LET'S PLAY A GAME WHILE WRITING

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Keywords: design-based research, pedagogical drama game, ecological linguistics, dialogical approach, distributed cognition, process writing

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ABSTRACT

This is a design-based (Barab, 2014) research project with an ecological, dialogical, and distributed cognitive (EDD) (Linell, 2009; van Lier, 2004; Thibault, 2011) theories-driven design of learning environment enriched by an online pedagogical drama game. The games, *Finding Jolin's Way Home* (first and third iteration) and *God of Time* (second iteration), were designed as part of the writing process. The purpose of this research is to study the relationships between the EDD framework, an Internet pedagogical drama game-supported second language writing (English) process, and the implementation of a ten-day course. The course was built on a flipped classroom concept in which adolescent Chinese participants read teacher-chosen articles about a socio-political topic before three-hour face-to-face sessions consisting of group discussion, a game session, and a timed-writing session. Three iterations of design and implementation were completed in July 2017, July 2018, and July 2019, respectively. A parallel comparison between the computer pedagogical drama-game engendered group discussions and group discussions guided by discussion questions showed that the former demonstrated students' languaging behavior (Swain, 2009) in ways not found in the latter. Further findings show that first, second language writing pedagogies can be advanced by collaborating with gaming that is rooted in an ecological (van Lier, 2004) and dialogical approach (Linell, 2009) to language learning and use; second, students respond positively to such a language use-based, experience-oriented and process-focused second language writing course; and third, such a game-supported writing course is not only feasible in a large classroom, but also generates an authentic writing process that engages students in a series of languaging (Swain, 2006) activities including collaborative dialogue about socio-political issues embedded in the game and game quest planning which scaffolded critical thinking events such as formulating a clear point of view, evidence-finding, evidence explanation, and recognition of alternative points of view.

Keywords: design-based research, pedagogical drama game, ecological linguistics, dialogical approach, distributed cognition, process writing,

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CHAPTER 1-Introduction

Background

As English education in China is exam-oriented (Kirkpatrick & Zang, 2011), English courses are very grammar intensive and still based around a grammar-translation approach to language learning. While many students can successfully complete exams about grammar and vocabulary, they tend to have a harder time speaking and writing, especially in impromptu situations and about topics that are new, unfamiliar, or complex.

The purpose of this project was to create a course to help students develop 21st-century literacy skills (Larsen & Miller, 2011) such as critical thinking, technology literacy, media literacy, collaboration, communication, and creativity while exploring the world using their second language. The course was designed from an ecological (van Lier, 2004), dialogical (Linell, 2009; Thibault, 2011), and distributed (Cowley, 2009; Steffensen, 2009; Thibault, 2011) approach to language learning that invited students to discuss and explore current social-political issues and a process writing (Seow, 2002) approach that encouraged students to experience the writing topic and develop critical thinking through the experience. The course presented a comprehensive writing process that involved students in gathering linguistic resources, collaborating with team members in completing game quests that were rooted in social-political events, and writing about a related topic after experiencing these topics in game environments.

This game-supported second language writing course was designed specifically for around 80 Chinese high-school students in each year's iteration who were preparing for a national English competition which focuses primarily on English writing, the *Chuangxin* (directly translated as Innovation) English Competition. *Chuangxin* is one of the most well-known and recognized competitions in China, and students awarded the national prize are able to

apply to separate college entrance exams designed by prestigious universities and colleges. Since over the past 17 years there has been a shift towards argumentative essays in the contest focus, the writing course designed for this dissertation project focused only on argumentative essays. The reason might be that it is easier to observe critical thinking from argumentative essays compared to other types of essays such as expository or narrative essays.

Statement of the Problem

The current English learning experience that high-school students in China have is still on the level of linguistic resources. Textbooks, exams, teachers, and schools still treat English as a subject for which students need to figure out all the tricky "grammatical questions." Thus, these students rarely use English for meaningful purposes or in meaningful contexts. In addition, when they are asked to write in English, the students focus on grammaticality and the linguistic aspect because that is how English is rated in Gaokao (University Entrance Exam). Therefore, critical thinking is not emphasized in school English lessons, and authentic use of English has never been encouraged or practiced. Moreover, the teaching of English writing still employs the product-approach, and students only engaged in timed writing as a practice to improve their English writing. This constant exposure to timed writing is probably the reason why students focus more on the linguistic aspect of writing than the critical thinking part of writing. Every time after they finish their written response, they are given a score purely based on linguistic competence. They were never given time to plan, draft, revise and edit (Seow, 2002), which could help develop their critical thinking.

The other issue with English education in China (or a similar EFL context) is that there are very few or even no communicative environments that can engage students in authentic communication in any way. In other words, even when teachers want to give students more

opportunities to use English, the students do not see the need to do so because these activities are inauthentic to them (participants of the communicative activities all speak fluent Chinese). A pedagogical drama game was therefore designed to give students more opportunities to use English to work with their classmates in order to accomplish different quests and use English in a more communicative and authentic manner by creating a complex gaming ecology in which non-playing characters spoke English and students' need for communication arose from the evolving gaming experience.

Purpose of the Study

This dissertation project aims to first, present the design and implementation of a design-based research project centering around the creation of a second language writing course that was supported by a pedagogical drama game in a classroom setting; second, investigate students' communication in the game-supported course; and finally, study the outcome of the course including students' feedback towards the course and their performance of critical thinking in writing. The design and implementation of the course adopted the naturalistic approach, for it is hardly possible for a language classroom to be like an experimental setting where the variables can be controlled.

Conceptual Framework

The project was created based on the theory of ecological (van Lier, 2004), dialogical (Linell, 2002), and distributed (Cowley, 2012; Hutchins, 1995; Thibault, 2011) cognitive approaches to language learning. In essence, the course adopted the understanding of language learning as an experience (Dewey, 1938) in which learners picked up and utilized resources (i.e. affordances) available in a learning ecology, and students developed multiple skills through

exploration scaffolded by multi-directional communication and group work afforded by the game-supported writing process created by the course.

Ecological, Dialogical, and Distributed Approach (EDD)

Before explaining EDD theories, it is crucial to talk about the concept of *languaging*. According to Swain (2006), languaging is a "means to mediate cognition" (p. 96) and "a process of making meaning and shaping knowledge and experience through language" (p. 98). Whenever we talk about languaging, we also see that language actually has two layers, which Thibault (2011) calls first-order languaging and second-order language. According to Thibault (2011), first-order languaging is "grounded in the real-time dynamics of interacting bodies in and through which persons coordinate their actions, intentions, perceptions, and feelings with each other" (p. 215). In other words, first-order languaging emphasizes the dynamicity of languaging as a whole-body action performed by language users. Thibault's (2011) explanation of first-order languaging is in alignment with van Lier's (2004) ecological approach to language learning in that "first-order languaging is not limited to vocalizing" (Thibault, 2011, p. 215). He emphasized that first-order languaging "includes a whole range of bodily resources that are assembled and coordinated in languaging events" with external factors such as "aspects of situations, environmental affordances, artifacts, technologies" (p. 215). Thibault's definition of second-order language is the language that has been understood by linguists as a structured system of signs. Second-order language refers to language as a tool for languaging, and it is the reason that first-order languaging is feasible. Thibault proposed the concepts of first-order languaging and second-order language to clarify that the expansion of understanding language is needed to study language as a dynamic entity that is not limited in individuals' minds.

This course was rooted in ecological (van Lier, 2006), dialogical (Linell, 2009), and distributed cognition (Cowley, 2009; Steffensen, 2011; Thibault, 2011) theories. The ecological theory of language denies the traditional understanding of language as an object and fully supports the concept of languaging, as this concept accurately depicts the shift from language as an input-output process to language as a dynamic evolving system of action potentials afforded by available resources in an environment (van Lier, 2006). Dialogical theory emphasizes that communication and cognition always involve interaction with others, which include other people, other systems, and other dimensions of one's self (Linell, 2000).

Dialogical theory, ecological theory, and distributed cognition work together as part of the EDD framework (Newgarden & Zheng, 2016; Trasmundi & Steffensen, 2016; Uryu, Steffensen, & Kramsch, 2014), as these theories complement each other in explaining the action of languaging in context. Ecological theory fully embraces the concept of languaging as a dynamic activity that language learners engage in, and languaging is dialogical as it occurs with others, where *others* include not only other human beings but also other systems or other dimensions of one's self. As can be seen here, ecological theory and dialogical theory complement each other to elaborate on this new conceptualization of how languaging operates.

First closely connected to dialogical theory, distributed cognition proposes that cognition is not limited to one's individual brain, but rather is distributed across the interlocutors, objects, artifacts, and tools in the environment. Now, it is clear that distributed cognition and dialogical and ecological theory all describe the same phenomenon and process, that is, languaging. Ecological theory (van Lier, 2006) emphasizes the whole environment and the interrelations of everything inside this whole; dialogical theory zooms into the dynamics of interactions between the individuals, objects, systems, and different dimensions of one's self; and the theory of

distributed cognition describes the cognitive process of perception and action of agents within the ecology while languaging. Hodges and Fowler (2010) also proposed the integration of distributed, dialogical, dynamic, and distributed approaches to language. Under the EDD framework, in order to implement the course designed for this dissertation project, several other pedagogical approaches were also referenced, including process writing and flipped classrooms, which are congruent with the EDD theories. The ecological, dialogical, and distributed approach to language learning is still on the level of philosophical discussions, and no research to date has examined language learning in classrooms from the EDD perspective.

This dissertation project took a naturalistic approach in which the design of the course and the nature of research went hand-in-hand. This project researches the area of second language writing; it is fundamentally a course development project and a game design project in which the game was an essential part of the course. The overarching research methodology is design-based research (referred to as DBR hereafter), which will be explained in detail in Chapter 3—Research Methodology. The designing theories for the language learning course revolve around the ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed (Thibault, 2011) approach to language learning.

