idea units to distinguish the key components of arguments. I identified student's position on the topic (i.e. 'I agree that' or 'I disagree that'). This will be coded as the *final claim*. Secondly, I identified the reasons the students have used to support the final claim, which was coded under *primary claims.* Third, I searched for any supporting reasons or examples that supported the primary claims. Fourth, I evaluated if students provided any *counterarguments* that refute any claim and whether these counterarguments were backed up by a reason or an example. Finally, I coded *rebuttal* if there was a claim that refute a counterclaim and any reason or example that supported the rebuttals. I also applied inter-rater agreement with two other PhD students to ensure the consistency of the essay coding.

The essays were rated for elements of persuasive argumentative essay as mentioned by Nussbaum & Schraw (2007), which include the final claim, reasons for the final claim, elaborations for the final claim and reasons, counterarguments, reasons for the counterarguments, rebuttals and also reasons for the rebuttals.

This study follows a previous study by Ferretti et al. (2009) where inter-rater reliability was calculated by dividing the total number of agreements by the total number of agreements plus disagreements (Appendix 12). In this stage, three raters were involved including me as the researcher. According to Graham, Milanowski & Miller (2012), the rule of thumb for percent agreement is 90% for high agreement while minimal agreement is 75%. I scored all 34 essays using the holistic scoring rubric previously described. In order to establish inter-rater reliability, I trained two female PhD students who have had experience teaching essay writing at secondary school level. However, both raters were unfamiliar with the design and purpose of the study. Raters firstly received a 2-hour training sessions on how to code idea unit following Nussbaum & Schraw (2007) before

practising using the rubric. The training began with familiarisation to the coding category and description developed by Nussbaum & Schraw (2007). They were trained to code a sample of essay (see Appendix 2) used by Nussbaum & Kardash (2005) using the six categories found in the rubric. The essay was entitled '*Watching too much television does cause children to become more violent'* (see Appendix 2). After both raters became competent to apply the six codes for analysing that essay, another five anchor papers (see Appendix 3) were used as examples to let them observe how the codes were extensively applied. The anchor papers were argumentative essays written by Malaysian secondary school students provided by a teacher who participated in the exploratory study. The teacher agreed to share the sample essays only for the purpose of training the two raters. Hence, the raters learned how the argumentative qualities of five anchor papers on the topic *"Internet promotes an unhealthy culture amongst students"* were determined to identify the elements of argumentative qualities. The second and third raters together with the researcher discussed the ratings, and then each rater proceeded independently to score another set of eight sample essays for additional practice for the coding and holistic scoring prior to the coding of essays for Iteration 1 and 2. Following the training and practice, both raters scored approximately 80% of the argumentative essays (n=8) in order to determine interrater reliability for the coding of argumentative elements presented in the essays.

A final claim (FC) was assigned when students explicitly mentioned their position about an issue; agree or disagree. Primary claim (PC) was used when students mentioned any reason to support their position. Any disagreement towards an opponent's primary claim (PC) was coded with counterargument (CA) while a statement that countered the counterargument was coded with rebuttal (RB). When students elaborated or gave examples to support their primary claim (PC), it was coded as supporting reason or example (SR/E).

3.9.1.2 4-point scale

Secondly, a 4-point scale as shown in Table 7 was used to determine the degree in which each essay has integrated arguments and counterarguments.

Table 7. Nussbaum & Schraw (2007) 4-point scale

Score	Category	Description
4	Exceptional	Essay was balanced, with integrative closing paragraph. It may weigh evidence on two sides.
3	Well integrated	Essay develops substantial counterarguments and rebuttals or a substantial it-depends argument.
2	Slightly integrated	Essay has (a) a minor it-depends argument, (b) a minor reservation, or (c) different conclusions stated at the beginning and end of the essay.
1	Unintegrated	Essay discusses only one side of the issue or has no final conclusion.

An essay will be awarded with a score of 3 or 4 if it integrates counterarguments and rebuttals whilst an essay will be awarded with score 0 or 1 if it does not include any of the elements mentioned.

Lastly, each essay was assessed holistically to determine its overall persuasiveness. The holistic assessment was conducted based on the rubric adapted from Chase (2011). Initially, the description of original scoring rubric - the one used by Ferretti et al. (2000) and Nussbaum & Kardash (2005) in their studies - for score 3 is *"Between the standards for 2 and 4"* while for score 5 is *"Between the standards for score 4 and 6".* But in this study, I have adapted the quality measure of score 3 and 5 by incorporating detailed descriptions of the scoring criteria as suggested by Chase (2011) as shown in Table 8.

Table 8. Adapted holistic scoring rubric proposed by Chase (2011)

SCORE	DESCRIPTION	
	ORIGINAL VERSION	**ADAPTED VERSION**
0	***Response to topic:*** Paper responds to the topic in some way but does not provide an opinion on the issue	***Response to topic:*** Paper responds to the topic in some way but does not provide an opinion on the issue
1	***Undeveloped opinion:*** Paper provides an opinion that is unclear or is undeveloped. Paper states an opinion, but no reasons are given to support the opinion, the reasons given are unrelated to or inconsistent	***Undeveloped opinion:*** Paper provides an opinion that is unclear or is undeveloped. Paper states an opinion, but no reasons are given to support the opinion, the reasons given are unrelated to or inconsistent with the opinion, or the reasons are incoherent. Reasons may

	with the opinion, or the reasons are incoherent. Reasons may be scattered incoherently throughout essay and provide contradictory information.	be scattered incoherently throughout essay and provide contradictory information.
2	*Minimally developed:* Paper states a clear position and gives one or two reasons to support the opinion, but the reasons are not explained or supported in any coherent way. The reasons may be of limited plausibility and inconsistencies may be present.	*Minimally developed:* Paper states a clear position and gives one or two reasons to support the opinion, but the reasons are not explained or supported in any coherent way. The reasons may be of limited plausibility and inconsistencies may be present.
3	**Between the standards for 2 and 4:** For example, there may be one developed reason and one undeveloped reason.	*Partially developed:* Paper contains a clear opinion and gives a reason and some detail for the reason. The supporting details only somewhat explain or elaborate upon the reason, and may contain some inconsistencies, irrelevant or unsupported information. Paper includes one reason and partially explained detail (e.g., two or fewer details) and/or unclear elaborations.
4	*Partially developed:* Paper contains a clear opinion and gives a reason and some detail for the reason. The supporting details only somewhat explain or elaborate upon the reason, and may contain some inconsistencies, irrelevant or unsupported information. Paper includes one reason and partially explained detail (e.g., two or fewer details) and/or unclear elaborations.	*Developed:* Paper states a clear opinion and provides a reason and several supporting details for the reason. The supporting details are well elaborated and serve to explain the writer's reasons for the stated opinion. The reasons and supporting details are generally plausible, and there are little to no problems with organization and clarity. Paper includes one reason and fully explained detail (e.g., at least three details) and clear elaborations.
5	***Between the standards for 4 and 6:** Could have counterclaims but are not developed.*	*Well developed: Paper is very clear and specific and provides strong elaboration on the supporting details. There are no inconsistencies, irrelevant or unsupported information, or problems with organization and clarity. The reasons are clearly explained and are elaborated by using information that is generally convincing. Essay may have introductory or concluding statement and may mention opposing opinion(s). Counterclaims may be present, though counterclaims are not elaborated or rebutted.*
6	*Highly developed:* Paper states a clear opinion and gives reasons to support the opinion. The reasons are explained clearly and elaborated by using information that could be convincing. Should mention opposing opinion. The essay is generally well organized and	*Highly developed:* Paper states a clear opinion and gives reasons to support the opinion. The reasons are explained clearly and elaborated by using information that could be convincing. Should mention opposing opinion. The essay is generally well organized and may include a concluding statement.

	may include a concluding statement.	
7	***Elaborated and addressed opposition:*** Meets the criteria for previous level. In addition, the paper deals with the opposing opinions with either refutation, alternative solutions, or explaining why one side is more convincing than the other. Overall, the essay is positive. The paper is free of inconsistencies and irrelevancies that would weaken the argument.	***Elaborated and addressed opposition:*** Meets the criteria for previous level. In addition, the paper deals with the opposing opinions with either refutation, alternative solutions, or explaining why one side is more convincing than the other. Overall, the essay is positive. The paper is free of inconsistencies and irrelevancies that would weaken the argument.

The rationale for the detailed description is to curb the ambiguity of the scale for consistent essay scoring by the researcher. It is easier for researchers and also other supplementary raters to score and categorise the essays compared to the original rubric.

3.9.1.3   Holistic scoring rubric

A 7-point holistic scoring rubric adapted from Nussbaum & Schraw (2007) was used to determine the overall quality of the argumentative essays. Similar rubric was also used by Ferretti et al. (2000), Ferretti, Lewis & Andrews-Weckerly (2009) and Nussbaum and Kardash (2005) in their studies. But the adapted rubric I have employed follows the recommendation made by Chase (2011) who has adjusted score "3" (Between the standards for 2 and 4) and score "5" (Between the standards for 4 and 6) with more thorough description to minimize the ambiguity of the scale. Overall interrater agreement was also applied when scoring the essays.

3.9.2 Dialogic interaction

I found that analysing the social interactions was a complex procedure. My main data analysis was the dialogic interaction obtained from students' dialogic group argumentation. Students participated in online group argumentation which was conducted in WhatsApp group environments.

3.9.2.1   Dialogic turns

I have employed the Scheme for Educational Dialogue Analysis (SEDA) by Hennessy et al. (2106) as shown in Table 9 to determine to what extent students' interactions are dialogic during all group argumentations.

Table 9. Scheme for Educational Dialogue Analysis (SEDA) by Hennessy et al. (2016)

CLUSTER CODE	CLUSTER NAME			KEYWORDS
I	Invite elaboration or reasoning	I 1		Ask for explanation or justification of another's contribution
		I 2		Invite building on/ elaboration/ (dis)agreement/ evaluation of another's contribution or view
		I 3		Invite possibility thinking based on another's contribution
		I 4		Ask for explanation or justification
		I 5		Invite possibility thinking or prediction
		I 6		Ask for elaboration or clarification
R	Make reasoning explicit	R 1		Explain or justify another's contribution
		R 2		Explain or justify own contribution
		R 3		Speculate or predict on the basis of another's contribution
		R 4		Speculate or predict
B	Build on ideas	B 1		Build on/clarify others' contributions
		B 2		Clarify/elaborate own contribution
E	Express or invite ideas	E 1		Invite opinions/beliefs/ideas
		E 2		Make other relevant contribution
P	Positioning & coordination	P 1		Synthesise ideas
		P 2		Compare/evaluate alternative views
		P 3		Propose resolution
		P 4		Acknowledge shift in position
		P 5		Challenge viewpoint
		P 6		State (dis)agreement/position
RD	Reflect on dialogue or activity	RD 1		Talk about talk
		RD 2		Reflect on learning process/purpose/value
		RD 3		Invite reflection about process/purpose/value of learning
C	Connect	C 1		Refer back
		C 2		Make learning trajectory explicit
		C 3		Link learning to wider contexts
		C 4		Invite inquiry beyond the lesson
G	Guide direction of dialogue or activity	G 1		Encourage student–student dialogue
		G 2		Propose action or inquiry activity
		G 3		Introduce authoritative perspective
		G 4		Provide informative feedback
		G 5		Focusing

| | | G 6 | Allow thinking time |

This framework was chosen as it is based on sociocultural paradigm and provides a systematic analysis of classroom dialogue across a range of educational settings. There are 33 communicative acts (CA) grouped into 8 clusters which contribute to the dialogic interaction. I counted the frequency of dialogic clusters produced by each group to identify to what extent their interactions are dialogic.

3.9.2.2 Persuasive argumentation

The transcripts of the argumentative exchanges were analysed for its persuasiveness using the research of (Leitão, 2003) which focuses on counterargumentation and rebuttal. Based on this research, an argument is considered successful when it directly responds to other's argument and this kind of argument is called counter-critique. If students offer an argument that does not directly respond to other's argument (counter-alternative), then it is considered less successful as the arguers do not argue on similar grounds. Furthermore, the exchanges of argument must be more than 6 turns. An argument is also considered persuasive when students manage to convince others with their points of view in terms of counterarguments or rebuttals. Other than that, an argument is persuasive when there is evidence that the students have changed their mind. I highlighted and counted all the counterarguments and rebuttals provided by each student so as to identify to what extent their arguments were persuasive. I also identified students who changed their minds after contemplating on the counterarguments and rebuttals provided by others.

3.9.2.3 Typology of talk

The third form of analysis was to identify the typology of talk suggested by Wegerif & Mercer (1997) (see Appendix 4). The purpose is to indicate whether the group argumentation is cumulative, disputational or exploratory in nature. This is because, changing of minds can be caused by different factors; being coerced by others or genuinely persuaded by relevant counterarguments or rebuttals. Generally, when coerced by others who were perceived as more able, students tended to uncritically obey the dominant idea. This was evident in cumulative talks whilst the more able students usually would have caught into disputational talks when they could dominate the collaborations.

3.9.2.4 Intra-rater reliability

Intra-rater reliability was used to analyse the dialogic interactions that have taken place in all group argumentations for Iteration 1 and 2. Based on SEDA, I coded all the group interactions manually in three different occasions. There were a few weeks of gap between the first, second and third coding. (see Appendix 5)

3.9.3 Participant Observation

I conducted some participant observations on all the group interactions for Iteration 1 and 2 to observe the important events that could happen during the activities. Participant observation is the process that enabled me to learn about the activities of the students in this study in a natural setting. Kawulich (2005) defines participant observation as the process of establishing rapport within a community and learning to act in such a way as to blend into the community so that its members will act naturally, then removing oneself from the setting or community to immerse oneself in the data to understand what is going on and be able to write about it.

I have built rapport with the students prior to the group argumentation to gain a close and intimate familiarity with the students. I freely mingled with the students as their friend in the hope that they will not be inhibited and hide their actual behaviour. I played an active role not only as an observer but also actively engaged in the activities with the research participants. During the group activities, I asked questions to each group member when they are not responding to each other, I encouraged students to provide opposing ideas when their friends give ideas and opinions, and also contributed some of my ideas regarding the issues discussed. However, I tried to limit my interactions with them. I aimed to play as neutral a role as possible. All the participants knew and recognised me as a teacher and an observer. I maintained moderate participation where I have balanced between "insider" and "outsider" roles. This allows me to have a good combination of involvement and necessary detachment to remain objective. As a participant observer, I am not just involved with observation. I also contributed in natural conversations, interviews of various sorts, checklists, questionnaires, and unobtrusive methods. Participant observation is characterised by such actions as having an open, nonjudgmental attitude, being interested in learning more about

others, being aware of the tendency for feeling culture shock and for making mistakes, the majority of which can be overcome, being a careful observer and a good listener, and being open to the unexpected in what is learned. Participant observations provided me with ways to check for nonverbal expression of feelings, determine who interacts with who, grasp how participants communicate with each other, and check how much time is spent on various activities. Participant observation is a way to increase the validity of the study, as observations may help the researcher have a better understanding of the context and phenomenon under study.

3.9.4 Students' post-intervention questionnaire

In order to analyze the data from the questionnaire, a thematic analysis was applied where major thematic ideas in the students' responses were extracted.

3.10 Ethics

Individuals involved in this study were treated with respect, as required in the Ethical Guidelines for Educational Research determined by BERA. Prior to the research getting underway, all participants were asked to sign a voluntary informed consent form (Appendix 6), which indicates that they have understood and agreed to participate without any duress. There is no form of deception and all respondents are informed of the study objectives, how the study is to be conducted, all the processes in which they would be engaged, why their participation is valued, how it would be used, and to whom and how the study would be reported. A certificate of ethical research approval from the Graduate School of Education, University of Exeter, was obtained before the current study commenced (Appendix 7).

Before both iterations were conducted, informal meetings were held to discuss the research, what would be expected from the participants and how they would benefit from the research. In addressing the issue of privacy, the participants were informed that the monitoring and the analysis of their online interaction and their participation during the interviews would only be used for the purpose of this study and they were permitted to have access to the information. Smartphones were used mainly for their group interaction hence this condition may make them

uncomfortable as it may violate their social space during the iterations. Therefore, they were informed of their right to withdraw from the study at any time. All respondents also understood that they have had to use their individual smartphone for the study and the responsibility of taking care of the device is on them.

Another ethical issue dealt with in this study related to the possibility of revealing respondents' picture and personal details via their WhatsApp account. In order to solve this problem, before the iteration was conducted, the respondents were advised to change their privacy setting so that nobody can see their profile pictures and details and they could revert the privacy setting once the iteration ends.

3.11 Conclusion

In this chapter, the methodological choice of this study was discussed, and the research design was introduced. The work plan and activities that took place in all stages of this study, the methods used, the ways to analyse the data, as well as limitations, ethical issues and possible problems encountered in this study had also been presented. The next three chapters will provide more detail of how each research stage of this study was conducted.

Chapter 4- The Exploratory Study

4.1 Introduction

The main purpose of this chapter is to report the findings of the exploratory study. This chapter is called exploratory because I need to explore and assess the reality of the teaching of argumentative essay in secondary schools before I can create a method to instantiate persuasive argumentation. The findings from this stage are important as they will be combined with the literature review to develop Design Framework 2. This exploratory study is conducted following Wademan's (2005) Generic Design Research Model (GDRM) which stresses the importance of practitioners input. The involvement of practitioners is very important so that the full extent of the problem is known, rather than being interpreted solely by researcher. This feature sets Design-Based Research (DBR) apart from other educational research as it displays commitment of the researcher to better understand the problems and find effective solutions collectively (Herrington, McKenney, Reeves & Oliver, 2007). The outcome from this chapter will guide the design of the educational intervention that will be further explained in the subsequent chapter.

4.2 The exploratory study

There are two stages involved in this phase of study. Firstly, a consultative stage where I interview examiners from secondary and post-secondary level. Secondly, an exploratory fieldwork stage where I conduct interviews with nine ESL teachers and observations with 33 secondary school students to test the basic tenet of Design Framework 1 as presented in Table 10.

Design Framework 1

Table 10. Design Framework 1

Design Framework 1
Students should participate in group argumentation before they write argumentative essays
Students should involve in persuasive argumentation which embraces dialogic interaction and Exploratory Talk

Students should follow ground rules to encourage them to participate in persuasive argumentation

4.2.1 Stage 1 - Consultation with examiners

Based on the extensive literature review, I learnt that the teaching of argumentative writing should focus on how to teach students to produce persuasive argumentation which includes the opposing side of views. However, the teaching of persuasive argumentation skill is usually abandoned at secondary school level due to the low priority for students to write argumentative essays in Malaysian Certificate of Education (MCE). Therefore, in this consultative stage, I wanted a justification from MCE examiners on the 'type' of argumentative essay taught to secondary school students and how students generally wrote argumentative essays in examinations in Malaysia. I incorporated opinions of experts who have years of experience in assessing major examinations such as MCE for secondary level and Malaysian University English Test (MUET) for post-secondary level to verify this matter. I wanted to find out if students had the ability or skill to write persuasively. The interview questions were:

1. *How do students generally write an argumentative essay in MCE and MUET level?*
2. *How do you evaluate students' argumentative essays?*

4.2.2 Stage 2 - Fieldwork with teachers and students

This stage was conducted to test the theories developed in Design Framework 1 by looking for answers to those questions:

1. *Do students participate in group argumentation before they write their essays?*
2. *Do students engage with persuasive argumentation when they argue in groups?*
3. *Do students participate in Exploratory Talk?*

4.3   Findings - Stage 1

4.3.1 Consultation with MCE examiner

The demographic data of the examiner is shown in Table 11 below.

Table 11. Demographic data of MCE examiner (n=1)

Name	Wahida
Gender	Female
Teaching experience	8 years
Marking experience	6 years

Wahida (not her real name) was chosen because of her position as an examiner who have had 6 years of marking experience for MCE and 8 years of teaching experience as an English language teacher in secondary schools. Since I know her in person, I directly contacted her and explained my study. She was interested to share her marking experience and agreed to participate. Since she was busy with teaching courses and programmes in her school at that time, she preferred to be interviewed via e-mail.

In her marking experience, Wahida noticed that secondary school students in Malaysia usually wrote argumentative essays that completely supported their stand about an issue. Students would provide several reasons to support why they agreed or disagreed with the topic. They would strengthen their chosen stand with examples and elaborations. She also stated that this had been the fixed pattern of argumentative writing being taught to secondary school students. Hence, it was expected that students' writings will be adhered to this structure.

In addition to that, I was also interested to know how argumentative essays are evaluated at MCE level since my study is focussing on how to improve students' persuasive argumentative responses in secondary schools. On that account, I referred to the standardised mark scheme (see Table 2) prepared by the Malaysian Examinations Syndicate (MES) to identify the key elements evaluated for argumentative essay. However, I found that the scheme does not furnish us with information on how a good argumentative essay should be measured as the marking criteria are mostly to evaluate writing conventions such as spelling,

punctuation, grammar and capitalisation. For teachers who did not have any experience and training to mark argumentative essay, it would be difficult to comprehend how to evaluate the persuasiveness of an argumentative essay using this scheme. Hence, I asked Wahida how she respectively evaluated argumentative essay for MCE. I also requested her to provide some samples of argumentative essays that she had already marked so I could observe how the mark scheme was authentically applied. From the written samples, I analysed all the comments she provided for each essay. She mentioned that in the mark scheme, one of the criteria stated is *'topic should be addressed with consistent relevance'* hence students are expected to write relevant reasons to support their stand. If they agree with a topic, they should provide several strong reasons to support their stand. Examiners will allocate higher marks if the reasons are relevant. Besides, the essays should have minimal grammar, spelling, vocabulary and punctuation errors to ensure they obtain an excellent mark.

4.3.2 Consultation with MUET examiner

In 2011 and 2012, I was indirectly involved with MUET when I was appointed by Malaysian Examination Council (MEC) to invigilate the exam for writing component (800/4). During one of the occasions, I met Tina, an English teacher who also had had experience as an examiner for MUET and currently the MUET Executive Secretary. The demographic data of Tina is shown in Table 12 below. As I knew her personally, I texted her via WhatsApp messenger explaining my purpose for contacting her, and she agreed to respond to my interview questions via email exchanges.

Table 12. Demographic data of MUET examiner (n=1)

Name	Tina
Gender	Female
Teaching experience	13 years
Marking experience	8 years

Tina has remarkable years of teaching and marking experience for post-secondary level. Responding to how students write an argumentative essay in post-secondary level, Tina explained that majority of the students usually write

essays which completely support their stand while only a few manage to write essays that contain both sides of issues. According to her, most textbooks in post-secondary level do provide guidance for students to write the argumentative essay focusing on the '*hamburger approach*' and teachers do not instruct students to provide counter-arguments and rebuttals when writing. However, she personally teaches her own students to write differently from the typical structure (completely agree or completely disagree) usually written by students in MUET. Other than teaching students to follow the typical approach, she improvised it by adding one paragraph for students to provide the opposing side of the issue. However, she professed that mostly high attainment students manage to grasp the skill and write sound argumentative essays in examination compared to low attainment students.

When marking students' essays, Tina expects students to write unbiased argumentative essay to '*show mature treatment of topic*' which is one of the criteria included in MUET mark scheme. Therefore, she stated that the important element she assesses is the element of counterargument. Tina highlighted that the argumentative topics tested at MUET level certainly require students to display their higher order thinking skills. Such skills can only be appreciated if students provide counterargument to display two-sidedness rather than one-sidedness in their essay. She values two-sided essays with higher bands compared to one-sided essays.

> *"Counterarguments are significant to exhibit students' critical thinking. It will hone students' critical thinking skills if they are able to see both sides of the coin. I am inclined to give the 'critical thinkers' a band 5 or 6 if they can include opposing ideas in their essay. Essays which just 100% agree or 100% disagree will only receive lower band (band 3 or 4)."*

Since the writing of persuasive arguments was more pronounced at post-secondary level compared to secondary level, I prolonged my discussion with Tina. I asked for her suggestions about the learning activities that teachers can conduct to encourage two-sided essays. In order to answer the question, she

emailed me an outline of an argumentative essay that she applied to teach her students in school. She also suggested that ESL teachers should refine their teaching approach from solely focussing on one-sided writing to explicitly teaching students the higher order thinking skills which will benefit them to learn how to generate counterarguments and rebuttals. She highly recommended teachers to train students to brainstorm collaboratively in small groups before they write their essays. She admitted that conducting group activities is demanding when it involves higher order thinking skill, but it is not impossible to be taught to students. She said,

> *"Basically, it will take more than one lesson to teach students to provide counterargument as this is a skill that is tedious but not impossible to learn. I am sure you will agree with me that the hardest part is to develop their critical thinking skills."*

She was confident that the writing outlines she shared with me can help secondary school students to write persuasive essays too. She strongly agreed that teachers must encourage students to write persuasively in secondary and post-secondary level as the skill is important to be applied in tertiary level.

> *"If they want to write an excellent essay, they need to have a more mature and critical line of argument. So, they must be able to present their counterargument and then a rebuttal to support their initial stand. When they introduce a counterargument in their essay, they need to rebut it with one more solid point to ensure that the initial stand is still strong."*

4.3.3 Conclusion from Stage 1

The valuable finding obtained from the MCE examiner was that secondary school students are taught and therefore are expected to write one-sided argumentative essays at secondary school level. Argumentative essays are evaluated by MCE examiners using an analytical scoring rubric that highly merit writing conventions such as language, vocabulary, punctuation and spelling (see Table 2). Clearly it

does not explicitly evaluate the key components of persuasive argumentation such as counterarguments and rebuttals. This demonstrated that the marking of argumentative essays at secondary level does not match the key elements of persuasive essays suggested in the extensive literature review (Chapter 2) as it does not evaluate the quality of persuasive argumentative essays. Since MCE examiners only evaluate argumentative essays for the conventions of writing, I made an assumption that the writing of persuasive argumentative essays is not prioritised in secondary schools in Malaysia. I also concluded that this condition happened because teachers and students mainly focus on narrative essay writing compared to argumentative essay writing.

From the consultation with the MUET examiner, I became aware that students in post-secondary level still have difficulty in writing persuasive essays especially low attainment students. Another valuable finding I obtained from the MUET examiner was that the argumentative essay is evaluated based on its persuasiveness, not only the conventions of writing. Even though the marking is based on analytical scoring rubric, examiners at MUET level were aware that they should be evaluating the components of argumentative essay too. This demonstrated that the marking for MUET and the teaching of argumentative essays in post-secondary level echo with the elements of persuasive essays highlighted in the extensive literature review. I can safely conclude that the writing of persuasive argumentative essays is highly valued at post-secondary level in Malaysia.

The input from both examiners were very valuable to my study. Even though this study focuses on writing argumentative essay at secondary level, it is also important to understand how argumentative essay is taught and evaluated at post-secondary level. Hence, I will know if the teaching of argumentation skill has long-term benefits to the secondary school and tertiary level students. Most importantly, I am aware of the scoring rubric that I should implement to evaluate students pre- and post-intervention essays. Both MCE and MUET mark schemes are analytical, which do not fit the nature of my study. MUET examiners agreed that the mark scheme does not explicitly evaluate counterarguments and rebuttals. Besides, the scheme uses for MCE is all-purpose and not genre-

specific (Mukundan & Ahour, 2009) which makes it less effective to measure the quality of persuasive argumentation skill. Since my study is concentrating on evaluating the key components of arguments, I need a genre-specific scale to attain it. Hence, a holistic scoring rubric is more appropriate to evaluate the ability of students to produce counterarguments and rebuttals. It is important to use a reliable rubric so that I can identify the improvement of students' argumentation skill in the post-intervention essays. Therefore, I will follow the suggestion from Nussbaum & Kardash (2005, 2007) and Reznitskaya, Kuo, Glina & Anderson (2009b) to use holistic scoring rubric to evaluate the pre- and post-intervention essays.

I am also aware that the mark scheme used for MCE hinders secondary school teachers from comprehending the key components of persuasive essays as it focuses merely on the language skill, not argumentation skill. This proves that the teaching of argumentative writing should be improved in secondary schools. I believe that preparing students to write argumentative essays is important in secondary school as the genre of writing beyond that level has shifted towards writing that requires higher order thinking skills. By acknowledging what is happening at post-secondary level education, I hope I am not only helping students for their secondary learning, but also indirectly preparing them with skill needed in post-secondary level and beyond. Other than that, it is also anticipated that the educational intervention developed in this study may be valuable for ESL teachers at secondary and post-secondary levels.

4.4 Findings – Stage 2

4.4.1 Interview with teachers

In this phase, nine teachers were interviewed to test the first theory of Design Framework 1 which postulates that students should participate in group argumentation before they write argumentative essays. Table 13 shows their demographic data.

Table 13. Demographic data of ESL teachers (n=9)

Teacher	Gender	State	Years of teaching experience	Highest qualification
Maria	Female	Terengganu	8	Master of Education in TESL
Sanjeet	Male	Pahang	10	Bachelor of Education in TESL
Jasmin	Female	Melaka	10	Master of Education in TESL
Hannah	Female	Terengganu	4	Master of Education in TESL
Chow Kwok	Female	Kelantan	4	Bachelor of Education in TESL
Adibah	Female	Kuala Lumpur	7	Bachelor of Education in TESL
Soh Chin	Male	Sabah	6	Bachelor of Education in TESL
Dini	Female	Kelantan	8	Master of Education in TESL
Sara	Female	Johor	4	Master of Education in TESL

All teachers participated in the exploratory study have at least 4 years of teaching experience with Teaching English as a Second Language (TESL) formal training. They were recruited via an online platform. I created a posting on a Facebook group called 'Doctorate Support Group', summoning secondary school teachers who have experience teaching argumentative essay in any type of secondary schools in Malaysia to participate. I also provided a brief explanation about my study. Those who were interested contacted me via Facebook Messenger and provided me with their personal email for me to send the interview questions. Our interaction was mostly conducted via a few email exchanges. Only one teacher preferred to communicate using Facebook Messenger as he hardly uses his email. All names are pseudonyms and the name of their school will not be revealed to protect their anonymity and confidentiality.

The interview questions were sent to their emails. Most importantly, I focused on finding out whether or not these teachers conducted group argumentation to teach argumentative essay. I wanted to investigate the factors that encouraged or discouraged them from conducting group argumentation. If they do conduct group argumentation, I will further investigate if students have engaged in

persuasive argumentation and follow some ground rules to engage in Exploratory Talk. The questions asked were:

1. *How do you teach argumentative essay?*
2. *Do you conduct group argumentation? What motivates (or demotivates) you to conduct group argumentation?*

4.4.1.1 Findings from teachers' interviews

The responses from these teachers (excluding Sanjeet and Adibah) for question 1 exhibited the teaching approach that they commonly implement in class, which is whole class discussion. Sanjeet used sample essays to guide the students to write while Adibah provided students with journals and stories to get content ideas. Their whole class discussion was conducted in two conventional ways. Firstly, they segmented the whiteboard into two columns and placed it in front of the students. The heading for one column reads disagree and the other reads agree. Students were then invited to give reasons why they disagree or agree, and the teacher wrote the answers on the board. Secondly, teachers divided the whole class randomly into two groups: agree and disagree. Students then provided reasons for their stand. If they were in the disagree group, they needed to provide reasons why they have disagreed and vice versa. The activity was then followed by an individual writing activity. Students selected a stand and copy all the reasons related to it. If they worked in a group that generated reasons for disagreement, they will copy all the reasons for disagreement. This procedure was a proof that none of the teachers was acquainted with group argumentation to teach argumentative essay.

When asked about conducting group argumentation in class, only Soh Chin, Adibah and Sanjeet had the experience implementing it in class. However, the activity bears no relation with the teaching of argumentative essay.

> *"I have conducted such an activity before, but they were done in preparation for the Oral English Test but not to teach argumentative writing. And a few of my students even had the*

privilege of representing the school in a debate tournament, hence the need." (Soh Chin)

"Yes, I did. But just a few of them during debate training." (Adibah)

"Yes, I have. I always conduct debate kind of activity in my class to train the debaters to represent school." (Sanjeet)

Question 2 was particularly aimed to find out the constraints teachers may have had that discourage them from conducting group argumentation in their classrooms. There are several reasons for this; one obvious reason is time. All teachers, excluding Maria and Jasmin, stated that they did not have the opportunity to conduct group argumentation due to restricted time allocated for English lessons. Conducting group argumentation in class is viewed as unmanageable as it usually demands no end of time especially in a class that had many students such as Sanjeet's.

"Double period is only 70 minutes. So, I prefer to elicit their ideas individually. I don't ask them to debate or argue with each other as I'm having roughly 56 students in a class." (Sanjeet).

Besides that, Hannah, Soh Chin and Dini added that they could not accomplish such activity because there are too many topics in the syllabus to be covered before MCE. Hence, they could not afford to allocate a lot of time specifically to teach argumentative essay.

"It is a race against time to complete all the components of the English Language syllabus within an academic year, and we teachers simply can't afford to spend too much time on any one particular type of essay." (Soh Chin)

Another issue that discouraged them from conducting group argumentation is students' attitude. Other than Sanjeet and Soh Chin, all teachers disregarded group argumentation because of students' attitude when working in groups. All

teachers doubted that their students would participate enthusiastically during the argumentation activity. It was because, as Soh Chin affirmed, it would be difficult to encourage her students to speak and argue with others.

> *"As English is not widely spoken in the region that I teach in, not being able to communicate in English effectively also equals to not being able to argue in English effectively." (Soh Chin)*

They had this feeling that their students will be unresponsive thus the goal of encouraging them to argue collaboratively would not be achieved. Students' low English language ability commonly in speaking was also one of the factors that hinders them from conducting group activity. Maria clarified that her students lacked the English language vocabulary for arguing. Another concern was the language used during the discussion. Jasmin, Hannah, Chow Kwok and Sara affirmed that their students will use their first language (L1) during discussion as they could not speak English well. When students were not able to use the target language to communicate, it will impede the flow of group argumentation. Overall, all teachers agreed that these are the few factors that demotivated them from conducting group argumentation with their students.

4.4.2 Student observation

During the email interview with the teachers, I have asked if any of them would like to volunteer their students to participate in the next stage of exploratory study; classroom observation and online observation. One female teacher, Sara, agreed to volunteer her students to be observed. The questions to test the second and third theories of Design Framework 1 were:

> *1. Do students engage with persuasive argumentation when they argue in groups?*
> *2. Do students participate in Exploratory Talk in their groups?*

4.4.2.1 Classroom observation

The first observation was conducted in Sara's classroom during a school visit. She had 24 students in her class and all of them participated in the classroom

observation. The purpose of the classroom observation was to investigate if students participated in persuasive argumentation when arguing verbally in groups. The second observation was conducted online using smartphones and the WhatsApp application with nine students. The aim was to further investigate if students participated in persuasive argumentation when using an alternative tool.

4.4.2.1.1 Findings from classroom observation

The demographic data of the students are shown in Table 14.

Table 14. Demographic data of participants in classroom observation (n=24)

Group	Group members
01	6 males
02	6 females
03	3 females, 3 males
04	2 females, 4 males

I divided these 24 students into four groups; each group consisting of six students. The classroom and online observation were only conducted after all students signed the consent form. Prior to both observations, all students were reminded that they can at any time withdraw from any phase of the activities and it will not at all affect their school or class performance. The topic of discussion was "School students should bring their mobile phones to school. Do you agree or disagree?" All group interactions were video-recorded and carefully examined.

On average, students' interactions did not exhibit any evidence of group argumentation, let alone persuasive argumentation. All of them did not present any argument or disagreement to others hence no persuasion took place in the groups. It was also impossible for Exploratory Talk to happen as students basically did not interact with each other. All they do was mostly individual writing activity. Many times, all groups were just concerned with correcting their written answers in terms of grammar and spelling. They let the best students in their group checked their answers as their main focus was writing correct sentences in terms of grammar and spelling. They did not ask questions to their friends and they did not share their views about the topic with others. Group 1, which

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consisted of all boys did not cooperate at all with others as they just waited for one student to write all the correct answers. Students who worked in mixed-gender group such as Group 03 and 04 did not talk and collaborated with the opposite gender. Albeit students in Group 01 and 02 collaborated with similar gender, they only talked with the person in front of them or next to them, not to the whole group. Furthermore, they did not use English language to talk about the topic. When I approached each group, students quickly lowered their voices so that I could not hear their conversations using their first language. The only time they spoke using English language was when I asked them to share their group decision and the reasons why they agreed or disagreed with the topic.

4.4.2.2 Online observation

Other than classroom observation, online observation was also conducted to get a closer look at how students participate in an alternative group argumentation. However, out of the 24, only nine students agreed to participate. Hence, I divided them in groups of three. Each student provided their phone number for WhatsApp application and all group argumentations were conducted on the same day but at different time chosen by the students. The group argumentation was conducted over weekends when the students were at home using their smartphones and WiFi. Each group was given two topics, but they had to choose only one to be discussed within 30 minutes in their group. Group A and C discussed the topic on bullying while Group B's discussion was about living in the city and village. Table 15 shows the demographic data of students who had participated in the online group argumentation.

Table 15. Demographic data of participants in online observation (n=9)

Group	Group members	Gender
A	A 01	Female
	A 02	Female
	A 03	Female
B	B 04	Female
	B 05	Female
	B 06	Female
C	C 07	Male
	C 08	Male
	C 09	Male

4.4.2.2.1 Findings from online observation

During the online argumentation, students showed better group argumentation skills compared to face-to-face argumentation except Group A. This was because, students in Group B and C actively gave their opinions within their respective group. Additionally, their group argumentations were extensive and contain more ideas as can be seen in Appendix 8. This shows how students in each group participated in the online group argumentation. Group A members did not participate in group argumentation as they just mentioned their individual stand about the topic within 3 minutes and no further discussion took place. Group B participated in the group discussion for almost 30 minutes while Group C participated for approximately 12 minutes. However, both groups did not participate in persuasive argumentation as they did not discuss any opposing views and they merely concurred with each other's opinion. When they did not provide any disagreement towards each other's argument, it was unlikely for Exploratory Talk to occur. This showed that students did not have the skill to participate in persuasive argumentation as well as Exploratory Talk.

4.5 Discussion

Based on the findings from teachers' interview, classroom observation and online observation conducted in Stage Two, these evidences were discovered.

4.5.1 Evidence of links between group and written argumentation

Findings from the interview analysis showed that group argumentation is meagre. Most teachers conducted whole class discussion with their 30 students as their main activity, not small group argumentation to teach argumentative essay. Within 40 to 70 minutes lesson, they conducted whole class discussion and individual writing hence it would be difficult to tell if students have the opportunity to discuss opposing ideas with others in such conditions. Furthermore, the teacher randomly divided the students into *disagree* and *agree* groups, where the opportunity to discuss opposing ideas was scarce. They may want to agree with the topic but were *obligated* to disagree as they had been grouped in the disagree group. Besides, when they merely listed down the reasons why they agreed or disagreed with the topic, most likely they could not attend to other people's ideas. They were only attentive to support their own stand which clearly generated

cumulative or disputational talk in the classroom. They built solidarity among group members to list down as many reasons as they could to show that their points were stronger than those of the opposite group. This clearly hindered students from engaging in persuasive argumentation and Exploratory Talk. This kind of whole class discussion functioned in contradiction to the principle of dialogic talk proposed in this study. Whole class discussion was described by researchers (Clark et al, 2003; Howe and Mercer, 2007; Lin et al., 2012) as inadequate to offer opportunities to students to counter-argue and refute each other's ideas. Mercer & Littleton (2007, pg. 91) argue that whole class discussion usually does not stimulate students' thinking skill hence they need to be taught how to participate in persuasive argumentation and Exploratory Talk in their group. According to the teachers, group argumentation was not employed due to some external and internal factors. The most prominent external factor is time to conduct group argumentation. Group argumentation consumes a lot of time to be conducted in a classroom setting due to the seating arrangement and students' behaviour. Another factor is the pressure to deliver the curriculum which dissuade them from conducting prolonged classroom activity such as group argumentation especially when preparing students for important examinations. There are also internal factors mentioned by the teachers, such as students' attitude, students' speaking skill and the use of L1 during discussion that hinder them from conducting group argumentation. While other practitioners may agree that the use of L1 sometimes may be valuable in their context to teach argumentation skill, the ESL teachers perceived its usage as a barrier because the students are supposed to expand their English language usage in order to write the argumentative essay in the target language. If they use L1 during group discussion, they may have difficulty to translate the ideas into English language when they write their individual essay. Furthermore, the English words used during the group discussion can be applied in their writing. Students were also encouraged to maximize the use of English language in the English language classroom as it is the only time when they will use English language. The resistance and barriers to group argumentation are visualised in Figure 2.
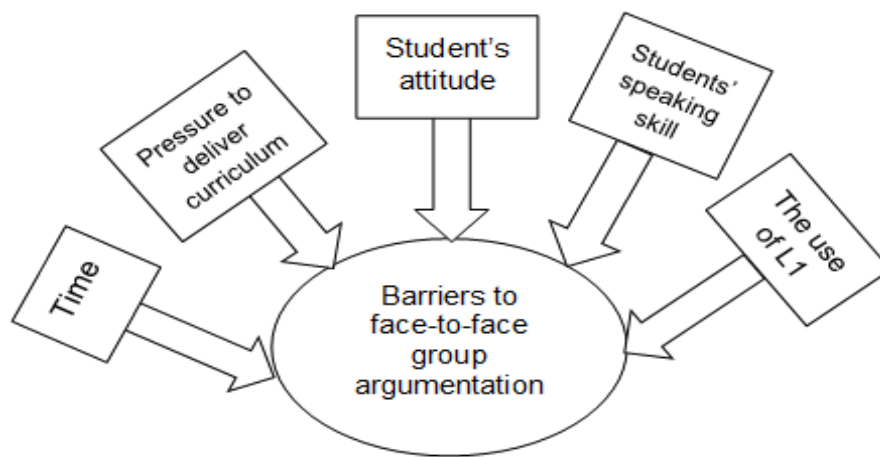
Figure 2. Teachers' views of barriers to group argumentation

4.5.2 Evidence of persuasive argumentation

In persuasive argumentation, students should engage with contemplation on the opinion of the opposite side as suggested by Leitão (2000) and Reznitskaya et al. (2007). However, it is found from both classroom and online observations that students did not display any persuasive argumentation skill. Students did not discuss opposing ideas in groups because they agreed with each other's opinion and showed some solidarity to support their friends' opinions. It is important to highlight during the intervention that students must provide opposing ideas when discussing and they must provide relevant and convincing refutation to persuade others with their initial stand. It is important to highlight this as part of the ground rules to be implemented during their group argumentation, to permit them to participate in persuasive argumentation. However, students participated in better group argumentation using English language when they worked collaboratively in WhatsApp group compared to verbal argumentation in class. This was probably because, during the WhatsApp conversations, they typed their ideas into words which is similar to a writing activity; they had more time to draft their responses prior to sharing their opinions with the group.