This was a second language writing course, and the pedagogical approach for the design of this writing course was process writing (Seow, 2002), which encourages students to see writing as a process instead of a product. The reason for adopting process writing was that the participant students in China focused too much on the linguistic forms in their writing and little on the idea of critical thinking. Figure 1.1 demonstrates the relationship between process writing and the game.

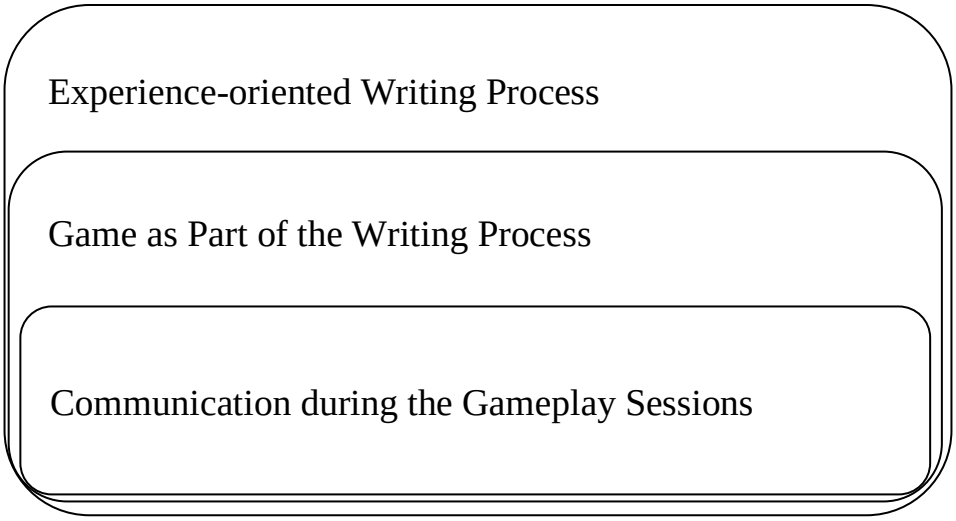


Figure 1.1. Breakdown of the Process Writing in this Course

Figure 1.1 shows that the game was intended as part of the writing process, as the communication that students engaged in during the gameplay sessions helped them to use language, explore relevant linguistic resources both for speaking and writing, and eventually develop critical thinking about a topic and convey their critical thinking in English.

The research is on the design of a second-language writing course in which a pedagogical drama game was the focus. In addition, this research project had two products: a second language writing course and a pedagogical drama game. In order to implement the course supported by the pedagogical game, a flipped classroom model was integrated into the design of the course so that class time could be fully and effectively used in communication and exploration via group discussions and gameplay sessions.

Significance of the Study

This research project is a quasi-longitudinal study conducted using design-based research methodology through which a pedagogical drama game-supported course was created, taught, and revised. The study aimed to: 1) bridge the gap between academic research in the area of second language studies and pedagogical practices in language learning; 2) re-think language

learning in a flipped classroom setting from the ecological, dialogical, and distributed view; and 3) provide a pedagogical model utilizing a pedagogical drama game for second language writing.

The purpose of this research was to study the relationships between the EDD framework, the pedagogical drama game-supported second language (English) writing course, and the implementation of a ten-day course. The course was built on a flipped classroom concept (King, 1993) in which participants (second-year high-school students in China) read teacher-chosen articles about a particular topic, such as technology and the environment, before three-hour face-to-face sessions consisting of group discussion, a game session, and a timed-writing session. Iteration 1 of the design-implementation was completed in July 2017, during which a parallel comparison showed that the pedagogical drama-game-engendered group discussions demonstrated students' languaging behavior (Thibault, 2011) in ways not found in group discussions guided by discussion questions. Based on Iteration 1 of the design-implementation cycle, the following changes were integrated into Iteration 2 (July 2018) of design-implementation: revision of students' self-study materials for the flipped classroom to assist their comprehension of authentic texts and modification of the pedagogical drama game to include a reward system and more interactive features. The third iteration (July 2019) added more speaking activities into the course to cater to the needs of a new state competition. It is important to note that this dissertation project was in itself a course design as it entailed a design-implementation-redesign cycle. After each cycle, a revised course was created. Within each cycle, students' participation, feedback, and performance provided important data to answer the questions of this study as shown below.

Research Questions

1. Game-afforded Communication: How do technology and the game-based course change students' communication in class, and how does the pedagogical drama game afford students' languaging and translanguaging?
2. Attitudes: What are students' attitudes towards technology and pedagogical drama games in English classes, and how do their attitudes change as a result of this particular pedagogical drama-game supported course?
3. Learning outcomes of the course: How does a pedagogical drama game-supported course develop students' critical thinking as displayed in writing samples?

Overview of the Dissertation

Chapter 1 introduced the rationale, theoretical framework, and research questions of this dissertation. The dissertation focuses on a course designed from scratch; consequently, the theories for design and implementation of the course were explained. Chapter 2 starts with definitions of key concepts that are vital in understanding the course and game design. After the definitions, the literature review provides the theoretical framework for the design of the course, the pedagogical drama game in the course, and the dissertation. Chapter 3 delineates the overarching research methodology of the dissertation and research methods for each individual research question stated at the end of Chapter 1. Chapter 4 provides a detailed description of the course, the game, and the three iterations of design-implementation. Chapter 5 answers the research questions by presenting the analysis of collected data, including the design documents and data from the implementation of the course. Chapter 6 summarizes major findings from the analysis and discusses the implications of these findings. Chapter 7 concludes the findings, discusses some of the limitations of the research, and proposes possible future research based on the research findings and the design products. The findings show that first, second language

writing pedagogies can be advanced by collaborating with gaming that is rooted in ecological (van Lier, 2016) and dialogical approaches (Linell, 2009) to language learning and use; second, students respond positively to such a language use-based, experience-oriented, and process-focused second language writing course; and third, such an activity-based writing course is not only feasible in a large class, but it also generates an authentic writing process which engages students in more evidence-finding and critical thinking.

CHAPTER 2-REVIEW OF THE LITERATURE

Chapter 2 summarizes the theoretical groundings for this research project and theories informing the design of the course including the ecological (van Lier, 2004), dialogical (Linell, 2002), and distributed cognition (Cowley, 2012, Hutchins, 1995; Thibault, 2011) theories. Design-based research (DBR) is the overarching research methodology for the dissertation study, whereas flipped classroom (King, 1993), process writing (Seow, 2002), languaging (Swain, 2006) and translanguaging (Garcian, 2009) are pedagogical approaches adopted in designing and implementing the pedagogical drama game-supported course. Before presenting the theoretical framework, key terms are defined, as these terms are essential in understanding the theoretical underpinnings for the design of the course and the game.

Definition of Terms

This dissertation is built on the understanding that language is social and language learning is ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed (Cowley, 2012; Hutchins, 1995). The theoretical framework is rooted in the interconnectedness of ecological, dialogical, and distributed approaches to language learning. In order to better showcase the theoretical framework and the analysis of the data presented, this section provides the definition of essential concepts.

Ecological Approach to Language Learning

The ecological approach to language learning (van Lier, 2010) focuses on the quality of learning opportunities, classroom interaction, and educational experience. This dissertation project involved the creation of a pedagogical drama game-supported English writing course. How students made use of the learning opportunities, how they interacted during the game sessions as part of the writing process, and how they perceived the overall educational

experience are key to understanding language learning by investigating language practice/languaging (Swain, 2006) performed by the language users instead of investigating the languages per se.

Dialogical Approach to Language Learning

A dialogical approach to language learning (Linell, 2003) states that interaction, contexts, and linguistic-communicative construction are keywords of dialogical approach to language learning.

Distributed Cognition

Distributed cognition (Hutchins, 1995; Cowley, 2012) is a branch of cognitive science that proposes cognition is not confined to an individual; rather, it is distributed across objects, individuals, artifacts, and their relations to each other in the environment.

Emergent Bilinguals

The students who participated in the dissertation are emergent bilinguals (Garcia, 2009a) who have the potential to develop their bilingualism and the ability to engage in translanguaging as Garcia (2009a) explained the word choice of emergent bilinguals as "emphasizing the students' emergent bilingualism places students on a bilingual continuum of more or less accessibility to languaging bilingually" (p. 323). The term "emergent bilinguals" emphasizes the trajectory of development; hence, it is an appropriate term to define these advanced-level English learners in a foreign language context.

Pedagogical Drama Game

Similar to interactive dramas which have been used in the commercial gaming world, pedagogical drama games (Barab et al., 2009) are designed with a pedagogical purpose and storylines or dramas with non-playing characters (NPC) to engage players in experiencing a

co-constructed journey or stories based on the choices and actions they make in the game.

Quests

Quests are fundamentally building blocks of gaming experience. Games consist of a series of linear or parallel quests. In order to progress through a game, players need to complete a series of quests. According to Howdy (2008), a quest consists of spaces, objects, characters, and challenges.

Experiential Learning

Dewey (1938) stated "there is an intimate and necessary relation between the processes of actual experience and education" (p. 7). To be more specific, experiential learning means learning through experience, and "learning through reflection on doing" (Pappa et al, 2011, p. 1003).

Flipped classroom and face-to-face interaction

The flipped classroom is a type of blended learning in which the lecture is moved outside of the classroom and the class time is used for other learning activities (King, 1993; Milman, 2012). Flipping the classroom aims to free the face-to-face time from lectures, allowing more time for an expanded range of learning activities. With the development of online technologies, class instruction and discussion can be divided into f2f versus non-f2f, where the non-f2f consists of synchronous and asynchronous interaction.

Multiliteracies

The multiliteracies approach emphasizes linguistic diversity and multimodal forms of linguistic expression and representation in contrast with the English education in China. The call by the New London Group (1996) for new literacy pedagogies facing the new age of

technological advancement has been around for more than two decades, but it is not seen in language pedagogies in China.

Previous Research on Languaging, Affordances, Critical Thinking, Pedagogical Games, and Process Writing

This section reviews previous studies on languaging, affordances, critical thinking, and pedagogical games in relation to process writing, as these concepts informing the design of the course for this design-based study are systemic, and they worked together to support the goal of the design: to improve critical thinking in the students' writing. As explained in Chapter One, the course was designed based on the ecological, dialogical, and distributed cognitive (EDD) framework. Affordances and languaging are concepts that could operationalize the EDD framework via the design of a pedagogical game. To be more specific, resources were added into an learning ecology by the designer, and when students became aware of these resources and acted on them, these resources turned into affordances which were realized through languaging activities. These languaging activities during the gameplay sessions were intended to be dialogical and cognitively distributed in nature so that students could develop their critical thinking.

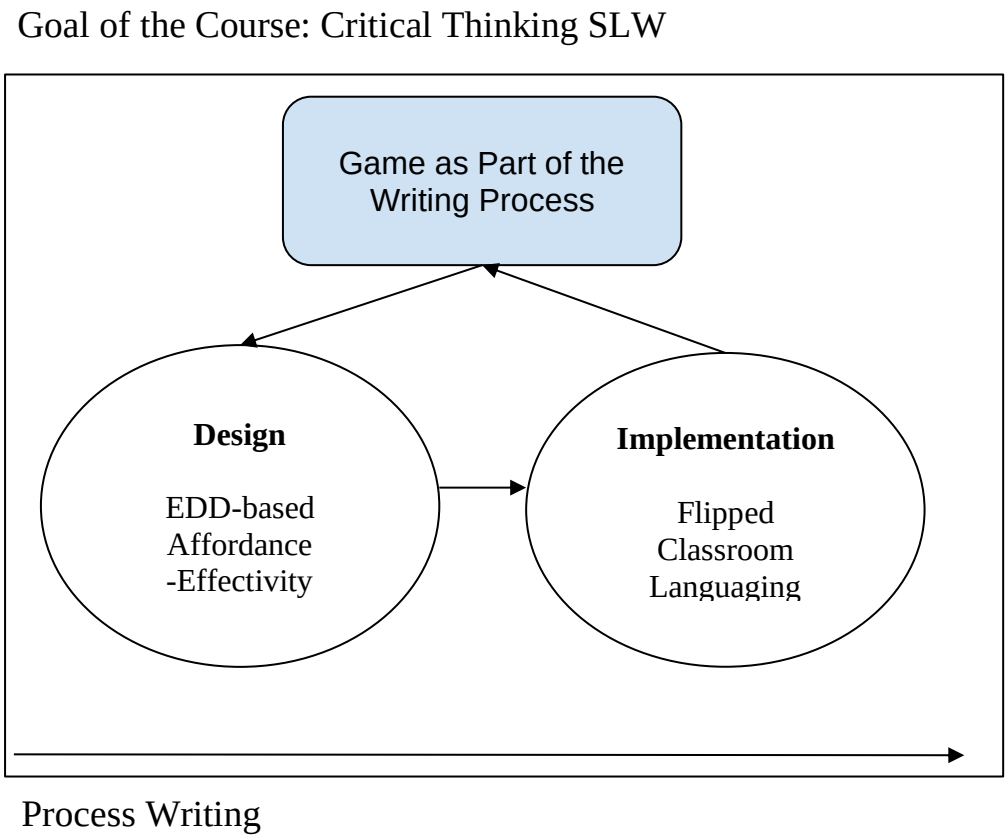


Figure 2.1. Theories and Approaches of this DBR Study

As can be seen in Figure 2.1, the design of the course specifically worked on the research gap of pedagogical drama games as part of L2 process writing to improve students' critical thinking in writing. Based on the goal of researching whether pedagogical drama games could be incorporated into a process writing-based writing course, the study adopted a design-based research methodology, which will be explained in Chapter 3. The design of the course and the game was grounded in EDD theories, and concepts including languaging, translanguaging and affordances were congruent with the EDD framework.

Languaging

Lado (1979) used "languaging" as a generic term to refer globally to various uses of language. Swain (1985) specified "languaging" as "the process of making meaning and shaping knowledge and experience through language" (p. 98) and emphasized that it "conveyed an action–a dynamic, never-ending process of using language to make meaning" (Swain, 2006, p. 96). Lankewicz (2014) explained that "languaging is a way of cognizing , making sense of the world, becoming conscious of oneself and a means of identification" (p. 2), and the concept has been popular in many disciplines such as educational philosophy and language learning (Swain, 2006; Swain & Lapkin, 2011) recently. When people language, a systemic learning action takes place. In other words, languaging activates the use of language together with cognitive activities distributed across interlocutors.

Studies have shown that languaging has a positive impact on writing skill. Suzuki (2012) investigated the impacts of written languaging on 24 Japanese students' immediate subsequent text revisions. The students were asked to write their explanation of corrections in Japanese after receiving the feedback. They studied grammar-based written languaging and lexis-based written languaging, and found that written languaging helped students successfully correct the errors, and both forms of written languaging helped students with improving the accuracy of their writing. Similar to Suzuki (2012), Khatib and Meihami (2015) investigated the impact of languaging on writing skill by studying the effect of collaborative writing on EFL students' writing performance. They used an experimental group and a control group to assess the impact of languaging on students' overall writing performance and their performance on different components of writing such as content, organization, grammar, vocabulary, and mechanics. Their statistical analysis showed that languaging had a positive effect both on overall writing

performance of EFL students and on writing components such as content, organization, grammar, vocabulary, and mechanics. Moradian and Hossein Nasab (2017) also studied the impact of written languaging on grammatical accuracy of writing by comparing the effects between a control and an experimental group. They conducted a pre- and post-test on the same prompt studying two groups: one received only direct corrective feedback, and the other group needed to language about the errors after receiving direct corrective feedback. The results showed that both groups improved significantly in terms of grammatical accuracy in their post-test, but written languaging was proved to be more effective than only direct written feedback. These studies demonstrated how languaging influenced writing outcome. All three studies examined the impact of written languaging on writing performance by adopting an approach of process writing, which provided a space for languaging to take place. However, there is a lack of research on the impacts of oral languaging on writing performance. In addition, no research was found about the influence of languaging (either written or oral) on critical thinking in writing.

Affordances

The term "affordance" was first coined by Gibson (1977), referring to action possibilities provided to an actor by the environment. van Lier (2004) expanded the term "affordance" to be "relations of possibility" (van Lier, 2004, p. 95) between language users that provide learners with opportunities for action to achieve certain goals. Whether the relations of possibility arise naturally or are created intentionally, affordances can be used for learning when the learner recognizes/perceives them (van Lier, 2004). More importantly, van Lier (2004) proposed three features of affordance in the realm of language learning: 1) It is both an action potential and a relation of possibility between language users; 2) linguistic affordances are specified in the

linguistic expression and available to the active interlocutor in the environment at the moment; and 3) the affordance picked up serves the agent's further actions.

Similar to the concepts of languaging and the ecological approach to language learning, the theory of affordances is also transdisciplinary. In ecological psychology, recent research has stated that affordances are not only action possibilities but also invite actions (Bruineberg & Rietveld, 2014; Prieske, Withagen, Smith, & Zaal, 2015). Withagen, Araújo, and de Poel (2017) analyzed the claim of affordances soliciting actions by studying the structures of conscientiousness as experienced from first person point of view; they found that actions resulted from the interplay between the environment's affordances/solicitations and the agent's capacity to decide whether to act upon these solicitations. Their study reconceptualized the affordance-agency-environment relation in an ecology, which highlighted that it was not the agent who imposed an action, instead the agent could affect to what degree s/he would be influenced by the affordance invitations.

In the area of computer-assisted language learning, affordances refer to the possibilities offered by technologies when analyzing human-computer interaction. Studying the development of the theory of affordances from when Gibson first proposed it to the post-cognitivist view, Bin (2016) defined CALL affordances "as a unique combination of technological, social, educational, and linguistic affordances" (p. 57).

Affordance within the Ecological, Dialogical and Distributed Cognitive Framework

Affordance is one of the most important terms in this dissertation project as it is the key to the design of the course and the game. First of all, affordance can be defined with reference to the understanding of learning as an ecology. The ecological approach emphasizes the fact that language learning is positioned in a larger system in which people, artifacts, and relationships

among them together constitute a reservoir of resources that students can pick up and turn into affordances (van Lier, 2000). According to Linell (2009), the dialogical perspective acknowledges the role that dialogues play in human thinking when they engage in talking to others, reading texts, and working with computers and artifacts, as well as making sense of the environment. The distributed view highlights that language is dispersed across the spatiotemporal scales (Thibault, 2011). The EDD framework focuses on the interconnectivity of the ecological, dialogical, and distributed views: the communicative actions achieved through dialogue between agents/interlocutors are distributed across the learning ecology that consists of the agents, artifacts, context, and environment. This ecological second language writing course aims to create a platform and engage students in an ecology in which students could interact with not only each other but also the non-playing characters in the game and all the available resources that are relevant online; all these resources in the ecology are action potentials and possible affordances that students could pick up that can scaffold their learning. Figure 2.2 (van Lier, 2004, p. 92) shows how affordance impacts the cycle of perception-action in an learning ecology.