4.5.3 Evidence of Exploratory Talk

I found no evidence of Exploratory Talk when students participated in the group argumentations conducted in classroom as well as in the WhatsApp groups. There was hardly any social interaction particularly in the classroom discussions. Therefore, it was impossible for Exploratory Talk to occur in such circumstances.

The reason being, Exploratory Talk only occurred when students were actively engaged with each other's ideas where they examined the topic from all sides. Students also actively took turns to propose alternative views, used critical thinking skills and made their reasoning visible. Students showed better group interaction when in WhatsApp group, but their dialogue was limited only to Cumulative Talk because they only elaborated on each other's opinion. Their dialogues were uncritical, and no argumentation occurred in their interactions. This situation prohibited Exploratory Talk as described by Mercer et al. (1999) and Wegerif et al. (1999) to occur successfully.

4.6 Conclusion

In this chapter, two stages of exploratory study were described and discussed. Firstly, the consultation with examiners who are the experts in assessing argumentative essays and secondly, the fieldwork conducted with teachers and students. The purpose of consultation is to identify to what extent secondary and post-secondary students in Malaysia display persuasive argumentation skills in their writing so that I can ascertain their existing skill to design an educational intervention that can help to improve their skill. The fieldwork was conducted to test the tenets of Design Framework 1.

Semi-structured interviews with teachers were conducted to find out if teachers conduct group argumentation before essay writing in schools and how. Observations were administered to investigate if students have the skills to argue persuasively and if they participate in Exploratory Talk when working in groups.

Chapter 5 demonstrates the design of a prototypical intervention which arises from a return to the literature to review educational interventions as well as the analysis of the findings of the exploratory phase, which incorporates the initial literature review, the consultation and the fieldwork conducted with the students. Overall, the exploratory study is a starting point to accomplish Tan and Miller's (2007, pp. 139) recommendation to transform the teaching of writing in Malaysian secondary schools to *go beyond examination* and remodel the teaching and learning of English in Malaysia.

Chapter 5 - Developing the Intervention

5.1 Introduction

This chapter is purposely designed to demonstrate the construction of the educational intervention. Its construction is underpinned by Design Framework 2 (DF 2) which is derived from the amalgamation of Design Framework 1 (DF 1) and findings of the exploratory study (Chapter 4). The literature review substantially emphasises the significance of face-to-face group argumentation in the classroom to improve persuasive argumentation skill. However, the findings from the interview with teachers (Chapter 4) tells us that face-to-face group argumentation is quite challenging to be conducted in most ESL classrooms in Malaysia considering the limited time allocated for English lessons, students' low second language ability and unconstructive students' attitudes towards learning approaches such as group argumentation. These common problems usually discourage teachers from conducting small group activities in class. Hence, most of the teachers interviewed resort to whole class discussion when teaching argumentative essay. This approach is opposed by most argumentation researchers. Consequently, there is a pressing need for this study to develop an intervention that goes beyond whole class argumentation in order to enhance student's argumentation skill (Edelson, 2006). Besides, a workable intervention is urgently needed as all the students who participate in the fieldwork study do not possess the appropriate skill of persuasive argumentation.

Bearing in mind that time constraint in the classroom is the major barrier highlighted by the teachers, I thought that an online tool could be employed to encourage group argumentation. This hypothesis is further supported by the initial findings from the exploratory fieldwork (Chapter 4) which proves that students are better engaged in group argumentation when using *WhatsApp* group compared to face-to-face collaboration. But, solely integrating technology will not ensure that their group argumentation will be persuasive. Hence, dialogic interaction should be the important element to be instilled when developing the online intervention.

5.2 Return to the Literature

The purpose of returning to the literature is to find an intervention that could be adapted and developed to encourage students to deal with counterarguments and rebuttals extensively. Due to the difficulty conducting face-to-face argumentation in most classrooms, I also need to review some literature related to the use of technology that promote educational dialogues. The literature concerning interventions that promote counterarguments and rebuttals will be considered first, followed by the literature that discusses the use of technology that promotes dialogue amongst students.

5.2.1 Interventions that promote 'dialogic interaction'

Interventions that successfully promote counterarguments and rebuttals will be considered in this review as the main aim of the research is to teach students how to integrate both elements when discussing and writing debatable issues. The key to each intervention reviewed in this chapter is Leitão's (2000) concept of knowledge building cycle where persuasive arguments are appreciated based on its argument, counterargument and rebuttal.

In their study, Kuhn, Shaw and Felton (1997) observe a positive shift from one-sided to two-sided arguments when participants write their pre- and post-essay on capital punishment (CP). The main intervention used was a dyadic interaction that involved engaging young adolescents and adults over this topic (CP) for a period of several weeks. Each argumentation activity took 10 to 15 minutes, which was conducted in pairs with multiple partners. However, integrating dyadic interaction as part of the intervention is less suitable in my context as I have restricted time to observe such activity when using online tool.

The approach implemented by Reznitskaya et al. (2001) is called Collaborative Reasoning (CR), an approach that aims to provide elementary school children with the opportunity to become skilled in argumentation. CR helps students to develop an argument schema, the abstract knowledge structures that represent extended stretches of argumentative discourse. This schema enables the

organisation and retrieval of argument-relevant information, facilitate argument construction and repair, and provide the basis for anticipating opposing ideas and for finding flaws in one's arguments and the arguments of others.

In their CR intervention which was conducted within 5 weeks, fifth graders in the experimental group participated twice a week, in small group argumentation discussing controversial issues via the Internet. Each online argumentation took approximately 15 minutes. Students were asked to take positions on an issue and provide supporting reasons and evidences for their opinions. The teacher coached the students to challenge each other's viewpoints, offers counterarguments and rebuttals, and asked for clarifications. Students were also exposed to the formal argument devices (argument schema) in teacher-led activities. This approach was straightforward as it explicitly and directly teaches students the argument schema or stratagems to students.

Waggoner et al. (1995), the pioneer advocate of Collaborative Reasoning (CR) approach suggest seven guidelines to directly encourage more construction of counterarguments and rebuttals in students' discussions. They are:(1) prompting: ask students for a position; (2) modelling: demonstrate the reasoning process; (3) asking for clarification: ask students to clarify what they mean; (4) challenging: challenge the students with ideas they have not thought of yet: (5) encouraging: acknowledge and praise progress in thinking; (6) summing up: help students keep track of the argument and (7) fostering independence: allow students to carry out the discussions.

Studies conducted by other researchers such as Anderson et al. (2001) concur that primary school students' argumentation skill improves when they socialised with others in the CR activities as their use of argument schema or stratagems snowballed. The explicit and direct teaching of argument schema which encourages the production of counterarguments and rebuttals has also proved successful by the studies conducted by Ferretti et al. (2000). Students aged nine to 12 years old with learning disabilities manage to improve their persuasive argumentation skill after the intervention. Undergraduates in Nussbaum & Kardash (2005) wrote more counterarguments and rebuttals after receiving

explicit instruction to generate both elements when participating in the educational intervention.

The 3-year intervention of dialogic argumentation conducted by Crowell and Kuhn (2014) accentuated on the production of counterarguments amongst 11- and 12-year-old students. The intervention consisted of three stages. In the 'pregame' stage, students brainstormed the reasons why they agreed or disagreed with other proponents about the topic. When they moved to the 'game' stage, they argued with the opponents of the topic using an instant messaging software (Google chat). At this stage, they dealt with counterarguments provided by their opponents while reflecting on their own arguments to provide stronger rebuttals to reinforce their initial arguments. Finally, in the 'showdown' stage, they participated in a whole-class debate.

In this study, I was adapting the lesson plans created for Thinking Together (TT) program *(thinkingtogether.educ.cam.ac.uk)* developed by Dawes et al. (2000). This adaptation was done by combining CR and Thinking Together to create my own lesson plans so as to educate students to participate in Exploratory Talk. I have decided to do this because, all the Collaborative Reasoning studies aforementioned did not explicitly mention how they explicitly taught the argument schema or stratagem to the students.

This exclusive adaptation was important as van der Meijden & Veenman (2005) suggest in order to improve the quality of the interactions of students working cooperatively in group argumentation, explicit instruction on how to interact most effectively and productively should be provided along with the practice of cooperative learning activities. Hence, students were explicitly taught how to immerse in dialogic talks in order to communicate collaboratively with the hope that they can attain Exploratory Talk.

Other than direct and explicit instructions, some researchers (Chinn & Clark, 2013; Harrell, 2011; Jonassen & Kim, 2010) integrate the use of argument diagrams (AD) as part of their intervention to teach argumentation skill. The use of argument diagrams or argument mapping according to Botley (2014) is a

visualisation technique where the various aspects of argumentative discourse are mapped out in a clear graphical representation. Nussbaum & Schraw (2007) find that when using the Vee diagram, students provided more refutations of counterarguments. Some researchers employed more sophisticated online map such as Lund, Molinari, Séjourné & Baker (2007) where they use *jigaDREW*. Participants are free to post their contributions anywhere in a two-dimensional discussion map and link it to whatever contributions they choose. The interconnected discussion threads go on at the same time and students move between these threads. This flexibility is an advantage. By using Collaborative Argumentation-Based Learning (CABLE), Marttunen & Laurinen (2007) students construct argument diagrams individually or collaboratively, engage in online chat with each other and write texts together. Botley (2014) also implement an online mapping software which is known as Rationale 2.0 amongst a group of university students. The software adapts the Toulmin (1958) argumentation model.

All the interventions previously described in this chapter were aimed to help students move from one-sided to two-sided argumentation. It has yet to be proved if those activities which mostly take place in English-speaking environment (L1) could be transferred into the ESL setting of this study.

5.2.2 Incorporating technology to promote 'dialogic interaction'

Prominent argumentation studies substantiate the effectiveness of face-to-face group argumentation to improve students' individual argumentation, but ESL teachers interviewed complain that they do not have sufficient time to conduct small group argumentation when they teach argumentative essays. Even though most argumentation studies are exploring face-to-face argumentations, the use of online argumentation has arisen. Therefore, online discussion is an appropriate alternative in my context. Jonassen & Kim (2010) argue that online argumentation may not work well in predominantly face-to-face classes as students see no reason to log onto an online discussion to talk with others they normally interact numerous times per day. Even though participants in this study are classmates who meet at least 5 days a week during school days, opportunity to work collaboratively in small groups during English classroom is very uncommon. Hence, I believe that the regularity of their face-to-face contact will

not undermine their enthusiasm to participate in the online discussion. I need to review effective online tools that have the potential to replace face-to-face group argumentation in my context. A further review of the research studies that successfully improve students' argumentation skill and what technologies can accomplish to help the process is commenced.

Most prominent studies (Wegerif, 1996a; Wegerif, 1996b; Wegerif, 2006; Wegerif, 2007; Wegerif, Littleton & Jones, 2003; Wegerif & Mercer, 1997; Weinberger et al., 2010) employ Computer-Supported Collaborative Learning (CSCL) and other sophisticated software to implement educational dialogues in classrooms. Exclusive educational software such as *Bubble Dialogue* (Wegerif et al., 2003), *Wikis* and *Interactive Whiteboard* (Pifarré & Staarman, 2011; Teo, 2013), *InterLoc* (Blake & Scanlon, 2014) and *Cohere* (Shum, 2008) are among the online tools used to integrate dialogue in teaching and learning activities. Wegerif (1996a) argue that specially designed software is effective in integrating reasoning through talk with curriculum learning. Wegerif, McLaren, Chamrada, Scheuer, Mansour, Mikšátko, & Williams (2010) also assert that software such as Digalo may offer more affordance for creativity than the much more common scrolling text chat environments. More importantly, it helps researchers to easily identify the interaction patterns as researchers can view the argumentation in visual form.

According to Cho & Jonassen (2003), computer-supported collaborative argumentation (CSCA) software called *Belvedere* is the most argumentative compared to other CSCA software such as *Netmeeting* and *Allaire Forum* because it stimulates students to check and counter each other's information most frequently. A study by Weinberger et al. (2010) successfully promotes equal and active group argumentation when they integrate scripted discussion board. The computer-supported scripts specify, sequence, and assign roles and activities to learners, reducing group processes losses when every student performs his/her role to keep the discussion going. Janssen, Erkens & Kanselaar (2007) employ the *Dialogue Act* coding software which has been integrated into The Shared Space (SS) chat tool to make students aware of agreement and discussion processes during their collaboration.

To my knowledge, the software previously used is mostly suited to advanced adult learners who are trained extensively to use the software. However, students in my context are inexperienced to utilise those sophisticated argument tools and online software. Furthermore, most established software such as *DIGALO* is used to cater large-scale unrestricted discussion participated by people from all over the world where arguments from thousands of people, counter-arguments, and rebuttals can be inserted. However, in my study, I focus on the group discussions of at least four students, thus not necessitating such complex software. Furthermore, little is known about students' argumentative practices in an online synchronous communication using a common technology tool. Also, it is not known if this tool is freely available for the laypeople. As this research is to be conducted with secondary school students casually at home, the aim should be to adapt a tool that is not too complicated to the students and would allow the focus to be on the interaction. Online argumentation can be conducted by means of text chat, instant messaging and threaded discussion forum. To date, there are various online instant messaging used on smartphone such as WhatsApp, WeChat, Viber, LINE, KakaoTalk Messenger, Facebook Messenger, Skype, LiveProfile, Groupme, Kik Messenger and ChatOn. They are characterised by a quick pace of simultaneously posted discussions. However, the use of instant-messaging to improve learning is still under-represented (Allagui, 2014). Many studies in the education field only hail the potential of social media as a new tool that socially engages students in a learning environment compared to WhatsApp application. As an example, Malaysian ESL researchers (Musa, Mohamed, Mufti, Latiff & Amin, 2015; Omar, Amin Embi & Md Yunus, 2012) have acknowledged the potential of second-language learning specifically using social media such as Facebook. In Malaysia, the use of mobile phones in the classroom has been seen as a distraction so much so that smart phones have been prohibited in primary and secondary schools until today. Due to this negative perception, teachers are hesitant to integrate the use of mobile gadgets in their classroom. However, banning mobile technologies in schools does not prevent students from using them at home or elsewhere. As in Malaysia, the info-structure and mobile lifestyle are not far behind from some other developed countries. Hence, the use of mobile

phones it is not supposed to be a big problem as far as this study is concerned (Mohammad, Mamat & Isa, 2012).

Amongst the aforementioned tools, I personally considered WhatsApp as the most appropriate tool due to the context of my study. Firstly, these are secondary school students who have limited access to computers and sophisticated online software either in school or at home. Generally, ESL teachers in Malaysia rarely embrace the use of sophisticated software in classroom teaching. Secondly, the nature of the group argumentation is informal, hence the use of informal communication tool such as WhatsApp is appropriate. Thirdly, the usage of WhatsApp is similar to face-to-face communication. It provides its users with various forms of communications, namely user-to-user communications and group chats. It is easy to use as the utilisation of WhatsApp is similar to Short Messages Services (SMS), it is popular among students, it encourages collaborative learning for students to exchange ideas and work together (Aglano, 2014). Lastly, many of the successful online interventions aforementioned are majorly in CSCL context which are intensive, long-term and costly. None of these excellent pieces of research exert WhatsApp application to offer space for group argumentation. The use of mobile gadgets has been widely implemented to teach writing, (Allagui, 2014; Alsaleem, 2013; Ma, 2016; Zaki & Yunus, 2015) vocabulary skill (Beaudin, Intille, Tapia, Rockinson & Morris, 2007; Lu, 2008; Man, 2014; Steel, 2015; Zhang, Wei & Burston, 2011) and reading (Plana, 2015) but rarely to promote collaborative argumentation skill. It is therefore, the intention of this research to explore this context as the means for students to argue collaboratively and to find if it has the potential to replicate similar results. Furthermore, studies documenting educational usage of WhatsApp in the teaching of argumentation skill among upper secondary school students in Malaysia or elsewhere are absent. Besides, the preliminary findings from the fieldwork (chapter 4) indicates that the WhatsApp tool has the potential to engage students with vigorous interactions thus strengthening my conjecture to use WhatsApp.

Up until now, teachers rarely exploit this advantage of communication using smartphones in the form of instant messaging. Educational researchers (Ma,

2016; Muhammed, 2014; Plana, Gimeno, Appel & Hopkins, 2015; Rasmussen& Hagen, 2015; Soleimani, Ismail & Mustaffa, 2014; Steel, 2015) recommend the use of mobile phone to support teaching and learning activities but Ngaleka & Uys (2013) argue that educators are not yet clear on how mobile gadgets can be used outside the classroom. Some opponents of mobile-learning argue that it will be more difficult to conduct online argumentation compared to face-to-face argumentation. Thornton & Houser (2005) criticise that the effectiveness of smartphone may be hindered due to its slow internet speed and small screen size. Other than students' lack of willingness to use mobile technologies, Stockwell (2010) argues that activities may take longer on mobile phones compared to computers. Even though students have greater sense of freedom in terms of time and place to conduct group activities, they usually will have more difficulties to make decisions about which times and places are the most suitable. Ngaleka & Uys (2013) argue that due to the nature of WhatsApp messages, it does not provide a specific thread for readers to follow due to several simultaneous conversations, which is usually out of order, and students need to read each thread to participate in the conversations especially when they want to provide responses. This opinion is supported by Man (2014) that it could be overwhelming for both teachers and students as the number of messages could be too much to handle.

However, studies show that the use of online tool to support argumentation activities replicate similar results with face-to-face argumentation. Crowell & Kuhn (2014) also highlight some benefits of online group argumentation compared to face-to-face argumentation. The written transcript of the dialogue provided by the Google chat gives students an opportunity to review and reflect on the arguments they generate. This feature stands in striking contrast to face-to-face dialogues, where the spoken word disappears as soon as it is spoken, therefore challenging students' cognitive load. By using online tool to organise collaborative argumentation, students can go back to their previous arguments (Ngaleka & Uys, 2013). It is helpful for students because the history of the recorded conversations can be accessed when they need them. This gives the online tool an advantage over verbal argumentations. It is not always easy to remember everything mentioned, but with the online tool, students can refer to previous

conversations anytime they want. By using the online tool, the group argumentation can be visualised (Weinberger & Fischer, 2006). Students see the arguments and counterarguments on the screen and it will be easier for them to refine their argumentation.

Some researchers reason that asynchronous argumentation provide more time for students to formulate their arguments compared to synchronous argumentation. However, synchronous argumentation can also cater for similar benefits if students are given extended time to construct their ideas (Asterhan & Schwarz, 2010). Furthermore, synchronous argumentation is more likely to ensure the flow of the argumentation when pauses are avoided. However, the use of instant messaging to conduct argumentation activities also have its limitations which cannot be ignored especially at the data analysis stage. It is quite time-consuming and difficult for researchers to search for idea units especially in instant messages as the thread usually are extended and mixed between different users. The disadvantage of an online, threaded discussion, where students are "hopping" from thread to thread, a line of common reasoning is often discontinued and usually ignored by students when they move to new threads.

Asterhan & Schwarz (2010) argue that the use of software such as *Digalo* is better than instant messaging, chat and threaded discussion forum because the use of arrows and shapes emphasise argumentation elements. Therefore, the automated coding makes it easier for teachers or researchers to identify the arguments made. This is because when more than two students simultaneously participate, this quickly creates conversational incoherence. Unrelated messages from other participants often intervene between an initiating message and its response and discussants tend to focus mainly on recently posted messages. Clark et al. (2007) support that online learning environments that integrate automated categorisation and coding could provide teachers with tools to monitor and scaffold multiple small groups of students working simultaneously on projects within their classes. Such environments may also model argumentation practices for the teachers themselves by helping the teachers interpret the argumentation practices of their students within the environment.

Currently there is a shift in Malaysian classrooms, as elsewhere, away from traditional teacher-centered transmission models to more student-centered ones (Ministry of Higher Education Malaysia, 2009). Teachers believe that group argumentation will be successful if it is conducted outside classroom contact hours where students' interaction is not constrained by time. The emergence of ICT could not be repudiated especially when the students are familiar with technological advancement in their everyday life. Today's generation surf the Internet to get connected virtually in social networks almost every day. Technologies and humans are inseparable, and it will be irrelevant to reject ICT in second language learning. Thus, I personally believe that the use of WhatsApp is relevant and should be adapted in the educational intervention. Hence, my study will exclusively shed light on this unexplored area by demonstrating the impact of the WhatsApp tool to improve the quality of arguments among a group of inexperienced students.

5.3   Theoretical Underpinnings – Design Framework 2

Design Framework 2 is derived from teachers' interviews, classroom observation and online observation during the exploratory study conducted with the teachers and students. Design Framework 2 is represented in the following Table 16.

Table 16. Design Framework 2

Design framework 1 (derived from Literature Review)	Findings from Exploratory Study (Chapter 4)	Design framework 2 (derived from exploratory study)
● Students should participate in group argumentation before they write argumentative essays.	● Teachers majorly conducted whole-class discussion to teach argumentative essay writing. *(Teachers' interview)* ● Students were randomly grouped into agree and disagree group and	● Students should participate in online group argumentation before they write argumentative essays due to the hindrances highlighted by the teachers.

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	listed down their reasons about the topic according to their group only. *(Teachers' interview)* ● Face-to-face small group argumentation were hindered by some external and internal factors (time, pressure to deliver the curriculum, students' attitude, students' speaking skill and the use of L1) *(Teachers' interview)*	
● Students should involve in persuasive argumentation which embraces dialogic interaction and Exploratory Talk.	● There was no evidence of social interaction amongst group members hence it would be impossible for persuasive argumentation to arise. Instead of doing verbal discussion, students wrote their responses on the paper individually. *(Classroom observation)* ● There was evidence of group interaction, but students did not discuss any opposing view as they merely	● Students should participate in persuasive argumentation. ● Students need to be aware of the different forms of argumentation. ● Students should learn how to provide counterarguments and rebuttals to make their arguments persuasive. ● Students should be encouraged to engage with argumentation that is based on Exploratory Talk.

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	concurred with each other's opinion. Cumulative talk was ubiquitous. *(Online observation)*	
● Students should follow ground rules to encourage them to participate in persuasive argumentation.	● No evidence of peer argumentation both in classroom and online observation. ● Difficult to determine what 'type of talk' was prevalent among students as they were very passive. ● Interaction was not at all 'dialogic'.	● Students should follow ground rules to encourage them to participate in Exploratory Talk. ● Each student should take part in collaborative activities designed to promote energetic peer interaction. ● Students should be encouraged to engage in argumentation that is based on dialogic talk. ● Students need to be aware of the way in which to engage in dialogic talk.

5.4   The Vehicle for the Interaction

The online intervention is based on Design Framework 2 (DF 2) and incorporates the key findings from the teacher interviews and fieldwork. From my observation, students did not engage in persuasive argumentation both in face-to-face and online medium and the teachers admitted they never teach students how to argue amongst themselves in class due to time constraint. Hence, I thought that an opportunity to encourage persuasive argumentation using online tool would be

an appropriate vehicle for the interaction. I believe that when students have the opportunity to discuss diverse point of views within rich dialogic interaction, they will be able to apply the argument schema into their individual reasoning. The students need to be able to argue within an environment equally full of counterarguments and rebuttals.

I proposed the use of Collaborative Reasoning (CR) by Reznitskaya et al. (2001), an approach to discussion that has undergone an extensive development and field testing by argumentation researchers. Its theoretical underpinning is persuasive argumentation (Kuhn, 1992; Toulmin, 1958). This intervention suits students at secondary school level in Malaysia as they are still incapable of writing persuasive argumentative essays. CR approach is a good foundation for the intervention, but it needs to be adapted to focus more on dialogic argumentation. Hence, the CR intervention must instantiate dialogic interaction in order to allow me to demonstrate any potential links between group and individual written argumentation.

5.5   Designing the Prototype Intervention

In this part, I will discuss the design of the educational intervention. Following DBR methodology, the intervention will be regarded as 'prototype' (Plomp, 2007) which must be piloted by practitioners. CR approach of Reznitskaya et al. (2001) will be discussed briefly to demonstrate how it can serve as the vehicle to promote dialogic interaction.

5.5.1 Initial impetus

The CR approach of Reznitskaya et al. (2001) involves 115 fourth and fifth graders (aged 9 or 10 years old) from multiple literature classrooms. The purpose of the approach is to develop students' persuasive writing in terms of arguments, counterarguments and rebuttals. Students participated in at least 10 face-to-face and online collaborative discussions within the 5 weeks duration. They met twice a week in small groups and they discuss controversial issues. Reznitskaya et al. encourages students to discuss in a group of six or eight within 15 to 20 minutes for each discussion. I wanted to do the same but in smaller groups of students (arguing in threes) within an online setting. I asked each group to participate in

group argumentation for at least 30 minutes. All the participants will engage in the group argumentation in such a way that could be easily monitored and observed by a researcher who is keen to examine the interaction and the process of the argument development itself. The observation phase would allow me to analyse the links between group and individual argumentation.

5.5.2 Designing the intervention – the prototype intervention

Table 17 shows the scheme of work which is designed to support the activities created to conduct the intervention.

Table 17. Scheme of work of the prototype intervention

Scheme of work	
Module	**Suggested activities**
1 **Ice-breaking**	*Group work –* Building rapport amongst students in an unconventional learning environment. Students leisurely discussing on random topics determined by each group member.
2 **Preparing for the Argument**	*Group discussion –* Discussing the argument schema or stratagem, its structure and examples. Exhibiting the responsibility of each group member to contribute to group argumentation by providing opposing ideas.
3 **Setting the Ground Rules**	*Group work –* Establishing Ground Rules democratically. Students distinguishing bad and good rules. Students list down 10 good Ground Rules.

4 **Importance of Ground Rules**	*Group work –* Discussing the importance of each good Ground Rules by giving justifications and examples.
5 **Arguing in Threes (teacher-selected topics)**	*Collaborative argumentation in threes –* Students applying the argument schema or stratagem by considering the agreed Ground Rules. The topics of discussion were selected by the teacher.
6 **Arguing in Threes (student-selected topics)**	*Collaborative argumentation in threes –* Students applying the argument schema or stratagem by considering the agreed Ground Rules. The topics of discussion were selected by the students.

The purpose is to provide appropriate teaching and learning activities that teachers can incorporate to improve their students' persuasive argumentation both in group and individual writing. This is a necessary feature of the work – the DBR methodology advocates designing practical solutions to classroom problems – and it is designed pragmatically to guide classroom practitioners who do not have the luxury of time to conduct group argumentation in their classrooms.

There are six stages, which are designed to scaffold students to argue persuasively in small groups. It is an integrated program of CR method and Thinking Together programme as Reznitskaya et al. (2001) acknowledge that their approach did not include any direct teaching of argument concept or strategies. Similar with the study conducted by Reznitskaya et al., this study also does not engage students with reflections after the group argumentation. These adaptations are important to ensure that students are explicitly guided to participate in dialogic interaction in order for me to find the relationship between dialogic interaction that occur in group and in individual writing. Fundamental to this work is that students' individual writing will improve if they participate in group argumentation which embraces dialogic interaction.

Modules 1 to 4 of the intervention serve as the preparatory stages to the group argumentation which are important to ensure dialogic interaction will be instantiated in the group argumentation.

Modules 1 to 5 are teacher-led which aim to prepare students to collaborate in an online environment and to enhance their argumentation skill while Module 6 is student-led. I shared the PowerPoint presentation with each WhatsApp group. Students can refer to the notes whenever they need if they do not delete them from their phones. Each module is expected to be completed within 30 to 40 minutes.

In Module 1, students participate in an ice-breaking activity. From the exploratory study, I learned from the teachers that ESL students are mostly not proficient to communicate in English. I also discovered that English teachers never conducted

online discussion with their students particularly to discuss argumentative topics. Therefore, this activity is conducted to demonstrate to students that the WhatsApp group discussion is an informal one, they are welcome to share their experience, and they do not have to worry about grammar, sentence structure, spelling and word choice. Therefore, during the ice-breaking activity, students are given a task, namely to talk on simple and casual topics related to themselves. This task is to build their confidence in using English in a WhatsApp group environment. Students take turns to ask questions to their friends related to the topic chosen by them.

Module 2 is the core of the learning activities as it focusses on teaching students the basics of argumentation and to prepare them for subsequent dialogue activities. The teacher models an example of three students arguing on the topic "School children should not have long school holidays. As a group, do you agree or disagree?" Here students are taught the main concepts of argumentation or chain of arguments: argument, counterargument and rebuttal. Towards the end of the stage, formal argument schema or stratagem and sentence openers that promote the development of reasoned discourse are explicitly highlighted so that students can apply them during the group argumentation.

> *1) giving information (e.g. in my opinion)*
> *2) asking for someone else's point of view (e.g. What do you think about; could you give an example)*
> *3) expressing disagreement (e.g. I do not agree with; because)*
> *4) expressing agreement (e.g. I agree with; because)*

In Module 3, students are encouraged to reflect upon ground rules. In order to engage students in an argumentative discussion, students need to be provided with a well-defined set of ground rules.

In Module 4, students are asked to discuss why they should follow the rules agreed in Module 3 with their friends. This was to remind them that it is important to adhere to the rules when participating in the group argumentation.

In Module 5, with coaching from the teacher, students participate in two discussions entitled *"Bullies should be punished in front of others during school assembly. As a group, do you agree or disagree?"* and *"Living in the city is better than the village. As a group do you agree or disagree?"* Students are prompted by teachers to challenge each other's viewpoints, offer counterarguments, respond to counterarguments with rebuttals, and to ask for clarification as needed.

In Module 6, students are expected to participate in student-led group argumentation. There are 10 topics for the students to choose. They are not required to discuss all ten topics, but it depends on the group how many topics they manage to finish within the 8-week period. Students are supposed to take position on each issue, provide counterarguments and rebuttals, and provide supporting reasons and evidence for their opinions. Students are constantly reminded to follow the Ground Rules when discussing.

Since the students were busy preparing for examination, they were given freedom to select the time of discussion within the 8-week period. They must quickly inform the researcher about the agreed time and date for the discussion, preferably a day earlier. The discussion schedule is solely decided by the group, not the researcher so that students show their own enthusiasm to participate in the activity. Some groups finished the intervention within a 7-week period and some within the 8-week period. During the discussion, I preserved my roles to only providing support for students to argue and give reasons. I did not interfere with the discussion by imposing my opinions nor influencing them to make a decision.

This scheme of work which is presented in the form of a PowerPoint presentation is the basis of the intervention. This is the format presented for considerations of the teachers. (see Appendix 10)

5.6   Conclusion

In this chapter, the literature reviews successful educational interventions that promote argumentation that cultivate dialogic interaction and Exploratory Talk.

The review also suggests some renowned successful online tools that promote group argumentation which demonstrates the potential of online tool to foster group argumentation like face-to-face argumentation does. The theoretical framework (DF 2) underpinned the design for the prototype intervention which incorporates Reznitskaya et al.'s (2001) Collaborative Reasoning approach and Thinking Together programme Dawes et al. (2000). The key findings of the exploratory study were incorporated into the design in order to ensure that the intervention is suitable to instantiate dialogic interaction and meet the needs of secondary school students in Malaysia. Appendix 9 summarises how the theory and findings entwined as well as the details of the scheme of work.

After designing and developing the prototype of the intervention, in the next chapter, Chapter 6, I conducted a second consultative stage with ESL teachers to provide them opportunity to evaluate the intervention. Based on their responses, I can evaluate the suitability of the intervention to promote Exploratory Talk amongst secondary school students. The results from this evaluation would lead to the development of the scheme of work.

Figure 3 demonstrates the key stages of the intervention and the process involved.

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│    PHASE 1      │ ───▶ │    PHASE 2      │ ───▶ │    PHASE 3      │
│ Pre-intervention│      │  Intervention   │      │Post-intervention│
│     essay       │      │Thinking Together│      │     essay       │
│                 │      │ (WhatsApp group)│      │                 │
└─────────────────┘      └─────────────────┘      └─────────────────┘
                                  │
                                  ▼
                         ┌─────────────────┐
                         │    Module 1     │
                         │   Ice-breaking  │
                         └─────────────────┘
                                  │
                                  ▼
                         ┌─────────────────┐
                         │    Module 2     │
                         │  Preparing for  │
                         │   theargument   │
                         └─────────────────┘
                                  │
                                  ▼
                         ┌─────────────────┐
                         │    Module 3     │
                         │Ground RulesPart 1│
                         └─────────────────┘
                                  │
                                  ▼
                         ┌─────────────────┐
                         │    Module 4     │
                         │Ground RulesPart 2│
                         └─────────────────┘
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                         ┌─────────────────┐
                         │    Module 5     │
                         │   Collaborative │
                         │  argumentation  │
                         └─────────────────┘
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                         ┌─────────────────┐
                         │    Module 6     │
                         │   Collaborative │
                         │  argumentation  │
                         └─────────────────┘
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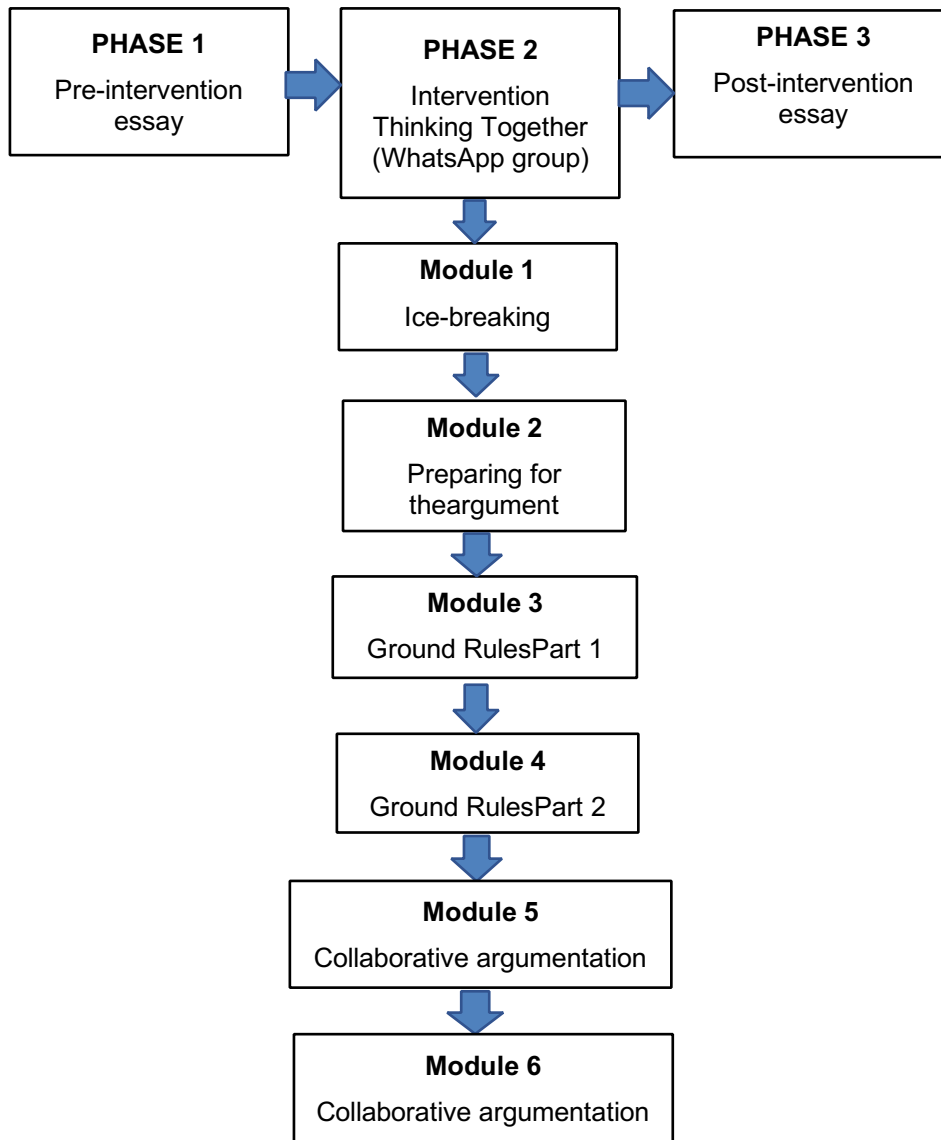
Figure 3. The stages of the 'prototype' online intervention

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Chapter 6 – Expert trials

6.1   Introduction

According to DBR methodology, on-going collaboration between practitioner and researcher is vital during the research process. Examiners, ESL teachers and students are involved in the exploratory study. Following Wademan's (2005) model, a second consultative stage is commenced in this chapter. Findings from the exploratory study demonstrates the obstacle to conduct group argumentation by some English language teachers who teach secondary school students. The intervention based on Reznitskaya et al.'s (2001) Collaborative Reasoning approach has been adapted to fulfil the gap. The second consultative stage provides the teachers with an opportunity to comment and improve my initial designed framework. They are asked to evaluate if the intervention would be suitable for their students' attainment level while I have the opportunity to evaluate to what extent the intervention is relevant to secondary school students in order to improve their argumentation skill. The results would lead to further developments of both the theoretical framework and the intervention itself.

The chapter starts with the background of the participants and the procedure of the expert trials. Data are gathered from the feedback of nine ESL teachers. The findings from the trials are used to determine the third theoretical framework, which will be discussed at the end of the chapter.

The questions asked at this phase were:

> *What is your general opinion about the scheme of work?*

> *To what extent do you think the scheme of work will improve students' argumentation skill?*

> *What are your suggestions to improve the scheme of work?*

> *What difficulties do you expect will happen when I deliver the lessons using WhatsApp application? What are your suggestions to avoid those glitches?*

6.2 The trials

In this chapter, I once again invited the teachers who participated in the exploratory study to respond and comment on the prototype intervention. This is crucial as they are the informants who understand the level and needs of the students and in a position to determine if the intervention suits the level of secondary school students in general.

6.2.1 The participants

All nine teachers participated in the exploratory study were interested to take part in the trials. Seven of them are female and the other two are male teachers. All of them prefer to provide their responses through e-mail exchanges as it was easy for them to go through the scheme of work at their own comfort prior commenting on the intervention. The demographic data of the teachers are as shown in Table 18 below.

Table 18. Demographic data of teachers (n=9)

Name	Gender	Years of teaching experience
Hannah	Female	4
Adibah	Female	7
Sara	Female	4
Soh Chin	Male	6
Jasmin	Female	10
Dini	Female	8
Maria	Female	8
Sanjeet	Male	10
Chow Kwok	Female	4

6.2.2 The procedure

In order to allow the practitioners to evaluate the scheme of work, I converted the scheme of work into a PowerPoint presentation and sent it via e-mail for their individual perusal. They were informed that the prototype intervention was derived from the Design Framework 2 (DF 2), additional theory and fieldwork findings (Chapter 4). Following DBR methodology, in this chapter, ESL practitioners were given the opportunity to evaluate the appropriateness of the intervention prior to testing it with a group of secondary school students. I explained to them how I planned to conduct the intervention and they were asked

about their opinions on the scheme of work, the usefulness of the scheme of work to improve students' argumentation skill, their suggestions to improve the scheme of work and possible glitches they foresee when conducting the intervention and their suggestions to abate the problems.