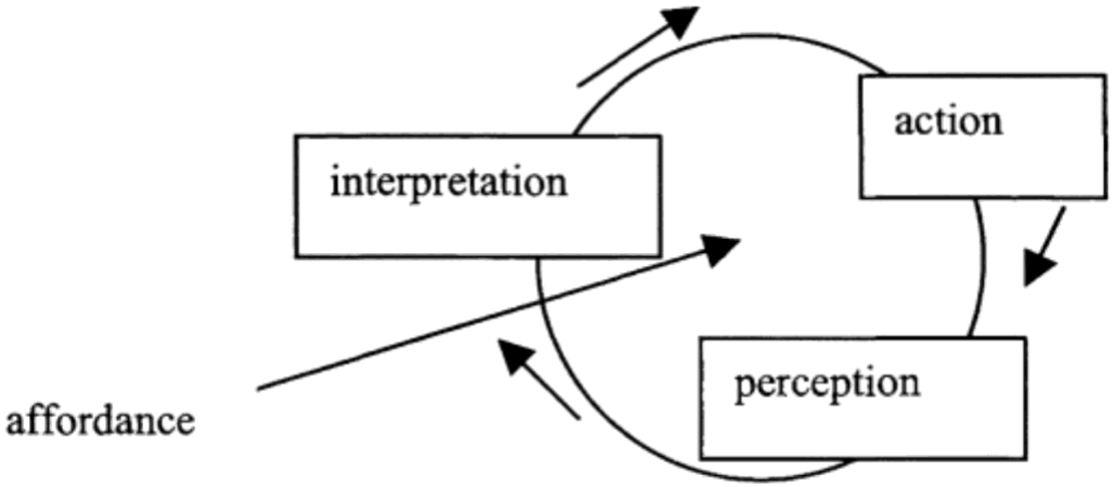


Figure 2.2. van Lier's (2004) Demonstration of Affordance (p. 92)

Translanguaging

Translanguaging is an extension of the term languaging, and Garcia (2009) defined it as "languaging bilingually" (p. 323). Different from codeswitching, which perceives language as a system of codes, translanguaging underscores language as an extended term consisting of both the linguistic codes and the dynamic action performed by bilinguals and multilinguals who strategically employ linguistic features and different modes of languages as an integrated system in order to maximize communication (Otheguy, Garcia, & Reid, 2015). An example of translanguaging in this dissertation is how students read and learned about a topic in English, searched for information about the topic in both English and Chinese, discussed in Chinese and English, and wrote about the same topic in English.

This section delineates the trajectory of the emergence of translanguaging. Translanguaging was first coined by Cen Williams, a Welsh researcher who used it to describe the practice in bilingual education which involves learners moving between different languages

for different communication channels (Baker, 2011). Williams (1994) reported on how a teacher taught in Welsh and students responded largely in English; sometimes students read something in Welsh, and the teacher would explain in English. The term was then adopted by Ofelia Garcia to describe English/Spanish bilingual classes in the US; her 'translanguaging' is "the act performed by bilinguals of accessing different linguistic features or various modes of what are described as autonomous languages, in order to maximize communicative potential" (Garcia, 2009a, p.140). Garcia reiterated that translanguaging is different from code-switching, although both involve the use of different languages during communication. Garcia and Li (2014) emphasized that translanguaging "refers not simply to a shift or a shuttle between two languages, but to the speakers' construction and use of original and complex interrelated discursive practices that cannot be easily assigned to one or another traditional definition of language, but that make up the speakers' complete language repertoire" (p. 22). Translanguaging is a dynamic process in which multilinguals utilize their languages as an integrated communication system and a holistic repertoire of resources (Canagarajah, 2011a; Garcia, 2009b; Pennycook, 2008). According to Canagarajah (2011b), translanguaging is a naturally occurring phenomenon; he has explored teachable strategies of translanguaging, which will be summarized in the next section on the operationalization of translanguaging.

Tracing to the fundamentals of translanguaging, it can be concluded that the theory of translanguaging redefines language neither as a system of structures nor a product located in the mind of the speaker; translanguaging underscores the dynamic and organic nature of language which lies in its potential of helping users making sense of the world and orienting to moment-by-moment actions. Li (2011b) explained, "when linguistics focuses narrowly on language as a discrete system of a fixed set of rules, none of the intricacies of human creativity, human

interaction and human knowledge can be fully understood" (p. 35). For this particular dissertation project, when conducting the gameplay sessions and the group discussion sessions, the classroom policy was that students were allowed to use Chinese whenever they felt that their English was not successfully conveying what they intended to, as the purpose of the game sessions, as well as the group discussion sessions, was for them to explore all the relevant resources about the topic that they were working on, such as refugees in Europe, and then formulate their own stance and develop their critical and dialectic thinking regarding the issue. Interestingly, the project aimed to engage them in languaging so as to not only talk it through but also work it through, and translanguaging, as a type of languaging, became a tool that students could use to engage in quest-completion activities so as to progress through the pedagogical drama game, which was, in fact, part of the writing process.

Operationalization of Translanguaging

Recent research in translanguaging has examined bilingual and multilingual education (Garcia, 2009b; Garcia & Lin, 2017), translanguaging in the classroom (Canagarajah, 2011b; Creese & Blackledge, 2010), participant confidence and motivation (Creese & Blackledge, 2010), writing (Garcia, & Leiva, 2014; Martin-Beltrán, 2014; Velasco, & Garcia, 2014), identities (Li & Zhu, 2013), and biliteracy (Hornberger, 2012). Based on the focus of this dissertation study, the operationalization of translanguaging in the field of writing is summarized here.

Adopting a dialogical pedagogy, Canagarajah (2011b) discussed the implications of translanguaging for academic and writing prospects of multilingual students and suggested the need to develop teaching strategies for co-construction of meaning and orientations (for teachers) for assessing effective translanguaging practices.

Recently, more and more research studies have reflected on the limitation of monolingual approaches and the potential of translanguaging. Creese and Blackledge (2010) described two case studies in their larger project, which aimed to explore the social, cultural, and linguistic significance of complementary schools and to investigate how students' as well as teachers' linguistic practices are used to negotiate their multilingual and multicultural identities. Through the analysis of the students' and teachers' communication, they argued for a more flexible bilingual instructional approach to replace the monolingual approach. They recognized the potential of translanguaging as a pedagogy for learning and teaching and they summarized some translanguaging incidences found in the classroom practice, which are also examples of how translanguaging can be operationalized:

1. Use of bilingual label quests, repetition, and translation across languages;
2. Ability to engage audiences through translanguaging and heteroglossia;
3. Use of student translanguaging to establish identity positions both oppositional and encompassing of institutional values;
4. Recognition that languages do not fit into clear bounded entities and that all languages are needed for meanings to be conveyed and negotiated;
5. Endorsement of simultaneous literacies and languages to keep the pedagogic task moving;
6. Recognition that teachers and students skillfully use their languages for different functional goals such as narration and explanation;
7. Use of translanguaging for annotating texts, providing greater access to the course and lesson accomplishment.

(Creese & Blackledge, 2010, p. 113)

These seven functions can be easily identified in classrooms and various pedagogical activities. More importantly, Creese and Blackledge (2010) illustrated why and how translanguaging is empowering students. Nevertheless, despite the potentials of translanguaging, an "English only policy" is still prevalent in English education in China, where it is almost a national belief that in order to improve students' listening and speaking, "English only policy" is a must. These seven practices can serve as evidence to convince policymakers and English teachers in China that Chinese is a precious resource that students can make use of while learning English.

According to Canagarajah (2011a), many studies have shown that translanguaging was produced by students unprompted and "surreptitiously behind the backs of the teachers in classes that proscribe language mixing" (p. 401). This is a precise description of what happens in many EFL and ESL classrooms that adopt English-only policies. If their teachers prohibit translanguaging, students lose many action potentials afforded by their L1. For example, they can language about the new words in their L1; they can find more information using both English and their L1, and their L1 can scaffold their process writing shown in studies studying reviewing translanguaging and writing.

Translanguaging has been investigated in relation to writing. Adamson and Coulson (2015) studied translanguaging as a pragmatic means to promote students' critical academic writing. They prepared students in partial English-medium instruction, which meant both English and Japanese could be used. They found that translanguaging facilitated task completion; translanguaging allowed students to do reading in Japanese related to class themes which resulted in improved proficiency for students of lower proficiency. They also found that students' awareness of translanguaging was related to improved writing. Garcia and Kano (2014)

investigated the role of translanguaging as a process and pedagogy by studying and interviewing Japanese students working on English writing in the US. They let students read side-by-side bilingual texts on the topic about which they were assigned to write; an English text would be coupled with a parallel translation in Japanese. After reading, students wrote an essay in English on the topic of bilingual reading and orally discussed the bilingual readings with their peers mostly in Japanese. They found that students produced better-written texts in English because the translanguaging pedagogical approach allowed these Japanese students to take into account their entire linguistic and discursive repertoire. From the interviews, they discovered that translanguaging enabled students to move back and forth along their linguistic repertoire. By doing so, these students managed to overcome and become more aware of the differences in languages and discourses. Study as such shows how translanguaging allows learners to make use of their holistic linguistic repertoire for different actions. Motihaka and Makalela (2016) studied the use of translangauging in both Sesotho and English in raising first-year students' awareness of L2 writing strategies in an urban university in South Africa. Their study was built on dialogic instruction in which instructors and students focused on students' ideas, questions, and modification of their topics. They found that dialogic instruction assisted students in raising their awareness of L2 writing strategies when they translanguage between L1 and L2. With a continuous emphasis on speaking only English and no L1, teachers actually limit students' access to a large repertoire of linguistic resources and hinder students' active critical thinking, which can be prompted if they were allowed to scaffold their discussion and learning using their L1. These studies reviewing translanguaging in writing showed promising impacts that translanguaging had on writing.