6.3 Findings

The discussion with all nine teachers took place over some e-mail exchanges. Their responses were summarised and analysed.

6.3.1 Teachers' general opinion about the scheme of work

Eight teachers left positive remark regarding the scheme of work in general. Adibah, Soh Chin and Maria particularly believed that other than high-proficiency students, low-proficiency students would also benefit from the activities. Only Chow Kwok mentioned she was skeptical to conduct the lessons with low proficiency students because of their undesirable attitude. Soh Chin, Jasmin and Maria agreed that the scheme of work appeared suitable for 13 to 17 year-old students in Malaysia. Soh Chin also added that the learning activities also fit the teaching of speaking skill to post-secondary students in MUET. Sara suggested that during the group argumentation, the teacher should not interfere with the flow of the discussion by correcting errors made by students. Instead, the teacher should constantly prompt students to provide more opinions. Adibah, Soh Chin and Sanjeet agreed that the implementation of online tool such as WhatsApp would increase the effectiveness of the intervention, but Hannah reminded us that students should be handled well during the online activities. Soh Chin presumed that the absence of face-to-face interaction would expand students' interactions as it lowers students' anxiety, shyness and fear of making mistakes when exchanging ideas with others compared to when they do it face-to-face in the classroom. However, Jasmin, Dini and Chow Kwok confessed that regardless of the value of the lessons developed by the teacher, the success of the intervention was highly dependable on students' attitude when participating in the activities.

6.3.2 The usefulness of the scheme of work

Generally, all teachers clearly agreed that the intervention will help to improve students' argumentation skill. The intervention was considered useful mainly because when students participated in collaborative argumentation, they were presented with various unimaginable ideas from other group members that will help them to have a wider perspective about the topic. They can utilise the ideas to elaborate more on their individual writing. This was agreed by seven teachers interviewed. Other than that, five teachers acknowledged that students' vocabulary will be positively enriched when participating in the intervention, thus thoroughly useful in helping them write argumentative essays. Soh Chin agreed that the use of online setting as the medium to deliver the lessons will provide more time for the students to participate without interfering their formal lessons in the classroom. Moreover, Dini, Chow Kwok and Sara believed that the intervention will enhance students' communication skill using English language while Adibah and Chow Kwok also add that students' critical thinking skill will be stimulated when participating in the group argumentation.

6.3.3 Suggestions to improve the scheme of work

All teachers supportively suggested ideas on how I should alter the scheme of work except Soh Chin as he thought that the scheme of work was completely sensible and did not need any adjustment. Four teachers (Dini, Adibah, Jasmin and Maria) suggested a modification on the sequence of the modules where they proposed Module 3 and 4 to be conducted after Module 1 instead of Module 2. They were of the opinion that the establishment of ground rules should be done prior to the delivery of any module in the scheme of work. The area highlighted by Dini and Chow Kwok was also related to the ground rules. They recommended that I should explicitly explain to the students about the importance of establishing ground rules prior to their group argumentation besides asking the students to generate their reasons of the importance of ground rules. This is crucial to ensure that the students adhere to the rules highlighted by teachers. Hannah mentioned about maximising the integration of existing functions available on WhatsApp while delivering the lessons such as text, voice and video messages. In terms of grouping the students, she suggested that it is better for the students to work in mixed ability groups. From the comments given by Sara, I learnt that the

effectiveness of the intervention is basically determined by my role as the teacher ensuring students to actively participate in dialogic group argumentation. She highlighted that I should considerably guide the students by giving more examples prior to their participation in the dialogic argumentation other than constantly prompting them to apply the Talk Cards. Lastly, Sanjeet suggested that students should be given the autonomy to determine when they will conduct their group activities as he can see that the nature of the learning is more student-led than teacher-led.

6.3.4 Predictable problems and ways to solve them

According to Sara, participating in online group argumentation is considered new to students and teachers in secondary schools especially using WhatsApp. All teachers, except Sara, Soh Chin, Sanjeet and Hannah use WhatsApp only to informally communicate with students, giving school information and sometimes reminders about homework. The common technologies used by the group of teachers are only PowerPoint, YouTube and some educational websites. Hence, they predicted some problems that are likely to occur and suggest ways to overcome the problems. Generally, Sara recommended that I brief the students about the overall plan of the scheme of work and what they are expected to do when participating in the intervention. Jasmin added that they should be supplied with a printed module of the intervention to guide them. Hannah, Adibah, Sanjeet and Dini were concerned with the duration of group discussion when it is conducted online. They anticipated that students will take longer time to think and respond to others' arguments hence delays should be expected. Therefore, Adibah and Dini suggested that the discussion should be conducted during weekends, so students can spend a longer time to participate in the discussion. When using WhatsApp, Hannah and Sara had doubts if the students will ask other people to type the responses for them. Besides, Sara highlighted that typing for a long time using mobile phone might be taxing to the students. Hence Sara suggested that the group discussion should be conducted intermittently, and students can use the WhatsApp web that can be operated from their laptop or personal computer for bigger screen. Sara also reminded the researcher to obtain consent from the parents as the students will use smartphones extensively at home. Jasmin, Dini and Maria expected that each group will have some difficulty

to gather all group members to be online at the same time. Even though students usually will have more free time during weekends, some might attend extra classes and would be unable to join others. Some may not be having internet mobile data when others are ready to go online. Therefore, Maria and Soh Chin suggested each group to have a leader who will remind the students about the agreed time and date for their group discussions. Hannah and Chow Kwok expected there will be lurkers in the groups while Sanjeet and Soh Chin expected that the attention of some students might be diverted during the discussion which in turn will disturb the flow of their group argumentation. Adibah and Sanjeet were also concerned if the discussion would divert from the actual topic. Therefore, Adibah reminded the importance of effective instructions and constant reminders to ensure the smooth flow of the group argumentation. Hannah, Sanjeet and Soh Chin also expected that low proficiency students will have difficulty to argue actively and effectively with others due to their limited vocabulary and grammar skill. Towards the end of their group argumentation, Sara suggested that the students should copy the arguments, counterarguments and rebuttals made during the discussion as the WhatsApp conversations are usually unorganised in sequence. It will be easier for them to see the outlines of their group argumentation. Finally, Dini reminded the researcher to have a backup of the online discussion just in case if the machine used is infected.

6.4   Adaptations to the scheme of work

The findings from this consultative phase are important because it is conducted with the similar group of practitioners who highlight the problems associated with the teaching of argumentative essay writing in their own classroom. Hence, they are the best individuals to comment on the suitability of the prototype intervention that is to be conducted with secondary school students in Malaysia. Based on the participants' responses and suggestions, I improved on the scheme of work to be more suitable and to suit the level of secondary school students (see Figure 4 below).
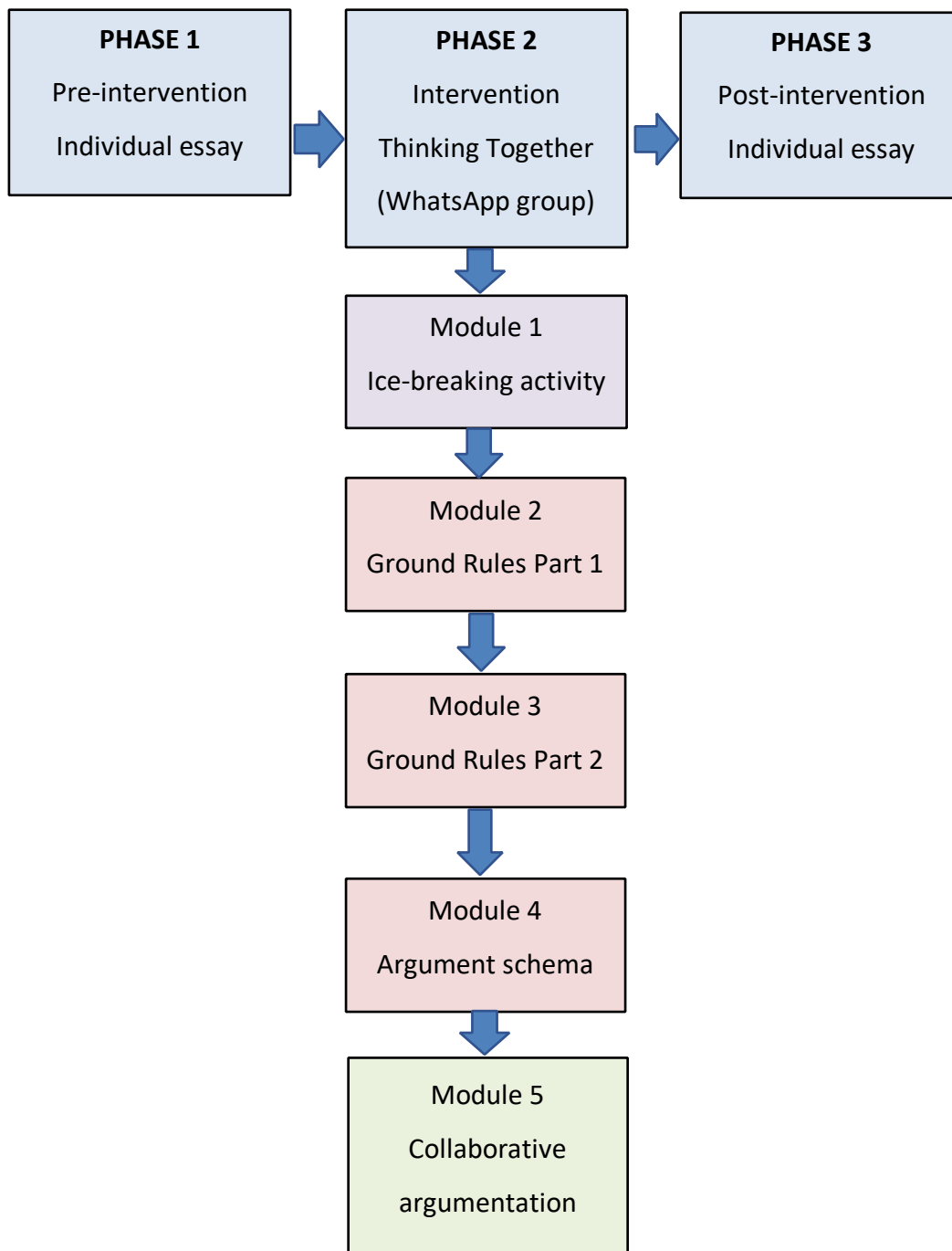
Figure 4. Adapted scheme of work after consultation with practitioners.

All teachers suggested that the Ground Rules should be introduced at the earlier stage of the intervention, hence the adaptation that I should make is to shift the ground rules to be introduced in Module 2 and 3. However, I am aware that the

teachers have not tested the intervention with the students, therefore I could not tell whether or not the intervention actually functions to improve students' argumentative essay writing. Based on teachers' responses, I at least had confirmation that the intervention has the potential to improve students' argumentation skills both in group and individual context, but I still need to test the intervention as a whole.

Most argumentation researchers trained teachers to teach argumentation to their own students, but I realised that I did not have the time to carry out such training of my own intervention design. The most significant adaptation that I could make to develop the intervention further is to find a teacher who is happy to allow me to run the online activities with his/her students and have me deliver the intervention. The teacher will play an important role too during the intervention as she will help me to conduct the pre-intervention and post-intervention essay writing under her supervision in her classroom.

6.5   Conclusion

This chapter shows another collaboration with ESL practitioners to evaluate the potential of the prototype intervention to improve students' argumentation skill. The data gathered presents the findings obtained from the teachers' individual responses regarding the effectiveness of the scheme of work to improve ESL students' argumentation skill, their responses on how to improve the scheme of work and the possible difficulties of conducting the lesson via online platform as well as how to resolve the issues. Importantly, the scheme of work is agreed by all teachers as a feasible vehicle to test the theory. The next chapter outlines how Iteration 1 was conducted and how the findings were reported.

Chapter 7- Results and discussion from Iteration 1

7.1   Introduction

This chapter concentrates on Iteration 1, which is supported by Design Framework 3. It serves the purpose to (a) observe whether the intervention promotes persuasive argumentation amongst the students, (b) analyse students' essays to discover any improvement in their written argumentation skill and (c) determine if there is any link between group and individual argumentation. Iteration 1 is conducted based on Design Framework 2 to develop Design Framework 3.

There are three sections included in this chapter. The first section discusses the context of the iteration, participants of the iteration, the procedures and methods used within Iteration 1. The second and third parts comprise the findings of the study and subsequent discussion leading to the development of the third theoretical framework – Design Framework 3. This will then lead to Iteration 2 which will be discussed in Chapter 8.

7.2   Background

Based on the consultation with the teachers as reported in the previous chapter (Chapter 6), they confirmed that online learning specifically using WhatsApp application has the potential to minimize the usual barriers they face when conducting small group activities in classrooms. Other than that, they also believed that the scheme of work is sensible to encourage secondary school students to engage with sound group argumentation where students would be motivated to generate more opposing ideas, gain new and unfamiliar vocabulary useful for argumentative essay writing, participate in extensive group argumentation, enhance their communication skill using English language and practise critical thinking skill. This set of findings supported the formation of the scheme of work as previously shown in Table 16 (Chapter 5).

The research questions for Iteration 1 were:

Research question 1: *What effect does the educational intervention have on the persuasiveness of the students' argumentation?*

Research question 2: *What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?*

Research question 3: *Does students' ability to argue persuasively in groups positively affect their ability to write persuasive argumentative essay?*

7.3   Iteration 1

7.3.1 Context of the iteration

The educational intervention was completely conducted using online tool when students were at home and had access to smartphones, WhatsApp application, Wi-Fi service or internet from their mobile data. However, I was informed by the teacher that the students would be busy preparing for Malaysian Certificate of Examination (MCE) in November 2016 hence the intervention had to be made around the students' comfort rather than researcher's comfort. The whole iteration was deliberately conducted around eight weeks as there will be some days that students did not want to be disturbed as they had school-based assessment and extracurricular activities. All the activities were created to suit their packed schedules as secondary school students.

During one school visit, I met the whole class of 28 students face-to-face in their classroom and explained my research project. I projected the list of activities on the overhead projector to give them an idea of what they were expected to do. However, I told them that the main requirement to participate was that they must have a smartphone, WhatsApp application and internet connection. Everyone in the class has smartphones but only 22 used the WhatsApp application. Out of these 22 students, only 18 agreed to participate. Students were given two copies of consent forms (one for them and one for their parents) and were asked to

return both forms to their English teacher within three days. This was to ensure they would not misplace them or forget to get their parents' consent. All students were reminded that this study did not relate to any of their school requirement and they had the choice to withdraw from the study. It was not obligatory for them to participate in all the stages of the intervention. Even though argumentative essay writing is not a popular genre amongst the students, they agreed to take part as they wanted to improve their argumentation skill. Besides, the activities were different from their typical learning experience in school as students could experience online learning at home with a group of friends at their own comfort. They were informed that I would not be in Malaysia when the activity commenced as I would be in the United Kingdom. However, this would not cause any major hindrance to the students and teacher as the educational intervention was deliberately planned to be conducted through online learning.

7.3.2 Participants of the iteration

The participants in this iteration were 17 year-old students from 5B class. In order to protect their privacy, each of them was assigned a unique code that bears no relation to their personal identity at all. The demographic data of the participants are shown in Table 19 below.

Table 19. Demographic data of participants in Iteration 2 (n = 18)

Group	Gender	Code	Age	Percentage of final exam marks	Attainment Level
1	Male	G101	17	71 A-	HA
	Male	G102	17	78 A-	HA
	Male	G103	17	85 A	HA
2	Female	G201	17	70 A-	HA
	Female	G202	17	72 A-	HA
	Female	G203	17	70 A-	HA
3	Male	G301	17	70 A-	HA
	Female	G302	17	70 A-	HA
	Female	G303	17	60 B	AA
4	Female	G401	17	86 A	HA
	Female	G402	17	62 B	AA
	Female	G403	17	62 B	AA
5	Male	G501	17	71 A-	HA
	Female	G502	17	65 B+	AA
	Female	G503	17	70 A-	HA
6	Male	G601	17	54 C	LA
	Male	G602	17	83 A	HA
	Male	G603	17	68 B+	AA

HA : high attaining (A+ / A-)
AA : average attaining(B & C)
LA : low attaining (D & E)
*Definitions of HA, AA and LA are based on the test results obtained by pupils on completion
 of their end-of-year examination phase.

Students were generally categorised in three levels of attainment; high, average and low. The attainment was determined by their previous final exam result for English language subject supplied by the teacher after all students agreed to share their data for the sake of this study. However, the problem with using exam marks as an indicator for students' language attainment was that it is not the most precise way of measuring a student's argumentation skill. The exam involved not only writing but answering comprehension and literature questions and most of the students did not write argumentative essay during the final exam. Hence, the exam marks could only classify students in general English language attainment. However, by categorising students according to the school's exam marks would later assist me whether to verify or discard the notion that only high-attainment students have the ability to participate in collaborative argumentation. This study attracted 12 high-attainment students, five average-attainment students and only one low-attainment student. Altogether, 18 students (eight male and ten female) with different English language attainment background volunteered to participate with the hope to improve their English language skill in terms of social interactions. Only Groups 1 and 2 had all high-attainment members while others are in mixed-ability groups. Group 1, 2, 4 and 6 preferred to work with the same gender while Group 3 and 5 had at least one male in the group.

7.3.3 Procedure of the iteration

Briefly, there are three phases involved in this iteration as shown in Figure 5.

```
┌─────────────────────┐      ┌─────────────────────┐      ┌─────────────────────┐
│      PHASE 1        │      │      PHASE 2        │      │      PHASE 3        │
│                     │ ───▶ │                     │ ───▶ │                     │
│  Pre-intervention   │      │    Intervention     │      │  Post-intervention  │
│                     │      │                     │      │                     │
│ Individual essay    │      │  Thinking Together  │      │ Individual essay    │
│ writing             │      │  (WhatsApp group)   │      │ writing             │
└─────────────────────┘      └─────────────────────┘      └─────────────────────┘
                                       │
                                       ▼
                             ┌─────────────────────┐
                             │      Module 1       │
                             │ Ice-breaking        │
                             │ activity            │
                             └─────────────────────┘
                                       │
                                       ▼
                             ┌─────────────────────┐
                             │      Module 2       │
                             │ Ground Rules Part 1 │
                             └─────────────────────┘
                                       │
                                       ▼
                             ┌─────────────────────┐
                             │      Module 3       │
                             │ Ground Rules Part 2 │
                             └─────────────────────┘
                                       │
                                       ▼
                             ┌─────────────────────┐
                             │      Module 4       │
                             │ Argument schema     │
                             └─────────────────────┘
                                       │
                                       ▼
                             ┌─────────────────────┐
                             │      Module 5       │
                             │   Collaborative     │
                             │   argumentation     │
                             └─────────────────────┘
```
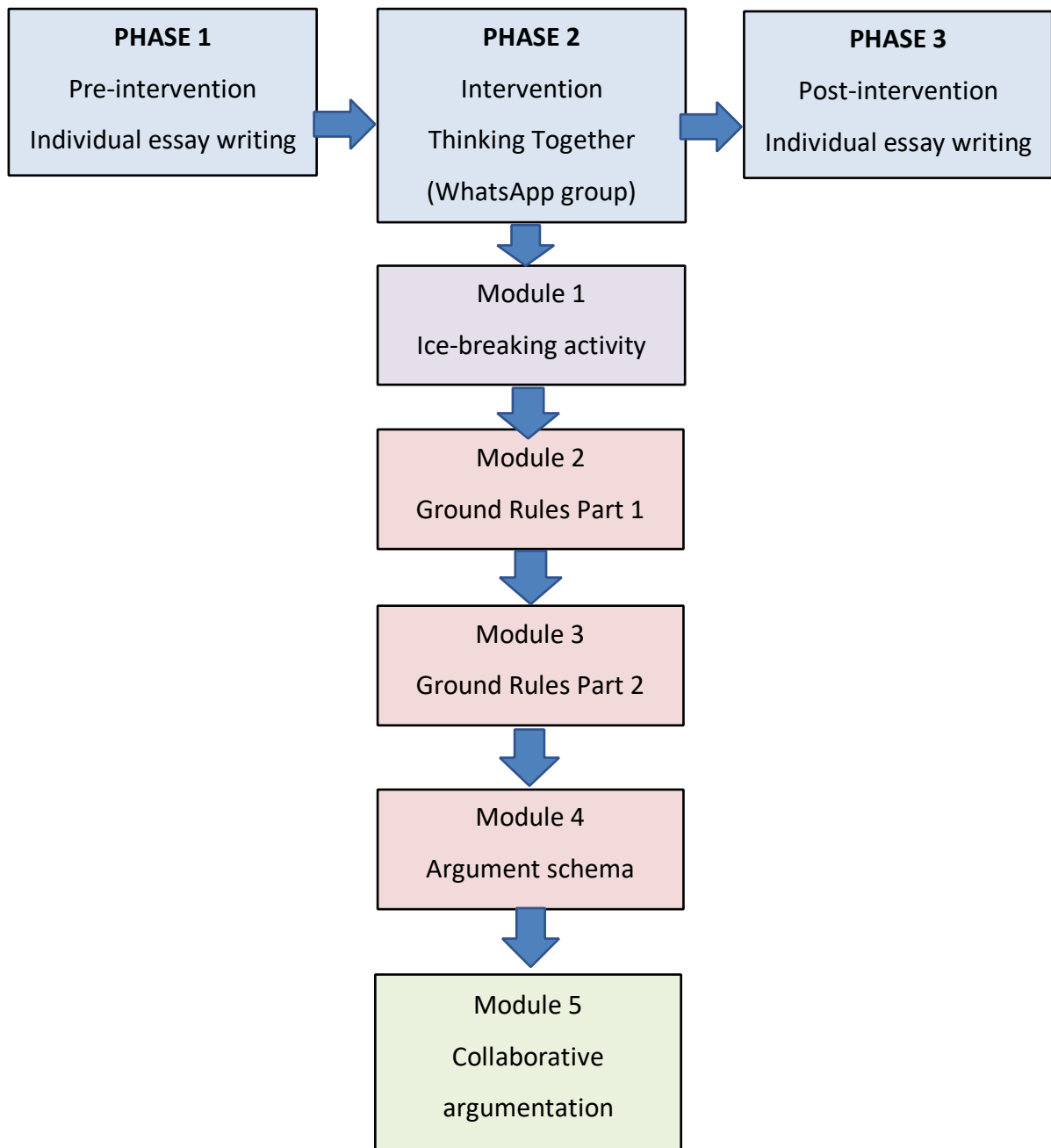
Figure 5. Stages of Iteration 1

Phase 1 was the pre-intervention stage where students wrote an argumentative
essay based on their existing skill, Phase 2 was the main intervention stage
where students participated in 5 learning modules to improve students'
persuasive argumentation skill while Phase 3 was the post-intervention stage
where students wrote argumentative essays based on the skill they gained from
the main intervention.

Phase 1 and 3 were conducted by the teacher while Phase 2 was conducted online by the researcher using WhatsApp application. The whole iteration was initiated with a pre-intervention essay writing. It was conducted under the English teacher's supervision in class to identify their existing skill to write argumentative essay. The teacher, Dini, allocated one hour of her teaching slot to conduct the writing activity. 10-minutes was used to deliver instructions and prepare students in proper seating arrangement to avoid students from copying another student's essay. The teacher wrote down two titles of argumentative essays on the board for the students to choose. Students were given 50 minutes (akin to the time allocated during MCE) to write 350 words of essay. Both topics were derived from their previous school examination questions prepared by the teacher. None of them chose to write the topics during examination as all of them write narrative essay. The titles were:

(1) *"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"* and

(2) *"Teenagers nowadays lack the sense of responsibility. Do you agree or disagree?"*

In this iteration, the intervention demanded the students to work in groups so the autonomy to select group members was theirs to reduce the occurrence of lurking due to shyness or anxiety. Hence, each group was formed based on students' preference completely. After they handed in their essays, Dini asked them to position themselves in a group of three and each member wrote down his/her name and WhatsApp phone number in the name list provided by Dini. She then emailed me the name list and I created six WhatsApp groups. Each WhatsApp group, consisted of 3 participants, was moderated by me as the teacher. Dini also helped me to provide each student with the activity form summarising the online modules for this iteration. Students were advised to discuss with their group members the date they planned to conduct each module.

It was then followed by the online intervention (Phase 2). In Module 1, students participated in an ice-breaking activity. Even though the students knew each other closely as they are classmates, I learnt from the teachers in the exploratory study (Chapter 4), that ESL students were frequently not proficient or shy to

communicate with others using English as the medium of communication. Therefore, this activity was conducted to minimise their anxiety by demonstrating that the group discussion was informal, and everyone was welcomed to share their opinions and experience. Most importantly, they were reminded not to be overly concerned with accurate grammar, sentence structure, spelling and word choice during the discussion. Hence, during the ice-breaking activity, students were given the task to talk on simple and casual topics related to themselves to build up confidence to use English in a new learning environment. Students took turns to ask questions to their friends related to the topic chosen by them. I instructed students to complete the activity within 30 to 45 minutes only.

In Modules 2, 3 and 4, students were taught how to engage in persuasive group argumentation. These were developed based on the Thinking Together programme *(thinkingtogether.educ.cam.ac.uk)* developed by Dawes et al. (2000) and the Collaborative Reasoning (CR) approach conducted by Reznitskaya et al. (2001). I intentionally merged both as CR method does not provide comprehensive teaching of argument concepts or group argumentation strategies prior to their CR activities. The aim of these explicit teachings was to provide an extensive support to students so that they would be competent to discuss dialogically in groups. Again, the conjecture of the study demanded students to improve their group argumentation skill before they can write a sound argumentative essay. The copy of the module was sent to each WhatsApp group in the form of images. Students were advised to save all the images in their phone, so they can refer to the modules when they engage in group argumentation. Each module was intended to be completed within 30 to 45 minutes.

In Module 2, students were encouraged to reflect upon some ground rules. In order to engage students in an argumentative discussion, students needed to be clear with the set of ground rules. They must be aware what rules are good and what rules are bad to ensure that they participate in persuasive argumentation.
In Module 3, students were asked to discuss with their friends the importance of the 10 ground rules selected in Module 2. This was to demonstrate the

importance of adhering to the ground rules when participating in the group argumentation.

Module 4 is the core of the learning activities as it was spent on teaching students the basics of argumentation to prepare them for the subsequent dialogue activities. The teacher modelled an example of three students arguing on the topic "School children should not have long school holidays. As a group, do you agree or disagree?". Here students were taught the main concepts of argumentation or chain of arguments: argument, counterargument and rebuttal. Towards the end of the module, formal argument schema or stratagem and sentence openers that promote the development of reasoned discourse were explicitly highlighted so that students could apply them during the group argumentation. For example:

1) giving information (e.g. in my opinion)
2) asking for someone else's point of view (e.g. What do you think
   about; could you give an example)
3) expressing disagreement (e.g. I do not agree with; because)
4) expressing agreement (e.g. I agree with; because)

After they completed all the learning modules (conducted in Week 1), students participated in collaborative argumentation in Module 5 where they were expected to participate in persuasive group argumentation. 10 topics were prepared for the students to choose. All the topics are social issues that relate to the everyday life of secondary school students in Malaysia. They were not required to discuss all the topics, but it depended on each group how many topics they could manage to finish within the 7-week period. Students were supposed to take position on each issue, provide counterarguments and rebuttals, apart from providing supporting details and evidences for their opinions. Prior to their group argumentation, students were repetitively reminded to follow the Ground Rules and apply the argument schema.

Since the students were busy preparing for examination, they were given the freedom to select the time of discussion within the 7-week period. They must quickly informed the researcher about the agreed time and date for the discussion, preferably a day earlier. The group discussion schedule was solely

decided by the group, not the researcher, hence all group argumentations were totally dependent on the availability and willingness of the students. Some groups finished the intervention within the 6-week period and some within the 7-week period. During the discussion, I preserved my role to only provide support for students to argue and give reasons. I did not impose upon them with my opinions or influence them to make decisions.

To complete the iteration, in Week 8, they wrote another argumentative essay in the post-intervention stage (phase 3). Following similar procedures of phase 1, students were required to write an argumentative essay. Again, Dini allocated one hour of her teaching time to conduct the activity but this time she wrote down 10 topics of argumentative essays on the board for the students to choose. Students were given 50 minutes to write 350 words of essay. Their post-intervention essays were used by the researcher to assess to what extent the intervention had an impact on their written argumentation.

Overall, only 16 students, 8 male and 8 female, completed all three stages in the first iteration. 18 students submitted their pre-intervention essays and fully participated in phase 2 but only 16 submitted their post-intervention essays.

7.3.4 Methods of data collection

18 essays were submitted during the pre-intervention and 16 in the post-intervention stage. The teacher collected the hand-written essays, scanned into PDF forms and emailed to me. However, due to illegible handwriting, I retyped all essays using Microsoft Word for a trouble-free analysis. The teacher validated the new version of essays with students' original hand-written essays. All errors from original writing were retained. Table 20 below is the example of how I retyped and segmented the essays according to 'idea units' as suggested by Reznitskaya et al. (2007, 2009b). Subsequently, I coded the essays according to the six categories suggested by Nussbaum & Schraw (2007).

Table 20. Example of segmented and coded essay

G503-pre-essay - "Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Code

Introduction	
I agree with the statement because almost every students have their own smartphones that can access the internet.	FC
The students nowadays became very aggressive because of the internet.	PC #1
There are a lot of disadvantages of internet among students.	
Paragraph 2	
First, the students can access the internet to find informations in just click with your pointed finger.	SR/E #2
But, the people loved to make the fake statements.	
So when the students read that, they totally trusted to the informations.	
When in their studies, they will use those wrong statements.	PC #2
The internet have a lot of wrong informations.	SR/E #2
Paragraph 3	
Second, the students also loved to play video online games in the internet.	PC #3
They will waste their golden time playing video games.	SR/E #3
They will be bored of doing their homeworks.	
When they have a lot of tasks, they will be more lazy to do their tasks.	
So that they will waste their time again playing video games.	
Paragraph 4	
Third, the students also surf the internet by entering websites.	PC #4
Some of them surf a bad website such as pornography.	
This is a unhealthy habits for them actually.	
It will make the students forget there's a lot of bad websites in the internet.	SR/E #4
Paragraph 5	
Lastly, the internet also uploaded a lot of styles outfit that can make the students copied.	PC #5
The students do not have to copy the styles from the other country or states because it's not suitable for our religion such as in islam.	
It will burn the money f we buy those outfit.	
There's a website for online shopping that are very expensive for students.	SR/E #5
Obviously, the students can't afford it.	

Conclusion	
The conclusion is the internet really promotes an unhealthy culture among students.	
The students should stop use the internet unless for a good reason.	
So that, the studies will increase if we use our time wisely and not surfing the internet to much.	

Note : All errors from original writing are retained.
FC : final claim
PC : primary claims
SR/E: supporting reason/example
CA: counterargument
RB: rebuttal
Res: Reservation

Scores

Category	Count
Primary claims	5
Supporting reasons	4
Counterclaims	0
Supporting reasons	0
Rebuttals	0
Supporting reasons	0

Hence, the total of 34 essays were analysed in Iteration 1. All WhatsApp group argumentations derived from Module 5 generated during the intervention were also analysed. I exported all the WhatsApp groups' conversation from my smartphone to Google Drive for further analysis. As for precaution, I also backed up all the conversations into my Microsoft OneDrive account. 22 episodes of group argumentations were analysed in Iteration 1. Apart from this effort, observations were also conducted to identify issues emerging during all episodes of group argumentation. Finally, seven students volunteered to participate in the post-intervention questionnaire.

7.4   Forms of Data Analysis

7.4.1 Written argument

Following Nussbaum & Schraw (2007), pre- and post-intervention essays could be marked in three ways. Firstly, they were coded based on the six main categories and the score was counted based on the frequency of each category that appears in the essay. Overall interrater agreement of the coding for the pre-

intervention essays was 84% before discussion and 100% after discussion while 94% before discussion and 100% after discussion for the coding of the post-intervention essay.

Table 20 is an example of how an essay was coded and scored. Secondly, all essays were rated based on a 4-point scale. Finally, essays were holistically scored using the adapted holistic scoring rubric.

7.4.2 Dialogic interaction

Groups 1, 2, 3 and 5 participated in three group argumentations while Groups 4 and 6 participated in five group argumentations. Hence, the total of 22 episodes of online interaction derived from the all WhatsApp groups were exported to my Google Drive for detailed analysis. I did not have to transcribe the interactions as they were already in word forms. The main challenge began when I had to manually coded the interactions following what Reznitskaya et al. (2009a) called idea units. It was challenging because the group interactions were lengthy and did not follow the argument-counterargument-rebuttal structure. Therefore, I needed to systematically followed the interactions from the beginning until the end to determine which arguer provided the arguments or the opposing ideas. The main purpose of this procedure was to identify each student's performance during the group argumentations. Table 21 below shows how idea units were organised and coded based on Group 1's interactions.

Table 21. Example of the coding of a group's interactions

Group argumentation 1 : Bullies should be punished in front of other pupils during school assembly.			
	G103	**G101**	**G102**
Final claim	Disagree	Agree	Agree
Argument	Eventhough they may have bully the others but we must protect their own privacy and dignity.	This case must (be) prevented.	Because its fair to the victims. If we didn't punish the bullies. The bullies will do it again.
	G102		**G103**
Counterargument	But it is fair to the victims		It is fair to punish the bullies but not in an open space with many students watching. This will hurt their dignity.
	G103		

Rebuttal	But still we have to conceal the problem. We don't want it to spread around the school.		

After categorising the interactions into idea units, they were assessed in two ways. The first form of analysis was to identify the dialogic interactions using the Scheme for Educational Dialogue Analysis (SEDA) developed by Hennessy et al. (2016). I manually coded all the dialogic interactions, hence, to achieve the intra-coder reliability, they were coded in three different occasions within two months. Peter & Autumn (2004) agree that inconsistency may occur due to coder's mood and fatigue, therefore it was crucial that more occasions of coding should be done to improve the consistency of my personal judgement. I did not integrate inter-coder reliability for this part of analysis as it consumed extended period of time if I am to train other coders to grasp the concept of dialogic interaction and apply all 33 codes stated in SEDA. Additionally, it was my first experience analysing dialogic interactions using the scheme single-handedly. Hence, I personally found it a complex and lengthy process to comprehend and apply all the codes to analyse students' dialogic interactions.

The second form of analysis is to determine the characteristics of their argumentation based on the research of Nussbaum & Kardash (2005) and Nussbaum & Schraw (2007) which determines the persuasiveness of an argument based on the argument-counterargument integration. Additionally, the impact of the persuasiveness can be further appreciated when students change their mind based on the counterarguments or rebuttals that go against their arguments.

7.4.3 Observation and field note

The aim of the intervention is to promote persuasive argumentation amongst students by expanding their opportunity to deal with counterarguments and rebuttals. Hence, detailed observation on each group interaction was conducted to identify any drawback that may prohibit students from participating in the desired argumentation. In my field note, I listed all the occurrences which greatly

promoted or prohibited persuasive argumentation from taking place. This is important to help me adapt the intervention prior to conducting it in the next iteration (Iteration 2). The observational variables I used to interpret my observations is descriptive observational variables where it demands me to see something and write it down without having to make any inference. From this method, Bernard (2017) agrees that the results would be more accurate and cost effective compared to questionnaire and face-to-face interviews, even though it is time-consuming and capture less meaning of the data for the students.

7.4.4   Student post-intervention questionnaire

The questionnaires were distributed after students participated in all the three stages (pre-intervention, intervention and post-intervention) in Iteration 1. However, only seven students volunteered to participate with the questionnaire session as others were busy with extra classes and school activities. Dini provided each of them with a copy of questionnaire to be answered. They were asked to provide their general comments related to the implementation of the intervention. The questionnaires invited students to elicit the advantages and disadvantages of participating in the intervention. It took them approximately 15 minutes to reflect and comment on the intervention.

Based on the findings from my observation, field note and students' feedback from the questionnaire, I would consider the issues raised to adapt the intervention prior to conducting it with a new set of students in the next iteration.

7.5   Findings of Iteration 1

Research question 1: *What effect does the educational intervention have on the persuasiveness of the students' argumentation?*

7.5.1   Did the intervention develop dialogic interaction?

Modules 2, 3 and 4 contained teacher-led activities that would help to prepare students to become more dialogic when arguing. Therefore, the evidence of dialogic interaction could be observed in all group argumentations in Module 5. Overall, all six groups managed to conduct at least three episodes of group argumentation; Groups 1, 2, 3 and 5 only participated thrice while Groups 4 and

6 participated in five episodes of group argumentation. Thus, the total of 22 episodes of group argumentations were carefully analysed using SEDA. From the findings, it was observed that the interactions of all groups involved at least five dialogic clusters out of 33 stated in SEDA. The analysis shown in Table 22 clearly supports that all groups successfully participated in dialogic interactions.

Table 22. Frequency of dialogic clusters produced by all groups

Group	Frequency of dialogic clusters				
1		GA 1	GA 2	GA 3	TOTAL
	CLUSTER	*f*	*f*	*f*	
	P (Positioning & coordination)	14	13	14	41
	E (Express or invite ideas)	5	13	9	27
	R (Make reasoning explicit)	5	5	16	26
	I (Invite elaboration or reasoning)	5	11	7	23
	B (Build on ideas)	3	7	12	22
	G (Guide direction of dialogue or activity)	1	0	0	1
2		GA 1	GA 2	GA 3	TOTAL
	CLUSTER	*f*	*f*	*f*	
	P (Positioning & coordination)	21	25	10	56
	E (Express or invite ideas)	2	7	10	19
	R (Make reasoning explicit)	4	7	7	18
	B (Build on ideas)	3	5	7	15
	I (Invite elaboration or reasoning)	0	4	1	5
	G (Guide direction of dialogue or activity)	2	0	2	4
3		GA 1	GA 2	GA 3	TOTAL
	CLUSTER	*f*	*f*	*f*	
	P (Positioning & coordination)	5	3	6	14

E (Express or invite ideas)	0	8	6	14
R (Make reasoning explicit)	1	4	1	6
B (Build on ideas)	1	2	2	5
I (Invite elaboration or reasoning)	1	2	1	4
G (Guide direction of dialogue or activity)	0	0	1	1
C (Connect)	0	0	1	1

4

	GA 1	GA 2	GA 3	GA 4	GA 5	TOTAL
CLUSTER	f	f	f	f	f	
P (Positioning & coordination)	8	7	13	11	15	54
R (Make reasoning explicit)	3	5	6	7	14	35
E (Express or invite ideas)	4	11	8	7	1	31
B (Build on ideas)	0	0	2	5	11	18
I (Invite elaboration or reasoning)	2	2	2	0	5	11
G (Guide direction of dialogue or activity)	0	0	5	0	1	6
RD (Reflect on dialogue or activity)	0	0	0	0	1	1

5

	GA 1	GA 2	GA 3	TOTAL
CLUSTER	f	f	f	
P (Positioning & coordination)	6	8	18	32
E (Express or invite ideas)	5	16	10	31
R (Make reasoning explicit)	6	6	10	22
I (Invite elaboration or reasoning)	2	4	2	8
B (Build on ideas)	3	3	3	9

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	GA 1	GA 2	GA 3	GA 4	GA 5	TOTAL
CLUSTER	f	f	f	f	f	
P (Positioning & coordination)	6	12	13	3	6	40
R (Make reasoning explicit)	5	4	7	3	5	24

	E (Express or invite ideas)	0	6	2	7	2	17
	B (Build on ideas)	2	1	1	2	9	15
	I (Invite elaboration or reasoning)	0	5	2	1	3	11
	G (Guide direction of dialogue or activity)	0	1	1	0	0	2

GA : Group argumentation

From the table, it was observed that the interactions of all groups were frequently developed by three dialogic clusters of SEDA. The most frequent dialogic turn observed in all groups is *'Positioning and coordination'* where they actively took a stand in the dialogue and exchanging different ideas. Other than that, they were also active in expressing ideas and inviting others to give ideas as well as make their reasoning explicit. It shows that all students in Iteration 1 successfully participated in dialogic interaction which demonstrates the positive impact of Modules 2, 3 and 4 to develop students' dialogic interaction skill regardless of their attainment level.

Additionally, correlation analysis was conducted to see if the frequency of dialogic turns correlated with the group argumentations. Table 23 shows that the values of coefficient of determination (r) for all groups, except Groups 2 and 6, are between 0.7 and 0.9 which shows a strong positive correlation. This means that more group argumentations go with more dialogic turns. Even though Groups 2 and 6 technically have positive correlation, the r values are only 0.2 and 0.3 which demonstrates a weak relationship between group argumentation and dialogic turn.
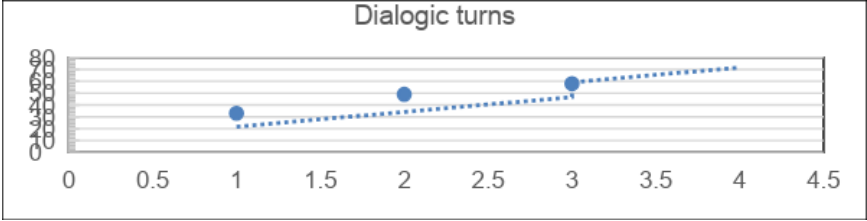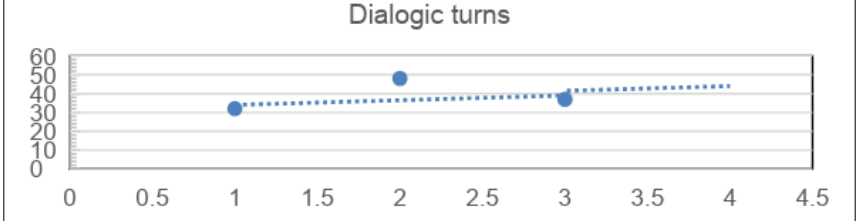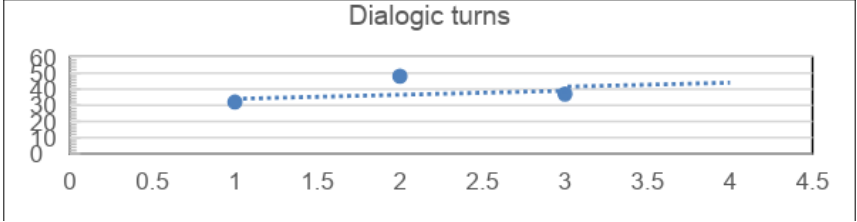
Table 23. Value of correlation coefficient

Group	Value of r
1	0.9
2	0.3
3	0.7

4	0.9
5	0.9
6	0.2

The scatter plots in Table 24 display a fairly strong positive correlation; as the group argumentations increase, their dialogic turns increase too.

Table 24. Correlation between group argumentation and dialogic turns of all groups

Group	Scatter plot
1	
2	
3	
4	

	Dialogic turns
5	Dialogic turns
6	Dialogic turns

Even though it is clear from the dialogue analysis that all students actively participated in dialogic interaction, it was still unclear if they were really engaging in persuasive argumentation.

7.5.2 What form of argumentation they performed?

Apart from encouraging dialogic interaction amongst the students, the intervention is mainly conducted to provide opportunities for students to engage with persuasive argumentation. Based on the aforementioned findings, I was aware that all group members had actively participated in dialogic interaction. However, I still need a detailed analysis of their discourse to determine if they had really engaged in persuasive argumentation. It is necessary to identify to what extent the dialogic discourse was persuasive and the reasons why it was not persuasive. The persuasiveness of a group argumentation was established

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when students willingly changed their minds after vigorous exchanges of counterarguments and rebuttals. By focusing on the impact of counterarguments and rebuttals generated by students to their friend's stance regarding the topic, it could be determined if any of them was persuaded or not.

The detailed analysis of 22 episodes of group argumentations indicate that not all groups consistently engaged in persuasive argumentation when discussing debatable issues. This demonstrates that some groups were unsuccessful to apply their persuasive argumentation skill across different argumentative topics. Table 25 presents the persuasiveness of each group argumentation.

Table 25. Level of persuasiveness of each group argumentation

Group	Group argumentation 1	Group argumentation 2	Group argumentation 3	Group argumentation 4	Group argumentation 5
1	Persuasive	Persuasive	Persuasive	-	-
2	Persuasive	Persuasive	Persuasive	-	-
3	Persuasive	Unpersuasive	Unpersuasive	-	-
4	Persuasive	Unpersuasive	Persuasive	Unpersuasive	Persuasive
5	Unpersuasive	Unpersuasive	Unpersuasive	-	-
6	Persuasive	Unpersuasive	Persuasive	Unpersuasive	Unpersuasive

The table shows that not all group argumentation was persuasive as some were found unpersuasive. In all cases of successful persuasion in this iteration, students were influenced by the sound counterarguments or rebuttals provided by others as shown in Table 26 below.

Table 26. The incidents of persuasion due to sound counterarguments and rebuttals

Group	Group argumentation				
	1	2	3	4	5
1	(G101 was persuaded by G103's CA)	(G101 was persuaded by G103's RB)	(G103 was persuaded by the RBs made by G101 and G102)	-	-
2	(G201 was persuaded by the CA initially made by G203 which later supported by G202)	(G203 was persuaded by the RB initially made by G201 which later supported by G202)	(G201 was persuaded by the CA made by G202 and G203)	-	-

3	(G302's CA persuaded G301 and G303)	(Nobody was persuaded by the CA provided by G302. Unattended CA)	No persuasion occurred. (No CA offered)	-	-
4	(G402 was persuaded by the CAs made by G401 and G403.)	No persuasion occurred. (No CA offered)	(G401's **authoritative voice** persuaded others)	(Nobody was persuaded with the CA provided by G401. Unattended CA)	(G401's CA persuaded G403 and G402)
5	No persuasion occurred. (No CA offered)	No persuasion occurred. (No CA offered)	No persuasion occurred. (No CA offered)	-	-
6	(G601 was persuaded by G602 and G603)	No persuasion occurred. (No CA offered)	(G603 persuaded G601 and G602 to change their minds)	No persuasion occurred. (No CA offered)	No persuasion occurred. (No CA offered)

CA: counterargument
RB: rebuttal

The most consistent group participation in persuasive argumentation is Groups 1 (100%) and 2 (100%). This goes to show that they had effectively grasped the skill of persuasive argumentation and had applied it successfully in all of their group argumentations. Group 4 managed to generate at least three (60%) episodes of persuasive argumentation from five group interactions, while Groups 3 (33%) and 6 (40%) only generated one. The absence of counterarguments in some episodes found in Groups 3, 4, 5 and 6 affected the persuasiveness of their argumentation. Group 5 is the only group in this iteration that did not engage in persuasive argumentation at all.

There are several reasons why some argumentations were not persuasive. Firstly, the students ignored their teacher's instructions or advice to counter their friends' arguments. This was clearly observed in Group 5. Even though they were prompted by the teacher, as shown in Table 27 below, to provide opposing ideas during each group argumentation, the instructions were often ignored. When a discussion was initiated, one student would agree with the topic, and the others were inclined to uncritically concur with the idea too. Therefore, no argument entailed.

Table 27. Example of how teacher prompted students to provide opposing ideas

Turn	Timestamp	Conversation
		GROUP 5
Topic of discussion: Bullies should be punished in front of other pupils during school assembly. As a GROUP, decide whether to agree or disagree.		
9	09/07/2016, 10:36:46: AA:	So everyone agrees. But.. You need to disagree with your friends' ideas too. Sometimes we do not have same ideas. It is ok to disagree.
31	09/07/2016, 11:03:25: AA:	Remember the rules that you need to disagree?
33	09/07/2016, 11:04:08: AA:	I understand but that is the rule. In the next discussion, you must include opposing ideas, too.
Topic of discussion: Living in the city is better than village. As a GROUP, decide whether to agree or disagree.		
26	17/06/2016, 15:45:39: AA:	Other than giving reasons why you agree, please think of reasons to disagree with the topic.
33	17/06/2016, 15:58:25: AA:	Please give negative points about living in the village too.
40	17/06/2016, 16:16:55: AA:	Anyone wants to contribute on the disadvantages of living in the village?
Topic of discussion: School students should not have long school holidays. As a GROUP, decide whether to agree or disagree.		
37	19/08/2016, 15:33:02: AA:	What other disadvantages for having long school holidays?

AA: Teacher's pseudonym

Secondly, in all unpersuasive group argumentations, students simply had no counterargument to offer when probed by teacher due to their extreme attitude or lack of knowledge regarding the topic that prevented them from pondering the opposite side of the issue as shown in Table 28 below.

Table 28. Example of students' hesitation to provide opposing ideas

Turn	Timestamp	Conversation
	GROUP 4	
	GA 2 : Living in the city is better than the village.	
18	06/08/2016, 15:54:21: AA:	When your friend gives ideas about what is good about living in the village, try to argue with them. There are also some disadvantages about living in the village. Can anyone tell me the bad side of living in the village?
29	06/08/2016, 16:04:01: G402:	We finish, teacher. We have no idea about the bad side because living in village is better.
30	06/08/2016, 16:09:51: G403:	Yeah, no idea.
	GA 4 : Sports and games are not important for students because they are not included in their exams.	
41	12/08/2016, 14:52:22: AA:	Is that all? Anymore opposing ideas about the disadvantage of playing sports like G401 mentioned just now?
42	12/08/2016, 14:53:40: G402:	I think that is all we got.
43	12/08/2016, 14:53:53: G401:	I agree with G402
	GROUP 5	
	GA 1 : Bullies should be punished in front of other pupils during school assembly.	
31	09/07/2016, 11:03:25: AA:	Remember the rules that you need to disagree?
32	09/07/2016, 11:03:28: G502:	Yes, but teacher... we think that is the best answer for this topic.
33	09/07/2016, 11:04:08: AA:	I understand but that is the rule. In the next discussion, you must include opposing ideas, too.

GA : group argumentation

Due to lack of knowledge about the appropriate punishment for bullies, G502 copied some information from the internet and shared it with the group instead of providing her personal views on that issue. Furthermore, the information did not contribute anything significant to the topic of their discussion.

Thirdly, there are a few occasions of unattended counterarguments which hindered the persuasion process. The counterarguments offered were generally weak, lacking in supporting details and inadequately convincing to make others change their mind as shown in Table 29 below.

Table 29. Example of weak counterarguments provided by students

Turn	Timestamp	Conversation
		GROUP 1
		GA 2 : "Living in the city is better than the village." As a GROUP, decide whether to agree or disagree.
11	02/07/2016, 08:31:41: G101:	but in the village also can get a job and can live in peace
12	02/07/2016, 08:33:12: AA:	I agree with you, G101. Can you elaborate or give examples?
13	02/07/2016, 08:34:16: G101:	what kind of job is available in the city, G103?
14	02/07/2016, 08:35:15: G103:	But there are many jobs in the city. Such as Banking, human resources, public sector, and many more
15	02/07/2016, 08:38:21: G101:	i see. i agree with that. because in the village is there was not much job.
		GROUP 3
		GA 2 : "Living in the city is better than the village." As a GROUP, decide whether to agree or disagree.
6	20/07/2016, 15:23:08: G302:	Any more ideas ? But we can easily get job when living in the city
7	20/07/2016, 15:24:49: G301:	But for me many bad attitude will be to teenagers that live in city
8	20/07/2016, 15:26:49: AA:	why G301?
9	20/07/2016, 15:31:41: G301:	Because in city low religious education
		GROUP 4
		"Sports and games are not important for students because they are not included in their exams. As a GROUP, decide whether to agree or disagree."
26	12/08/2016, 14:25:22: G401:	No, not really, though sometimes it does consume some of my time

GA : group argumentation

In Group 1, all members concurred that living in the city is better than living in the village. However, in turn 11, G101 counter-argued that living in the village is better but he could not give examples of jobs available in the village to reinforce his argument. He, on the other hand, was influenced by G103 when G103 managed to give examples of jobs available in the city in turn 14 hence changing his mind in turn 15. Due to his lack of knowledge about the jobs available in the village, G101 could not defend his counterargument as the force was weaken by G103. The counterargument raised by G101 that had the potential to persuade others was left unattended.

In Group 3, all students showed an extreme attitude when they disagreed that living in the city is better than the village. However, in turn 6, G302 strongly disputed and mooted that job opportunities are better in the city. However, G301 kept providing reasons to support his extreme attitude and ignored G302's counter-argument. Besides, G302 did not support his argument with supporting reasons or examples. Hence, the opposing idea offered by G302 was not further discussed and failed to challenge others' arguments.

In Group 4, all students showed an extreme attitude when they disagreed that playing sports is not important. Even though G401 provided a counterargument in turn 26, nobody paid attention to it and it was left unattended. This was simply because, G401 did not elaborate or give examples why playing sports consumed his studying time.

7.5.3 What form of talk did they attain?

Previous studies substantiate that there is a likelihood to observe dialogic interaction in Disputational, Cumulative and Exploratory Talk but persuasive argumentation is likely to occur when students immerse themselves in Exploratory Talk. Hence, their interactions were further analysed using the typology of talk proposed by Wegerif & Mercer (1997) to identify what form of talk occurs during the group argumentation. Table 30 below shows the types of talk generated by all groups.

Table 30.   **Types of talk of students' group argumentation in Iteration 1**

Group	Group argumentation 1	Group argumentation 2	Group argumentation 3	Group argumentation 4	Group argumentation 5
1	exploratory	cumulative	exploratory	-	-
2	exploratory	exploratory	exploratory	-	-
3	exploratory	cumulative	cumulative	-	-
4	exploratory	cumulative	exploratory	cumulative	exploratory
5	cumulative	cumulative	cumulative	-	-
6	exploratory	cumulative	disputational	cumulative	disputational

From the table, we can see that 10 episodes of talk are exploratory (45%), 10 are cumulative (45%) while the remainders are disputational (10%). When comparing types of argumentation in Table 7.4 and types of talk in Table 7.3, it is evident that there was a connection between persuasive argumentation and Exploratory Talk. It is clear that when students participated in Exploratory Talk, their group argumentation became persuasive in nature. Apart from that, there were some occasions of winning and losing occurring in Group 1 (group argumentation 1) and Group 2 (group argumentation 3). In Group 4, G401 was a little authoritative when the group was trying to come to a conclusion (group argumentation 3).

Research question 2: *What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?*

7.5.4 Did the essays improve?

The purpose of evaluating students' essays is to observe if the intervention had any positive impact on students' individual writing. 18 essays were submitted for the pre-intervention essays but only 16 were submitted during the post-intervention stage as two students did not attend the writing session (G502 and G503 are absent from school). The total of 34 essays were marked using the 4-point scale followed by the adapted holistic scoring rubric by Nussbaum & Schraw (2007).

7.5.4.1   Using the 4-point scale

The purpose of assessing the essays using the 4-point scale suggested by Nussbaum & Schraw (2007) is to measure if students managed to eradicate one-sidedness in their argumentative essay after participating in the intervention. Table 31 below shows the score for the pre- and post-intervention essays based on the 4-point scale.

Table 31. The score for the pre- and post-intervention essays based on the 4-point scale in Iteration 1

4-point scale			
Student	**Attainment level**	**PRE**	**POST**
G101	HA	1	3
G102	HA	1	2
G103	HA	1	2

G201	HA	1	2
G202	HA	1	3
G203	HA	1	3
G301	HA	2	1
G302	HA	2	2
G303	AA	3	1
G401	HA	1	2
G402	AA	2	1
G403	AA	2	1
G501	HA	1	1
G502	AA	1	-
G503	HA	1	-
G601	LA	1	3
G602	HA	1	3
G603	AA	3	1

HA: high attaining (A+ / A-)
AA: average attaining(B & C)
LA: low attaining (D & E)
*Definitions of HA, AA and LA are based on the test results obtained by pupils on completion
 of their end-of-year examination phase.

Score 1 indicates that the essays are one-sided, score 2 shows that the essays have a slight hint of opposing ideas but could not be considered as two-sided, score 3 shows that the essay is well-integrated with counterarguments and rebuttals and score 4 indicates that students integrate counterarguments and rebuttals in their essay as well as conclude it with an integrative conclusion. Thus, a sound argumentative essay would receive score 3 or 4 while the poor one would be scored 1 or 2. However, the improvement of essays written by G502 and G503 was unable to be determined as they did not submit their post-intervention essays.

Based on the findings in Table 31, the improvement of argumentative essay writing amongst the students could be classified into three categories; deterioration, positive improvement and no improvement. The deterioration occurred amongst students who scored 3 for their pre-intervention essay but scored lower (1 or 2) after participating in the intervention. This means that their essay moves from two-sided to one-sided after the intervention. This is evident from the essay written by G303 and G603. Clearly that the intervention is not helpful to both of them. This somehow shows that the intervention is only valuable to students who do not possess the skill to write persuasively.

Five (28%) essays which were written by G101, G202, G203, G601 and G602 showed positive improvement as they managed to move from score 1 to score 3. Their essays improved from one-sided to two-sided. This is the highest improvement obtained in Iteration 1. Their essays were well-integrated with counterarguments and some had rebuttals which make them two-sided. However, none of them managed to reach score 4 as they did not write an integrative conclusion. This particular skill could be ignored as it is not the main part of the intervention. The encouraging improvement of the essays is expected to be influenced by the intervention as this group of students did not manage to write two-sided essays in the pre-intervention stage.

There is no improvement exhibited from the essays of nine (50%) students (G102, G103, G201, G301, G302, G401, G402, G403 and G501). They are considered unimproved as their pre- and post-intervention essays were one-sided. Four (22%) of them (G102, G103, G201, G401) progressed from scale 1 to scale 2 due to a minor reservation identified in their essays. Even though such minor reservation tones down the one-sidedness of their essay, they are still at the embryonic stage that could not reach the desirable outcome. The four students managed to add a single statement that slightly disapproved their initial stance after initially providing multiple reasons to back up their stand. Minor reservations were mostly found in the introduction and conclusions of the essays. This is shown in Table 32 below.

Table 32. Example of minor reservations found in students' argumentative essays

Student	Stance towards topic	Excerpt of minor reservations	Part of essay
G102	Internet helps students in their studies.	On the other hand, "every coin has two faces" in the similar way internet also having two faces one is good another is bad.	Introduction
G103	Internet helps students in their studies.	In conclusion, the internet will become a problem if we misuse it but if we use it the right way it can help us in many ways.	Conclusion

G201	Living in the city is better than the village.	However, to understand the moral value and culture of a state or a place, you definitely need to spent some part of your life in a village and also to enjoy and understand the beauty of nature in all its true colours and aspects.	Conclusion
G401	School students should do a part-time job.	If students did not know how to do it wisely, they will face many problems in their lives.	Conclusion

7.5.4.2 Holistic scoring

Based on Nussbaum & Schraw's (2007) holistic scoring, one-sided essays are scored 0 to 4 while two-sided essays are scored 5 to 7. The essays are classified as one-sided when they do not include any opposing idea while two-sided essays are recognised from the appearance of opposing ideas. There are four types of one-sided essays: *(a)* score 0 – response to topic, *(b)* score 1 – undeveloped opinion, *(c)* score 3 – minimally developed and *(d)* score 4 – developed. Two-sided essays are categorized into three categories: *(a)* score 5 – well developed, *(b)* score 6 – highly developed and *(c)* score 7 – elaborated and addressed opposition. Table 33 shows the score for the pre- and post-intervention essays based on the holistic scoring.

Table 33. The score for pre- and post-intervention essays based on the holistic scoring in Iteration 1

Holistic scoring			
Student	Attainment level	PRE	POST
G101	HA	3	5
G102	HA	4	4
G103	HA	4	4
G201	HA	2	3
G202	HA	3	5
G203	HA	2	6
G301	HA	3	4
G302	HA	2	4
G303	AA	5	4
G401	HA	4	4
G402	AA	4	4
G403	AA	4	4
G501	HA	0	4
G502	AA	4	-

G503	HA	4	-
G601	LA	3	6
G602	HA	3	6
G603	AA	5	4

HA: high attaining (A+ / A-)
AA: average attaining(B & C)
LA: low attaining (D & E)
*Definitions of HA, AA and LA are based on the test results obtained by pupils on completion
of their end-of-year examination phase.

From the table, we can see that the essays written by G101, G202, G203, G601 and G602 were immensely improved as their essays moved to a higher score. The essay written by G203 progressed from score 2 to 6, G101 and G202 from score 3 to 5 and G601 and G602 from score 3 to 6. It is simply because, counterargument and rebuttal, which are the key components of a persuasive argumentation, increased in frequency amongst the five (28%) students in their post-intervention essay. The utmost improvement is performed by G203, G601 and G602 as they managed to write highly-developed essays (score 6) which the highest score achieved in Iteration 1. Four students (22%) showed improvement on their score too, but their essays were still one-sided while five students (28%) did not demonstrate any holistic improvement even after participating in the intervention. The intervention is not beneficial at all to two (11%) students (G303 and G603) as they did less well after the intervention as their writing performance in terms of argumentation deteriorated.

Research question 3: *Does students' ability to argue persuasively in groups positively affect their ability to write persuasive argumentative essay?*

7.5.5 Were there any links between the collaborative argumentation and individual argumentation?

This study is based on the hypothesis that when students participate in persuasive group argumentation, their individual argumentation writing would be improved from one-sided to two-sided. In order to determine if there is any link between group and individual argumentation, I need to firstly investigate if there is any positive transfer occurred from the group to individual argumentation. It means that, if a student is very lively providing opposing ideas - be it

counterargument or rebuttal - during group argumentation, can he/she transfer the skill when writing his/her individual argumentative essay? For that reason, I compared their performance when arguing in group with their individual performance when writing the post-intervention essay. Their performance is based on the frequency of opposing ideas produced both in group and written essay as shown in Table 34 below.

Table 34. Links between performance in group argumentations and individual written essay

Student	Frequency of opposing ideas in group argumentations	Frequency of opposing ideas in individual essay	Essay's improvement from one-sided to two-sided
G101	2	1	√
G102	2	0	x
G103	4	0	x
G201	6	0	x
G202	7	4	√
G203	10	2	√
G301	0	0	x
G302	2	0	x
G303	0	0	x
G401	4	0	x
G402	5	0	x
G403	2	0	x
G501	1	0	x
G502	1	No post-essay	Undetermined
G503	0	No post-essay	Undetermined
G601	2	4	√
G602	3	2	√
G603	4	0	x

5 students showed improvement when they managed to write two-sided essays after producing at least two opposing ideas during their group argumentations. However, 9 students showed negative transfer of group to individual argumentation. They managed to produce some opposing ideas during the group argumentations, but they could not write two-sided essays. It is because, they did not include any opposing idea in their post-intervention essays. Students in Group 4 showed the most negative transfer as all of them produced opposing ideas during their group collaboration but none of them included opposing ideas in their post-intervention essays. The skill obtained in the group is not transferred into their individual writing.

Amongst the six groups, only Group 2 managed to argue persuasively in all their group argumentations but only limited to three occasions. All of them are high-attainment students but only G202 and G203 showed a link between group and individual performance. G201 did not improve her written argumentation and this need to be improved in the next intervention. Group 4 succeeded to participate in at least three persuasive occasions. However, none of them improved in their writing. Group 1 however participated in persuasive occasions twice but expected improvement is only observed in G101's essay even though all of them are high-attainment students. This does need further investigation. In another case, Group 3 only participated in one persuasive occasion and none of their writing improved. On the other hand, Group 6 which also participated in one persuasive argumentation showed massive improvement by the essay of G601 and G602. This is an unexpected finding and need further investigation.

In Group 5, only the performance of G501 could be measured as he was the only person who submitted the pre- and post-intervention essays for the group. Since none of their group argumentation is persuasive, G501 did not benefit from the intervention. Overall, it could be summarised that the findings from this iteration are categorised into two: link between group and individual argumentation is established and link between group and individual argumentation is denied.

7.6 Advantages, disadvantages and suggestions regarding the intervention

The questionnaire asked students three main questions. Firstly, the advantages of the intervention, secondly, the disadvantages and finally their suggestion to improve the intervention. All of the students approved that the intervention had some advantages. G602, G103, G401, G502 and G301 totally agreed that the intervention helped to improve their English language skill and ideas to write argumentative essay while G201 mentioned that she felt more confidence to participate in the group argumentation and felt excited to share her ideas with others. G103 highlighted the ease of conducting group argumentation using WhatsApp as they did not have to go out from their house to meet. They could do it at the comfort of their home at their own preferable time. However, there are also disadvantages faced by students. All students, excluding G502 and G301, complained on the difficulty to gather all group members to discuss. It was very

difficult for them to conduct the group discussion when one of them was not online. Five of them admitted that it was difficult for them to always check their WhatsApp messages. G401, G201 and G301 also admitted that their packed schedule and the coming examination disallowed them to give full commitment to this project. G401 also added that the activity consumed a lot of their time.

> *"It was quite time consuming as I had to patiently wait for my friends to online. And sometimes, the discussion took quite a long time. We had to wait for others to reply." (G401)*

When asked about what should be done to improve the intervention, all of them suggested that the intervention should be initiated with some face-to-face sessions to make them familiar with the argumentation activities. They suggested the activity to be conducted with their teacher in class. Based on the continuous monitoring of my direct observations on the group argumentations, I found out that students' extreme attitude, positive personal experience and lack of knowledge are the drawbacks that prohibited students from generating opposing ideas to challenge others' opinions. When students had positive experience with the topics discussed, they tended to remain one-sided when discussing the topics in order to validate their own experience. Hence, they failed to see the other side of the coin. In order to curb those problems, I decided to establish more teachers' active role to encourage students to be aware on their obligation to provide opposing ideas to challenge others' arguments. Only in such a way that students' alertness would be elevated hence ensuring their group argumentations to be more persuasive.

The findings from the main interventions as well as student feedback from the questionnaire and my direct observations are included in the development of the next design framework to improve the intervention.

7.7   Discussion

The discussion of the findings in this chapter will inform a discussion on how to develop the framework to create Design Framework 4 and also how to develop the intervention for the next iteration.

7.7.1 Is persuasive interaction instantiated?

Each episode of the group argumentation in Iteration 1 represented dialogic interaction but some episodes are not persuasive and exploratory. The findings indicated that dialogic interaction is not necessarily persuasive. Group 2 was the most active group in Iteration 1 as it generated the most counterarguments and rebuttals in every group argumentation thus their argumentations were extended particularly in their second group argumentation.

The main concern is, even though students interacted dialogically, the frequency of counterarguments and rebuttals were inadequate as they did not actively produce counterargument and rebuttal. This prompted their dialogues to be less exploratory as most of them were cumulative and disputational. As a result, they rarely managed to generate persuasive argumentation in their group. There are several explanations for the lack of counterarguments in certain groups. The most noticeable factor is students' extreme attitude on an issue. It is no doubt that students managed to provide substantial arguments when arguing especially when they had extreme opinion regarding the topic. But when they were too focused to merely provide reasons why they agreed or disagreed with the topic, they overlooked to insert some opposing ideas in their discussion. It became more difficult for the group argumentation to be exploratory and persuasive when all members had similar extreme attitude. Counterargument was not offered even though they were already taught about the sequence of argumentation schema in the learning modules. They also ignored the ground rules which required them to attend to every argument raised by others with a counterargument. This needs a further investigation.

7.7.2 Are there any links between the group argumentation and individual argumentation?

It is clear that there is a strong link of group argumentation and individual argumentation demonstrated by five students (G101, G202, G203, G601 and G602). This is because, the essays written by them improved from one-sided to two-sided. Each of them supported their argument with counterargument and rebuttal, which make their essays undoubtedly two-sided. Furthermore, all of their counterarguments were counter-critique, where they responded directly to their

own argument. This positively helped them to weaken the force of the initial arguments (Kuhn et al., 2008). This is the strongest form of counter-argument compared to counter-alternative as 'the argument does not directly address the argument put forth by the opponent' (Goldstein, Crowell & Kuhn,2009, p. 382). I believe it is the direct impact from the skill they have learnt during the group argumentation as they could not write two-sided essay prior to the intervention.

G202's essay also shows huge improvement in terms of counterarguments. Disappointingly, she only managed to provide counter-alternatives, which was mentioned previously, is a weaker form of argumentation compared to counter-critique. It could be the organisation and structure of the essay that stimulate the presence of counter-alternatives. When writing the essay, G202 provided all the primary claims (arguments) that support living in the city is better than the village in the first few paragraphs. Only in the subsequent paragraphs she supplied her counterarguments. All of them did not directly relate to her primary claims. Table 35 below displays the counter-alternatives found in G202's post-intervention essay.

Table 35. Example of counter-alternatives found in G202's argumentative essay

"Living in the city is better than the village. Do you agree or disagree?"	Code
Introduction	
Sometime you may be think, the city life is better than village life.	
However, there are so many advantages and disadvantages in city and village life.	Reservation
Actually the city life is more comfortable.	FC
As well as there are more opportunities for people to progress in their lives.	
There are a lot of facilities for people in the city and they have more opportunities for making money.	PC #1
Paragraph 2	
Children living in the city can get a good education because there are better school in the town than in the village.	PC #2
When a person falls ill there are good goverment and private hospital in the city to get treatment.	PC #3
Paragraph 3	
People in the city have better transport facilities than the village.	PC #5
There is electricity, highway, communication, plumb facilities in the city.	PC #6
So people can lead a comfortable and enjoyable life in the city.	SR/E #6
Although living in the city have many advantages there are some disadvantages too.	
The cost of living is very high in the city.	CA #1

	(counter-alternative)
Most goods are very expensive.	SR/E
There is no fresh air and pure water.	CA #2
	(counter-alternative)
The environment is polluted with dust, smoke, garbage and dioxide gases from factories.	SR/E
Paragraph 4	
Most of the people who lived in the city are corrupted.	CA #3
	(counter-alternative)
So there are a lots of crimes in the city.	
Many thefts and murders often take place in the city.	SR/E
The city is always busy and noisy.	CA #4
	(counter-alternative)
There are a lot of vehicles and people in the road.	
The streets are dusty and unclean.	
So it is hard to lead a healthy life in the city.	SR/E
Conclusion	
-	

Note: All errors from original writing are retained.
FC: final claim
PC: primary claims
SR/E: supporting reason/example
CA: counterargument
RB: rebuttal
Res: Reservation

Overall, this intervention is considerably effective to help some students who have successfully participated in Exploratory Talk to also have some improvement when writing their own argumentative essay. The finding is similar with Chinn et al. (2001) and Reznitskaya et al. (2001) who find that even though students do not receive any guidance on how to write argumentative essay, they still succeed in writing the argumentative essay containing counterarguments and rebuttals after participating in Collaborative Reasoning.

7.8   Towards Design Framework 3

The intervention successfully generates dialogic interaction, but persuasive and Exploratory Talk are limited in certain argumentation episodes. Furthermore, from 18 students who participated in Iteration 1, only five eventually wrote two-sided essays. I want to see if this could be replicated with other sets of students too,

but I would like to encourage more group argumentations to be persuasive and exploratory, rather than unpersuasive, cumulative or disputational. I also wish to encourage more students to write two-sided essays after participating in the intervention. The emphasis on teacher's role in promoting more counterarguments and rebuttals is planned to impede the extreme attitude detected and ensure differences of opinion are the main objective of the next iteration. This move is also suggested by Asterhan, Schwarz & Gil (2012) as they notice that in order to improve the quality of small-group synchronous discussions, the role of online teacher guidance must be emphasised. Hence, it will encourage them to actively engage with persuasive argumentation. So, what will be taken into the next framework is the need to emphasise on persuasive argumentation and two-sided individual writing.

The following Table 36 shows the development between Design Framework 2 and Design Framework 3.

Table 36. The development of Design Framework 3 based on findings from Iteration 1

Design Framework 2	Activities from the intervention	Findings from Iteration 1	Design Framework 3
● Students should follow ground rules to encourage them to participate in Exploratory Talk. ● Students need to be aware of the way in which to engage in Exploratory talk.	● **Group work:** established ground rules collaboratively and students copied the rules in their notebook for their reference when arguing in groups.	● Despite the ground rules, there was evidence of cumulative and disputational argumentation. Limited evidence of Exploratory Talk in most group argumentations. ● Most high-attainment (HA) students had extreme attitude about the topic and discouraged others (especially average- and low-attainment students) to provide opposing ideas to their arguments.	● Students should follow ground rules to encourage them to participate in Exploratory Talk. ● Ground rules should highlight the significance of equal rules of respect regardless of their attainment level in English language subject when giving opinions. ● Students need to be aware of the way in which to engage in Exploratory Talk.
● Students should participate in online group argumentation before they write	● **Group work:** Students participated in collaborative	● The detailed analysis of online group argumentation showed that all students actively participated in the group	● Students should participate in online group argumentation before they

argumentative essay individually.	WhatsApp group argumentations. ● **Individual work:** Writing pre- and post-intervention essay.	argumentation, but most groups did not constantly participate in persuasive argumentation. ● Some of their group argumentations encompassed cumulative or disputational talk rather than Exploratory Talk. Evident in WhatsApp group argumentation. ● The analysis of pre- and post-intervention essays confirmed that only a small number of students managed to write from one-sided to two-sided essay after participating in the online group argumentation.	write argumentative essay individually. ● Teachers need to play an active role to engage students in persuasive argumentation that will lead to Exploratory Talk. ● The use of argument map should be included to scaffold students to transfer the argumentation skill learned in group to their individual writing.
● Students should participate in persuasive argumentation. ● Students need to be aware of the different forms of argumentation.	● **Collaborative argumentation in threes:** arguing in groups following the structured argument following the argument-counterargument-	● Lack of counter-arguments and rebuttals produced by students which made their group argumentation less persuasive and inclined towards cumulative or disputational talk. ● Students still hold to the typical	● Students should participate in persuasive argumentation. ● Students should produce counterarguments and rebuttals in each group argumentation.

	rebuttal structure.	way they argued with others as they were only keen to get their ideas heard rather than considering what others were saying. Students neglected the ground rules where they should consider and provide opposing ideas to others' arguments.	● Students need to be aware of the different forms of argumentation.
● Students should learn how to provide counterarguments and rebuttals to make their arguments persuasive. ● Students should be encouraged to engage with argumentation that is based on Exploratory Talk.		● Students' extreme attitude prohibited them to contemplate on others' opposing ideas. ● Students' extreme attitude hindered them to provide counterarguments and rebuttals when arguing.	● Students should learn how to provide counterarguments and rebuttals to make their arguments persuasive. ● Teacher should play an active role to promote counterarguments and rebuttals during the group argumentation.
● Students should take part in collaborative activities designed to promote energetic peer interaction. ● Students should be encouraged to engage in argumentation that is based in dialogic talk.		● All students actively participated in energetic peer interaction	● Students should follow some ground rules to encourage them to participate in Exploratory Talk. ● Teacher should play an active role to prompt students to respond to others' arguments by

			providing counterarguments and rebuttals.

7.9   Adapting the Intervention

There are a few issues that need to be improved in the next intervention. Firstly, students often neglected some important Ground Rules such as providing opposing ideas during each group argumentation. Secondly, the extreme attitude students have which prevents the discussion of opposing ideas. Thirdly, students ignored the opposing ideas proposed by others as they did not want to lose grip of their initial stand. Additionally, students mentioned that they could not give full commitment to this activity due to the coming examination. Secondly, they suggested the intervention to comprise some in-class activities prior to their online argumentation.

Therefore, in the next iteration, some changes should be made to minimize similar issues to recur and curb the effectiveness of the intervention. All the changes are shown in Figure 6 below.
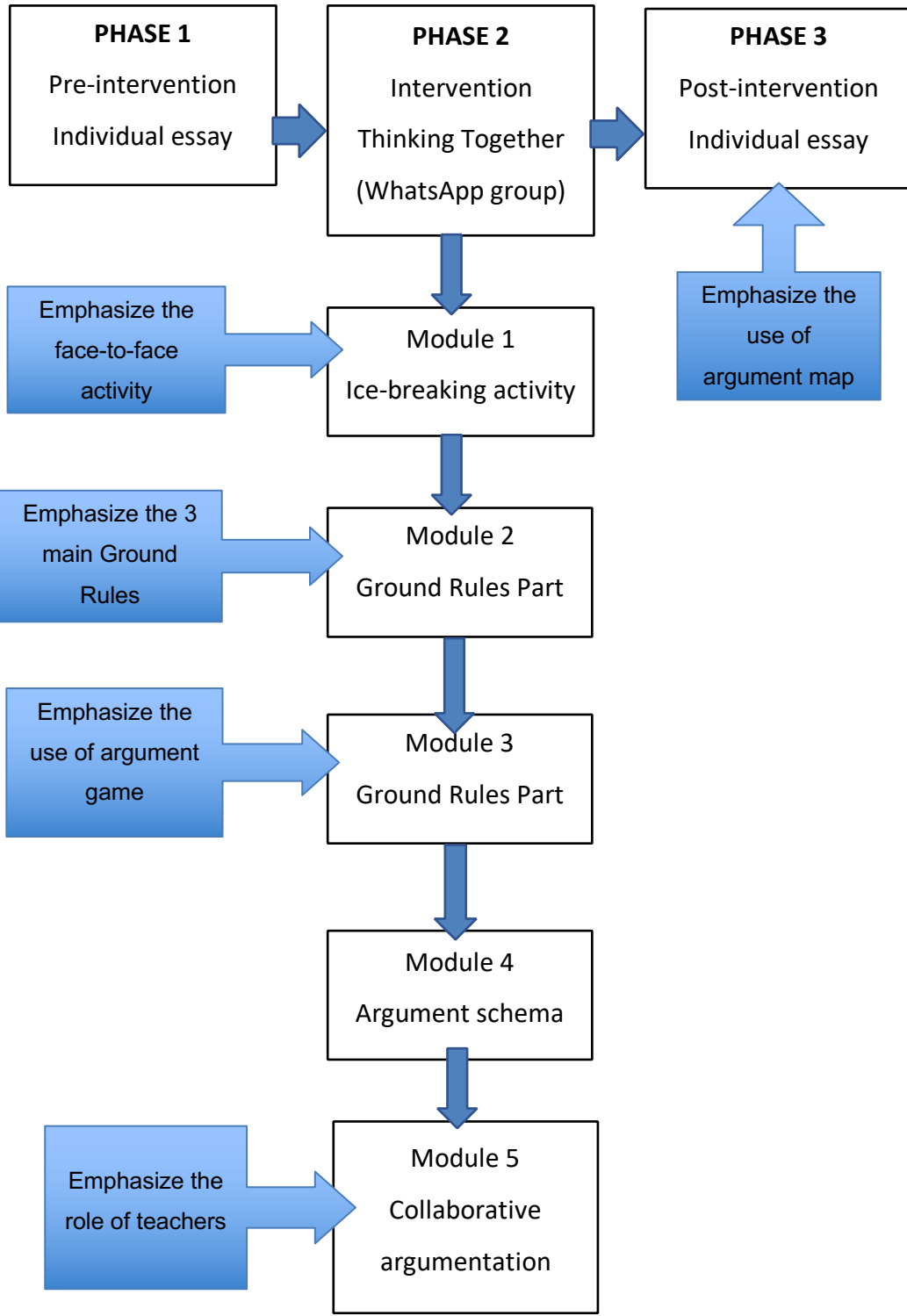
Figure 6. Adapted intervention based on findings from Iteration 1

Firstly, I will add some face-to-face sessions conducted by the teacher in the classroom, so that the students can learn the basic steps on how to participate in argumentation activities before the online interactions. Secondly, I will stress on the three main Ground Rules and add an argument game to enhance their understanding of the Ground Rules. I also will highlight the role of the teacher during the group argumentation to ensure that each student contributes to the production of opposing ideas namely the counterarguments and rebuttals. A major adaptation for the next iteration is the use of argument diagram to assist students when arguing alone. I concur with Knudson (1992) and Ferretti et al. (2000) that the lack of positive transfer from group to individual argumentation is due to the absence of argument partners. Hence, they need a tool to help them manage their arguments.

7.10 Summary of Chapter 7

In this chapter, Iteration 1 was implemented based on Design Framework 3. The explicit aim is to determine if the intervention has instantiated persuasive argumentation. The chapter also reviews the context, participants, procedure and method of Iteration 1. Students' argumentative essays were evaluated to identify if there is any improvement in terms of two-sidedness. Group interactions were also analysed to find any association between students' performance during group argumentation and individual argumentation. Preliminary findings demonstrated that only five students managed to write persuasively after participating in the intervention. All groups, except Group 5, generated persuasive argumentation at least once. The students whose essays have improved the most are those who have engaged in argumentation that has shown evidence of Exploratory Talk.

These findings need to be tested further as some groups could not constantly generate Exploratory Talk in every group argumentation. Furthermore, only five students managed to write two-sidedly after participating in the intervention. The focus of Design Framework 4 is to help students to demonstrate constant ability to engage with Exploratory Talk regardless of the topic they are discussing.