Translanguaging, as the extension of languaging, highlights the new understanding of language beyond a system of codes, and embraces language users' different languages as an expanded linguistic repertoire that they could use for different actions. Although translanguaging has been a highly researched concept recently, especially applied as a pedagogical tool, more research needs to be done to promote translanguaging as a practical theory of language (Li, 2018). Translanguaging fits in the EDD framework for its recognition of the dialogical and action potential of language beyond its semiotic resources as shown in its affordances in collaborative learning (Walker, 2018).

Process Writing

Over the years, we have seen a slow progress from product-oriented approaches to teaching writing (Pennington & So, 1993) to process approaches (White, 1988; Sun & Fung, 2009), genre approaches (Callaghan, Knapp & Noble, 2014), and more recently a combined process-product approach and process-genre approach (Badger & White, 2000; Chow, 2007). The product approach focuses on students' production of final writing and tends to make students focus on the accuracy and correctness of their written language. Process writing breaks the activity of writing into several steps and engages both the teacher and students into a process of generating a writing product. The following paragraphs review studies of process writing.

When Flower and Hayes (1981) proposed a cognitive process theory of writing, they believed that the processes of writing are "hierarchically organized, with component processes embedded within other components" (p. 375). Goldstein and Carr (1996) investigated whether students benefited from process writing by analyzing the frequency of process-oriented activities taught in United States schools and the writing performance of students whose teachers emphasize these process-oriented activities. Their large-scale data were drawn from the 1992

National Assessment of Educational progress in Writing, which was administered to around 295,000 students from three different grades. Their results indicated that students whose teachers encouraged process writing were better writers and their average writing ability was higher than students whose teachers never encouraged process writing. They concluded that use of pre-writing activities is associated with higher average proficiency scores. These early studies analyzed process writing with L1 students, yet the findings shed light on the potential of process writing for L2 writing as shown below.

The process writing approach to second writing instruction has been understood to scaffold L2 writing students. Faraj (2015) studied the effect of scaffolding on EFL students' writing ability through the writing process. In the study, 30 second-year college students studying in the English department in Iraq underwent process writing including Prewriting, Drafting, Revising, Editing, and ended with Publishing, and students received teacher feedback from the beginning until the end of writing process. Based on the pre- and post-test, the results showed that students' improved significantly. Similarly, studies have shown that process writing has a positive effect on students' writing success. Bayat (2014) investigated the effects of process writing on students' writing success and anxiety by analyzing students' writing at the beginning and end of the course over 10 weeks. The statistical analysis of pre- and post- writing showed that process writing had a significant positive effect on students' writing success and their anxiety over writing.

Process writing has been integrated into different pedagogical practices. For instance, Storch (2005) applied collaborative writing as a way of process writing in class and found that collaborative writings were shorter than the control group but better in task fulfillment, grammar accuracy, and complexity. Other than research studies, Boas (2011) proposed pedagogical

methods of how the Internet can be applied in process writing by describing how to use blogs and Ning networks in engaging students in process writing activities. These above-mentioned research studies have shown that process writing has been proven to be effective in helping students with their writing success and anxiety. However, it can be seen that process writing has great potentials of incorporating new pedagogical tools and methods to generate new implications for second language teaching that have not yet been researched. Moreover, the design of serious games—computerized games for serious purposes (Mildner & Mueller, 2016)—for second language writing is still lacking in the literature.

Process writing fits with the EDD framework in that the inherent process could engage students in an experience, and experience-based writing, learning or exploring provides a space for ecological design in which the dialogical and distributed cognitive theories-based activities can be incorporated.

Games in Language Learning

As shown from the literature review of process writing and languaging, it can be inferred that a process writing approach creates a space for languaging activities. There are many pedagogical ways to induce languaging activities, and gameplay is one of them. This section reviews studies involving games in second language learning and concludes that the current studies using games as a source of second language learning have shown the potential of games being applied in second language writing. There is a growing number of research projects introducing games (Gee, 2003, 2005; Piirainen-Marsh & Tainio, 2009; Peterson, 2010) as a source of second language learning. Piirainen-Marsh and Tainio (2009) used Conversation Analysis to study the interaction during a video gameplay and found that repetition done by other plays affords the game players the opportunity to engage with second language on top of making

sense of the game and allowed game players to use these language resources from other-repetition to display and develop linguistic and interactional competence. Peterson (2010) studied the role played by players in massively multiplayer online role-playing games and concluded that such games provided a motivating environment for students to engage in target language interaction. He also suggested that such a gaming environment provides learners opportunities of vocabulary acquisition and development of communicative competence. Sykes (2018) explored the use of digital games in language learning and proposed ways to incorporate games into the field in the future by increasing access to both community-based games and commercial games, and meaningful incorporation of virtual reality.

Based on a review of others' research, Gee (2006) proposed six features of good video games that enhance learning:

1. Video games can create an embodied empathy for a complex system.
2. They are simulations of embodied experience.
3. They involve distributed intelligence via the creation of smart tools.
4. They create opportunities for cross-functional affiliation.
5. They allow meanings to be situated.
6. They can be open-ended, allowing for goals that meld the personal and the social.

(Gee, 2006, p. 179)

Gee's (2006) features of good video games fit into an EDD framework via the embodied experience, distributed intelligence, situated meaning, and opportunities for cross-functional affiliation. The ecological theory proposes the concept of a complex system which entails enriched resources affording opportunities for action. The opportunities for action were congruent with the "opportunities for cross-functional affiliation" mentioned by Gee (2006, p.

179), and the distributed intelligence was in line with the distributed cognitive theory within the EDD framework.

In addition, research about the effects of gaming in second language learning has been promising (Allen, Crossley, Snow, & McNamara, 2014; Rankin, Morrison, McNeal, Gooch, & Shute, 2009; Young & Wang, 2014). Rankin, McNeal, Shute, and Gooch (2008) proposed the concept of user-centered game design for serious games (games designed not primarily for entertainment) and used this framework for analysis between Player Characters in a massive multiplayer online. They found that serious games (games designed not primarily for entertainment purpose) show great promise as a learning tool for vocabulary acquisition. Yet, not much has been done regarding multi-player games in a classroom setting or in second language writing in general. Rankin, Gold, and Gooch (2006) used Ever Quest 2 as a learning tool for ESL students, and their results showed that students' vocabulary increased by 40% because of their game interactions with non-playing characters. They suggested that language was a significant artifact for students to develop their game characters and complete game tasks. Moreover, they pointed out that the game allowed students to practice conversation skills with playing characters as their chat messages increased 100%.

Other than research done to investigate the impact of games on language learning, new research calls for new ways of studying the relation between games and language learning and development. For example, Scholz and Schulze (2017) proposed the study of the gaming processes and second language development instead of the players' reflection of the validity of gameplay. They suggested complex adaptive systems research and retrodictive qualitative modeling to study the learners playing *World of Warcraft* and their gaming trajectories over four months. Other than applying games in second language learning in general, studies have applied

games in second language writing. Allen, Crossley, Snow, and McNamara (2014) analyzed two groups (L1 and L2) of students' engagement, motivation, and perceptions of performance after interacting with an intelligent tutoring system with a set of educational games over eight weeks. Their findings show that both groups' writing performance improved, and their attitudes became more positive after the interaction with the game system. They further discovered that game difficulty was a predictor for boredom for L1 students, and game enjoyment was a predictor for motivation and perceived writing improvement for all students. Bawa, Watson, and Watson (2017) investigated whether including a Massively Multiplayer Online Game in an online undergraduate writing course would improve students' writing performance and their engagement. They conducted an experimental study with a control group in which both groups were given readings about digital games-based learning and wrote essays about the topic. The only difference between the control and the experimental group was that the experimental group interacted with the game as part of the course. They found that the experimental group had higher writing performance scores than the control group, and the game incited more engagement. From the review of research of games and second language studies, although games have been applied in second language studies, the majority of the research in this area is investing gaming as an individual entity or language learning tool instead of as part of a course. Moreover, most studies used the existent games created for entertainment purposes as a pedagogical tool which could be problematic as sometimes the objectives of the game and the course objectives did not align. This dissertation study will fill this research gap by demonstrating the design of a game which specifically aligns the course objective.

Studies have investigated the roles that video games can play in second language learning, but these researchers talked about existing video games for entertainment purposes, not

designed for educational objectives. Games fit within the EDD framework due to its plethora of languaging opportunities they offer learners/players during the gameplay. Compared to more traditional approaches to teaching writing, games provide a more dynamic environment in which learners/players can be engaged in thinking and planning prompted by game design, and they are constantly scaffolded and supported by the peers, artifacts, and guided by the narratives of the games.

Critical Thinking

Critical thinking is a transdisciplinary concept that has been researched in education, psychology, and sciences. The definition used for this dissertation is from Rhodes (2010): "a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion" (p. 1).

The reciprocal connection between critical thinking and writing has been demonstrated in many studies (Chaffee, 2014; Green III & Klug, 1990; Mertes, 1991; Smyth, 2004). Chason, Loyet, Sorenson, and Stoops (2017) embedded critical thinking in paragraph writing instruction by teaching students the TBSIR (topic, bridge, support, interpretation, and return) approach to paragraph organization. They used a double-blind rating and found that instruction in TBSIR improved students' critical thinking in writing, and the results showed that this particular paragraph organization does encourage students to think about how the evidence supports their main ideas and the significance of the evidence/support. Cottrell (2011) also emphasized the importance of evidence and position in critical thinking in second language writing. Condon and Kelly-Riley's (2004) guidelines for rating critical thinking in writing are also in alignment with Loyet, Sorenson, and Stoops (2017) and Cottrell's (2011) findings; they all highlighted the importance of significant evidence and the link between the evidence and the point. Mehta and

Al-Mahrooqi (2015) discussed whether critical thinking could be taught by connecting critical thinking and writing in an EFL context. They investigated the impact of in-class discussions and subsequent writing on critical thinking and found that students became more successful in integrating critical ideas into their writing. Hence, they concluded that continuous oral and written practice provides students opportunities to develop their critical thinking. It can be seen that Mehta and Al-Mahrooqi (2015) also connects process writing with critical thinking. Their findings can also be interpreted using the concept of educational affordances (Bin, 2014) as the in-class discussions were the educational affordances that students perceived and made us of in their writing. Kovalik and Kovalik (2007) studied how a language simulation including an in-class quick response, a card game, individual research, a classroom debate, a debriefing session, and an argumentative essay improved students' quality of explanation of evidence supporting the writer's stance. They concluded that language simulation enhances students' critical thinking. Based on the review of the above-mentioned studies, we see that critical thinking in second language writing is a research area that can be further advanced, and no studies have been conducted to investigate critical thinking in second language writing from an EDD perspective. By filling the research gap, this dissertation created a blended space between writing and critical thinking via gaming.