Chapter 8 – Result and discussion from Iteration 2

8.1 Introduction

This chapter reports the findings of the second iteration of this study. It is refined into a more comprehensive and detailed one to address the weaknesses observed and mentioned by students in Iteration 1. Generally, dialogic interaction has been instantiated in all groups during Iteration 1, but some of the groups do not manage to argue persuasively in some of their group argumentations. This is because, they only manage to argue persuasively on limited topics. Consequently, some of them could not improve their written argumentation skill. It is observed that when students have an extreme attitude on a topic, positive personal experience and lack of knowledge, their group argumentation would be one-sided or unpersuasive. Thus, it is necessary to determine whether sustained persuasive group argumentation could be instantiated by the revised intervention, particularly after it has been adapted to focus specifically on the teacher's role to impede extreme attitude. In Iteration 2, the teacher is actively stimulating dialogic interaction during every group argumentation. The teacher needs to validate that students adhere to the structure of argument-counterargument-rebuttal so that each group argumentation will be rich with counterarguments and rebuttals.

Iteration 2 is also intended to guide for a greater understanding of the role of group argumentation and its link with individual argumentation as part of the intervention has been amended to provide more assistance to students during the individual writing. The link between group argumentation and individual argumentation is not confirmed. Most students who manage to participate in collaborative persuasive argumentation could not cope with writing their own persuasive argumentative essays. Therefore, it is necessary to determine whether positive transfer from group to individual argumentation could be instantiated by the revised intervention, especially after it has been adapted to concentrate more specifically on the role of teacher during the group

argumentation and the role of an argument diagram to assist students when arguing alone during writing. This visualisation technique, which is advocated by argumentation researchers, assists students to map out the elements of their group and individual argumentation into a clear graphical representation. The inclusion of both features in the intervention is anticipated to establish a stronger link between group and individual argumentation.

The educational intervention for Iteration 1 is designed to improve the argumentation skill of upper secondary students (aged 17). In Iteration 2, however, the revised intervention is tested with lower secondary students (aged 13) to explore its usefulness to a group of younger students who have never been taught argumentative essay writing. The main writing genre includes in the English language syllabus for lower secondary students is mainly the narrative essay. Students are not taught to write argumentative essay until they progress to the upper secondary level.

The chapter is divided into three sections. Firstly, it will deal with the participants involved, the ethical issues involved, and the procedures followed. Secondly, it will discuss the findings of Iteration 2 and finally a discussion of the findings. The themes and their possible implications for conducting the intervention in secondary schools in Malaysia in the future will be discussed further in Chapters 9 and 10.

8.2 Background

Due to the flexibility of design-based research (DBR) methodology, this iteration responds to the lessons learnt in Iteration 1 which are the extreme attitude and lack of positive transfer from group to individual argumentation. This refinement process, which aims to fix the aforementioned weaknesses, is the major feature distinguishing the design study of this iteration.

I learn that I should invent a better scheme of work with consideration of firstly the extreme attitude and secondly the lack of positive transfer from group to individual argumentation. Both findings lead to the development of the theoretical framework which underpins the research study. Design Framework 4 is

distinctive from Design Framework 2 and 3 due to some further additions. The role of teachers and the use of argument map have been emphasised as part of the intervention.

The intention of this iteration is to test if the intervention is helpful to improve lower secondary students' argumentation skill. It is also intended to equip them with appropriate argumentation skill prior to entering upper secondary level. In an attempt to appreciate how collaborative argumentation impacts on the transition between group and written argumentation which has not been clearly validated in Iteration 1, Iteration 2 incorporates the use of the argument map. Emphasising teacher's active role in promoting Exploratory Talk, it is also hoped to diminish any extreme attitude of the students when discussing a debatable issue.

Encouraging students to use argument diagrams or maps is intended to accelerate their individual argumentation skill. Argumentation researchers such as Nussbaum & Schraw (2007), Jonassen & Kim (2010), Harrell (2011) and Chinn & Clark (2013) notice that students provide more opposing ideas when they integrate this tool. However, the use of online argument map as suggested by Lund et al. (2007) and Marttunen & Laurinen (2007) could not be applied in this iteration due to its complexity. Only a simple argument diagram following the argument-counterargument-rebuttal structure advocated by Leitão (2000) is used in this research. This is further supported by a recommendation made by a teacher (Sara) in the post-intervention interview (Chapter 7) which ponders upon the use of an instrument to help students to organise and look back at their arguments after the collaborative conversation. In this iteration, students are therefore expected to complete the argument map during or after the collaborative work.

The research questions for Iteration 2 are as follows:

Research question 1: *What effect does the modified educational intervention have on the persuasiveness of the students' argumentation?*

Research question 2: *What effect does teacher's active role to encourage the construction of opposing ideas have on the extreme attitude of the students when arguing in groups?*

Research question 3: *What effect does the use of argument diagram have on the transferability of group argumentation to individual argumentation?*

Research question 4: *How does the intervention designed for upper secondary students help lower secondary students to improve their written argumentation?*

There were seven average-attainment students and seven low-attainment students from 1B class. The attainment was determined by their initial school-based exam for the English language subject when they first entered secondary school. It was provided by the teacher after all students agreed to share their data for the sake of this study. In Chapter 7, I previously declared that the school exam marks are too general and not the most precise way to measure students' argumentation skill. The findings from Iteration 1 verified that regardless of students' attainment level, each of them has the potential to participate in dialogic interaction if not persuasive argumentation. In addition, students from various attainment level also managed to participate in persuasive argumentation. This discards the notion made by some ESL teachers during the exploratory study (Chapter 4) that only high-attainment students will have the ability to participate in group argumentation. Altogether, 14 students (two male and twelve female) with different English language attainment background participated in the second iteration. Most of them are average- or low-attainment students. The attainment depends on their previous exam result for English language subject. Only Group 1 had male members while others are female. They also worked in mixed-ability group except for Group 1 which consisted of two low-attainment students. Unlike the students in Iteration 1, they were not preparing for any important examination and the attainment level for most of them is poor. Their future important examination will only be conducted in the next two years and it is expected that their discussion will not be broad due to their limited language competence. It is interesting to investigate how students in lower secondary level who have no commitment to important examination participate in the adapted educational intervention. The findings from this iteration are also significant because, as most students are average- and low-attainment students, it can be investigated if the adapted intervention is effective for all level of students. The improved design

framework is aimed to ensure all students actively provide opposing ideas and experience positive transfer from group to individual argumentation. In order to ensure the commitment of the students during the iteration, only those who were interested to experience online learning were selected to be part of the iteration. This group of students were the students who had been 'volunteered' by the same teacher (Dini) who cooperatively participated in Iteration 1.

Before the iteration was conducted, the teacher held a 30-minute classroom session to brief the participants of the study objectives, how this iteration is to be conducted, all the processes in which they are to be engaged, why their participation is necessary, how it would benefit the students, and to whom and how it would be reported. They were informed of their right to withdraw from the study while it is being conducted. Prior to their participation, they were required to sign the voluntarily informed consent form which indicates that they understand and agree to their participation without any pressure. Parents' consent forms were also distributed to each participant to get the permission from their parents. As WhatsApp tool is the technology used in this iteration, all students were required to download the application in their smartphone. They were also reminded that they will be working in a group of four and that they could leave the WhatsApp group once the iteration ends.

8.3 Context of Iteration 2

8.3.1 Participants

Table 37 shows that the participants are all lower secondary school students aged 13 years old.

Table 37: Demographic data of participants in Iteration 2 (n = 14)

Group	Gender	Code	Age	Exam marks	Attainment level
1	Male	G101 (Dan)	13	48 E	LA
	Male	G102 (Mai)	13	40 E	LA
	Female	G201 (Far)	13	60 C	AA
	Female	G202 (Sya)	13	66 C	AA

2	Female	G203 (Em)	13	35 F	LA
	Female	G204 (Ada)	13	28 F	LA
3	Female	G301 (El)	13	73 B	AA
	Female	G302 (Naj)	13	50 D	LA
	Female	G303 (Uma)	13	72 B	AA
	Female	G304 (Mun)	13	73 B	AA
4	Female	G401 (Ain)	13	71 B	AA
	Female	G402 (Yan)	13	70 B	AA
	Female	G403 (Ai)	13	57 D	LA
	Female	G404 (Jaw)	13	57 D	LA

HA: high attaining (A+ / A-)
AA: average attaining(B & C)
LA: low attaining (D, E & F)
*Definitions of HA, AA and LA are based on the test results obtained by pupils on completion of their end-of-year examination phase.

They were seven average-attainment students and seven low-attainment students from 1B class. The attainment was determined from their initial school-based exam for English language subject when they first entered secondary school. It was provided by the teacher after all students agreed to share their data for the sake of this study. In Chapter 7, I previously declared that the school exam marks were too general and not the most precise way to measure students' argumentation skill. The findings from Iteration 1 verified that regardless of students' attainment level, each of them had the potential to participate in dialogic interaction if not persuasive argumentation. In addition, students from various attainment level also managed to participate in persuasive argumentation. This discarded the notion made by some ESL teachers during the exploratory study (Chapter 4) that only high-attainment students had the ability to participate in group argumentation. Altogether, 14 students (two male and twelve female) with different English language attainment background participated in the second iteration. Most of them were average- or low-attainment students. The attainment was depending on their previous exam result for English language subject. Only Group 1 had male members while others were female. They also worked in mixed-ability group except for Group 1 which was consisted of two low-attainment

students. Unlike the students in Iteration 1, they were currently not preparing for any important examination and most of their attainment level were poorer. Their future important examination will only be conducted in the next two years and it was expected that their discussion will not be broad due to their language competence. It was interesting to investigate how students in lower secondary level who have no commitment to important examination participated in the adapted educational intervention. The findings from this iteration were also significant because, as most students were average- and low-attainment students, it can be investigated if the adapted intervention is effective for all level of students. The improved design framework was aimed to ensure all students actively provided opposing ideas and experience positive transfer from group to individual argumentation. In order to ensure the commitment of the students during the iteration, only those who were interested to experience online learning were selected to be part of the iteration. This group of students were the students who had been 'volunteered' by the same teacher (Dini) who cooperatively participated in Iteration 1.

Before the iteration was conducted, the teacher held a 30-minute classroom session to brief the participants of the study objectives, how this iteration was to be conducted, all the processes in which they were to be engaged, why their participation was necessary, how it would benefit the students, and to whom and how it would be reported. They were informed of their right to withdraw from the study while it was being conducted. Prior to their participation, they were required to sign the voluntarily informed consent form which indicated that they understood and agreed to their participation without any pressure. Parents' consent form was also distributed to each participant to get the permission from their parents. As WhatsApp tool was the technology used in this iteration, all students were required to download the application in their smartphone. They were also reminded that they will be working in a group of four and that they could left the WhatsApp group once the iteration ended.

8.3.2 Procedure

The intervention was conducted from April until May 2017. Changes have been made to the intervention for Iteration 2 where the teacher will interrupt the discussion if she senses any extreme attitude towards the topic. Furthermore, the students are going to utilise the argument map during the group argumentation and post-intervention writing to help them organise their arguments. In order to make sure similar procedure in Iteration 1 would be followed, I delivered the intervention myself to the new set of participants. Before the iteration took place, I took about half an hour with the students in each WhatsApp group to build rapport with them. This is important because I did not get to meet them face-to-face and I need to make them comfortable with me. I introduced myself to them and briefly explained the purpose of my research study.

The intervention covers the similar three main phases; pre-intervention stage (students write an argumentative essay), the intervention (students participate in WhatsApp group argumentation) and post-intervention stage (students write an argumentative essay).

Firstly, students were required to write an argumentative essay under their English teacher's supervision in class. The teacher, Dini, who had participated in Iteration 1, was already informed of the procedure of the intervention hence the pre- and post-intervention phase were conducted efficiently by her. She allocated one hour of her teaching slot to conduct the pre-intervention writing activity. 10 minutes was used to deliver instructions and prepare students in proper seating arrangement to avoid students from copying another student's essay. She then wrote the title of an argumentative essay on the board for the students. Students were given 30 minutes to write 150 words of essay. The topic was derived from our informal conversation. The title was:

> *"Schools should start at 8.40 and finish at 3.10. It is better than 7.40 until 2.10. Do you agree or disagree?"*

After they handed in their essays, Dini asked them to position themselves in a group of four and each member wrote down his/her name and WhatsApp phone

number in the name list provided by Dini. She then emailed me the details and I created four WhatsApp groups. Each WhatsApp group, consisting of four participants, was moderated by me as the teacher. Dini also helped me to provide each student with the activity form summarising the online modules for this iteration. Students were advised to discuss with their group members the date they want to conduct each module.

The intervention consists of 6 learning activities (see Appendix 11). Some major changes were made for the intervention in Iteration 2. Modules 1 until 3 which aims to improve students' skill to discuss dialogically in group are teacher-led. Group argumentation was commenced in Module 4. The teacher shared each module in the form of images to each WhatsApp group. Students were advised to save all the images in their phone, so they can refer to the notes whenever they need them. Each online module is designed to be completed within 30 to 40 minutes.

In Module 1, I replaced the ice-breaking activity with extensive face-to-face classroom activities as students in Iteration 1 suggested that face-to-face teaching should be done prior to the online activities. Hence, the English teacher helped me to conduct the session in her classroom with the hope that students would be more confident to participate in the online activities. There are three phases incorporated in Module 1; Phase 1 (Classroom briefing), Phase 2 (Collecting ideas in pairs) and Phase 3 (Organising arguments using the argument diagram) (see Appendix 11 for more details of Module 1). Here students were taught the chain of arguments: argument, counterargument and rebuttal. It is important to expose students with the basic step of argumentation process to prepare them for the subsequent online dialogue activities.

In Module 2, I stressed more on the Ground Rules by creating some major changes for this iteration. I found that most of the students were prone to neglect the Ground Rules when arguing. Dissimilar to Iteration 1 where students contemplated on bad and good Ground Rules and justifying why they thought so, students in Iteration 2 participated in extensive activities pertaining to the Ground Rules. I stressed three important Ground Rules in this module. The first Ground

Rule is that the students should criticise ideas, not people. Secondly, students will be instructed to follow the metaphor of "get the ball over the net and back to the other side" which adhere to the argue-counter argue-fight back structure. Student A provides argument, then Student B proposes counterargument and Student A needs to provide rebuttal to back up his/her initial idea. Finally, the third Ground Rule is for the students to apply argument stratagem and sentence openers to develop their argumentative discourse. The examples of argument stratagem are:

1) giving information (e.g. in my opinion)
2) asking for someone else's point of view (e.g. What do you think about; could you give an example)
3) expressing disagreement (e.g. I do not agree with; because)
4) expressing agreement (e.g. I agree with; because)

In Module 3, I replaced the previous activity with a different activity to enhance students' comprehension of the Ground Rule which is the argument game. In this game, students were provided with an argument and a rebuttal. Students were instructed to select a counterargument which is interconnected with both components. The purpose of the game is to teach students how to choose counter-critique arguments over counter-alternative arguments.

In Module 4, students were expected to participate in dialogic argumentation guided by the teacher who would ensure all students avoid any extreme attitude during the group argumentation. This module highlighted the role of teacher as an active promoter of dialogic interaction during the group argumentation. 10 topics were prepared for the students to choose. All the topics are social issues that relate to everyday life of secondary school students in Malaysia. They were not required to discuss all the topics provided, but it depends on the group's commitment. Students were supposed to take position on each issue, provided counterarguments and rebuttals, and provided supporting reasons and evidence for their opinions. Students were constantly reminded to obey the Ground Rules when discussing.

Since the students were not committed to any important examination during this iteration, I instructed them to participate in at least 3 group argumentations in a week. They were given freedom to select the time of discussion within the 4-week period. They must quickly informed the researcher about the agreed time and date for the discussion, preferably a day earlier. The group discussion schedule was solely decided by the group, not the researcher, hence all group discussions depended on the availability of the students during the whole intervention. Some groups finished the intervention within the 3-week period and some within the 4-week period. During the discussion, I played an active role ensuring students to argue and give reasons, but I did not interfere with the discussion by imposing my personal opinions or influencing them to make a decision.

In week 4 also, following similar procedures of phase 1, students were required to write an argumentative essay. Dini allocated 30 minutes of her teaching slot to conduct the activity. In this iteration, students were given a worksheet of argument diagrams for brainstorming purposes. Students were provided with five topics of argumentative essay to choose. All titles were derived from the topics of their previous group argumentations. Students were given 30 minutes to write 150 words of essay. The purpose of this post-intervention essay is to measure if the intervention has a positive or negative transfer on students' argumentation skill.

Overall, 14 students, 2 males and 12 females, completed all three stages in the first iteration. All of them submitted their pre-intervention essays, participated fully in the intervention and submitted their post-intervention essays.

8.3.3 Data collection

14 pre-intervention and 14 post-intervention essays were gathered, scanned into PDF forms and emailed to me by the teacher. The total of 28 essays were analysed in Iteration 2. All WhatsApp group argumentations generated during the intervention were also examined. I exported all WhatsApp conversation from my smartphone to Google Drive for further analysis. As for precaution, I also backed up all the conversations into my Microsoft OneDrive account. There were 33

group argumentations analysed in Iteration 2. Observation of all the online interactions was also conducted to identify issues that emerged during the intervention and all fourteen students happily volunteered to participate in the post-intervention interviews.

8.4 Data Analysis

8.4.1 Written argumentation

As in Iteration 1, pre- and post-intervention essays were marked in three ways. Prior to the markings, I also retyped all essays using Microsoft Word for a trouble-free analysis. The teacher validated the new version of essays with students' original hand-written essays. Essays were coded and based on the six argumentative elements. Secondly, all essays were rated based on a 4-point scale followed by the holistic scoring. Overall interrater agreement of the coding for the pre-intervention and post-intervention essays is 100% as students in this iteration write a straightforward essay. All raters did not have disagreement to code the essays.

8.4.2 Dialogic interaction

All 33 episodes of online interaction derived from the WhatsApp groups were exported to my Google Drive for detailed analysis. The first form of analysis was to identify the dialogic interactions using the Scheme for Educational Dialogue Analysis (SEDA). I individually coded all the dialogic interactions, hence, to achieve intra-coder reliability, they were coded in three different occasions within two weeks. The second form of analysis was to determine the characteristics of their argumentation based on the research by Nussbaum & Kardash (2005) and Nussbaum & Schraw (2007) which is based on the argument-counterargument integration. The third form of analysis was to identify the typology of talk suggested by Wegerif & Mercer (1997).

8.4.3 Observation and field note

A detailed observation on each group conversation was conducted to identify any drawback that prohibited students from participating in the intervention. This is

important to help me adapt the intervention prior to conducting it in the future iteration (Iteration 3 and onwards).

8.4.4   Student post-intervention questionnaire

The teacher helped me to conduct the final session with the students. Each student was provided with a set of questionnaires composed in their first language (L1) which is the Malay language. The use of L1 is somewhat necessary to motivate the students to respond to the questionnaire and to avoid any misconception caused by inadequate English language skill. The session was conducted once all the students completed the post-intervention writing stage. Since the responses were in students' L1, I personally translated their responses into English language. With the assistance from the teacher, all translated responses were validated to avoid misinterpretation of the students' responses. There are two sections of the questionnaire; the first part is related to the use of smartphone and WhatsApp and the second part is related to the group argumentation activities.

Based on the findings from my observation, field note and students' feedback from the questionnaire, I would consider the issues raised to adapt the intervention prior to conducting it with another group of students in the future iteration.

8.5   Findings of Iteration 2

Research question 1: *What effect does the modified educational intervention have on the persuasiveness of the students' argumentation?*

8.5.1   Did the intervention develop dialogic interaction?

Module 1, 2 and 3 contained teacher-led activities to scaffold students' argumentation to become more dialogic hence the evidence of dialogic interaction could be observed when students participated in group argumentation activities in Module 4. Overall, all groups managed to conduct at least six episodes of group argumentation. Group 1 and 2 participated in 10 group argumentations while Group 3 in six group argumentations and Group 4 in seven group argumentations. Therefore, the total of 33 episodes of group discussions

were analysed using SEDA. It is evident that all 14 students in this iteration successfully participated in dialogic interaction in some of the group discussions regardless of their attainment level as shown in Table 38 below.

Table 38. Frequency of dialogic turns for each group argumentation in Iteration 2

Group argumentation	Group 1	Group 2	Group 3	Group 4
1	7	19	11	9
2	7	10	12	11
3	7	13	7	11
4	8	20	6	10
5	7	10	12	9
6	4	7	7	6
7	6	12	-	3
8	5	11	-	-
9	3	10	-	-
10	11	10	-	-

Besides, it is also observed that the interactions of all groups involved at least three dialogic clusters mentioned in SEDA. The most dialogic turn taken by students is *'Positioning and coordination'* where they actively took a stand in the dialogue and coordinating ideas. Other than that, they were also active in making reasoning explicit. It shows that all students in Iteration 2 managed to apply their dialogic skill successfully when discussing debatable issues. Even so, it is still unclear if they were really engaging in persuasive argumentation.

8.5.2 What form of argumentation they performed?

The revised intervention was conducted to promote students to participate in more group argumentations which are persuasive. Hence, it is necessary to identify to what extent their argumentation is persuasive. An argumentation is considered persuasive when the interactions are at least 6 turns long, someone in the groups changes his mind or someone constantly defends her/his position with counterarguments or rebuttals. The detailed analysis of 33 episodes of group argumentations indicate that all groups managed to participate in at least four persuasive group argumentations as shown Table 39.

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Table 39. Persuasiveness of group argumentations in Iteration 2

Group argumentation	Group 1	Group 2	Group 3	Group 4
1	Persuasive	Persuasive	Persuasive	Persuasive
2	Unpersuasive	Unpersuasive	Persuasive	Persuasive
3	Persuasive	Persuasive	Unpersuasive	Persuasive
4	Unpersuasive	Persuasive	Unpersuasive	Persuasive
5	Unpersuasive	Unpersuasive	Persuasive	Persuasive
6	Persuasive	Persuasive	Persuasive	Unpersuasive
7	Persuasive	Persuasive		Unpersuasive
8	Unpersuasive	Persuasive		
9	Unpersuasive	Persuasive	-	-
10	Persuasive	Persuasive		

Even though most groups in Iteration 2 did not participate in prolonged argumentation and most of their responses were short, they accomplished to argue persuasively in a few episodes.

8.5.3 What form of talk did they attain?

The interactions of the students were further analysed to identify the form of talk occurred during the group argumentations. Table 40 below shows the types of talk generated by the groups.

Table 40. Types of talk in students' group argumentation in Iteration 2

Group argumentation	Group 1	Group 2	Group 3	Group 4
1	Exploratory	Exploratory	Exploratory	Exploratory
2	Exploratory	Exploratory	Exploratory	Exploratory
3	Exploratory	Exploratory	Exploratory	Exploratory
4	Exploratory	Exploratory	Exploratory	Exploratory
5	Exploratory	Exploratory	Exploratory	Exploratory
6	Exploratory	Exploratory	Exploratory	Exploratory
7	Exploratory	Exploratory	-	Exploratory
8	-	Exploratory	-	-
9	-	Exploratory	-	-
10	Exploratory	Exploratory	-	-

All groups managed to participate in Exploratory Talk as they actively contributed counterarguments and rebuttals in their group argumentations. There were at least one counterargument and rebuttal found in each group argumentation.

Research question 2: *What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?*

8.5.4 Did the essays improve?

In order to identify any positive transfer from group to individual argumentation, the total of 28 argumentative essays were analysed and marked; 14 students submitted their pre- and post-intervention essays.

8.5.4.1   Using the 4-point scale

Table 41 shows the score for the pre- and post-intervention essays based on the 4-point scale.

Table 41. The score for pre- and post-intervention essays based on the 4-point scale in Iteration 2

4-point scale			
Student	**Attainment level**	**PRE**	**POST**
G101 (Dan)	LA	1	3
G102 (Mai)	LA	1	3
G201 (Far)	AA	1	3
G202 (Sya)	AA	1	3
G203 (Em)	LA	0	3
G204 (Ada)	LA	0	3
G301 (El)	AA	1	3
G302 (Naj)	LA	0	3
G303 (Uma)	AA	1	3
G304 (Mun)	AA	3	3
G401 (Ain)	AA	1	3
G402 (Yan)	AA	1	3
G403 (Ai)	LA	1	3
G404 (Jaw)	LA	1	3

Based on the findings, the improvement of argumentative essay writing amongst the students could be classified into two categories; improved and not improved. Overall, all students showed improvement from writing one-sided to two-sided essay after participating in the revised intervention. Only one student, G304 (Mun), showed no improvement as she already grasped the skill to write two-

sided essays. Her essay score in the pre-intervention stage demonstrated that students in lower secondary level (13-year-old) essentially have the ability to write two-sided essay when writing argumentative essay even though it is not yet included in their English language syllabus.

8.5.4.2 Holistic scoring

Table 42 shows the score for the pre- and post-intervention essays based on the holistic scoring.

Table 42. The score for pre- and post-intervention essays based on the holistic scoring in Iteration 2

Holistic scoring			
Student	Attainment level	PRE	POST
G101 (Dan)	LA	3	5
G102 (Mai)	LA	3	5
G201 (Far)	AA	2	6
G202 (Sya)	AA	2	6
G203 (Em)	LA	0	5
G204 (Ada)	LA	0	6
G301 (El)	AA	2	6
G302 (Naj)	LA	0	6
G303 (Uma)	AA	2	6
G304 (Mun)	AA	5	6
G401 (Ain)	AA	1	6
G402 (Yan)	AA	2	6
G403 (Ai)	LA	2	5
G404 (Jaw)	LA	2	6

When measuring the holistic improvement in terms of argumentation, it can be clearly seen that all students greatly benefit from the intervention. It appears, too, that those students who have written mostly one-sided argumentative essay are now capable of writing what is recognisable as a basic argument supported by counterarguments and rebuttals. 13 students succeeded in improving by two or more levels. Four students, G203(Em), G204(Ada), G302(Naj) and G401(Ain), moved from zero evidence of an argument to 5 and 6, respectively, demonstrating that they now could write using more counterarguments and rebuttals. They seem to gain the most from the intervention as initially they did not even know how to express their argumentation one-sidedly. G304(Mun) moved from 5 to 6; she was already demonstrating argumentation in her pre-intervention essay, but after the intervention, her argument was stronger as she provided more counterarguments and rebuttals to support her argument.

Research question 3: *Does students' ability to argue persuasively in groups positively affect their ability to write persuasive argumentative essay?*

8.5.5 Were there any connections between the collaborative argumentation and individual argumentation?

The findings in Table 43 show there is a positive relation between group argumentation and individual argumentation.

Table 43. Positive relation between performance in group argumentation and individual written argumentation

Student	Frequency of opposing ideas produced in group argumentations	Frequency of opposing ideas produced in individual essay
G101(Dan)	20	4
G102(Mai)	18	4
G201(Far)	12	10
G202(Sya)	19	8
G203(Em)	10	4
G204(Ada)	17	10
G301(El)	9	6
G302(Naj)	13	4
G303(Uma)	7	6
G304(Mun)	1	6
G401(Ain)	10	8
G402(Yan)	2	10
G403(Ai)	5	2
G404(Jaw)	8	9

Overall findings show that all students in Iteration 2 managed to produce opposing ideas when writing their essay. Ten students produced more opposing ideas during group argumentation compared to when they individually wrote their own essay. Three students (G304, G402 and G404) managed to produce more opposing ideas in writing compared to when they discussed in group. Only two students (G401 and G403) produced fewer opposing ideas when writing but they actively provided opposing ideas during group argumentation. This shows that when students are arguing with other students who actively producing opposing

ideas in the group, they someway get similar benefit when writing their own essay. It is evident that all groups successfully participated in dialogic interaction and all students' written argument improved immensely as measured by the holistic scoring. The findings present positive transfer from the group argumentation to individual written argumentation; when students successfully participate in persuasive group argumentation aside from using argument map when writing, they manage to write persuasive argumentative essay individually. Each essay was written with at least one counterargument and rebuttal.

8.6 Students' perceptions of the intervention

All 14 students who participated in the intervention offered to answer the questionnaire right after completing their post-intervention essay. 14 sets of questionnaires were distributed by the teacher. The session was conducted in the classroom after she gathered all the written essays. She allocated 40 minutes for the students to reflect on their previous experience participating in the intervention. The questionnaire is aimed to discover students' perceptions of the intervention in terms of the use of WhatsApp and the group argumentation itself. Based on the questionnaire, overall, all students perceived that the intervention was useful to them. Some of the advantages that they have gained are learning new vocabulary, improving their general knowledge, improving their English language skill, increasing their self-esteem to share ideas with others and encouraging them to think critically. However, they mentioned that they had difficulty to participate in WhatsApp group argumentation because some of them did not like to use the application frequently. Sometimes, they conducted a group argumentation for more than 30 minutes hence they felt tired typing and looking at the phone. Besides, they sometimes had internet connection problem at home that hindered them from smoothly participating in the group argumentation. (see Appendix 13)

8.7   Discussion

In this section the research questions are revisited and addressed in turn.

Research question 1: *What effect does the modified educational intervention have on the persuasiveness of the students' argumentation?*

8.7.1 Was more persuasive argumentation instantiated?

Overall, it appears that the revised learning modules positively helped students to participate in persuasive argumentation. At least each group participated in four episodes of persuasive argumentation compared to students in Iteration 1. However, there were still unpersuasive argumentations. In most unpersuasive cases, their exchanges of opposing ideas had less than 6 turns, nobody changed his/her mind, or nobody constantly defended her/his position with counterarguments or rebuttals. Additionally, the dialogic interaction in this iteration was limited to mostly two dialogic clusters; positioning and coordination and make reasoning explicit. Only some groups participated with the 'build on ideas' cluster. Based on the findings, I can surely assert that dialogic interaction is successfully instantiated where students in Iteration 2 participated in more persuasive group argumentations than students in Iteration 1

Research question 2: *What effect does teacher's active role to encourage the construction of opposing ideas have on the extreme attitude of the students when arguing in groups?*

8.7.2 Does teacher's active role impede the extreme attitude of the students?

In this revised intervention, the role of teacher was emphasised. I played an active role by reminding and encouraging students to provide opposing ideas with the purpose to prevent extreme attitude during the group argumentation. I highlighted the arguments offered and required everyone in the group to attend to the arguments. They were asked to provide counterargument and rebuttal. As a result, students played an active role in providing opposing ideas during the group argumentation. Teacher's active role ensure that no idea was left unattended hence all 33 episodes successfully contained a few opposing ideas made by students. There were a few episodes that I did not interfere with the reminder as students successfully demonstrated persuasive interactions.

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Research question 3: *What effect does the use of argument diagram have on the transferability of group argumentation to individual argumentation?*

8.7.3 Does implementing argument diagram guarantee the positive transfer?

Previous studies prove that students who participate in persuasive group argumentations will generate ample counterarguments and rebuttals. Hence, it is crucial to investigate if students also incorporate sufficient counterarguments and rebuttals in their individual writing. Table 44 shows that when students write their individual argumentative essay, it is evident that they have integrated both elements which make their essay persuasive.

Table 44. Frequency of counterarguments and rebuttals written by students for Iteration 2's post- intervention essays

		Counterargument	Rebuttal
Group	**Student**	*f*	*f*
1	G101 (Dan)	2	2
	G102 (Mai)	2	2
2	G201 (Far)	5	5
	G202 (Sya)	4	4
	G203 (Em)	2	2
	G204 (Ada)	5	5
3	G301 (El)	3	3
	G302 (Naj)	2	2
	G303 (Uma)	3	3
	G304 (Mun)	3	3
4	G401 (Ain)	4	4
	G402 (Yan)	5	5
	G403 (Ai)	1	1
	G404 (Jaw)	5	4

8.7.4 Can the intervention be used to improve 13-years old written argument?

Research question 4: *How does the intervention designed for upper secondary students help lower secondary students to improve their written argumentation?*

All students in this iteration handed-in their pre- and post-intervention essays. Therefore, it is straightforward to determine whether the intervention have

improved their written argumentation or not. It would appear that the intervention is a success. All students' argumentation improved. All groups participated in more persuasive group argumentations hence they were likely to write two-sided essays as the impact of the intervention. I can conclude from this iteration that when students truly engage in persuasive and exploratory interaction, their written responses show evidence of developed argumentation. This improvement is not limited to students with average-attainment level but also to low-attainment students such as G203 (Em), G204 (Ada) and G302 (Naj). This shows that examination grades are not the most accurate ways of measuring students' intelligence. The findings prove that the engagement is the indicator of success. This will be examined further.

8.8   Summary of Chapter 8

This chapter discusses Iteration 2, which is the first implementation of Design Framework 4. It explores whether the revised intervention would be of benefit in the teaching of argument to lower secondary students. All groups engage in argumentation that at times became dialogic. The pre- and post-intervention essays demonstrate an improvement and it is evident that there is a link between the arguments, the essays and the argument diagrams.

The next chapter will present the refined design framework, discuss the significance of all the findings in relation to the literature and revisit the research questions of this study.

Chapter 9 – Discussion

9.1 Introduction

This chapter is the beginning of the final part of the thesis in which I shall discuss the findings, review the study, and offer recommendations for the future. In this chapter, I shall be discussing how the intervention and theoretical frameworks have been developed throughout the research process. In keeping with the pragmatic goal of design-based research which aims to contribute to contextually-sensitive design principles and theories (Wang & Hannafin, 2005), this chapter also highlights the development of both theory and practice for the use of online dialogic interaction for the benefit of ESL secondary school teachers and students in Malaysia.

This chapter has three main sections. The first section reviews how the interventions have been developed over the trials. After that, the development of design principles throughout the study and their significance to the literature are discussed before the final design principles of this study are presented. The final design framework of this study is compared to the conceptual framework developed initially. It is worth mentioning that, in the wider sense of educational enquiry, the generated design framework is not final and is still open for further investigation and modification based on other cycles of interventions in future research. The final framework produced in this study is the output developed from the literature review and the empirical data from the two interventions.

The next section of this chapter revisits the research questions and presents the answers to them. The final section covers issues that have emerged through the research process, which are worth investigating for future research.

9.2 Reviewing the development of the iterations

The initial intervention was 'scaffolded' series of classroom activities which were based on the principles which underpinned Design Framework 2, additional theory derived from a return to the literature review, and the findings of an exploratory study which incorporated e-mail interviews with ESL teachers, classroom and online observations carried out amongst a group of secondary

school students (see Chapter 5 for the original plan for the 'intervention'). The intervention was designed to be implemented in a series of five stages as illustrated in Figure 7 as shown below.
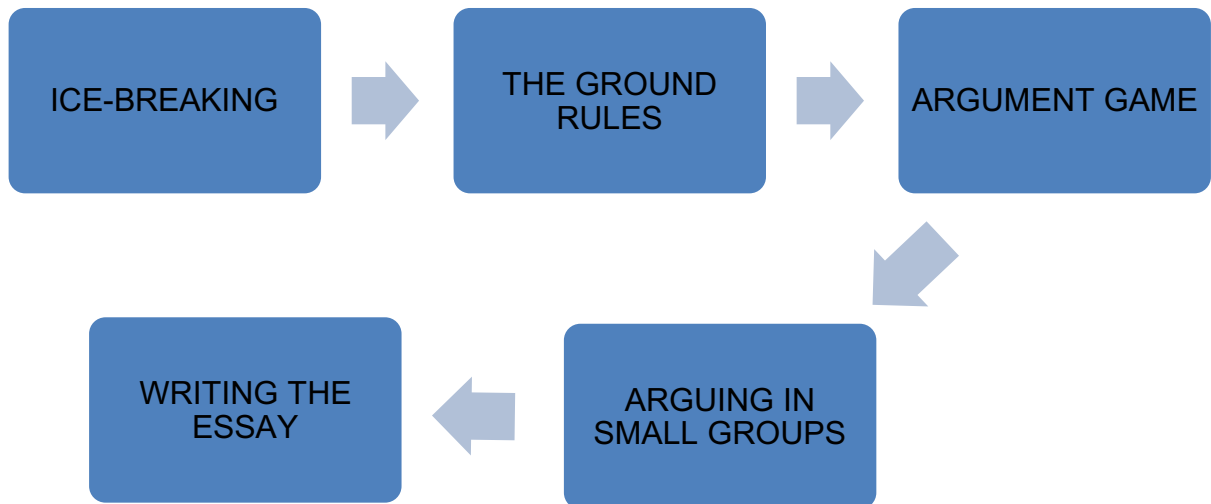
Figure 7. The five stages of the intervention

How each stage was tested and developed through the research process will now be reported.

Module 1 – Ice-breaking

This initial stage was important because before this study, the students had never participated in any academic online discussion particularly arguing on social issues using English language. As described by the teachers during the Exploratory Study, most ESL students in Malaysian secondary schools had unsatisfactory English language skills to discuss debatable issues hence it was expected that their low self-esteem, shyness and lack of enthusiasm to participate will impede the implementation of the intervention. In order to lessen the impact of these behaviours, the ice-breaking activities required them to talk with each other in the group casually prior to their more thoughtful discussions. This was to improve their self-confidence to use English language amongst themselves. However, students in Iteration 1 suggested that they would feel more

confident to participate in the online argumentation and adhered to the ground rules if they were firstly briefed face-to-face. They preferred to learn the basic steps of participating in group argumentation face-to-face. They also requested the teacher to explain using Malay language instead of English language. Hence, in Iteration 2, the lesson plans for face-to-face teaching sessions were designed to scaffold students on how to engage in persuasive argumentation.

Module 2 – The ground rules

Wegerif et al. (1999) recommends that students should be initially scaffolded with Exploratory Talk before getting into any dialogic intervention. Conducting Exploratory Talk in students' first language is more undemanding compared to conducting it in a second language context. Establishing different ways of talking using English as a second language in my context of study was somehow challenging. Due to students' lack of language skills as well as experience participating in dialogic group argumentation which emphasises the egalitarian turn-takings, students in Iteration 1 were sometimes found neglecting the ground rules even though repetitively prompted by the teacher to either attend other's arguments with opposing ideas or provide more supporting reasons to strengthen their arguments. This stage was the most adjusted as I found that students did not significantly benefit from the previous module on ground rules. Rather than letting the students chose bad or good ground rules, I highlighted three most important ground rules that would assure their interactions to be more persuasive.

Module 3 – Argument game

This module was also fine-tuned to make it more meaningful to the students in Iteration 2. In the previous module, students in Iteration 1 were asked to give reasons why they thought certain rules are good or others bad. However, it did not really assist students to participate in persuasive argumentations. As there were a few days gap between each group argumentation, students had overlooked the ground rules in some of their group activities. Hence, in this module, I highlighted a simple game where students were given two selections of counterargument and they chose the most appropriate one that will connect

the argument and rebuttal of each issue. This was done to demonstrate how counterargument had been developed and rebutted.

Module 4 – Arguing in small groups

The default mechanism used by teachers to teach argumentative essay was whole-class discussion. Argumentative researchers were opposed to this method as it usually prohibited each argument from being carefully attended by students. All teachers during the Expert Trial agreed that arguing in small groups is the most effective way to encourage participation from each student. The analysis of argumentational interactions for all groups using SEDA showed that each student regardless of his/her attainment level had participate dialogically in each group argumentation. This occurred in all groups in Iteration 1 and 2. However, in terms of dialogic interactions, students in Iteration 1 displayed better dialogic skill as their interactions incorporated more dialogic clusters than Iteration 2's students. They also produced more dialogic turns, longer responses and displayed better vocabulary and communication skills. However, it did not guarantee that they displayed better persuasive argumentation skills than students in Iteration 2. Even though students in Iteration 2 produced less dialogic turns and dialogic clusters, only managed to produce short responses and were lacking in vocabulary and communication skills, they managed to participate in more group argumentations which were persuasive.

Module 5 – Writing the essay

The teachers in the expert trials, reported in Chapter 6, each confidently predicted that the essays of the students would show improvement after evaluating all the learning modules created for the intervention. Generally, students' essays improved in Iteration 2. It was only in Iteration 1, with the absence of argument diagram that some essays did not improve. Furthermore, essays written by G303 and G603 showed deterioration after participating in the intervention (as can be seen in Chapter 7). This will be discussed further when the fundamental research questions are discussed.

The on-going development of the intervention will be considered in Chapter 10, when future research is discussed. Design Framework 4 which will form the

theoretical basis for the continued research process is presented here and shows the findings of Iteration 2.

Table 45. Design Framework 3 based on findings from Iteration 2

Design Framework 3	Adaptations to the intervention	Findings
● Students should follow ground rules to encourage them to participate in Exploratory Talk.	**Emphasize the face-to-face argumentation activities:** ● Students worked in small groups collaboratively with the teacher to learn how to provide counterarguments and rebuttals related to an issue in the classroom.	● Students managed to provide counterarguments and rebuttals in the face-to-face small groups.
● Students should follow ground rules to encourage them to participate in Exploratory Talk. ● Ground rules should highlight the significance of equal rules of respect regardless of their attainment level in English language	**Emphasize the 3 main ground rules:** Teacher highlighted the three main ground rules that should be followed by students. Determine the importance of: 1. Responding to each argument provided by each group member regardless of their attainment level. 2. Attending other's arguments with counterarguments and rebuttals	● The analysis of argumentational interactions shows evidence of adhering to ground rules by all groups: 1. Almost all students put effort to attend to each argument offered by their friends. 2. Almost all students provided counterargument and rebuttal to other's arguments.

subject when giving opinions. • Students need to be aware of the way in which to engage in Exploratory Talk.	2. Utilizing some argumentative phrases to develop their argumentational interactions	• However, students infrequently applied the argumentative phrases taught in Ground Rule 3 due to their low language attainment. Hence, their interactions were mostly short and limited.
• Students should participate in persuasive argumentation.	**Emphasize the argument game:** Students were required to choose the most appropriate counterargument that related to the argument and rebuttal given for each topic.	• Students enjoyed participated in the game • Students learnt how to select the most appropriate counterargument
• Students need to be aware of the different forms of argumentation. • Students should produce counterarguments and rebuttals in each group argumentation.	**Emphasize the role of teacher:** • Teacher highlighted the counterargument made by a student and asked other students to refute	• Teacher actively highlighted all the arguments made by students • Teacher actively assigned individual student to counter-argue or refute other's arguments

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● Teacher should play an active role to promote counterarguments and rebuttals during the group argumentation.	● Teacher directly assigned a student to counter-argue or refute another student's argument	
● The use of argument map should be included to scaffold students to transfer the argumentation skill learned in group to their individual writing.	**Emphasize the use of argument map:** ● Students fill in the map during group argumentation ● Students fill in the map during post-intervention essay writing	● Students copied all the counterarguments and rebuttals produced in the group argumentations into their individual argument diagram ● Students integrated multiple counterarguments and rebuttals in their post-intervention essays

The following section discusses the overall success or failure of the intervention.

9.3 Returning to the Research Questions

This thesis was an investigation into the links between persuasive argumentation and written argument. I designed an online intervention that would instantiate persuasive argumentation so that I could explore the potential links between the group and individual argumentation, other than verifying that the students' essays have improved.

9.3.1 What effect does the educational intervention have on the persuasiveness of the students' argumentation?

I defined persuasive argumentation following Bakhtin (1986) who asserts that persuasive argumentation welcomes different voices and perspectives which is a more humane way to argue. This notion is greatly emphasised in dialogic interaction too as Hennessy et al. (2016) accentuate that during dialogic interactions, different opinions, beliefs or ideas are pertinent as it values equality amongst arguers. Hence, dialogic interaction plays a major role as the vehicle for the persuasive argumentation in this study. Educational Dialogue Analysis (SEDA) developed by Hennessy et al. (2016) is used to analyse the dialogic sequences of all group interactions in Iteration 1 and 2. This is because, Bakhtin's (1986) dialogic theory suggests that the statement produced by each arguer is the basic unit of analysis of communicative practices, representing the link that joins chains of dialogic interactions. I was suggesting that the more exploratory talk occurs in the group's interaction, the greater the probability for the students to argue persuasively which eventually will help to improve their written argument.

The intervention for Iteration 1 was designed to help upper secondary students (17 years old) wrote argumentative essays. Instead of participating in whole class discussions (teachers' default mechanism to teach argumentative essay writing), students collaboratively engaged in the process of argument prior to their individual writing. As dialogic interaction was the vehicle for persuasive argumentation, I firstly examined to what extent the group argumentation demonstrated dialogic interaction. All six groups participated well in dialogic interaction where the frequency of dialogic turns of each group was encouraging.

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Each group was also found using at least five dialogic clusters in their group interactions. In spite of that, some of the group interactions turned out to be unpersuasive. When inspected, all the unpersuasive interactions were due to their cumulative and disputational talk. In cumulative discourse, Wegerif & Mercer (1997) assert that students merely repeat, confirm and elaborate rather than challenging others while disputational talk only allows students to reject others' ideas. Both types of talk prevent persuasive argumentation to arise as students display extreme attitude towards the issue debated. Extreme attitude by some means forbids students from participating in Exploratory Talk as each of them is only absorbed to present their own opinion rather than contemplating on others' opposing ideas (Nussbaum & Kardash, 2005). Extreme attitude occurs because of one's personal experience, (Kuhn, 1991; Stapleton, 2001) that the topics of discussion are mostly related to students' social life. It is observed that some students are 'self-centering' (Jonassen & Kim, 2010, p.445; Leitão, 2003, p. 275) as they mistreat their friends' opposing points of view.

It was clear that persuasive argumentation in Iteration 1 could be instantiated by the online intervention, but not for every group; this needs further investigation. In order to improve this, the intervention was deliberately and sensibly revised. In order to resolve the issue of extreme attitude, teacher's active role to promote the formation of opposing ideas was taken as the solution to this problem. This is supported by Zhang & Dougherty Stahl (2011) who agree that teacher should play an important role to promote collaboration and thinking skills amongst the students when arguing. By promoting students to counter argue and rebut other's arguments, I believe that their group argumentations would have been more persuasive.

The revised intervention for Iteration 2 emphasised the role of the teacher to overcome students' extreme attitude. Again, similar findings from Iteration 1 were found in Iteration 2 as all groups participated well in dialogic interaction. The difference was that the frequency of dialogic turns of each group in Iteration 2 was discouraging as the interactions were mostly short and limited due to their limited English language skill. This was anticipated as all the students in Iteration 2 were average- and low-attainment students. Each group was also found only

using three dialogic clusters in their group interactions. Yet, most of the group interactions turned out to be persuasive. When inspected, all the persuasive interactions were the influence of their Exploratory Talk. This is accentuated by Wegerif et al. (1999) and Wegerif & Mercer (1997) that the essence of Exploratory Talk is the one that promotes persuasive argumentation, not cumulative and disputational talk. Such talk encourages persuasive argumentation to arise as students do not display any extreme attitude towards the issue debated. Counterarguments and rebuttals are evident and consistently found in each group interaction. Teacher's active role in prohibiting extreme attitude has proven to be effective as the cumulative and disputational talk prevalent in Iteration 1 ceases.

In conclusion, it was clear that persuasive argumentation was successfully instantiated by the online intervention. Other than improving upper secondary students' (17 years old) writing skill, the intervention also improved similar skill amongst lower secondary students (13 years old). The finding was similar with Kuhn et al. (2008) and Chinn et al. (2001) that students at any age will gain benefit when they are taught persuasive argumentation skill extensively. Since argumentative essay writing is not a genre included in lower secondary English language curriculum, the improvement in their writing skill verifies the effectiveness of the revised intervention. Hence, the revised intervention could be used as a standard model to teach persuasive argumentation in lower and upper secondary level in Malaysian context.

9.3.2 What effect does the educational intervention have on the persuasiveness of the students' argumentative essay writing?

The intervention incorporated explicit teaching of argument schema and argumentative interactions. These were the main aspects of the intervention which have been successfully used by other argumentation studies (Fernández et al., 2001; Mercer & Littleton, 2007; Rojas-Drummond & Zapata, 2004; Wegerif et al., 1999). Furthermore, Wegerif & Mercer's (1997) Exploratory Talk is also an important element highlighted during the intervention. They argue that when students participate in Exploratory Talk, their individual argumentation skill would

improve. However, I did not implement the Raven's Standard Progressive Matrices (RSPM) to test each student like how Wegerif & Mercer (1997) have done but students were tested to write the argumentative essay according to MCE standards. However, there was an issue with using the standardised marking scheme prepared by Malaysian Examinations Syndicate (MES) for MCE. Primarily, it is used to mark all genre of essays including argumentative essays. Hence, I discovered that the scheme does not explicitly measure the elements of persuasive argumentation proposed by argumentation researchers followed in this study (Leitão, 2000; Reznitskaya et al., 2007; Weinberger & Fischer, 2006). Key to writing a persuasive argumentative essay is the ability to integrate counterarguments and rebuttals to support one's argument. Consequently, Nussbaum & Schraw (2007)'s 4-point scale and holistic scoring geared to measuring argumentation have been used to mark all pre- and post-intervention essays in both Iterations 1 and 2.

In Iteration 1, five students showed improvement in their marks while nine did in terms of two-sidedness and holistic scoring. Exclusively, there were two students (G303 and G603) who experienced deterioration in their post-intervention essays. There are several explanations that could explain the small number of students who have shown improvement which may have nothing to do with the intervention. Firstly, most students in upper secondary level were used to writing narrative essays since they were 13 years old (lower secondary level) and primary school level. Besides, they admitted that they had religiously practiced writing that genre for MCE in order to obtain good grades. Furthermore, students were only a few months away from their examination, hence I believed that they had been prepared by their teachers to focus on narrative essay writing compared to argumentative essay. Secondly, argumentative essay writing is rarely prioritised by teachers at secondary level in Malaysia. As found in the teacher's yearly teaching plans, argumentative essay is planned to be taught to students a few weeks before the major examination. When asked if they would rather choose to write argumentative essay for their examination, most of them would still choose to write narrative essays for their MCE even after participating in the intervention for 8 weeks. Due to the lack of exposure and the preference writing for that genre in school, it was challenging to improve the skill in a short

time (8 weeks) and motivate students to have interest in writing the argumentative essay.

Based on the conjecture of this study, students' essays were expected to improve after they participated in persuasive group argumentation which were based on Exploratory Talk where students were extensively exposed to numerous counterarguments and rebuttals. However, there were still students who did not show the desired improvement even after participating in the ideal group argumentation. Students in Groups 2 and Group 4 participated in group argumentations which had generated the most counterarguments and rebuttals. They were considered the groups which had successfully participated in persuasive argumentation. However, the essays written by G201, G401, G402 and G403 did not improve when marked against the tools suggested by Nussbaum & Schraw (2007). Their essays were clearly one-sided and did not integrate opposing ideas.

Based on the findings from Iteration 1, it was evident that all argumentative essays in Iteration 1 had improved after participating in the online intervention, but not for every student; this needs further investigation. In order to improve this, the intervention was deliberately and sensibly revised. In order to resolve the issue of negative transfer, argument diagram was promoted and taken as the solution to this problem as suggested by Chinn & Clark (2013), Harrell (2011) and Jonassen & Kim (2010). I believed that their written essays would be more persuasive.

The revised intervention for Iteration 2 has been emphasizing the use of argument diagram to overcome negative transfer. This time, distinctive findings were found in Iteration 2 because all the essays improved from one-sided to two-sided and showed improvement in terms of holistic scoring except the essay written by G304(Mun). Her essays already demonstrated two-sidedness, but she also benefited from the intervention as her essays improved holistically by one level. All students had inserted more counterarguments and rebuttals in their post-intervention essays thus the major improvement in their writing.

In Iteration 2, students employed the argument diagram in two stages of the intervention; when arguing in groups and when writing the post-intervention essay. Firstly, the main purpose of argument diagram was to organise the group's ideas. This was because, the conversation threads in WhatsApp group were disordered and did not necessarily follow the argument-counterargument-rebuttal structure. Hence, during the group interactions, students completed the argument diagram according to the sequence. The advantage of this diagram was that students became aware if they did not provide any counterargument or rebuttal to their friends' arguments. This has successfully ensured that no argument was left unattended. Secondly, when using the argument diagram to write their post-intervention essay, students were prompted to provide counterarguments and rebuttals after providing their stance on the issue. This was found beneficial to assist students to write persuasive essays. Overall, the use of argument diagram proved to link group and individual argumentation as there was a relationship between what was achieved in the group argumentations and individual argumentation. It was clear that those who appeared to improve the most were those who were not the high-attainment students but were the most engaged and most willing to put forward a point of view. Therefore, the more exploratory the interaction, the better the written responses.

9.3.3 Does students' ability to argue persuasively in groups positively affect their ability to write persuasive argumentative essay?

The aim of teaching students how to participate in persuasive argumentation was to prepare them to generate the right kind of interactions so that they have the chance to explore different points of view as recommended by Bakhtin (1986). Based on the analysis of their group interactions, it became clear that when students participated in persuasive argumentation, they were actively involved with the exchanges of counterarguments and rebuttals. When this occurred, there was a potential for them to improve their written argument only if they managed to transfer the skill obtained collaboratively into their individual writing.

Students in Iteration 1 only managed to participate in one to three persuasive group argumentations. It was because they only managed to conduct three to five group argumentations due to their busy schedule preparing for an important

examination (MCE). Hence, the frequency of counterarguments and rebuttals were low in their group argumentations especially when they displayed extreme attitude where opposing ideas were occasional. Some students displayed negative transfer of skill when they managed to produce multiple opposing ideas in groups but could not replicate similar skills in their individual writing.

The findings from Iteration 2 clearly demonstrated that the more counterargument and rebuttals produced in the interaction, the better the written responses. The use of argument map clearly helped students in Iteration 2 to demonstrate positive transfer from group to individual argumentation as found by Nussbaum & Schraw (2007). In conclusion, the role of persuasive argumentation is to encourage more production of counterarguments and rebuttals when arguing.

9.4   Emergent issues

The most significant issue which emerged in this study was the extreme attitude exhibited by students. Even though the objective of persuasive argumentation was to instruct students to see the opposite side of the issue, some students could not achieve this objective as their ability to provide counterarguments and rebuttals majorly depends on their personal attitude towards the topic discussed. Based on the analysis of students' interactions, I was aware that students' ability to provide counterarguments and rebuttals were highly dependent on the topic of discussion. Their personal experience and general knowledge about the topic hindered their ability to provide counterarguments and rebuttals during the discussion. If they had an existing extreme attitude towards the topic, it would be difficult for them to think beyond their own assumption about the topic. From my observation, students' performance was not consistent due to their extreme attitude. When they had a positive experience about the topic, the tendency for them to see the opposite side of the issue was minimal or non-existent. When they talked from their experience, they would be biased and did not attend to any counter-argument that went against their point of view as they knew that their argument was personally valid.

Furthermore, some students did not have sufficient English vocabulary to express themselves, especially those low-attainment level students. Some of them had

such low self-confidence that they refrained from voicing their opinions especially when they knew that other group members are high-attainment level students. Other than English language attainment level, students who worked with different genders also displayed difficulty to provide counterarguments and rebuttals. The stereotype that women must follow what men say was displayed in a group in Iteration 1. The two females who worked with a male member were inclined to merely follow what was said by the male student. It was obvious that they quickly agreed with the statement made by him and changed their stand when he changed his mind about the topic.

Another factor which contributes to their extreme attitude was that, it was not always clear to students that there could be more than one correct answer. Students need to be encouraged to express their views about the issue even though others may have a different or opposing view. They need to be able to accept it when their answers do not correlate with others and learn how to back up their findings with accurate information. Students at secondary school level still do not see the importance of supporting their stand with reasons. They also need to learn to be more respectful of others' opinions and express their opposing views in a respectful manner. They still perceive group argumentation as a self-defence activity and their guards are up when others go against their ideas. Finally, students rarely got the opportunity to control their own group argumentation. Usually teachers would give typical instructions and they merely followed.

Secondly, another important issue that emerged was the negative transfer from group to individual argumentation which hindered the desired improvement in their post-intervention essays. The probable explanation was that, in Iteration 1, students did not receive any explicit instruction on how to write argumentative essay prior to their post-intervention essay writing. It was up to them whether to apply the persuasive structure or not in their writing. Students could not self-regulate to insert all key elements of persuasive argumentative essay when they are not reminded or guided to do it prior to their individual writing. Furthermore, none of the students has been trained to write according to the argument-counterargument-rebuttal schema when writing an argumentative essay. They

merely follow the Hamburger approach when writing the argumentative essay. Only some managed to insert a few counterarguments and rebuttals in their essay, but these were very minimal. Overall, for Iteration 1, there was only a slight connection between group argumentation and post-intervention writing. Hence, students were not aware that they should write their post-intervention essay in a similar way to how they have argued in their group. They may not see the correlation between the group argumentation, done in WhatsApp group at home, and the writing, which was done with the teacher in school. Students were not able to write two-sided essays when they were doing it alone as no one was against their arguments. Students need to be scaffolded not only during the group interaction, but also while writing individually. Hence, the argument diagram is a good scaffolding tool to help them organise their essays persuasively. It was shown to be effective when students in Iteration 2 showed improvement in their writing.

Students' readiness to participate in online learning was also an issue that has emerged in this study. Even though the group argumentation was conducted online, and students were instructed to conduct the group argumentation whenever they want, students still waited for the teacher's permission to conduct the group argumentation. Instead of discussing with their group members to decide on the time of discussion, one of them went straight to the teacher to ask when they should conduct the group argumentation. Furthermore, the level of students' reliance on the teacher's assistance is also apparent. From the first iteration, it was observed that when the teacher does not interfere during the group argumentations, students forget to follow the assigned ground rules. They still need the teacher to prompt the rules that should be followed when arguing in groups. This indicates that secondary school students are not ready for independent learning using technological tool. Besides, students were also not prepared to participate in informal learning using technology beyond school hours. This was indicated in the post-intervention questionnaire, where students in both Iterations 1 and 2 complained that it is difficult to gather all group members to go online at the time. They usually have a conflict to agree on the time of discussion, especially students in Iteration 1. Most of them have packed schedules even on weekends; attending extracurricular activities in school, extra

classes, family occasions and other social gatherings. Finally, the use of technology to teach ESL students is still rare, as indicated by students in Iteration 1 who responded in the questionnaire that they prefer the online learning to be initiated with face-to-face teaching. The full implementation of online teaching and learning is less successful due to students' unwillingness and readiness. Some students admitted they felt bored when using the WhatsApp for more than two hours for the group discussion. They complained that the use of smartphone caused eye strain and sometimes they felt sleepy when discussing online. Furthermore, the flow of group discussion was also depended on student's interpersonal relationship. If they had some misunderstanding with their friends in real life, they admitted that it was difficult for them to participate in the online discussion. They took a few days to resolve their personal issue before they continued with the online activities. This had slightly disturbed the momentum of their group progress to complete the intervention.

Another issue that has emerged is the technical glitches students face when using smartphones and WhatsApp to participate in the study. Each student who engaged in this study needed at least the latest smartphone, a functioning wireless network and significant amounts of time of their active participation. They complained that they had difficulties to go online due to weak internet connection, either at home or with their mobile data. Besides, as they are secondary school students, they could rarely pay more for the mobile data on their smartphones. Another issue of using only Wi-Fi as their internet source is that the group discussion could not be conducted when there is no electricity. On a daily basis, they just subscribe to the basic internet plan as they just use internet to use Facebook, Instagram and other social media platforms. When they participated in the intervention, they spent extra money to pay for the internet service in order to ensure they can participate in the group interactions for a long-term period. The intervention described in this study is extended and hence costly in time and money. Some students had problems with their smartphones during the intervention. In a few incidents, students had to postpone their group discussions as one of the members had low battery power and they had to wait for a few hours to continue the discussion. Some of them had to regularly charge their phones in the middle of their group discussion. A few students also had to

discontinue their group discussion when their phones were getting too hot after a long use. The group discussions were postponed for a few hours until the students could use their phones normally again. WhatsApp application on certain Android phones cannot work properly if too many messages came in simultaneously. Some students who use Android phones needed to reformat their phone when it is infected by internet virus. This hindered the flow of their group discussions which at times demotivated the students to participate or proceed with the online intervention. Another hindrance is that not every student who has a smartphone had access to it all the time at home because some students are only allowed to use smartphones at certain times by their parents. When their parents only allowed them to use smartphones in the evening, all group members tried their best to allocate time in the evening for the discussion. Hence, the time to conduct a group discussion varied according to the personal usage of smartphone at home. Furthermore, a student had to withdraw from the study when her smartphone was malfunctioning. Other students also disclosed that they tend to get distracted by the notifications from online games, Facebook, Instagram and WeChat during the online discussion. Finally, as most Malaysian teachers have no experience to use online tool to train students for dialogic pedagogy and Exploratory Talk, it is a fair question to ask whether an intervention like this is worth it.

Summary of Chapter 9

This chapter discusses the development of the intervention and returns to the original research questions to discuss the overall findings of the research process. It also discusses the themes that have emerged through the investigation. Dialogic interaction is instantiated during the group argumentation. Even though there are links between group and individual argumentation, it does not occur to every student due to two main causes - the extreme attitudes presented by some students influence and prohibit the entire group from discussing opposing ideas and the lack of positive transfer from group to individual argumentation. This chapter ends by discussing issues that have emerged through this research. The next chapter will conclude the whole research journey.

Chapter 10 – Conclusion

This chapter summarises the main findings of this study. Next, it explains the research contributions of this study to methodology, knowledge and practice. It also acknowledges the limitations of this DBR study. Finally, this chapter makes recommendations for further developing Design Framework 4 derived from this study.

10.1   Summary of findings

10.1.1 Revisiting the aims of the research

The aim of this research study was to investigate the links between persuasive argumentation and written argument. I was aware that ESL teachers in a few secondary schools in Malaysia did not execute students' collaborative argumentation prior to writing their argumentative essay. The most widely used approach mentioned by them was the whole class discussion where teachers randomly divided students into two groups; namely disagree and agree groups. Each group brainstormed for ideas for their own stand and they were not required to ponder upon opposing ideas. This was established by the responses from the MCE examiner that students were taught and expected to write one-sided argumentative essays at secondary school level and essays were only evaluated for the conventions of writing not how persuasive they were. Besides, students did not demonstrate the ability to argue persuasively when observed in the exploratory study stage; classroom and online observation. This may be due to the teaching method implemented by their teacher.

10.1.2 Revisiting the research questions

The initial conjecture derived from my teaching experience, reinforced by an extensive literature review and subsequently confirmed by the exploratory study is that:

> The essays of secondary school students will improve if they
> are encouraged to participate in persuasive argumentation

before they write their essays. I am proposing that when the students argue persuasively, they will realise how to cope with counterarguments and rebuttals when arguing hence it will guide them to write a good persuasive argumentation.

This conjecture was disseminated into three related research questions. Firstly, is there a connection between persuasive group argumentation and written argument? Secondly, do the essays of students who engage in persuasive argumentation improve more than those who do not? Finally, could I create an online intervention that would allow me to investigate the links between persuasive group argumentation and written argument?

10.1.2.1 Is there a connection between persuasive group argumentation and written argument?

In Iteration 1, there was a visible connection between collective argumentations and written argument as the essays written by G101, G202, G203, G601 and G602 showed significant improvement after participating in group argumentations which were persuasive. After the online interactions were analysed and compared to the argumentation elements found in their essays, it can be concluded that the persuasive skill generated in their group interactions was transferred into their writing skill. The experience gained during the collaborative work was transferred to the individual task of persuasive writing. Even though each group's argumentation was fully conducted online, the finding of this study was consistent with other studies that had incorporated collaborative oral discussions; that group argumentation promoted individual reasoning. Furthermore, students who did not improve in their writing were those who did not participate in persuasive group argumentation at all or participate infrequently.

In Iteration 2, all groups participated in persuasive group argumentation which happened frequently. Consequently, there was a major improvement in all their written arguments. With the assistance of teacher's active role prompting them to offer opposing ideas and the use of argument diagram during group argumentation, they managed to produce numerous counterarguments and rebuttals collaboratively. Hence the skill they acquired in the group clearly helped

them to write especially when argument diagram was also integrated during the writing stage. All the essays turned out to be two-sided and holistically improved. Iteration 2 offered a clear indication that there were links between group argumentation and written argument when aided by active teacher's prompts and argument diagrams.

10.1.2.2   Whose essays improved the most?

My research demonstrated that when persuasive argumentation was instantiated, the students who engaged in it were able to make desired improvements in their written essays when measured for argumentation. This finding was essential. Measuring tools by Nussbaum & Schraw (2007) are applied to measure the two-sidedness of an essay as well as its holistic improvement. The most important finding here was that at least five essays produced in Iteration 1 had shown more of these argumentative indicators after the educational intervention while there was no explicit instruction for the essay writing. It meant students were not at all reminded to insert opposing ideas in their post-intervention essay. This at least advocated that group argumentation has the potential to teach argumentative writing in the Malaysian ESL context. It was also clear that the students whose essays showed the most and clear improvements in argument – improving by at least two levels – were the students who engaged in at least one occasion of persuasive argumentation. This suggested that any student who participated in a persuasive argumentation even once, had the potential to gain similar benefit as others who participated numerous times. However, G203 improved the most in Iteration 1 where Group 2 participated in the most number of persuasive argumentations (3 episodes).

In Iteration 2, all students showed improvement in terms of two-sidedness and holistic scoring. However, the students who improved the most were those who had actively provided opposing ideas during the group argumentations.

10.2   Research contribution

10.2.1 Contributions to methodology

This study contributed to the methodologies used in persuasive argumentation studies as it adopted educational DBR. It is an alternative to the experimental design as the DBR methodology adopted in this study has produced outcomes that demonstrates positive relation between theories of persuasive argumentation and ESL writing as well as presenting principles or guidelines for teachers to teach persuasive argumentation.

Herrington et al. (2007) argue that the DBR methodology can be feasible in doctorate projects if the projects are adjusted to suit the context and conditions of the study. This study was unique as it was conducted differently from the traditional model of DBR. The approach was cyclical like the traditional DBR but was unique. Iteration 1 tested all the design conjectures of Design Framework 1. In Iteration 2, different theories were tested due to some emerging issues from Iteration 1. To produce the final design framework from this study, each iteration was conducted with different participants and in different learning contexts, and I was engaged in testing, developing, and exploring theories in iterative cycles. In Iteration 2, some of the theories were adjusted, taking the extreme attitude and negative transfer of group to individual argumentation into account in order to improve students' persuasive argumentation skill.

The strength of the study is the DBR methodology that coordinated the whole study. The educational intervention implemented in this study has never been conducted in any classroom in Malaysia, hence DBR is a powerful tool to ensure the success of the program if it is to be conducted in Malaysian secondary classroom in the future. Since this is a formative research, DBR is seen as a powerful tool to ensure the effectiveness of the educational intervention prior to the design and implementation of the real program in authentic secondary school classrooms. Firstly, this is because the intervention was designed based on the imperative needs of secondary school students and teachers in Malaysia. I worked closely with practitioners to fully understand what works in their classroom. Additionally, the intervention was also implemented and tested in

Malaysian secondary school classrooms with real students. Secondly, DBR integrates the development of solutions to practical problems in learning environments with the identification of reusable design principles. This is evident when the issues that hindered the effectiveness of the educational intervention were initially identified during Iteration 1. Thirdly, DBR emphasises collaboration involving researchers and practitioners. I worked closely with the examiners and teachers to identify the problems and the solutions for the problems that emerged during the study. Towards the end of the study, DBR allows researchers to produce new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings.

10.2.2 Contributions to theory

Although a vast number of argumentation studies have been conducted based on Collaborative Reasoning, none of the previous studies integrated Exploratory Talk to enhance students' argumentation skill. Early studies on the impact of collaborative argumentation on individual argumentation skill agreed that face-to-face group argumentation is the ultimate way to improve students' individual writing for argumentative essay. However, none of these studies integrated online Collaborative Reasoning based on Exploratory Talk for improving students' essay writing as conducted in this research. The findings from previous scholars were relevant but this study indicated that online Collaborative Reasoning using WhatsApp application enhanced students' learning as well as their argumentation skill both in group and individual writing.

The most important finding of this study was the importance of an argument diagram to assist students to organise their ideas during the online activities. It was reported in Iteration 1 that students struggled to transfer their persuasive argumentation skill into their individual writing. This study also suggested that it was not just Collaborative Reasoning, but the integration of Exploratory Talk that led to the development of students' persuasive argumentation skill. This study also suggested that in order to overcome extreme attitudes of the students during group argumentation, teachers play an important role to encourage students to produce counterarguments and rebuttals.

10.2.3 Contributions to practice

This study contributes to practice by suggesting Design Framework 4 as shown in Table 46 below, which consists of guidelines for teachers to adopt the use of WhatsApp application as part of their teaching. It suggests new opportunities for argumentative essay writing by utilizing technological tools that are familiar to the students which encourages collaborative and independent learning.

Table 46. Design Framework 4

Design Framework 4
• Face-to-face argumentation activities should be conducted prior to the online learning activities. • Students need to be taught how to provide counterargument and rebuttal face-to-face in small groups. • Ice-breaking activity should include face-to-face argumentation activities.
• Students should follow three main ground rules to encourage them to engage in Exploratory Talk. • Ground rules should emphasize the importance of attending to every argument offered by everyone in the group (criticize ideas, not people), providing opposing ideas (counterarguments and rebuttals) to other's arguments and using the argumentative phrases extensively in group. • Students need to be aware of the way to engage in Exploratory talk. • Teacher shows how dialogic talk is executed via the argument game. • Teacher should give more encouragement to low-attainment students to provide counterarguments and rebuttals to make their arguments persuasive.
• Teacher should play an active role to prompt students to respond to others' arguments by providing counterarguments and rebuttals. • Teachers need to play an active role to engage students with Exploratory Talk which will lead to persuasive argumentation.
• The use of argument map should be included to scaffold students to transfer the argumentation skill learned in group to their individual writing. • Argument map should be used during the group argumentation

> - Argument map should be used during the post-intervention essay writing

Although the guidelines were suitable for the learning content from both iterations of the study, they initially emerged from the authentic practices of teachers teaching ESL learners and also observation of ESL learners during the exploratory phase. Based on these real learning contexts, the problem was identified in which some design conjectures were formed and revised through circles of iterations. This study also contributes in many ways to the language learning practice of secondary school students and also to teachers. It suggests new opportunities for argumentative learning and teaching by utilizing students' and teachers' personal devices, a technology that is very close to most learners today. The technologies of smartphones and WhatsApp investigated in this study may evolve from time to time but manipulating them could encourage learners to engage in independent learning and improve their argumentation skill. By using technologies that are familiar to students, this study suggests that students are more motivated to participate and learn collaboratively with each other. Therefore, this study encourages teachers to try alternative methods and explore the opportunities to use new technologies as a tool that can open up new opportunities to engage students' learning especially in ESL field. Most importantly, they could practice using the English language and practice persuasive argumentation skill in a less stressful and formal environment, and the teacher could monitor their conversation and progress.

10.3   Limitations of the study

The limitations of this study require consideration because they affect the reliability of the results. The limitations revolved around issues of the selection of participants, the design of the learning course, the limited technological tool used and time constraints.

Although I am an English language teacher, the participants involved were not my own students as I was on study leave while this study was conducted. The choice of participants was only limited to the students of one teacher (Dini) who willingly participated in Iteration 1 and 2. This leads to constraints when designing appropriate learning activities especially when designing the learning modules

included in the lesson plans. I had to be very selective to only conduct group activities that will enable students to grasp the concept of persuasive argumentation skill in two or three lessons. Although students in both iterations admitted they gained a lot of benefits after participating in the intervention, their argumentation skill might be greater if I included more interesting activities that may enhance their persuasive argumentation skill.

Moreover, the main online tool used in this study was only limited to the use of smartphone and WhatsApp application. While there are many other sophisticated software created for online argumentation recommended by argumentation researchers, participants in both iterations only had access to smartphones and were only familiar with WhatsApp application. They rarely use desktop computer or laptops on a daily basis as those gadgets are more highly-priced than the basic smartphones. Therefore, the findings of this study were limited in that different outcomes might be achieved if the students had access to more advanced software.

Another limitation of this study is regarding the time when it was conducted. Iteration 1 was conducted between July and August 2016 with participants from upper secondary level when they were three months away from a national examination (November 2016). I had to conduct the first iteration while they were busy with studies, homework, extra-curricular activities, tuition classes and school-based examinations. Hence, this study did not allow for an exhaustive, long-term prototyping process as is the case in many Design Based Research studies since they had to prioritize their studies rather than this research. Also, I only managed to conduct Iteration 2 with lower secondary students in May and June 2017 due to the teacher's suggestion. I initially planned to conduct it earlier in February and March, but around that time, the school conducted class streaming for 13-year-old students where they were assigned to classes according to their academic ability. If I conducted it at the beginning of the year, some students might move to other classes hence it will be difficult for me and the teacher to conduct the activities. Besides, the students had many school activities in August onwards. As a result, the prototyping phases for both iterations were short, lasting as a whole for no more than four months, and

involving only two iterations. Therefore, the final design framework (DF 4) is final for this study but is still open to modification and refinement for future studies. This limitation might limit the generalizability of the findings; future studies should involve larger number of participants who are the researcher's students to increase authenticity and to be able to generalize the results.

Another recognizable criticism of the educational intervention is that it took longer than two weeks to teach argumentative essay. ESL teachers in Malaysian secondary school rarely teach argumentative essay for more than two weeks as they usually followed the scheme of work determined by the ministry. The teacher's scheme of work stated that they typically allocated one genre of essay to be taught only within two weeks. This means that it would be challenging for teachers to integrate this educational intervention into their classroom lessons. It would be particularly challenging if their current classroom pedagogy is based on the whole-class teaching and teacher-centered instructions, because this intervention is firmly based on a 'dialogic' stance which promoted student-centered learning especially during students' group argumentation. For those teachers unused to teaching in such a student-centered approach, this can be challenging. Managing the online group argumentation in its collaborative and argumentational phases takes deep understanding of the processes involved. It is suggested that the intervention should be incorporated into lessons when the teacher has developed complete understanding about what persuasive argumentation and dialogic interaction are, to ensure it reaches the objective of enhancing students' persuasive argumentation skill.

In terms of data collection, this study was also limited. In order to evaluate students' perceptions of the intervention, a questionnaire was used in this study. I could also have used students' reflections on their group argumentation activities. As most students are now technologically literate, the reflections could also be documented using smartphones.

There is also a problem related to the research design. In Iteration 1 and 2, only one teacher was willing to help me in terms of recruiting the participants. Hence, the context of the study is limited to merely one school. Participants in Iteration 1

and 2 are the students taught by the teacher. Other than that, only one MCE examiner and one MUET examiner willingly participated in this study. Hence, the views about how argumentative essay is taught and evaluated are restricted to only limited context. It would be more fruitful if I could get more than five MCE examiners and five MUET examiners during the exploratory study.

10.4   Suggestions for future research

This study advocates that the use of WhatsApp has the potential to provide a dialogic space for secondary school students to argue collaboratively. As the teacher who facilitates all 55 episodes of online group argumentations single-handedly, I feel excited about teaching the students to participate in the collaborative argumentation using WhatsApp as I have never experienced this before. Consequently, future studies should explore other social networking applications familiar to students and teachers in Malaysia such as Skype, Twitter, Facebook, Viber or Telegram. Besides, they can also explore the WhatsApp Web where students can do pairing of their smartphones with the Whatsapp on their laptops or computers. Even though WhatsApp is relevant during the time this study is conducted, there are many other social networking applications evolving hence researchers should be experimenting other apps too. This can be done in the light of the sound design framework of this study.

Besides, future research should investigate how the use of smartphones and WhatsApp could be used to facilitate dialogic argumentation beyond a single school as both are technologies that are convenient to most school students nowadays. The tools can be the platform for inter-school collaborative argumentation projects discussing numerous social issues related to the social lives of secondary school students in Malaysian context.

In both iterations, similar topics used in group argumentations are reused in the post-intervention essays. Therefore, for future research, researchers may use a new topic for the post-intervention essay which has never been discussed in any of the group interactions. This can certify if students truly grasped the persuasion skill that could be transferred to their argumentative essay writing.

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Appendices

Appendix 1 - Students' post-intervention questionnaire for Iteration 1

NAME : _____ WHATSAPP GROUP : 1 / 2 / 3 / 4 / 5 / 6

Bahagian A : Sila tandakan √ pada kotak 'TIDAK SETUJU' atau 'SETUJU'. Pilih satu sahaja untuk setiap soalan. Kemudian nyatakan KENAPA.

SOALAN	TIDAK SETUJU	SETUJU	KENAPA?
Susah untuk belajar secara online (guna telefon bimbit)			
Saya selalu ada masalah internet			
Susah untuk berbincang guna WhatsApp			
Susah untuk berbincang guna Bahasa Inggeris			
Berbincang seramai 4 orang agak susah			
Susah untuk saya bagi pendapat apabila guna WhatsApp			
Berbincang dalam WhatsApp tidak menarik			
Susah untuk kumpul semua ahli untuk online			
Aktiviti ini mengganggu masa saya			
Saya tak faham arahan yang diberikan			

Bahagian B :

Nyatakan masalah utama yang ada hadapi

ketika menjalankan aktiviti.

Apakah cadaangan anda untuk memperbaiki

aktiviti yang dijalankan?

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Students' post-intervention questionnaire for Iteration 2

NAME : _____ WHATSAPP GROUP : 1 / 2 / 3 / 4

<u>Bahagian A : Sila tandakan √ pada kotak 'TIDAK SETUJU' atau 'SETUJU'. Pilih satu sahaja untuk setiap soalan. Kemudian nyatakan KENAPA.</u>

SOALAN	TIDAK SETUJU	SETUJU	KENAPA?
Susah untuk belajar secara online (guna telefon bimbit)			
Saya selalu ada masalah internet			
Susah untuk berbincang guna WhatsApp			
Susah untuk berbincang guna Bahasa Inggeris			
Berbincang seramai 4 orang agak susah			
Susah untuk saya bagi pendapat apabila guna WhatsApp			
Berbincang dalam WhatsApp tidak menarik			
Susah untuk kumpul semua ahli untuk online			
Aktiviti ini mengganggu masa saya			
Saya tak faham arahan yang diberikan			

Bahagian B : Sila tandakan √ pada kotak 'TIDAK SETUJU' atau 'SETUJU'. Pilih satu sahaja untuk setiap soalan. Kemudian nyatakan KENAPA. Komen / pendapat saya tentang aktiviti (We say-They say-Fight back) ini :

We say :

They say :

Fight back :
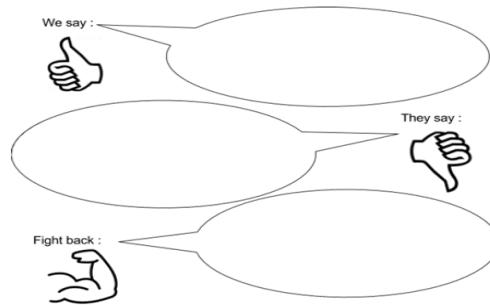
SOALAN	TIDAK SETUJU	SETUJU	KENAPA?
Saya tiada idea untuk 'disagree' dengan idea kawan saya			
Saya tiada idea untuk dikongsi bersama rakan			
Aktiviti ini susah			
Aktiviti ini bantu saya berfikir			
Aktiviti ini membosankan			
Saya tidak suka aktiviti ini			
Saya tidak suka topik topik yang dibincangkan			
Topik yang diberi susah			
Saya berasa lebih yakin untuk memberi pendapat selepas belajar aktiviti ini			
Saya malu nak bagi idea			
Telefon bimbit saya tidak sesuai untuk aktiviti ini			
Aktiviti ini tidak meningkatkan Bahasa Inggeris saya			
Aktiviti ini tidak berfaedah			

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Appendix 2 - Sample of essay used for second and third rater

Sample of essay :

Although this topic is widely debated and there is evidence for both sides of the issue, I believe that watching *too much* television does cause children to become more violent.

There are various reasons that I have come to the conclusion that violent television is detrimental to children. First, the fact that I am more prone to act violently (even though it is often times only in imitation) after watching violent programming is a strong reason for my belief in this way. As an adult, I find myself affected negatively by this type of programming. I am thus, more weary of children, who may not recognize the non-reality of television, despite their "vivid imaginations," seeing so much violent programming.

Children are unable to distinguish what they should and should not watch. They are not able to recognize the programs that may not be healthy, developmentally, for them to review. I believe that violent programming has less of a negative effect on those children who are more closely monitored by their parents, however they are still affected by it. Just as many more school related violent acts occurred following the Columbine incident, so will the violent nature of childhood behavior increase as the amount of violence on TV, and the time spent viewing it increases.

Essentially, watching violent programs, just as watching live violent acts, is negative for children who are learning what behavior(s) are correct and incorrect/appropriate and inappropriate. There are many factors, such as time spent watching TV, parental control and involvement among others, that would help to decrease the negative effects of violent TV. However, there will always, in my opinion, be negative effects on children due to violent programming.