From this review of the research on critical thinking, it can be interpreted that critical thinking is neither a fixed writing template that can be replicated nor a list of must-haves in the writing. It is a holistic skill that needs training, and process writing allows students to spend time exploring and thinking, which helps students develop critical thinking as a holistic skill over time. This dissertation research intends to help students explore critical thinking by engaging students in experience-oriented learning, self-study of reading materials, group discussions, and

group game sessions in which they need to search for information and work collaboratively in order to complete relevant quests.

Conclusion

This literature review summarizes recent studies in the area of languaging, affordances, translanguaging, process writing, games in language learning, and critical thinking to show that although these theories individually have been researched and found to contribute to the studies in language learning and writing, there is a lack of research attempting to consolidate these approaches and apply them systemically in course design. While EDD theories have been developed at the philosophical level, not many pedagogical applications have been implemented in the field of second language studies. In order to operationalize EDD theories, a pedagogical approach like process writing could be adopted as its experience-oriented nature has created a space for the application of the games, and gameplays allow languaging to take place, which were found to have positive impacts on second language learning. This dissertation study built on the framework of ecological, dialogical, and distributed cognitive approach to language learning, adopted the pedagogical approach of process writing to create a pedagogical drama game-supported second language writing course in which learners/players engaged in languaging and translanguaging.

CHAPTER 3-METHODOLOGY

Introduction

Chapter 3 introduces the research methodology of this dissertation project including the research design, research method, and research procedure. As this is an educational research project centering around the creation, evaluation, and re-adjustment of a course, the design of the course and the background information of the educational site are also part of the methodology (Design-based Research), and detailed information about course and game design can be found in Chapter 4.

Research Design

Design-Based Research

Design-based research, also called *design research* and *development research*, has been used in the fields of learning sciences, educational research, and educational psychology. According to Wang and Hannafin (2005), the main characteristics of design-based research (DBR) include "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p. 6). Anderson and Shattuck (2012) stated that design-based research is a "practical research methodology bridg[ing] research and practice in formal education" (p. 16). They reviewed basic structures of DBR and summarized the characteristics of DBR as being situated in a real education context, focusing on the design and testing of significant interventions, using mixed methods, and involving multiple iterations. For DBR, it is significant to situate the research in a real educational context instead of a controlled experimental setting. In addition, the intervention of DBR can vary depending on the purpose of

the research project; it can be a learning activity, a type of assessment, an administrative activity, or a technological intervention. The outcome of DBR is the improvement of the educational intervention and the development of theories. Ann Brown (1992), the American researcher credited with first developing DBR, used the term "design experiments" to describe a method to carry out formative research to test and refine educational designs or programs based on principles or theories derived from prior research. Design experiments are an alternative term for design-based research.

Design-based Research intends to address several needs and issues in analyzing learning and education, with a particular focus on learning. These include the following:

1. The need to address theoretical questions about the nature of learning in context.
2. The need for approaches to the study of learning phenomena in the real-world situations rather than the laboratory.
3. The need to go beyond narrow measures of learning.
4. The need to derive research findings from formative evaluation. (Collins, Joseph, & Bielaczyc, 2004, p. 16)

To provide some background for the later section on the comparison between DBR and quasi-experimental method, it is important to note that DBR is a methodology rather than a method. Moreover, its primary focus is learning in context. DBR has emerged as a new research approach to investigate learning phenomena in real-world contexts, not a controlled laboratory environment. In addition, design-based research is also a research tool for formative research studies, which are an integral part of program development.

The Design-based Research Collective (2003) summarized the characteristics of design-based research as the following:

> First, the central goals of designing learning environments and developing theories or "prototheories" of learning are intertwined. Second, development and research take place through continuous cycles of design, enactment, analysis, and redesign (Cobb, 2001; Collins, 1992). Third, research on designs must lead to sharable theories that help communicate relevant implications to practitioners and other educational designers (cf. Brophy, 2002). Fourth, research must account for how designs function in authentic settings. (p. 5)

The first characteristic summarized by the Design-based Research Collective (2003) is consistent with what Collins et al. (2004) pinpointed about the issues and needs of learning. It admits that learning is a dynamic process that involves many theories and DBR is a methodology that meets the educational goal of designing learning environments and developing learning theories. Anderson (2005) also argues that the practical nature of DBR resonates with the pragmatic tradition of American educational philosophy originating with Dewey that highlights the role of experience in learning. The Design-based Research Collective (2003) emphasizes the one key characteristic of DBR: cycles or iterations of design, enactment, analysis, and redesign. The other three characteristics of DBR include 1) the applicability of the theories discovered from the design, 2) the enactment of the design, and 3) authentic settings.

Last but not least, DBR as a research methodology and framework emerged to investigate how a holistic environment provides learners with specific and unique experiences. According to Dewey's (1938) theory of experience and learning, education and learning are social and interactive processes, students thrive in an environment where they are allowed to experience and interact with the course, and all students should have the opportunity to take part in their own learning. DBR is both a research framework in which a course that aims to provide learners

with a positive learning experience can be developed through different iterations and a research methodology that allows researchers to investigate a complex learning environment and system. By studying the interactive processes, new theories about learning and learning experience can be generated.

Examples of DBR in Classroom Research

DBR has been used mostly in educational settings, but rarely with second language pedagogies. Analyzing these examples, it can be seen that DBR is a method that can bridge research in the field of second language studies with learning science and educational psychology. Bush and Sorensen (2013) used the design-based research (DBR) framework in investigating how computer-assisted language learning (CALL) materials were implemented in a social network setting and an Alternate Reality Experience for Language Learning (ARELL). Through DBR, the researchers managed to observe changes in the variables over four separate iterations of the ARELL environment, and the data informed them about students' attitudes toward the experience. They concluded that the manner in which the teacher presented the material had the greatest impact on how students reacted to the new learning setting. Their study is an example of how DBR can employ both observational research methods and quantitative study in which the researchers aim to find a causal-effect relationship between the independent variable and dependent variables. In addition, each iteration was designed based on the results and feedback from the previous iteration.

Johnson, Khoo, and Campbell (2013) conducted a case study about a fully online CALL course in a language teacher education program. They used DBR because of its ability to capture the complex teaching environments and its several iterations which allow the researchers to undergo several rounds of planning, reflecting and changing. The intervention they used is

teaching software called *Panapto*. They concluded from the iterations that course design and development are of significant importance to an online course and it is crucial to use a collection of new technological tools and shape the use of these tools based on the needs and dynamics of the complex teaching and learning context. Different from Bush and Sorensen (2013), Johnson, Khoo, and Campbell (2013) did not take a quantitative approach, but rather they focused more on the thick description of the design and implementation as well as the feedback from the students. Johnson, Khoo, and Campbell (2013) also highlighted that DBR is suitable for such a case study.

Different from both Bush and Sorensen (2013) and Johnson, Khoo, and Campbell (2013), which are in ESL context, Sumi and Takeuchi (2013) used DBR in an EFL context, a class of 19 first-year undergraduate students of EFL over the course of one year at a university in Japan. They built their design on the Cyclic Model of Learning (CML) and then conducted four phases of DBR. They implemented the model using technology and investigated how CML-based teaching practice influences students' English ability as well as the instructor's teaching methods. Like Johnson, Khoo, and Campbell (2013), Sumi and Takeuchi (2013) also understood DBR as an overarching research methodology that can employ other specific research methods. For this study, Sumi and Takeuchi (2013) collected data, both on- and off-line, in a variety of ways including quizzes, weblog, video recording, questionnaires, and classroom observation.

Pardo-Ballester and Rodríguez (2013) adopted DBR in investigating design principles for language learning activities in two hybrid Spanish courses with a total of 79 Spanish language learners. They then used sociocultural theory and second language acquisition to analyze students' interactions during chat exchanges and a roleplay task with native language speakers. The tasks were the focus of each iteration and the new tasks were improved based on the analysis

results from the previous iteration. They aimed to connect the affordances of virtual worlds with the opportunities for language development.

From these examples which have operationalized DBR, it can be concluded that DBR has been used in the field of second language pedagogy to improve a particular pedagogical task, support a learning environment with certain technological tools, or generalize design principles. In all of these examples, the study underwent several iterations, and each new iteration was revised based on observation and analysis data from the previous iteration. In addition, it can be seen from the above studies that DBR is not a specific method but rather a framework within which both qualitative and quantitative methods can be employed for data collection, observation, and evaluation. In addition, we can see that designs in all these examples are based on different theories that make a flexible research methodology for different disciplines as well as areas in the field of second language studies.

The advantages of design-based research include its ability in addressing theoretical questions about the nature of learning in context, which quasi-experimental method cannot address. DBR also bridges research and application by presenting the details of the whole process of designing, implementing, analyzing, and redesigning the project. DBR is a more systemic research methodology compared to a formative evaluation in that it also aims to draw theoretical findings through DBR.

DBR and Course Development Research

According to van Lier (2014), a course must be "based on our knowledge of the learning process and the learning context" (p. 4) and take into consideration the values and purposes of those who will affect and be affected by a course, including the teacher, students, parents, and any other stakeholders. Van Lier (2014) proposed the AAA course, which is built on the

principles of *awareness, autonomy,* and *authenticity*. He defines awareness as "know what you are doing and why, conscious engagement and reflection"; autonomy as "free choice and democratic education"; and authenticity as "language use in life, relevance, and communication" (p. 11).

DBR, as a research framework and methodology, can be used in course development research in two ways: first, DBR gives course developers the opportunity to generate new theories about learning in the course, as well as the interaction between learners, teachers, and the course; second, DBR gives researchers the opportunity to figure out how van Lier's (2014) three A's (awareness, autonomy, and authenticity) are realized in the design and enactment by analyzing the recorded thick description of the designing and redesigning phases as well as the interactions between the teacher and students during the implementation phase. Figure 3.1 shows how DBR as a research methodology allows a myriad of other ESL (English as a second language) pedagogy and writing approaches to be at play all at the same time in this study.

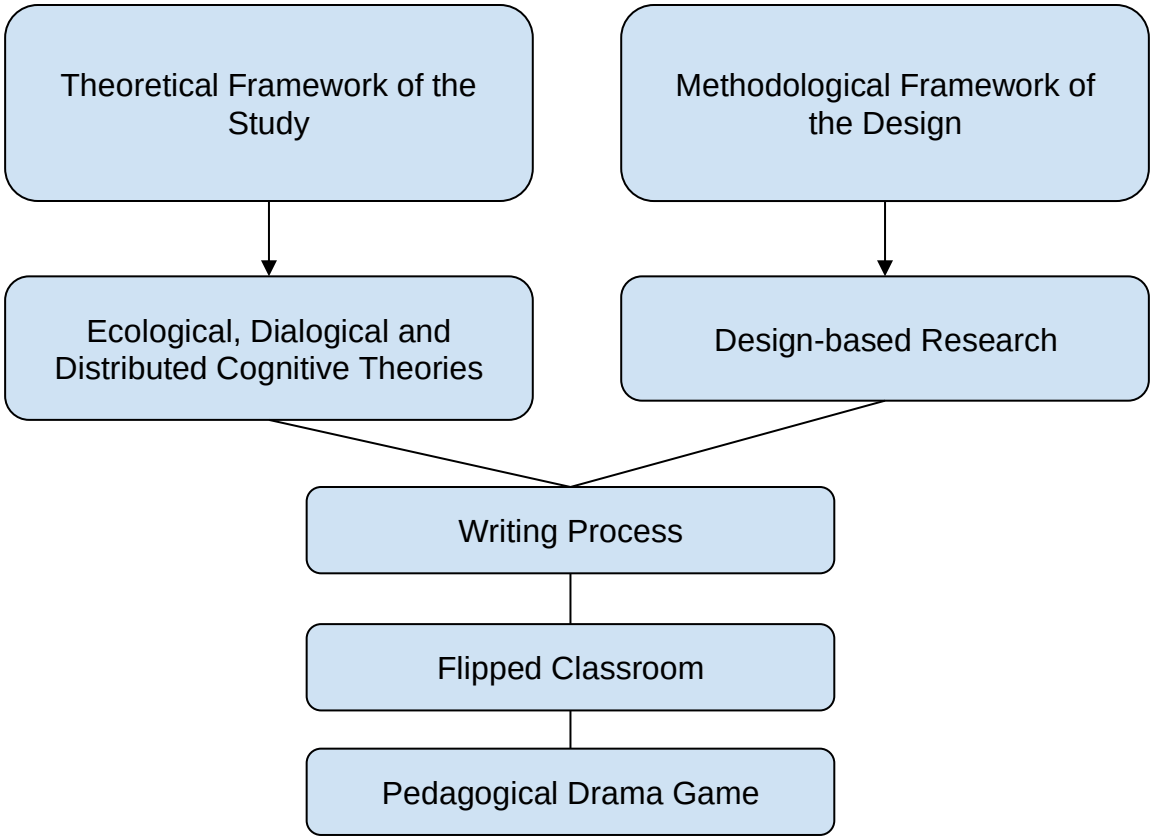


Figure 3.1. Breakdown of Theoretical Underpinnings of this Research Project

The dissertation project was created based on the methodological framework of design-based research, and the design of the overall course was informed mainly by the theories of experience-oriented language learning and the ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed cognitive theories (Thibault, 2001) to language learning. The specific approaches that guided the creation of the pedagogical activities were process writing (Seow, 2002), flipped classrooms (King, 1993), and pedagogical drama game (Barab et al., 2009).

Course Structure

The whole course was divided into two parts: the self-study materials and the face-to-face sessions. New content was presented in a flipped classroom model (see Figure 3.2). The face-to-face sessions were divided into three sections: 1-hour group discussion based on discussion questions, 1-hour game session, and 1-hour in-class timed writing based on a provided topic.

Each daily module focused on one theme, for example, technology, education, or environmental issues.

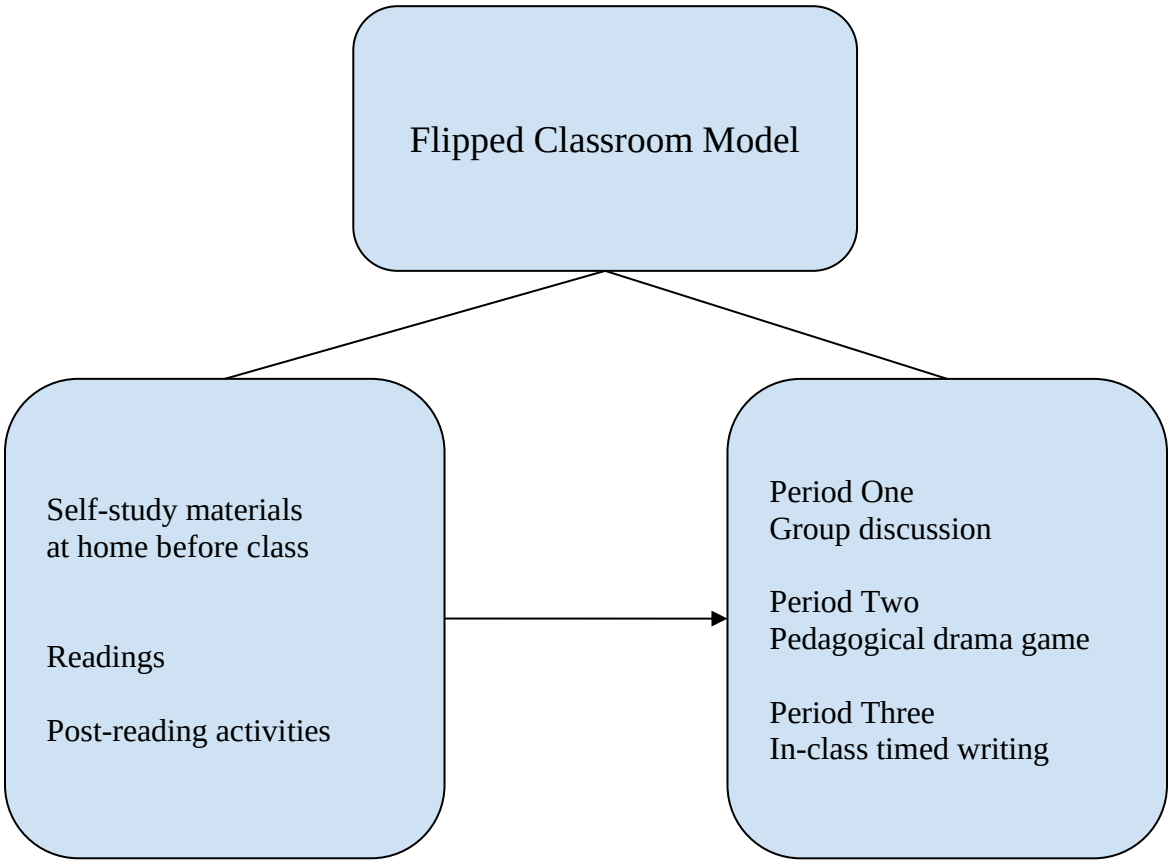


Figure 3.2 Course Structure

The course on second language writing was designed and revised after every iteration. This course was supported by a pedagogical drama game and executed using a flipped classroom model. Iteration 1 was tested by a group of 80 high school students in China, and was conducted in the summer of 2017. In new iterations in the summers of 2018 and 2019, the course was conducted in a similar way. The students were divided into two classes: Class A and Class B. Two teachers taught both classes (one teacher was the researcher and the other instructor was not involved in the designing process). Each day the class was divided into three periods: discussion-question guided communication and lecture, gameplay session, and in-class writing. To diminish

the effects of two different instructors, each instructor was in charge of teaching only one type of lesson (either discussion-question guided communication and lecture or gameplay session) per day, and students swapped classrooms after each period. In addition, the two instructors also alternated in teaching different types of lessons. If one taught the lecture one day, s/he would teach the gameplay session the next day.

Research Methods

The main research methodology employed for this project is design-based research (DBR) because this is an interdisciplinary research project that studies second language writing, technology-supported learning environment, course design, and games in learning. DBR methodology is ideal for this research project as the intervention, the online pedagogical drama game, was implemented through several iterations in natural settings, in order to test the ecological validity of an ecological, dialogical, and distributed theory-based pedagogical approach. Through several iterations, new theories and frameworks for conceptualizing second language learning, instruction, design processes, and possible education reform will be generated. Under the general research methodology of DBR, different specific research methods were employed.