Example of analysis of essay :

Assertion	Category
watching *too much* television does cause children to become more violent.	FC
First, the fact that I am more prone to act violently (even though it is often times only in imitation) after watching violent programming is a strong reason for my belief in this way.	PC
I am thus, more weary of children, who may not recognize the non-reality of television, despite their "vivid imaginations," seeing so much violent programming.	SR/E
Children are unable to distinguish what they should and should not watch.	PC
I believe that violent programming has less of a negative effect on those children who are more closely monitored by their parents,	CA
however they are still affected by it.	RB
Just as many more school related violent acts occurred following the Columbine incident, so will the violent nature of childhood behavior increase as the amount of violence on TV, and the time spent viewing it increases.	SR/E
There are many factors,	CA
such as time spent watching TV, parental control and involvement among others,	SR/E
that would help to decrease the negative effects of violent TV.	CA
However, there will always, in my opinion, be negative effects on children due to violent programming.	RB

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Appendix 3 : Anchor papers used to train second and third raters

Anchor paper 1

"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Category
Introduction	
I didn't agree with the topic that said "The Internet promotes an unhealthy culture among students". For me, it's up to someone own self to take the responsibility when they're searching and surfing something through the internet. I would like to tell all of you that internet actually give all of us a lot of benefits.	FC
Paragraph 2	
When we surfing the information from the internet, we can take advantages for improving our study techniques. We can also become more effective as an excellent student. This can be really helpfull for the person that want to achieve their success. When get active through the internet, we can gain a lot of knowledge and know the information from all around the world. By that, we will always can get the up-to-date information and news.	PC #1 SR/E
Paragraph 3	
Not only that, surfing through the internet also can help a student who also a daughter to become a good daughter. This is because nowadays, there're lot of girl students that want to learn cooking for their beloved family. So, internet will help them when they're searching the way how to cook something and find a lot of wonderful recipes. They can prepare the breakfast, the lunch and also the dinner for all of their family member. This will not only help to maintain a relationship but also can improve the relationship become tighten. By this also, a daughter can always show her loves to her parent.	PC #2 SR/E
Paragraph 4	
In addition, internet can give advantage and adopt great attitude among students. This is proof when there are a lot of students that have become great doctors, lawyers, engineers, teachers and business men. So, lot of students nowadays can gain information that really will help them to achieve their ambition. They can do the revision and also the exercises by online on the internet. Time also didn't waste on the bad deeds as the students busy with their revision through the internet. Time is gold and very precious so that parents can make sure their children were doing something beneficial that lead them to the way of successful. They can look on their children when their children surfing the internet and parents can have the chance to teach their children.	PC #3 SR/E
Paragraph 5	
After that, internet also helping the students to solve their problem by discussing their problems with their friends. The students also can express their feelings and problems to the online caunselor. They can have their chat with their teacher through the internet to ask them about the lesson that they're weak in. All of discussions about problems and also the lessons that they're weak in can be solve by having chats with the caunselor through internet apps like Instagram, Whats App, We Chat, Facebook and Telegram.	PC #4 SR/E
Conclusion	
As the conclusion, internet actually really give benefits and a lot of advantages to the students. The technology nowadays like internet will help to produce the generation that will lead our country to the success.	

Note: All errors from original writing are retained.

Scores	
Category	Count
Primary claims	4
Supporting reasons	4
Counterclaims	0
Supporting reasons	0

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Rebuttals	0
Supporting reasons	0

Anchor paper 2

"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Category
Introduction	
"The internet promotes an unhealthy culture among students. Yes, I agree. Nowadays, many people use internet especially among students. Internet can give many benefits for students but internet also give bad things for them. Students can use handphone, laptop, or go to cyber cafe if they want surfing internet.	FC Reservation
Paragraph 2	
Internet give many badness for students such as if they surfing internet then open youtube, they will watch bad videos likes gangster movie, and etc. This is can give effects for students such as unhealthy thinking, late go to bed, lazy do their homework, and they maybe will try what they watch on reality world.	PC #1 SR/E
Paragraph 3	
Internet very not suitable for students if they don't know to use internet in right way. Students will search bad contents in internet and then they follow it. Internet have Twitter, Facebook, WeChat, Telegrame and etc. They very excited to follow them and they maybe think plays internet is important than study.	PC #2 SR/E
Paragraph 4	
The internet promotes an unhealthy culture among students with is they will late go bed because play internet at midnight and lazy to do homework. They will sleepy at class and can't focus during teacher teaching in class.	PC #3 SR/E
Paragraph 5	
Internet also can make their relationship with family break. The time is gold and when the students always with gadjets the waste their time. Students can become agrecive with what they do.	PC #4 SR/E

Note: All errors from original writing are retained.

Scores	
Category	Count
Primary claims	4
Supporting reasons	4
Counterclaims	0
Supporting reasons	0
Rebuttals	0
Supporting reasons	0
Reservation	1

Anchor paper 3

"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Category
Introduction	
The internet promotes an unhealthy culture among students. I'm agree with this communique. As you know internet also have benefits but it have an unhealthy culture more than benefits. Students usually search about bad things such as search about how to steal, bullies and the others.	FC Reservation

	PC #1
This attitude will make students feel comfortable with that situation. They can make what they saw from the website. They can do it in their own reality. For to avoid this culture from students their parents have to take an action. Such as they have to control their children. But parents don't have to over control them.	SR/E
Futhermore, the internet will make our relationship with our family break. This happen because they who are students will with their handphone 24 hours. So time with family are gone. As you know, time is a gold. So students have to take this golden opportunity to be with their family. But you also have to know that not only students did this but their parents also. They do this because they cheat it from their idol.	PC #2 SR/E
From your knowledge, bullies are really worst in the school. This because students are free to do what ever they want it. So that they will not more afraid with their teachers anymore. They become stubborn and they will not take an advices from who are older from them. They just want to enjoy and do what are they want it.	SR/E for PC #1
Than, they will become more agrecif. They took to do this mood. From in there they will do it in their reality live. They will fight with others, such as they will be can't reproach and they will fight with who are reproach them. They will be known as school gangster.	SR/E for PC #1
An unhealthy culture from intrent is they will sleep at midnight. Because they did not recognize what are the time when they searching internet. From this, problem they will sleepy in the classroom. And this action will make them don't understand what are their teachers teach in front of. This will make their curriculum weak. because they will did not know what should they have to write in exam paper.	PC #2 SR/E
The conclusion is internet is unhealthy culture for students. So I advice you to did not involve in this unhealthy culture because it is not good for your future. These all of attitude will destroy of our future. But you also have to know that internet also have benefits. So that for your goodness you should use internet wisely.	

Note: All errors from original writing are retained.

Scores

Category	Count
Primary claims	4
Supporting reasons	4
Counterclaims	0
Supporting reasons	0
Rebuttals	0
Supporting reasons	0
Reservation	1

Anchor paper 4

"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Category
Introduction	
Internet is the most popular things in the world especially in our country. Internet can bring a lot of benefits to us. It is because when we want to find anything, we just have to press the button because "internet is on the fingers". We can find anything especialy it relates with our homeworks. It will save our time because we didn't have to go to another country to know about it if the homeowrks it is relates with the another country.	CA (counter-alternative) SR/E
The Internet also can improve our knowledge. When we have the internet, we can read anything and we also can "go around the world" through this internet. We can search anything such as the animals that we didn't see before, the plants, amd also their scenery. We didn't have to go there to know all this things but, just search in our computer.	CA (counter-alternative) SR/E
Besides that, we also can chats with our friends through this internet. We can ask them about the homeowrk, and it is especially to the students who are in the high school. They can help their friends such as send the notes that they didn't have opportunities to copy it and others.	CA (counter-alternative) SR/E
In order to have the internet, we have to use it wisely. It is because the internet might cause a lot of bad things especially to the students. Majority the students is on the mature life. They have just moved	PC #1 SR/E

	Category
from the childhoods life to the teenager life. They'll do anything in that time because they have just moved from the good life to the naughty.	
Internet also can bring the lazy attitude to the students. When they were playing with their computer, they'll ignore. Their family such as his/her mother told them to do anything such as to buy to him/her. It will make their attitude were rude with their parents.	PC #2 SR/E
Internet also can bring the bad culture to the students. When they have the internet, they'll find anything that they like whether it is good or bad. Almost the students will search the bad things such as the blue film. It can give a lot of effect to their studied.	PC #3 SR/E
So, I agree with this because it brought a lot of bad things to the students who are need to focus on their studied to get a flying colours.	FC

Note: All errors from original writing are retained.

Scores

Category	Count
Primary claims	3
Supporting reasons	3
Counterclaims	3
Supporting reasons	3
Rebuttals	0
Supporting reasons	0

Anchor paper 5

"Internet promotes an unhealthy culture amongst students. Do you agree or disagree?"	Category
Introduction	
I agreed with that because nowdays alot of bad things happened caused by person followed from the internet so much.	FC
The internet maybe good and bads for us because it could help you or maybe harm you too. It's up to you to use it in proper way or bad way.	Reservation
Internet is a networking that we use to find a lot of informations and data to help us finish our job or task. But, there a few bad things that internet could promotes an unhealthy culture among students.	CA RB
First, students could searches all things in internet include explicit contents. They will visit websites that have unproper images and visits porn sites. Their attitude will become so bad and their heart will dark. It may caused their's studies become worse and worse and it is not good for the students. As a students, we should searches just the good things that related with our studies.	PC #1 SR/E

Note: All errors from original writing are retained.

Scores

Category	Count
Primary claims	1
Supporting reasons	1
Counterclaims	1
Supporting reasons	0
Rebuttals	1
Supporting reasons	0

Appendix 4 - Typology of talk by Wegerif & Mercer (1997)

Type of talk	Characteristics	Analysis
Disputational	Characterized by disagreement and individualized decision making. There are few attempts to pool resources, to offer constructive criticism or make suggestions. Nobody offers suggestions or constructive criticism. High levels of competitiveness and criticality as participants defend their own positions.	Short exchanges, consisting of assertions and challenges or counter-assertions ('Yes it is.' 'No it's not!')
Cumulative	Speakers build positively but uncritically on what the others have said. Partners use talk to construct 'common knowledge' by accumulation. Conversationalists relate their contributions to what the other party has said, but this is done uncritically, but positively. Characterised by high levels of solidarity as participants desist from criticising one another.	Cumulative discourse is characterized by repetitions, confirmations and elaborations.
Exploratory	Partners engage critically but constructively with each other's ideas. Conducive relationships. Offering suggestions and statements for joint consideration. Arguments and counterarguments are justified, and alternative solutions and perspectives are offered.	Explanatory terms and phrases more common- for example 'I think', 'because/cause', 'if', 'for example' and 'also'

Appendix 5 - Date of intra-rating for dialogic interactions (Iteration 1)

	FIRST	SECOND	THIRD
G1			
D1	03/10/2016	10/11/2016	30/11/2016
D2	03/10/2016	10/11/2016	30/11/2016
D3	03/10/2016	10/11/2016	30/11/2016
G2			
D1	05/10/2016	12/11/2016	01/12/2016
D2	05/10/2016	12/11/2016	01/12/2016
D3	05/10/2016	12/11/2016	01/12/2016
G3			
D1	11/10/2016	14/11/2016	01/12/2016
D2	11/10/2016	14/11/2016	01/12/2016
D3	11/10/2016	14/11/2016	01/12/2016
G4			
D1	20/10/2016	17/11/2016	03/12/2016
D2	20/10/2016	17/11/2016	03/12/2016
D3	20/10/2016	18/11/2016	03/12/2016
D4	21/10/2016	20/11/2016	03/12/2016
D5	21/10/2016	20/11/2016	03/12/2016
G5			
D1	21/10/2016	20/11/2016	04/12/2016
D2	01/11/2016	20/11/2016	04/12/2016
D3	01/11/2016	20/11/2016	04/12/2016
G6			
D1	01/11/2016	26/11/2016	04/12/2016
D2	01/11/2016	26/11/2016	04/12/2016
D3	07/11/2016	29/11/2016	04/12/2016
D4	07/11/2016	29/11/2016	04/12/2016
D5	07/11/2016	29/11/2016	04/12/2016

Appendix 6–Participants' consent form

CONSENT FORM FOR RESEARCH

Title of Research Project

The integration of mobile assisted language learning (MALL) and Thinking Together approach to improve argumentative essay writing amongst secondary school students in Malaysia.

Details of Project

This project is about the use of Whatsapp discussion to help secondary school students in Malaysia to write better argumentative essay. I am a doctoral student in Exeter University and the data obtained will be used in my doctoral studies.

Contact Details

For further information about the research/interview data, please contact:

Name: *Aireen Aina binti Bahari*
Postal address: *University of Exeter, Heavitree Rd, Exeter EX1 2LU*
Telephone: 00 44 (0) *7835249487*
Email: *aabb201@exeter.ac.uk*

If you have concerns/questions about the research you would like to discuss with someone else at the University, please contact:
Professor Rupert Wegerif, R.B.Wegerif@exeter.ac.uk

Consent

I have been fully informed about the aims and purposes of the project.
I understand that:

There is no compulsion for me to participate in this research project and, if I do choose to participate, I may withdraw at any stage and may also request that my data be destroyed.

I have the right to refuse permission for the publication of any information about me.

Any information which I give will be used solely for the purposes of this research project, which may include publications or academic conference or seminar presentations.

If applicable, the information, which I give, may be shared between any of the other researcher(s) participating in this project in an anonymised form.

All information I give will be treated as confidential;

The researcher will make every effort to preserve my anonymity.

CONSENT FORM FOR RESEARCH

....
(Signature of participant)   (Date)

....
(Printed name of participant)

One copy of this form will be kept by the participant; a second copy will be kept by the researcher(s). Your contact details are kept separately from your interview data.

Appendix 7 – Certificate of Ethical Research

Ref (for office use only)

D/15/16/48

COLLEGE OF SOCIAL SCIENCES AND INTERNATIONAL STUDIES

When completing this form please remember that the purpose of the document is to clearly explain the ethical considerations of the research being undertaken. As a generic form it has been constructed to cover a wide-range of different projects so some sections may not seem relevant to you. Please include the information which addresses any ethical considerations for your particular project which will be needed by the SSIS Ethics Committee to approve your proposal.

Guidance on all aspects of the SSIS Ethics application process can be found on the SSIS intranet:
https://intranet.exeter.ac.uk/socialsciences/staff/research/researchenvironmentandpolicies/ethics/

All staff and postdoctoral students within SSIS should use this form to apply for ethical approval and then send it to one of the following email addresses:

ssis-ethics@exeter.ac.uk This email should be used by staff and postdoctoral students in Egenis, the Institute for Arab and Islamic Studies, Law, Politics, the Strategy & Security Institute, and Sociology, Philosophy, Anthropology.

gseethics@exeter.ac.uk This email should be used by staff and postdoctoral students in the Graduate School of Education.

Applicant details	
Name	AIREEN AINA BINTI BAHARI
Department	GRADUATE SCHOOL OF EDUCATION
UoE email address	aabb201@exeter.ac.uk

Duration for which permission is required
You should request approval for the entire period of your research activity. The start date should be at least one month from the date that you submit this form. Students should use the anticipated date of completion of their course as the end date of their work. Please note that <u>retrospective ethical approval will never be given.</u>

Start date: 13/04/2016	End date: 01/09/2017	Date submitted: 18/05/2016

Students only
All students must discuss their research intentions with their supervisor / tutor prior to submitting an application for ethical approval. The discussion may be face to face or via email.

Prior to submitting your application in its final form to the SSIS Ethics Committee it should be approved by your first and second supervisor / dissertation supervisor/tutor. You should submit evidence of their approval with your application, e.g. a copy of their email approval. |

Student number	630059993
Programme of study	EDD TESOL (FULL TIME)
Name of Supervisor(s)/tutors or Dissertation Tutor	PROF. RUPERT WEGERIF DR KERRY CHAPPELL
Have you attended any ethics training that is available to students?	NO. For example, the Research Integrity Ethics and Governance workshop: http://as.exeter.ac.uk/rdp/postgraduateresearchers

	If yes, please give the date of the training: NONE

Certification for all submissions

I hereby certify that I will abide by the details given in this application and that I undertake in my research to respect the dignity and privacy of those participating in this research. I confirm that if my research should change radically I will complete a further ethics proposal form.

AIREEN AINA BINTI BAHARI

Double click this box to confirm certification ☒

Submission of this ethics proposal form confirms your acceptance of the above.

TITLE OF YOUR PROJECT

The integration of mobile assisted language learning (MALL) and Thinking Together approach to improve argumentative essay writing amongst secondary school students in Malaysia.

ETHICAL REVIEW BY AN EXTERNAL COMMITTEE

No, my research is not funded by, or doesn't use data from, either the NHS or Ministry of Defence.

MENTAL CAPACITY ACT 2005

No, my project does not involve participants aged 16 or over who are unable to give informed consent (e.g. people with learning disabilities

SYNOPSIS OF THE RESEARCH PROJECT

Primarily, the study that I will conduct is to explore the impact of Thinking Together (TT) approach on secondary school students' argumentative essay writing in a secondary school in Malaysia. Specifically, its implementation will involve the use of mobile assisted language learning (MALL) which permits students to participate in Whatsapp group discussion using their mobile phone at home outside school hours. This study is an attempt to utilize a social tool such as Whatsapp that is frequently used by students outside school but not fully utilized for academic purposes. Whatsapp application will be used as all students have mobile phone and use the application. Usually, Whatsapp application is an informal tool used by teacher and students for their immediate connection about school-related announcement.

In the Malaysian Certificate of Education (MCE) (equivalent to General Certificate of Secondary Education (GCSE), secondary school students' English language ability is mostly determined by their writing skill which is judged within the argumentative essay they are required to write. This part contributes most of the mark for the exam. Due to its big impact, my overarching aim is to help them to write more effective argumentation in their exam. I will explore student-led online discussion using mobile assisted language learning (MALL) and investigate its links with individual written argument. I will do this in order to design an online intervention rich in meaningful discussion that will help future ESL students write better essays. In the context studied, classroom activities are exclusively teacher-led where student-led group discussion is sporadic. The main issue for not conducting student-led discussion is insufficient classroom time for such activity. Hence, online Thinking Together appears more appropriate in this context.

The study will address the research questions:

1. How can Thinking Together approach help ESL students to improve their argumentative essay writing?

2. What is the impact of online Thinking Together on individual student's argumentative essay writing? Is there any improvement in terms of (i) grade and (ii) evidence of argumentative indicators when comparing written essay in exploratory phase and evaluation phase?

3. What are the challenges or difficulties to participate in online Thinking Together using Whatsapp group?

INTERNATIONAL RESEARCH

This study will be conducted with a group of secondary school students in Malaysia. It will be fully conducted using online methods such as Whatsapp group and online interview with a secondary school teacher, examiners and 15 students. Information sheet and consent forms will be distributed to the school head teacher, parents, teacher and students. Ministry of Education in Malaysia prohibits the use of mobile phones in schools therefore this study will be conducted at students' home during their leisure time. The sample of students who participate in my study are mostly Muslims who need to attend prayers on certain time of the day hence I need to respect that and do not conduct online discussion during that time. Other than that, the school has made students' attendance in extra classes during school holidays as compulsory so I will not force any participation if they have to attend those classes on weekends or long holidays.

The following sections require an assessment of possible ethical consideration in your research project. If particular sections do not seem relevant to your project, please indicate this and clarify why.

RESEARCH METHODS

Data collection

PHASE 1
- Writing samples
- Student interviews & focus group interviews
- Teacher interview
- Examiner interviews

PHASE 2
- Online observation
- Collaborative writing
- Focus group interview

PHASE 3
- Writing samples
- Student & focus group interviews
- Teacher interview
- Examiner interviews
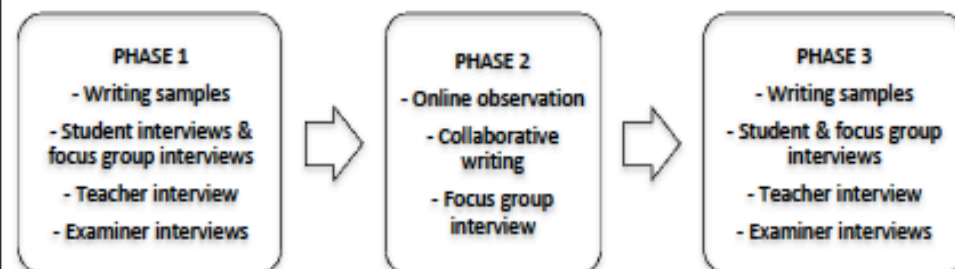
Phase 1:

In this phase, writing samples written by each participant will be gathered. The teacher participates in the study will conduct a face-to-face session to gather all participants to write the essay. She will write the title of the essay on the board and students will write a 350-essay within

one-hour duration as they have to do in MCE examination. Essays will be collected, scanned and e-mailed to the researcher. Before e-mailing all the writing samples to each examiner, researcher will delete all personal information written (i.e. name, class and school) and label each sample with participants' personal code. All writing samples will be marked and graded by two MCE examiners for English language subject who have at least 3 years of marking experience.

Then, online interview with the students (individual and focus groups) will only be conducted once the marks are ready. The online interview will investigate about the difficulties they have when writing that essay. Since the online interview will be conducted when students are at home, researcher must ensure to conduct the session when students are really free on that time to avoid disruption of the interview process. Researcher must inform each student, the estimated duration for the interview so student will make sure their mobile phone battery is enough and their family members will not disturb the session. Student must ensure the internet connection is stable and will not be disrupted within the session. Student should be advised to be in a quiet room where noise will be minimised and others will not hear the conversation if the audio messages will be used.

Online interviews with the teacher and examiners will be conducted using e-mail interview.

Phase 2 :

In this phase, which is also known as the intervention phase, students will be exposed to online Exploratory Talk where they will communicate with their group members in a Whatsapp group. Students will choose their own group members and each group will consist of three members. All groups are closed groups where only members can view the content and participate in the discussion. A few mini lesson plans (i.e ice-breaking activities, introducing Exploratory Talk, determining Ground Rules and practising Exploratory Talk) will be used to teach the students during the whole intervention phase. The researcher will join each group but will not interrupt the student-led discussion. Researcher will make field notes when observing the students and should inform the condition to the students so they will be alert that what they typed and shared during the online discussion will be monitored, analysed and used as the data in the study. All WhatsApp conversations will be exported to researcher's Google drive for data analysis process. Students will do collaborative writing after each discussion in the WhatsApp group.

Towards the end of the intervention phase, online focus group interviews will be conducted to investigate students' perceptions about the intervention.

Phase 3 :

In order to evaluate the outcome of the intervention, similar processes in phase 1 will be conducted. This time, mark obtained during the pre-intervention will be compared with the one obtained during the post-intervention. The findings will be discussed in the interviews with students, teacher and examiners in terms of their perspectives.

Next iteration:

The nature of this study is Design-based Research where the first iteration (phase 1, 2 and 3) will be tested again for the second iteration. A number of changes will be made to the learning

environment before they proceed to the second iteration. Students will be acknowledged on the new procedures (if there is any major changes) and they will be again reminded that they have the right to withdraw from the study if they decide not to continue their participation in the next iteration. In most cases, researcher must accept if participants wish to withdraw. However, if researcher wants students to re-engage, the persuasion must be taken with care without involving any force or threats.

PARTICIPANTS

One English language teacher who has 7 years of teaching experience will assist the researcher throughout this study by supplying information through interviews and informal conversation.

Students from six classes from the school has been informed about the study and all of them has been invited to participate. Each class is consisted of 25 to 35 students. Only a few students from two classes responded and volunteered to participate. Altogether, there are fifteen secondary school students from two different classes aged 16 and 17 will participate in this study voluntarily. Both classes are taught by the English language teacher who also participate in the study.

All of them are Malay students who use English as their second language. They are living in a specific region in north-east of Peninsular Malaysia that has their own unique dialect. Most of the time, the dialect is ordinarily understood by the people living within the social group. Since the dialect is widely practised in their social life, English is not a significant language to be proficient to communicate with family members, teachers, friends and the bigger community outside school. They are very proud of their dialect and they tend to use the dialect compared to the national language of the country that is standard Malay language. Furthermore, the participants live in sub-urban and rural area which do not use English language as the language is only used amongst people living in urban area. Researcher will not force them to use English if they prefer to use standard Malay language during the online interview. But they are not allowed to use language other than English during the online group discussion.

All participants learn English as one of the compulsory subject in Malaysian education system hence they are required to enrol in English classes and have national examination for the subject before they join higher education. They have limited use of spoken English and infrequently use the language for formal and informal communication purposes.

THE VOLUNTARY NATURE OF PARTICIPATION

Student participation is voluntary and consent form will be obtained from students, parents and head teacher prior to their participation in the study. Students, parents and head teacher will be informed that they can withdraw, withdraw their children or withdraw their students from

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participation in the study at any time without giving any reason or excuse for doing so at any time. Students will be recruited online. Consent form is needed as the activity that will be conducted is not usual in their normal learning context as they will use mobile phone to participate in student-led discussions. Both teacher and students do not have experience in using mobile phone for academic purposes therefore the consent form is crucial to inform the procedures used in this study and what they will do when participating in the study.

SPECIAL ARRANGEMENTS

NOT APPLICABLE

THE INFORMED NATURE OF PARTICIPATION

Students will be informed about the nature of the project through online text using Whatsapp. Translated information sheet in their first language which will mention some potential benefits and risks that they may have when participating in the study will be distributed to them. Translated consent forms will be provided to participants and other parties indirectly involved as English is not their first language. Students and parents will be acknowledged that they can withdraw or withdraw their children from participation in the study at any time. Reasons or explanations will not be required if they desire to terminate their participation.

ASSESSMENT OF POSSIBLE HARM

Mainly this study does not require researcher to physically travel to Malaysia to collect the data. Data collection will be conducted online with the teacher and students using Whatsapp group and online interview.

The main concern when using mobile phone to interact with secondary school students is the private space and time that may be interrupted by the researcher. Most of the time, students are required to participate in the discussion after school hours such as at home and during weekends. This may add some burdens to students as if they still have homework to do every day after school. In order to avoid this, researcher will minimize the impact of the research on the normal working and workloads of participants. Online activity will only be conducted when students do not have many homework to do on that day, do not have to attend extra classes or do not have any coming test or examination. Students have the right and freedom to choose the time and date to conduct the discussion. Students are allowed to agree or not to agree according to their choice whenever researcher suggests a time and date for them to engage in any activity. It will involve prolong interaction and activities in the online group for a few months therefore I will try my best to avoid from invading their privacy.

Students might feel uneasy when an outsider (the researcher) is asking about the difficulties they usually have when writing argumentative essay. I will not label them based on their writing abilities to avoid stress, humiliation or embarrassment. Individuals must be treated fairly, with

dignity and free from prejudice regardless of their grade and writing ability. Researcher should avoid mentioning particular weaknesses of each student directly when interviewing them. The grade obtained will not be shared with other students or school. Grades should not be exposed with the name of the students but only with the unique code. The interview will be conducted using both Malay and English language to ensure students feel relax and confident to respond to the questions and convey valuable and reliable information.

Both teacher and students do not have background knowledge about dialogic teaching therefore researcher will not give negative comment if they have difficulties to engage with the activities. Students will be using mobile phone at home as part of the requirement of this study, so if the parents do not allow them use mobile phones on certain time, researcher will not force or scold students for not doing so.

Students and teacher will not be forced or threatened to participate in the activities if they are not ready to do so. Every activity will only be conducted when everyone agrees to participate.

Students will receive some incentives when participating in the study in order to encourage them to participate in the online discussion, interviews and writing argumentative essays. Researcher will distribute some amount of money to each participant which they can use to pay for their internet connection used for the purpose of the study.

Participants will be informed that the findings gathered might be used in seminars, conferences and publication on the Internet and data will be always used in anonymous form. They also will be informed about the aims, methods and expected commitment required from them. BERA Revised Ethical Guidelines for Educational Research will be adhered in order to avoid any harm when participants follow all the procedures stated earlier.

DATA PROTECTION AND STORAGE

"Data Protection Notice - The information you provide will be used for research purposes and your personal data will be processed in accordance with current data protection legislation and the University's notification lodged at the Information Commissioner's Office. Your personal data will be treated in the strictest confidence and will not be disclosed to any unauthorised third parties. The results of the research will be published in anonymised form."

   (a) maintaining confidentiality and anonymity

      To ensure anonymity and confidentiality, each writing sample will be coded and the personal information written on each sample will be deleted when researcher e-mail each sample to the examiners. All essays will be identified by using personal code not individual name to guarantee anonymity and confidentiality. Students will be informed that any grade obtained will not affect their individual performance in school. Teacher needs to carefully explain that we are interested to find out how they write argumentative essay and not to test their writing skills as a whole as if in a school-based examination.

      To ensure confidentiality and privacy of the participants, one list of students' names and personal information will be kept in a secure and private location which is only accessible

by researcher. All interviews and field notes will be assigned pseudonyms and unique code and will be maintained throughout the study. All personal information will be strictly treated as highly confidential by ensuring the anonymity of each participant. Each student will be assigned an ID (personal code). For example : G1A (group 1, student A), G2B (group 2, student B), G3C (group 3, student C). I will ensure that no one knows who has said what in a report and participant information will be securely stored and shared. Additionally, any output will not allow any participant or institution to be recognized from their real names, data, contextual information or any combination of those mentioned. During the online interview, questions will not be asked regarding their personal information.

Researcher will not give negative comments on the teacher's lesson plans and the latest examination marks of the students.

(b) the security of the data
Hard copy data such as students' essays and consent forms and any document that matches the personal code of each student will be stored in rooms, cupboards and drawers which only be accessible by the researcher who keeps the keys. All data which will be kept in the computer will be secured by the username and password known only by the researcher. The laptop or computer contained the electronic data will be kept in a secured room where only the researcher can access and will be stored in my password-protected account on the University of Exeter U-drive. All copies of recorded interview will be destroyed when the study is completed. All data will be handled in a strict manner following the Data Protection Act (1998) and will not be linked to any real name of the participants. All data will be used only by me for the research purpose only.

(c) What will happen to the material at the end of the project?
After 5 years, all data will be destroyed. The content of interaction in 'Whatsapp Group' will be deleted after the duration of maximum 5 years. The 'Whatsapp Group' will be deleted when the study ends.

(d) Since each participant has their own personal code and the teacher will be given a pseudonym, no personal identifiable data will be published in any publication, seminar, conferences or training material.

DECLARATION OF INTERESTS

I have no interest to declare.

USER ENGAGEMENT AND FEEDBACK

The nature of a research that integrates Design-based Research (DBR) is that the researcher and practitioner will collaborate from the beginning until the end of the study. Therefore, the teacher participates in this study will be directly acknowledged about the outcomes of the study especially the grades obtained by students after the intervention. The students will also be informed about the outcome of their participation by showing them the grade they obtained for the pre and post essay writing. They can reflect if the project does any good to their writing performance in terms

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of grade determined by the outcome.

INFORMATION SHEET

All documents are attached in the e-mail.

(1) Participant information sheet (student)
Translated participant information sheet (student)

(2) Participant information sheet (teacher)

CONSENT FORM

All consent forms and translated consent form are attached in the email.

(1) Participant's consent form

Translated participants' consent form

(2) Head teacher's consent form

(3) Participant's parent/guardian consent form

Translated participants' parent/guardian consent form

(4) Teacher's consent form

SUBMISSION PROCEDURE

Staff and students should follow the procedure below.
In particular, students should discuss their application with their supervisor(s) / dissertation tutor / tutor and gain their approval prior to submission. Students should submit evidence of approval with their application, e.g. a copy of the supervisors email approval.

This application form and examples of your consent form, information sheet and translations of any documents which are not written in English should be submitted by email to the SSIS Ethics Secretary via one of the following email addresses:

Appendix 8 - Online observation

GROUP A

25/06/2016, 13:53:48: AA: <image omitted>
25/06/2016, 13:53:57: AA: Bullies (the persons who bully others) should be punished in front of other pupils in the school assembly. As a group, decide to agree or disagree. You have 30 minutes to discuss with your friends.
25/06/2016, 13:54:15: A 01: Agree
25/06/2016, 13:54:34: A 03: Agree
25/06/2016, 13:54:44: A 02: Agree
25/06/2016, 13:55:08: AA: Is that all?
25/06/2016, 13:55:41: A 03: Yes

GROUP B

25/06/2016, 15:33:28: AA: <image omitted> Living in the city is better than the village. As a group, do you agree or disagree?
25/06/2016, 15:34:26: AA: You have 30 minutes to talk about the topic with your friends
25/06/2016, 15:36:13: A 06: I disagree with the topic because i think that leave in village is more interesting than leave in city
25/06/2016, 15:37:22: A 04: I disagree too because leave in village can give us more benefit than leave in city .
25/06/2016, 15:38:20: A 05: Yes, I agree with both of you
25/06/2016, 15:38:38: A 06: 😂
25/06/2016, 15:38:44: A 04: Hahaha
25/06/2016, 15:38:47: A 06: Think
25/06/2016, 15:39:29: A 06: Why do you think so A 04?
25/06/2016, 15:41:15: A 04: Its because leave in village is so peaceful than leave in city that is full of crowded of people
25/06/2016, 15:41:16: A 04: 😅
25/06/2016, 15:41:45: A 05: In my opinion, lived in the city a lot of disadvantages of goodness
25/06/2016, 15:43:47: A 05: At village,we can get a fresh air and we will not be exposed to air pollution
25/06/2016, 15:51:52: A 04: Also we can avoid a traffic jam like in city
25/06/2016, 15:53:02: A 05: At village we can do a lot of activity with our family members
25/06/2016, 15:54:06: A 05: Yeah...traffic jammed make us stress
25/06/2016, 15:44:10: A 04: Yes . I agree with A 05
25/06/2016, 15:45:48: A 05: Yeah...100% agreed
25/06/2016, 15:55:30: A 06: Futhermore, in village we can see a beautiful view at some place.
25/06/2016, 15:56:59: AA: so all of you agree or disagree with the topic?
25/06/2016, 15:57:27: A 06: Disagree.
25/06/2016, 15:57:40: A 05: Disagree
25/06/2016, 15:59:51: A 04: Disagree teacher
25/06/2016, 15:59:53: AA: Do you have any different opinion, maybe?
25/06/2016, 15:59:58: A 04: No. Thats all teacher 😖

GROUP C

25/06/2016, 09:58:11: AA: Bullies (the persons who bully others) should be punished in front of other pupils in the school assembly. As a group, decide to agree or disagree. You have 30 minutes to discuss in your group.

25/06/2016, 09:58:32: A 07: I agree because supaya pembuli tak mengulangi kesalahan mereka

25/06/2016, 09:58:37: A 07: 😅

25/06/2016, 09:59:39: A 09: I agree with A 07 because they should know who the bullies

25/06/2016, 10:00:05: A 08: In my opinion,bullies should be punished in front of other pupils in the school assembly because other pupil will know the consequence if they bullies someone

25/06/2016, 10:00:28: A 07: Do we all agree ?

25/06/2016, 10:00:36: A 08: Yes

25/06/2016, 10:00:40: A 09: Yes i agree

25/06/2016, 10:01:00: A 09: Why do u think so A 07?

25/06/2016, 10:01:24: A 07: Like im say before 😅

25/06/2016, 10:09:04: A 07: I dont have idea 😅

25/06/2016, 10:10:00: A 08: As we can see,a lot of bully case happened nowadays

25/06/2016, 10:10:19: A 09: Then, what would we do?

25/06/2016, 10:10:20: A 08: not only secondary school students but also primary

25/06/2016, 10:10:23: A 08: Like we discussed just now,we should punished them in front of others

25/06/2016, 10:10:31: A 09: I think all of us agree with this.

Appendix 9 - The scheme of work showing the intertwining of theory from Design Framework 2, additional theory and fieldwork findings

Theory		Fieldwork findings from teachers and students	Intervention	
Design Framework 2	**Additional theory from literature review**		**Module**	**Scheme of work Suggested activities**
Students should take part in collaborative activities designed to promote active peer interaction.	Warm-up pre-online discussion activities is significant considering the absence of face-to-face contact. Hew & Cheung (2012)	Students had lack of skill engaging with group argumentation conducted in English language. Hence, the need to initially train students using the language considerably when communicating in the WhatsApp setting. (Classroom observations)	**1** **Ice-breaking**	*Group work –* Building rapport amongst students in an unconventional learning environment. Students leisurely discussing on random topics determined by each group member.
			2	

Students should participate in persuasive argumentation. Students need to be aware of the different forms of argumentation. Students should learn how to provide counterarguments and rebuttals to make their arguments persuasive. Students should be encouraged to engage with argumentation	Teacher needs to teach the features of formal argument explicitly as it cannot be learnt as readily from daily oral interchanges. (McCann, 1989)	Group argumentation confined to merely agree or merely disagree. (Online observations)	**Preparing for the Argument**	*Group discussion* – Discussing the argument schema or stratagem, its structure and examples.
	Students need to be taught how to argue with others by addressing different point of views. (Teasley, 1995)			Exhibiting the responsibility of each group member to contribute to group argumentation by providing opposing ideas.
	Students must be exposed to the functional rhetorical moves or argument stratagems (Anderson et al., 2001)			

that is based on Exploratory Talk.				
Students should be encouraged to engage in argumentation that is based in dialogic talk. Students need to be aware of the way in which to engage in dialogic talk. Students should follow ground rules to encourage them	There are probabilities that argumentation can transfer into quarrels or debates that focus on winning or losing the argument. (Chinn & Clark, 2013)	Students did not know how to participate in group argumentation. Students did not use English language to communicate.	**3** **Setting the Ground Rules**	*Group work* – Establishing Ground Rules democratically. Students distinguishing bad and good rules. Students list down 10 good Ground Rules.
		Students were not interested to participate in group argumentation. (Teacher interviews) Students were passive and limited group argumentation was observed in all groups.	**4** **Importance of Ground Rules**	*Group work* – Discussing the importance of each good Ground Rules by giving justifications and examples.

to participate in Exploratory Talk.		(Online and classroom observations)		
	Teachers should aim to create environments that strongly encourage deep rather than superficial discussions. (Chinn & Clark, 2013)	Students did not have experience arguing in small groups. (Teacher interviews) Students either engaged in one-to-one discussion rather than group discussion or just remained quiet and waited for others to share their opinions.	**5** **Arguing in Threes** **(teacher-selected topics)**	*Collaborative argumentation in threes –* Students applying the argument schema or stratagem by considering the agreed Ground Rules. The topics of discussion were selected by the teacher.
		Students did individual writing to share their	**6**	

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		opinions rather than discussing with others. (Classroom observation)	**Arguing in Threes (student-selected topics)**	*Collaborative argumentation in threes –* Students applying the argument schema or stratagem by considering the agreed Ground Rules. The topics of discussion were selected by the students.

Appendix 10 - Scheme of work for   Iteration 1

THINKING TOGETHER LEARNING MODULES

Module 1

Ice-breaking activity

Topics of discussion :
1. What I did last school holidays
2. My favourite teacher in school
3. Favourite food when I visited (choose one state in Malaysia)
4. My pet
5. My hobby
6. My experience when I went (camping/fishing/hiking/travelling)

Step 1 : Each group member selected a topic from the lists given to them:
- Student A : What I did last school holidays
- Student B : My hobby
- Student C : My pet

Step 2 : Student A asked questions to student B about his/her hobby. Example :

1. What is your hobby?
2. Why is (hobby) your favourite?
3. When do you usually do your (hobby)?

Step 3 : Student B asked questions to student C about his/her pet.

Step 4 : Student C asked questions to student A about his/her activity during last school holidays.

Slide 5:

What I did last school holidays.

A

My pet.

C

My hobby.

B

Slide 6:
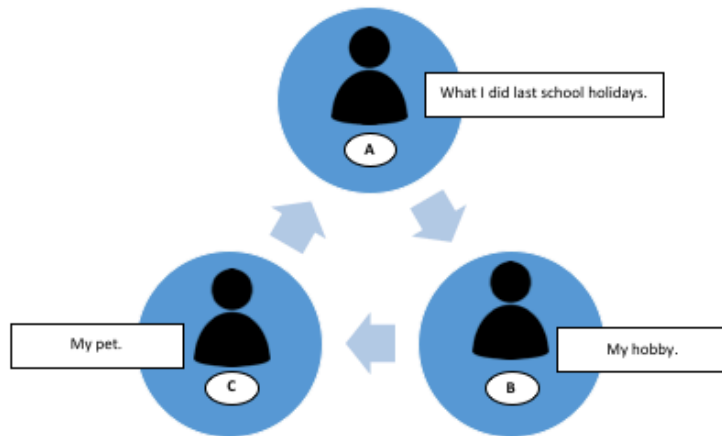
Module 2

Good rules Part 1

Slide 7:

Step 1 :
Students were presented with some bad rules and good rules in each round (round 1 - 6)

Step 2 :
Students were asked to tell which rule is good or bad

Step 3:
Students gave reason why they think the rule is good or bad

Step 4 :
Students wrote down 10 good Ground Rules they must follow during discussion in their notebook

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Slide 8:

ROUND 1 :

❑ Make sure the group agrees with the final decision after discussing
❑ Discuss as quickly as you can so that you get finished
❑ If you hear a good reason, you can change your mind

ROUND 2 :

❑ Ask for reasons why
❑ If people disagreed with your ideas, you must fight back and give reasons
❑ Force others to accept your idea
❑ Discuss all the alternatives before deciding

ROUND 3 :

❑ Ask everyone in turn for their opinion
❑ You should always agree with your friends
❑ No one can change their mind

ROUND 4 :

❏ We try to beat each other in the group
❏ The group tries to agree before making a decision
❏ Think about the idea gave by friend and discuss it

ROUND 5 :

❏ Respect other people's ideas
❏ Other friend's opinion is not important - you know what is the best!
❏ If someone gives a reason and you don't think is good, you should question it

ROUND 6 :

❏ The best student should decide
❏ Be prepared to change your mind - it shows you have focussed and can accept good reasons
❏ The most clever person should dominate the discussion

GROUND RULES
1)
2)
3)
4)
5)
6)
7)
8)
9)
10)

Module 3

Ground Rules Part 2

Step 1 :

Students were asked to tell the importance of Ground Rules.

Step 2:

Teacher highlighted the ideas that in WhatsApp group argumentation :

❏ You are welcome to disagree with a friend's idea but you must provide good reason
❏ When a friend disagrees with your idea, you must fight back with good reasons
❏ Everyone should give ideas

Slide 13:

Module 4

Argument schema

13

Slide 14:

Step 1 :
Teacher shows some examples of argumentation to students.

Step 2:
Teacher explains the structure of argumentation (argument - counterargument - rebuttal)

Step 3:
Teacher models some examples of argument schema to be used during group argumentation

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Slide 15:

School children should not have long school holidays. As a group, do you agree or disagree?

Lina	This topic is interesting, right?	
Lee	Lina, what is your opinion?	Lee asked Lina's opinion about the topic.
Lina	I agree with the topic. Students play a lot during school holidays.	Lina gave a reason why she agreed with the topic.
Tony	But, I study more during holidays with my sister at home. During school days, I not study with my sister at home. We are too tired after school.	Tony disagreed or did not like Lina's idea. Tony gave his reason why he disagreed with Lina.
Lina	But some students do not study during school holidays.	Lina fought back Tony's idea.

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Slide 16:

LINA (opinion)

TONY (disagree)

LINA (fight back)

16

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Slide 17
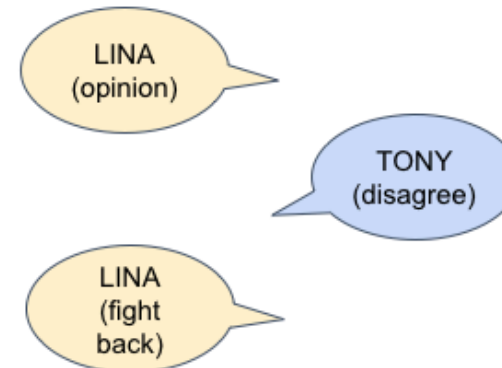
Lee	I think I will disagree like Tony. Holidays are important too.	Lee gave reasons why he disagreed.
Lina	Why do you think so, Lee?	Lina asked Lee to give his reason.
Lee	I can relax from going to school. I have more energy to study at night.	Lee gave reasons why he disagreed.
Lina	But you can also relax after going back from school.	Lina disagreed or did not like Lee's idea.
Lee	No. I go for tuition after school.	Lee fought back Lina's idea.

Slide 18

LEE (opinion)

LINA (disagree)

LEE (fight back)

Slide 19
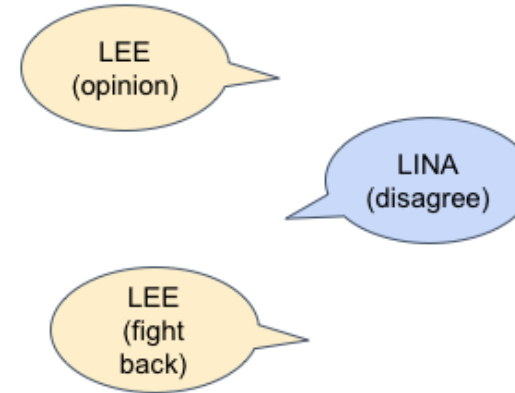
Argument schema or stratagem

I agree with _____ because _____

I disagree because _____

Why do you think so?

_____, what is your opinion?

What is your reason?

Anymore ideas to share?

Slide 20

Module 5

Collaborative argumentation

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Slide 21

Students are reminded to :
- ask why questions
- disagree with their friend's ideas
- fight back when somebody disagrees with you
- follow the Ground Rules
- use the argument schema

Slide 22

Topic 1
"Bullies in school should be punished in front of others during school assembly."
As a group, do you agree or disagree?

Slide 23

Topic 2
"Living in the city is better than the village."
As a group, do you agree or disagree?

Slide 24

Topic 3

"School students should not have long school holidays."
As a group, decide to agree or disagree.

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Topic 4

"Parents spend enough time with their children nowadays."
As a group, decide to agree or disagree.

25

Topic 5

"Sports and games are not important for students because they are not included in their exams."
As a group, decide to agree or disagree.

26

Topic 6

"The internet does not help students in their studies."
As a group, decide to agree or disagree.

27

Topic 7
"School students should have part-time jobs during school holidays."
As a group, decide to agree or disagree.

28

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Topic 8
"Students should not wear school uniforms to school."
As a group, decide to agree or disagree.

Topic 9
"Students should walk to school."
As a group, decide to agree or disagree.

Topic 10
"Students should bring their own food to school."
As a group, decide to agree or disagree.

Appendix 11 - Scheme of work for Iteration 2

MODULE 1
Ice-breaking

Face-to-face classroom activities

❏ Phase 1 : Classroom briefing
Teacher writes the title of the discussion on the board. Teacher randomly groups the students in a group of four. Teacher explains the purpose of grouping is for them to debate in small groups. In each group, two students will take a position to agree and two students to disagree.

❏ Phase 2 : Collecting ideas in pairs
Students are provided with a worksheet according to their stance (agree or disagree). Besides writing their own reasons, students can ask their mother, father, brother, sister, cousin and teacher to give ideas and write their reasons in the table.

❏ Phase 3 : Explaining how to participate in a group argumentation
Teacher briefly explains how to participate in the group argumentation according to the argument - counterargument - rebuttal structure. Teacher shows example how students should take turn to provide arguments by filling in the argument diagram. Teacher asks students to use the reasons they have gathered in Phase 2.

1

2

Slide 1

Student's worksheet for
Phase 2 :

We AGREE that schools should start at 8.30 until 3.30 because :
1.
2.
3.
4.
5.

We DISAGREE that schools should start at 8.30 until 3.30 because :
1.
2.
3.
4.
5.

1

Slide 2

School should start at 8.30 and finish at 3.30. Do you agree or disagree?

We say

In my opinion, school should start at 8.30 and finish at 3.30 because I will have time to eat breakfast at home.

Your opinion, belief, stand, position, view, feeling or idea.

Objection, dislike, protest, doubt or disagreement.

I do not like the idea because you can bring your breakfast from home and eat it at 10 during recess.

They say

Fight back

But I think 10 o'clock is late already to eat breakfast. I want to eat my breakfast at 7.30 before I go to school.

Fight back or backup your first idea.

2

Slide 3

In my opinion, school should start at 8.30 because _____ .

I do not like the idea because _____ .

But I think _____ .

3

Slide 4

Student's worksheet for Phase 3 :

We say

They say

Fight back

4

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Slide 7
MODULE 2
Ground Rules Part 1

Slide 8
GROUND RULES
Number 1

Slide 9
Criticise ideas, not people.

Slide 10
GROUND RULES
Number 2

Slide 11
REASON

Maizan

DISAGREE

?

BACKUP

Maizan

Slide 12
Student must eat breakfast before going to school. Do you agree or disagree?

REASON

I disagree because I do not like to eat in the morning.

Maizan

DISAGREE

I disagree with Maizan because eating breakfast is very important. So you can focus in class.

Daniel

BACKUP

I know but I will have stomach ache if I eat in the morning.

Maizan

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13

14

GROUND RULES

Number 3

15

16

17

18

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Slide 19

MODULE 3
Ground Rules Part 2

Slide 20

GAME TIME!

Slide 21

Argument game

Which one is correct?

Slide 22

Students should not wear school uniform. Do you agree or disagree?

REASON	DISAGREE	BACKUP
I agree because I do not like to wear white baju kurung or shirt to school. It gets dirty easily.	❑ I disagree because my school uniform is pretty. ❑ I disagree because white colour is my favourite.	But it is difficult to take care of white clothes especially when eating sambal. Very difficult to wash.

Slide 23

Students should read English story books everyday. Do you agree or disagree?

REASON	DISAGREE	BACKUP
I disagree because I do not understand some English vocabulary.	❑ I disagree because you can use dictionary to search for the meaning of words. ❑ I disagree because reading is a good activity.	But I do not know how to use dictionary. My teacher does not teach me how to use it.

Slide 24

Students should eat nasi lemak for breakfast everyday. Do you agree or disagree?

REASON	DISAGREE	BACKUP
I agree because nasi lemak can make us full in the morning.	❑ I disagree because nasi lemak will make us fat if we eat everyday. ❑ I disagree because I love to eat.	But my mom cooks nasi lemak everyday for breakfast.

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Slide 25:

Students should bring their handphone to school. Do you agree or disagree?

REASON

I agree because I can call my father to pick me up from school.

DISAGREE

❏ I disagree because I love to use handphone to search for information.

❏ I disagree because not all students can afford to have a handphone.

BACKUP

But we can use the handphone to call our parents if we have emergency.

Slide 26:

MODULE 4
Arguing in fours

Slide 27:

Before we start……

Everyone should have at least 3 reasons why they agree or disagree. Think of some examples to backup your reasons.

Slide 28:

Everyone should have this argument diagram.

We say

They say

Fight back

Slide 29:
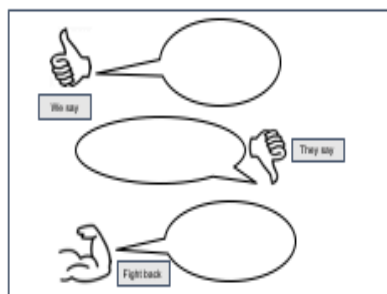
TOPIC 1
School students should watch television from 8 to 9 o'clock every night so they can release their stress.

Do you agree or disagree?

Slide 30:

TOPIC 2
Students should eat nasi lemak for breakfast everyday.

Do you agree or disagree?

266

TOPIC 3
School students should bring their mobile phone to school.

Do you agree or disagree?

31

TOPIC 4
Students should sleep at 9 o'clock every night.

Do you agree or disagree?

32

TOPIC 5
School students should go to the school library after school to read storybooks every day.

Do you agree or disagree?

33

TOPIC 6
School students should have part-time job during school holidays.

Do you agree or disagree?

34

TOPIC 7
Every Form 1 student should join tuition classes every Friday and Saturday morning.

Do you agree or disagree?

35

TOPIC 8
School students should not wear school uniform to school.

Do you agree or disagree?

36

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TOPIC 9
Everybody should have a cat as their pet (binatang peliharaan) at home.

Do you agree or disagree?

TOPIC 10
Boys need to learn to cook.

Do you agree or disagree?

Appendix 12 - Example of inter-rater reliability for pre-intervention essays

Iteration 1

	Raters							
G101	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	I	I	I	1	1	1	3/3	1
L2	FC	FC	FC	1	1	1	3/3	1
L3	PC #1	PC #1	PC #1	1	1	1	3/3	1
L4	I	I	SR/E #1	1	0	0	1/3	0.34
	Paragraph 2							3.34
L1	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
L2	I	SR/E #1	I	0	1	0	1/3	0.34
L3	SR/E #1	I	PC #2	0	0	0	0/3	0
L4	SR/E #1	SR/E #1	SR/E #2	1	0	0	1/3	0.34
	Paragraph 3							1.68
L1	PC #2	PC #2	PC #3	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	I	1	0	0	1/3	0.34
L3	SR/E #2	SR/E #2	I	1	0	0	1/3	0.34
L4	SR/E #2	SR/E #2	I	1	0	0	1/3	0.34
	Paragraph 4							2.02
L1	PC #3	I	PC #4	0	1	0	1/3	0.34
L2	SR/E #3	I	SR/E #4	0	1	0	1/3	0.34
L3	I	I	SR/E #4	1	0	0	1/3	0.34
L4	I	I	I	1	1	1	3/3	1
L5	I	I	SR/E #4	1	0	0	1/3	0.34
	Paragraph 5							2.36
L1	PC #4	PC #4	PC #5	1	1	1	3/3	1
L2	SR/E #4	I	SR/E #5	0	1	0	1/3	0.34
L3	SR/E #4	SR/E #4	SR/E #5	1	1	1	3/3	1
L4	SR/E #4	SR/E #4	SR/E #5	1	1	1	3/3	1
								3.34
G102	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
L2	I	I	I	1	1	1	3/3	1
	Paragraph 2							2
L1	R	R	R	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
L3	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 3							3
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
	Paragraph 4							2
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
L4	R	R	R	1	1	1	3/3	1
	Paragraph 5							3
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L2	SR/E #4	SR/E #4	SR/E #4	1	1	1	3/3	1
	Paragraph 6							2
L1	PC #5	PC #5	PC #5	1	1	1	3/3	1
L2	R	R	R	1	1	1	3/3	1
L3	SR/E #5	SR/E #5	SR/E #5	1	1	1	3/3	1
								3
G103	Rater 1	Rater 2	Rater 3	R1/R2	R1/R3	R2/R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
	Paragraph 2							1
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 3							2
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1

	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
Paragraph 4								2
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
Paragraph 5								2
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L 2	SR/E #4	SR/E #4	SR/E #4	1	1	1	3/3	1
								2
G201	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Paragraph 1								
L1	I	I	I	1	1	1	3/3	1
L2	FC	FC	FC	1	1	1	3/3	1
Paragraph 2								2
L1	PC #1	PC #!	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
								2
G202	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Paragraph 1								
L1	FC	FC	FC	1	1	1	3/3	1
Paragraph 2								1
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	Rep	Rep	Rep	1	1	1	3/3	1
L3	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
Paragraph 3								3
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
								2
G203	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Paragraph 1								
L1	FC	FC	FC	1	1	1	3/3	1
Paragraph 2								1
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
Paragraph 3								2
L1	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
								1
G301	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Paragraph 1								
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
Paragraph 2								2
L1	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
Paragraph 3								1
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
Paragraph 4								2
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	Reservation	I	Reservation	0	1	0	1/3	0.34
								1.34
G302	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Paragraph 1								
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
L3	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
L4	Reservation	Reservation	Reservation	1	1	1	3/3	1
Paragraph 2								4
L1	I	I	I	1	1	1	3/3	1
L2	I	I	I	1	1	1	3/3	1
L3	PC #2	PC #2	PC #2	1	1	1	3/3	1
L4	PC #3	PC #3	PC #3	1	1	1	3/3	1
L5	SR/E #3	I	SR/E #3	0	1	0	1/3	0.34
L6	SR/E #3	I	SR/E #3	0	1	0	1/3	0.34
Paragraph 3								4.68
L1	I	I	I	1	1	1	3/3	1
Paragraph 4								1
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1

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	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
L2	SR/E #4	I	SR/E #4	0	1	0	1/3	0.34
L3	I	SR/E #4	I	0	1	0	1/3	0.34
	Paragraph 5							1.68
L1	I	I	I	1	1	1	3/3	1
								1
G303	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
L3	SR/E #1	I	SR/E #1	0	1	0	1/3	0.34
L4	CA #1	I	CA #1	0	1	0	1/3	0.34
L5	RB #1	I	RB #1	0	1	0	1/3	0.34
L6	SR/E - RB	SR/E #1	SR/E - RB	0	1	0	1/3	0.34
	Paragraph 2							3.36
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	PC #3	SR/E #2	0	1	0	1/3	0.34
	Paragraph 3							1.34
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	I	SR/E #3	0	1	0	1/3	0.34
								1.34
G401	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Introduction							
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	I	PC #1	0	1	0	1/3	0.34
L3	CA #1	-	SR/E #1	0	0	0	0/3	0
L4	RB #1	PC #1	RB #1	0	1	0	1/3	0.34
L5	SR/E - RB	PC #1	SR/E - RB	0	1	0	1/3	0.34
	Paragraph 2							2.02
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
L3	SR/E #2	SR/E #2	CA	1	0	0	1/3	0.34
	Paragraph 3							2.34
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
L3	SR/E #3	SR/E #3	CA	1	0	0	1/3	0.34
	Paragraph 4							2.34
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L2	SR/E #4	SR/E #4	SR/E #4	1	1	1	3/3	1
	Paragraph 5							2
L1	PC #5	PC #5	PC #5	1	1	1	3/3	1
L2	SR/E #5	SR/E #5	SR/E #5	1	1	1	3/3	1
L3	SR/E #5	SR/E #5	CA	1	0	0	1/3	0.34
L4	SR/E #5	SR/E #5	SR/E #5	1	1	1	3/3	1
								3.34
G402	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
L3	Reservation	Reservation	Reservation	1	1	1	3/3	1
L4	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 2							4
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
L3	SR/E #2	PC #3	I	0	0	0	0/3	0
L4	SR/E #2	SR/E #3	I	1	0	0	1/3	0.34
	Paragraph 3							2.34
L1	SR/E #2	PC #4	SR/E #2	0	1	0	1/3	0.34
L2	SR/E #2	SR/E #4	SR/E #2	1	1	1	3/3	1
	Paragraph 4							1.34
L1	PC #3	PC #5	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #5	SR/E #3	1	1	1	3/3	1
	Paragraph 5							2
L1	PC #4	PC #6	PC #4	1	1	1	3/3	1
L2	SR/E #4	SR/E #6	SR/E #4	1	1	1	3/3	1
L3	SR/E #4	I	SR/E #4	0	1	0	1/3	0.34

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								2.34
G403	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Introduction							
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
	Paragraph 2							2
L1	SR/E #1	PC #2	SR/E #1	0	1	0	1/3	0.34
L2	R	R	R	1	1	1	3/3	1
L3	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 3							2.34
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
L3	SR/E #2	PC #3	SR/E #2	0	1	0	1/3	0.34
	Paragraph 4							2.34
L1	SR/E #2	SR/E #3	SR/E #2	1	1	1	3/3	1
L2	SR/E #2	PC #4	SR/E #2	0	1	0	1/3	0.34
L3	SR/E #2	SR/E #4	SR/E #2	1	1	1	3/3	1
L4	SR/E #2	SR/E #4	SR/E #2	1	1	1	3/3	1
	Paragraph 5							3.34
L1	PC #3	PC #5	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #5	SR/E #3	1	1	1	3/3	1
								2
G501	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Not an argumentative essay							
								3
G502	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
L2	PC #1	PC #1	PC #1	1	1	1	3/3	1
	Paragraph 2							2
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
	Paragraph 3							2
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
	Paragraph 4							2
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L2	SR/E #4	SR/E #4	SR/E #4	1	1	1	3/3	1
	Paragraph 5							2
L1	PC #5	PC #5	PC #5	1	1	1	3/3	1
L2	PC #6	PC #6	PC #6	1	1	1	3/3	1
								2
G503	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 1							
L1	FC	FC	FC	1	1	1	3/3	1
	Paragraph 2							1
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 3							2
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
	Paragraph 4							2
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
	Paragraph 5							2
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L2	SR/E #4	SR/E #4	SR/E #4	1	1	1	3/3	1
								2
G601	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
	Paragraph 2							
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
	Paragraph 3							2
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	PC #3	1	0	0	1/3	0.34
	Paragraph 4							1.34

	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
L1	PC #3	PC #3	PC #4	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #4	1	1	1	3/3	1
Paragraph 5								2
L1	PC #4	PC #4	PC #5	1	1	1	3/3	1
L2	SR/E #4	SR/E #4	SR/E #5	1	1	1	3/3	1
Paragraph 6								2
L1	PC #5	PC #5	PC #6	1	1	1	3/3	1
L2	SR/E #5	SR/E #5	SR/E #6	1	1	1	3/3	1
Conclusion								2
L1	FC	FC	FC	1	1	1	3/3	1
								1
G602	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Introduction								
L1	FC	FC	PC #1	1	0	0	1/3	0.34
Paragraph 2								0.34
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
Paragraph 3								2
L1	PC #2	PC #2	PC #3	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #3	1	1	1	3/3	1
								2
G603	Rater 1	Rater 2	Rater 3	R1 / R2	R1 / R3	R2 / R3	Agreement	
Introduction								
L1	FC	FC	FC	1	1	1	3/3	1
Paragraph 2								1
L1	PC #1	PC #1	PC #1	1	1	1	3/3	1
L2	SR/E #1	SR/E #1	SR/E #1	1	1	1	3/3	1
Paragraph 3								2
L1	PC #2	PC #2	PC #2	1	1	1	3/3	1
L2	SR/E #2	SR/E #2	SR/E #2	1	1	1	3/3	1
L3	CA	SR/E #2	CA	0	1	0	1/3	0.34
L4	RB	SR/E #2	RB	0	1	0	1/3	0.34
L5	SR/E - RB	SR/E #2	SR/E - RB	0	1	0	1/3	0.34
Paragraph 4								3.02
L1	PC #3	PC #3	PC #3	1	1	1	3/3	1
L2	SR/E #3	SR/E #3	SR/E #3	1	1	1	3/3	1
L3	I	I	I	1	1	1	3/3	1
Paragraph 5								3
L1	PC #4	PC #4	PC #4	1	1	1	3/3	1
L2	SR/E #4	I	SR/E #4	0	1	0	1/3	0.34
L3	SR/E #4	I	SR/E #4	0	1	0	1/3	0.34
L4	SR/E #4	I	SR/E #4	0	1	0	1/3	0.34
Paragraph 6								2.02
L1	PC #5	PC #5	PC #5	1	1	1	3/3	1
L2	SR/E #5	SR/E #5	SR/E #5	1	1	1	3/3	1
								2

G101 (12.74) + G102 (15) + G103 (9) + G201 (4) + G202 (6) + G203 (4) + G301 (6.34) + G302 (12.36) + G303 (6.04) + G401 (12.04) + G402 (12.02) + G403 (12.02) + G501 (8) + G502 (10) + G503 (9) + G601 (10.34) + G602 (4.34) + G603 (13.04) : 166.28
/
G101 (21) + G102 (16) + G103 (9) + G201 (4) + G202 (6) + G203 (4) + G301 (7) + G302 (15) + G303 (10) + G401 (17) + G402 (15) + G403 (14) + G501 (8) + G502 (10) + G503 (9) + G601 (11) + G602 (5) + G603 (17) : 198

Mean : 166.28/198 = 0.84
The inter-rater reliability is 84%.

Appendix 13 - Students post-intervention questionnaire responses for Iteration 2

ADVANTAGES OF WHATSAPP

			My mobile phone is not suitable to do this activity
	DISAGREE	**AGREE**	**WHY**
G101	/		No, because I bought a specific phone to use WhatsApp
G102	/		Because it was easier to find the meaning of words using mobile phone
G201	/		Because my mobile phone is expensive and I can save all the notes (pictures) given by teacher
G202	/		No, I can save all the pictures in my phone
G203	/		My phone is suitable for this activity
G204	/		Because my phone did not have any problem
G301	/		Suitable because I use touch screen mobile phone
G302	/		Because it is a learning activity that I really like.
G303		/	Because I did not have my own mobile phone
G304	/		Because my mobile phone is suitable for this activity
G401	/		My phone has WhatsApp
G402	/		Because I can use WhatsApp using my phone
G403	/		Because my phone is big. Therefore I can use it comfortably.
G404	/		Because I use a suitable phone for this activity

			Discussing in WhatsApp group is not interesting
	DISAGREE	**AGREE**	**WHY**
G101	/		No, because when I use WhatsApp to discuss, I can send pictures and many more
G102		/	Because internet was so slow
G201		/	Because it was difficult to do online discussion
G202		/	Because I did not like online discussion
G203	/		Because it helps me to complete my essay
G204	/		Because I think I can get a lot of benefits and I don't have any problem when I learn using WhatsApp
G301	/		If I discuss face-to-face, I feel shy
G302	/		Because it eases us to discuss.
G303		/	Because I did not like to learn using mobile phone
G304	/		Because it can improve my knowledge in English language
G401	/		Because the questions given by my teacher were easy
G402		/	Because the questions given were difficult for me
G403		/	Because the questions given by my teacher were very difficult
G404	/		Because I perceive this activity as very beneficial and helps me to write essays

DISADVANTAGES OF WHATSAPP

STUDENTS' PERCEPTIONS OF THE INTERVENTION

			I don't like this activity
	DISAGREE	**AGREE**	**WHY**
G101	/		No, because I can increase my knowledge through this activity
G102	/		Because this activity improved my potential
G201		/	Because it disturbed my daily activities
G202		/	Sometimes this activity was conducted for more than one hour
G203		/	Because some friends could not go online
G204	/		Because can increase more knowledge
G301	/		Because I can spend my free time.
G302	/		This activity is an additional learning
G303		/	Because this activity did not follow the initial time assigned
G304	/		Because it gave me a lot of benefits
G401	/		Because it keeps my mind active
G402	/		Because I need to think
G403	/		Because I need to think a lot
G404	/		Because I can share ideas with friends

			This activity is boring
	DISAGREE	AGREE	WHY
G101	/		No, because I have other friends to do the activity
G102	/		Because it can fulfill my free time
G201		/	Because sometimes not everyone eas online to give ideas
G202		/	There will be at least one person would not be online
G203	/		I like to discuss with my friends
G204	/		Because I like to participate in this activity because this was my first time involved with online activities
G301	/		Because it is very interesting
G302	/		Because this activity makes me excited to learn
G303		/	Because sometimes when I wanted to answer, teacher was not available
G304	/		Because we can increase our knowledge
G401	/		
G402		/	Because the ideas given were not interesting
G403		/	Because it is difficult for others to go online
G404	/		Because this activity fills up my free time

			This activity is not beneficial to me
	DISAGREE	AGREE	WHY
G101 (Dan)	/		No, because this activity helps me to write my essay
G102 (Mai)	/		Because this activity tested my thinking
G201 (Far)	/		Because it taught me to be punctual when teacher set the time of our discussion
G202 (Sya)	/		This activity was beneficial because it taught me how to be punctual
G203 (Em)	/		I learned a lot of vocabularies.
G204 (Ada)	/		Because this activity was very beneficial for me.
G301 (El)	/		This activity is very beneficial because it improves my general knowledge
G302 (Naj)	/		This activity is very beneficial.
G303 (Uma)	/		This activity improves my learning experience
G304 (Mun)	/		Because it increased my knowledge when we discussed
G401 (Ain)	/		Because I learn new words from my friends
G402 (Yan)	/		Because I learnt to use English words
G403 (Ai)	/		Because it can increase my knowledge
G404 (Jaw)	/		Because I am able to complete my essays

			This activity does not improve my English language skill
	DISAGREE	AGREE	WHY
G101 (Dan)	/		No, because I become more fluent in English when I always use English during WhatsApp discussion
G102 (Mai)	/		With this activity, I can improve my English language skill
G201 (Far)	/		Because I learned a lot of new words in the discussions
G202 (Sya)	/		No, this activity improved my mark when writing essay
G203 (Em)	/		When I discuss, I learnt many new words

	DISAGREE	AGREE	WHY
G204 (Ada)	/		Because before I joined this activity, my English skill was poor but after that, I understand more English words.
G301 (El)	/		It helps to improve my English language skill with this kind of activity
G302 (Naj)	/		This activity is very important for me because I wanted to improve my English language skill
G303 (Uma)	/		I learned new English words
G304 (Mun)	/		Because this activity used a lot of English words
G401 (Ain)	/		I can write longer now.
G402 (Yan)	/		Because I learnt a lot of new words
G403 (Ai)	/		Because I learnt new words and understand more.
G404 (Jaw)	/		Because I learnt from my mistakes

I feel more confident to give/share my personal opinions after participating in this activity			
	DISAGREE	AGREE	WHY
G101 (Dan)		/	Yes, because I become more skillful to use English language
G102 (Mai)		/	Because I understood how to do the discussion
G201 (Far)		/	Because I obtained a lot of knowledge
G202 (Sya)	/		Because this activity was not related to our examination
G203 (Em)		/	Because all my answers are OK
G204 (Ada)		/	Because I got many ideas.
G301 (El)		/	Because I started to have an interest with this activity
G302 (Naj)		/	Yes, because it will increase our knowledge
G303 (Uma)	/		Because sometimes I did not answer teacher's questions
G304 (Mun)		/	Because this activity gave me a lot of knowledge
G401 (Ain)		/	Because teacher never said my answer is wrong
G402 (Yan)		/	Because I can increase a lot of general knowledge
G403 (Ai)		/	Because I feel like participating in a quizzing event
G404 (Jaw)		/	Because I understand how to share opinions after participating in this activity

This activity encourages me to think			
	DISAGREE	AGREE	WHY
G101		/	Yes, because each topic involves thinking activity
G102		/	Because it challenged my mind to think
G201		/	Because teacher asked spontaneous questions
G202		/	Because teacher asked spontaneous questions
G203		/	Because I could not get the answer from the internet
G204		/	Because can learn many words that I don't know
G301		/	Because before this, I don't like to think how to answer questions
G302		/	Because this activity makes me think fast.

	DISAGREE	AGREE	WHY
G303		/	Because sometimes teacher used simple language which was easy for me to understand
G304		/	Because it was easier to think when we conducted discussions
G401		/	Because I must think before I share my ideas
G402		/	Because it helps me to write essays
G403		/	Because it can increase my general knowledge when answering examination questions
G404		/	Because I learn new words

WhatsApp discussion distracted my time at home			
	DISAGREE	AGREE	WHY
G101	/		No, because this activity gives me a lot of benefits
G102	/		Because this activity was very important to me
G201		/	Because sometimes I had a lot of homeworks and difficult for me to do the discussion
G202		/	Because sometimes I had a lot of homeworks and I needed to iron my school uniform at night
G203	/		I have a lot of free time to do this activity
G204	/		Because I think this activity fulfilled my free time.
G301	/		Only activity like this helps to improve my English language skill
G302	/		Because this activity is beneficial to school students
G303		/	Because sometimes I had too many homeworks and I took a long time to finish them
G304	/		Because the discussions were conducted atnight time, I always free on that time
G401		/	Don't have time for my family
G402		/	Because the discussions sometimes were conducted at night and I need to sleep early.
G403		/	Because most of my friends wanted to discuss at night. So it is difficult for me to sleep.
G404	/		I have a lot of free time.

It is difficult to discuss in a group of 4			
	DISAGREE	AGREE	WHY
G101		/	No, because if I don't know anything, i can ask my friends
G102		/	Because had to share a lot of ideas and information
G201	/		Because they can help when I don't understand
G202	/		Because they helped me to find the meaning of words
G203	/		Because we can share ideas when discussing in a group of 4
G204	/		Because I think when discussing with 4 people, we can get more ideas
G301	/		It is easier to discuss in a group of 4.
G302		/	Yes, because many personal opinions were given.
G303	/		My friends helped me a lot
G304		/	Because it was difficult to give ideas
G401		/	Because I did not feel comfortable to give ideas
G402		/	Because it is difficult to wait for everybody to go online
G403		/	Because it is quite difficult to wait for all group members to go online
G404	/		Because can share ideas when discuss with 4 people

It is difficult to participate in online learning (using mobile phone)			
	DISAGREE	AGREE	WHY?
G101		/	Yes, my father does not allow me to use mobile phone regularly
G102		/	Because there were students who did not own a mobile phone
G201		/	Because my phone ran out of battery quickly
G202		/	Because I did not like to use mobile phone for a long time
G203	/		Because online learning helps me to increase my knowledge
G204		/	Because online learning was not thorough (in-depth)
G301		/	It is difficult to explain my answer
G302		/	Because the internet connection at my home is slow
G303		/	Because I did not have my own mobile phone
G304	/		I always have my phone with me
G401		/	Because it was difficult to discuss using WhatsApp
G402		/	Because sometimes the internet at home has problems
G403		/	Because it is difficult to learn online
G404	/		Because I always use my mobile phone

PERSONAL DIFFICULTIES WHEN PARTICIPATING IN THE INTERVENTION

	DISAGREE	AGREE	WHY
I feel shy to give my opinions/ideas			
G101	/		No, because if I am wrong, it becomes a challenge to me
G102		/	Because I was afraid if I gave wrong and different ideas.
G201	/		Because I tried to give my own ideas
G202		/	Because I did not use to give my own ideas
G203		/	Because I was afraid if I use wrong English words
G204		/	Because I was afraid if my answers were wrong
G301	/		Because it is a learning process
G302		/	Because the teacher is there (in the WhatsApp group)
G303		/	I was afraid if my answer was wrong
G304	/		Because we discussed using WhatsApp
G401		/	I am afraid if my friends laugh at my answer
G402	/		Because many of my ideas were accepted by my friends
G403		/	Because I am a coy person
G404	/		I don't feel shy to give or share ideas

	DISAGREE	AGREE	WHY
I don't have ideas to share with other friends			
G101	/		No,because I can ask my parents.
G102		/	Because my friend used difficult words
G201		/	Because I could not think spontaneously
G202		/	I could not think spontaneously
G203		/	Sometimes I don't have idea
G204		/	Because I didn't have any idea.
G301		/	Because my mind is blank.
G302	/		Because this activity triggers students' mind
G303		/	Because I could not think of any ideas
G304		/	Because I did not have ideas to give
G401		/	Because I don't know how to translate to English
G402		/	Because the topics were difficult
G403		/	Because my ideas were not pithy
G404		/	Because I am not fluent to use English language

	DISAGREE	AGREE	WHY
I don't have ideas to 'disagree' with my friend/s's ideas			
G101	/		No, because I had many ideas for each discussion
G102		/	Because I rarely disagree with others
G201		/	Because my friends' ideas were very good
G202		/	Because this activity was conducted spontaneously
G203		/	Because I don't have ideas
G204	/		Because my mom gave and helped me to give many ideas to disagree.
G301		/	Because it was difficult for me to 'fight back' when my friend disagreed with my initial idea
G302		/	Because the sentences they gave were too long and weird
G303		/	Because I did not know how to disagree on certain ideas
G304		/	Because I did not really understand to disagree
G401		/	Because my friends' ideas were more interesting
G402		/	Because my friends' ideas were so interesting
G403		/	Because my friends' ideas were far more interesting than mine
G404		/	Because I didn't have ideas.

	DISAGREE	AGREE	WHY
I do not understand the instruction given			
G101	/		No, because I understand all the instructions given
G102		/	Because I did not know the meaning of some dificult words
G201		/	Because teacher always used English language
G202	/		I understand but difficult to give reasons
G203	/		I can understand the instruction
G204	/		Because I will ask my teacher when I didn't understand anything.
G301	/		Because I understand teacher Aireen's instructions.
G302		/	Because the instruction was given in English language
G303		/	Because teacher always used English language
G304	/		Because soemtimes teacher used Malay language to give instructions
G401	/		Because I understand the instruction given by my teacher

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G402	/		I understand but difficult for me to answer
G403	/		Because I understand the instruction given by my teacher
G404	/		I can understand English language

It is difficult to gather all group members to online at the time assigned			
	DISAGREE	AGREE	WHY
G101		/	Yes, because some people don't have time to use their WhatsApp
G102		/	Because sometimes some parents did not allow their children to use mobile phone at home
G201		/	Because we did not know when others were busy or free at home
G202		/	Because sometimes they were asleep, difficult to online and other matters
G203		/	Because some group members could not online due to internet problem
G204		/	Because there were group members who had internet problems
G301		/	Some switched off their phones and some did not turn on their mobile internet data
G302		/	Some people do not have WhatsApp.
G303		/	Group members rarely went online
G304		/	Because some were asleep and some went out with their family
G401		/	Because all group members were busy spending time with their family members
G402		/	Because group members do not have suitable time to do group discussion
G403		/	Because group members do not have suitable time to do group discussion
G404		/	Because many group members did not go online on the agreed time.

It is difficult to discuss using English language			
	DISAGREE	AGREE	WHY
G101		/	Yes, because I have poor English language skill
G102		/	Because I did not know the meaning of Malay words in English
G201		/	Because I don't like English language
G202		/	Because I am weak in English language
G203	/		Because I can use Google to look for meaning of words
G204	/		Because I can use Google to look for meaning of words
G301	/		I am accustomed to use English
G302		/	Yes, because I did not really understand English language.
G303	/		I like English
G304		/	Because I did not really understand English language
G401	/		Because it can improve my achievement in English subject
G402	/		Because I am fluent to use English language
G403		/	Because I don't understand English language
G404	/		Because I can look for the meaning of words using Google search

I always have internet problem at home			
	DISAGREE	AGREE	WHY
G101		/	Because my house is located in a remote area
G102		/	Because my father did not pay the internet bills
G201	/		Because I did not have internet problem at home
G202	/		Because I did not have internet problem at home
G203		/	Because the internet connection at my house was slow
G204	/		I did not have internet problems because I use wifi at home
G301	/		I always have internet connection at home
G302		/	Yes, because my siblings use it to do their works.
G303	/		I did not have internet problem at home
G304		/	Because the internet connection at my house was slow
G401		/	Because the internet connection at my house was slow
G402		/	Because the internet connection at my house was slow
G403		/	Because the internet connection at my house was slow
G404		/	Yes, because there was a problem with my internet connection at home

The topics given were difficult			
	DISAGREE	AGREE	WHY
G101	/		No,because I already encountered each topic in my textbook
G102		/	Because it was difficult to get ideas

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	DISAGREE	AGREE	
G201	/		Because I can answer the questions
G202	/		No, all the topics given were interesting
G203	/		The topics are OK for me
G204	/		Because the topics given were quite easy
G301	/		Because I can give ideas for all topics
G302		/	Yes, because I don't really understand the topics given
G303	/		Not all topics were difficult
G304	/		Because not all topics were difficult
G401	/		The topics are easy
G402	/		Because the topics given were easy
G403	/		Because the topics given by my teacher were very easy
G404	/		Because I think the topics can improve my language skill

I don't like the topics used in this activity			
	DISAGREE	AGREE	WHY
G101	/		No, because the topics discussed might come out in the exam questions
G102	/		Because the topics were interesting
G201	/		Because the topics were not that difficult
G202	/		No, all the topics were easy
G203	/		The topics were interesting
G204	/		Because the topics were interesting
G301	/		Because all the topics given were very interesting
G302		/	Because the topics were quite difficult for me
G303	/		Because certain questions were easy to answer
G304	/		Because all the topics given were not that difficult
G401	/		The topics were interesting to discuss
G402	/		Because the topics were interesting
G403	/		Because the topics given can increase my general knowledge in English language
G404	/		Because the topics discussed really challenged me

This activity is difficult			
	DISAGREE	AGREE	WHY
G101	/		No this activity is easy because I always like to think
G102		/	Because most of the time I did not understand some words
G201		/	Because sometimes i did not understand the meaning of the sentences sent by my friends
G202		/	Because I need to finish my homework
G203	/		The topic is not difficult to think
G204	/		Because teacher demonstrated how to do the discussion prior to the group activities.
G301	/		Because I can answer the question easily.
G302	/		This activity is too easy for me.
G303		/	Because I need to answer using English language
G304		/	Because I am not good to use English language
G401	/		I can give ideas
G402		/	Because it requires us to use internet
G403		/	Because it was conducted in English language. So, I don't understand
G404		/	Because I found it difficult to 'fight back'.

It is difficult for me to give my opinion when using WhatsApp			
	DISAGREE	AGREE	WHY
G101	/		No, because I can use the dictionary in my phone
G102		/	Because I did not know how to make an explanation
G201		/	Because I don't like to use my mobile phone for a long time
G202		/	Because I did not like to type a lot
G203	/		Because it is easier to communicate with my group members
G204	/		Because when I don't have any idea, I will ask my mother
G301		/	Because I don't have ideas.
G302		/	Because I have lack of pithy ideas.
G303		/	My phone is too small so I was lazy to type
G304		/	Because it was difficult to use English language
G401		/	Because I usually took a long time to think
G402		/	Because the internet line at home is slow
G403		/	Because it is quite difficult to give opinions
G404	/		Because it is easier to communicate

It is difficult to discuss using WhatsApp			
	DISAGREE	AGREE	WHY

G101		/	Yes, because there were many problems such as need a lot of money to top-up for the internet
G102		/	Because I did not know how to start
G201		/	Because sometimes teacher did not understand what I meant
G202		/	I prefer face-to-face discussion
G203		/	Because some students could not online due to some personal affairs
G204		/	Because my mother asked me to do a lot of works at home
G301		/	Difficult for me to explain my answer to others
G302		/	Yes, because most of my friends typed very fast. And I was not in time to send the messages.
G303		/	Because I was lazy to type using phone
G304	/		Because we did not have to go to school to discuss
G401		/	Because my phone is easier to get faulty
G402		/	Because sometimes my phone is faulty
G403		/	Because my phone does not work when receiving too many messages
G404		/	Yes, because there are some group members do not online during discussion