Research Procedure

The research project involves three iterations; the whole research process can be illustrated using Figure 3.3. The design of course 1.1 is informed by the theories of the ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed (Thibault, 2011) approach to language learning, as well as methods from flipped classroom models (King, 1993), process writing (Seow, 2002), and pedagogical drama games (Barab et al., 2010).

Each iteration involved three phases: the design of the course, the implementation of the course, and the analysis of the collected data. Conclusions generated from the analysis of the collected data informed the redesign of the course and hence, a new iteration. The design of the course involved two aspects: the design of the online self-study learning materials presented in the flipped classroom model and the design of the face-to-face sessions consisting of group discussion sessions and game sessions. Design documents keep records of the designing process.

After each iteration of course design was completed, course implementation and data collection took place in China. During the implementation process, students took a pre-course and post-course test, which were used to measure changes in their writing and speaking during the course. A pre-course survey and a post-course survey examined both students' and teachers' attitudes towards the course and the pedagogical drama game. Students' group communication during the face-to-face class sessions was video recorded and transcribed using *Transana* (Woods & Fassnacht, 2012). *Transana* is a transcribing software that allows multiple transcribers to work on the same document at the same time, and the software can produce a keyword map based on the keywords transcribers assign during the coding process.

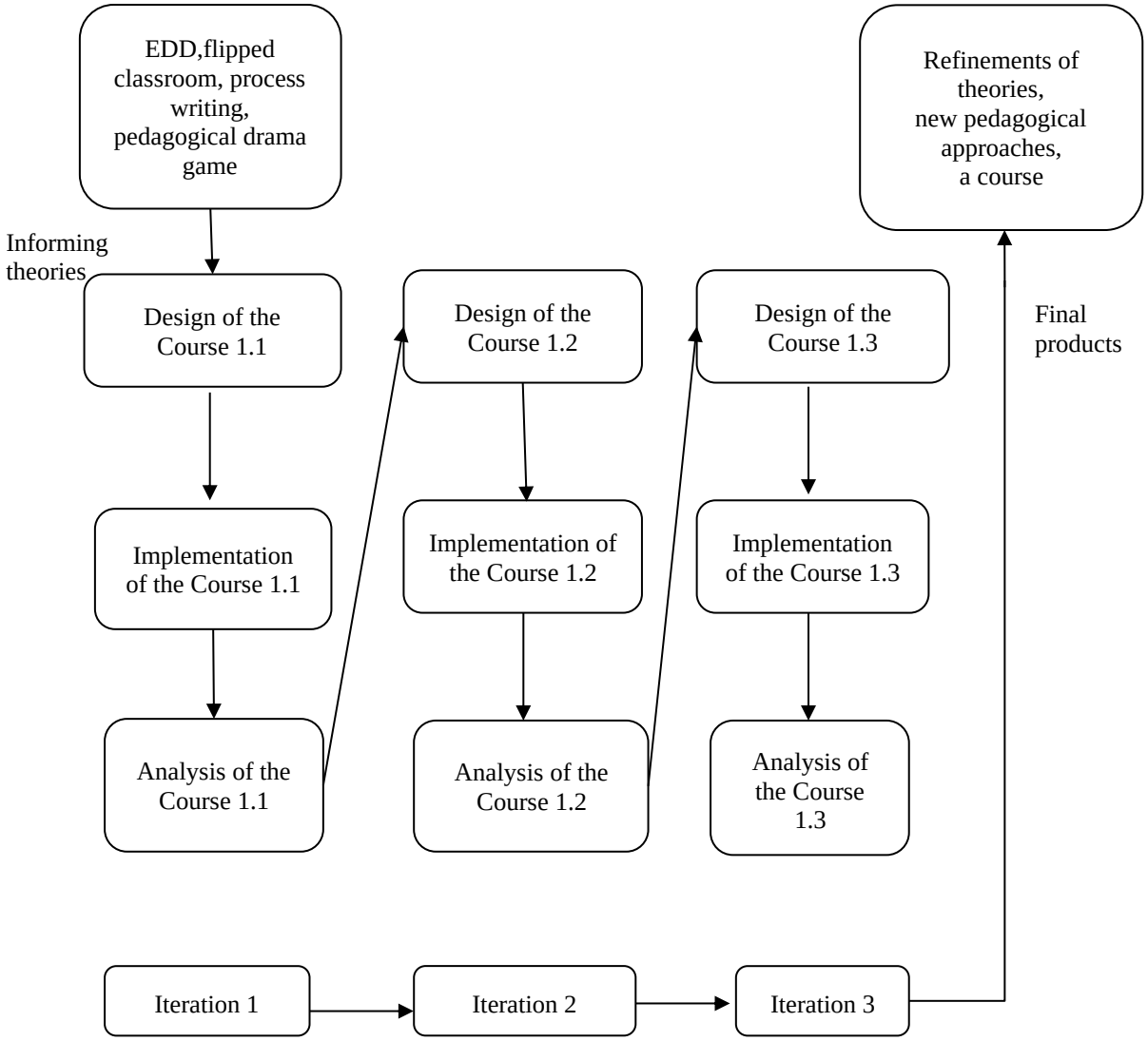


Figure 3.3. Research Procedure

After the analysis of the collected data was completed, Iteration 2 started with the redesign of the course based on the analysis of the collected data from Iteration 1. Once the redesign process was finished, a new iteration began as shown in Figure 3.3. After the analysis of the collected data from Iteration 2 was completed, the researcher was ready to end the research as the outcomes and feedback were positive. The third iteration was implemented as the school wanted their English teachers to be involved and an additional period was added to the original design in which these teachers taught English grammar. After each iteration, in order to see if

there was a need to do a new iteration, the following indicators were evaluated: whether the course had shown a positive, neutral, or negative effect on students' writing; whether the course or the game needed more revision; and whether students and teachers had any concerns that needed to be addressed. If the outcomes and feedback of the course were mostly positive, and there were no more needs for further adjustment, the designer could decide to end the research at that particular iteration.

Data Collection

To record the implementation of the course, an observational approach (participant observation) was adopted, which was in alignment with the naturalistic-ecological perspective of this educational research. The instructor was able to take observational notes because the course did not involve teaching but rather coordinating activities. Once students were informed of the activity or the game quest, the instructor was free to go around the classroom and observe group activities. The execution of the course was carefully video-recorded, and each group's communication was also video recorded. In order to ensure inter-coder reliability, a coding scheme and a framework for interpreting observed behaviors in students' engagement in the course were developed by the researcher and another coder and communicated between the two. The ethnographic research process for this dissertation project can be summarized into the following phases: entry and establishment of researcher role, where the researcher was also one of the teachers; data collection procedures, that is the course execution; establishment of objectivity; and analysis of data.

Before the start of the course, I (the sole researcher for the project) used QQ teleconferencing tool to communicate with potential students who would be joining the course in order to test the Wi-Fi stability and had a virtual tour of the physical classroom where we were to

have the classes in China. The physical classrooms were the same over the three iterations. Before Iteration 1, I also had a few meetings with the English teachers working at the school discussing issues they thought were critical with their students. These teachers also completed a survey to investigate their opinions about students using the Internet in their studies. I had a research assistant who was not involved in the designing process to assist with the teaching and coordinating of the classes for the three iterations. Moreover, in order to diminish the effects of differences between two teachers, students were divided into two classes, Class A and Class B, and the two teachers alternated sessions each day. This means if Class A took the game session with Teacher Z and discussion session with Teacher L today, the next day Class A would have the game session with Teacher L and discussion session with Teacher Z. After the implementation of each iteration, I interviewed the assistants regarding their experience teaching the class and his observation of students' responses to designed activities.

For this dissertation project, the researcher took on three roles: researcher (collecting and analyzing data), designer (designing the course as part of the research), and teacher (implementing the course). Since this is a design-based research study, the data include both design documents and implementation data. As shown in Table 3.1, the design documents include the researcher's planning journals, designing philosophies, relevant lesson plans, observation notes, and reflections. The implementation data include the video and audio recordings of the lessons, group discussions, and the game plays as well as students' writing and speaking samples. Before the implementation of every iteration, students and parents were informed of the purpose of the research and were asked to sign consent forms with regard to the collection of the data.

Table 3.1 *Data Collection*

Designing Data (from the designer perspective)	How the Data was Collected	
	Planning journals Designing philosophies Lesson plans	Planning journals and design materials were written weekly based on communication with the research site.
	Observation notes	Observation notes were written with the review of the video recordings after the lesson for the day. Observation notes were the data that informed the researcher on how students responded to the designed activities during class time.
	Reflections	Daily reflections were completed after each lesson. Students could write in either English or Chinese.
Implementation Data (from the researcher perspective)	Video and audio recordings	Each group was given a voice recorder to record their group discussions and the gameplay sessions. Three camcorders were placed beside four randomly chosen groups before class.
	Pre- and Post-course surveys (See Appendix A)	Printed out for students to fill before and after the course
	Pre- and post-course tests (See Appendix B)	Students wrote an essay in class by hand before and after the course based on a written prompt and completed a speaking activity by recording their answers before and after the course based on a speaking prompt.
	Writing samples (See Appendix C)	Students' pre- and post- writing samples rated for critical thinking by two raters based on a rubric created for rating critical thinking in writing.

The implementation data includes pre-f2f data and in-class data. The pre-f2f data was stored in *Yiqixie*[1] (Iteration 1 and 2) and QQ[2] online collaborative folder (Iteration 3). The in-class data consists of video and audio recordings of students' group discussions during the discussion session and the gameplay sessions as well as their essays.

Video and Audio recordings

Students sat in groups of four during the face-to-face class time. Each group was given an audio recorder to capture their group discussions and gameplay sessions. With the availability of the three camcorders, six groups from two classes were video recorded daily during their group discussions and gameplay sessions. As the class size was big and the recording quality might be jeopardized, an extended microphone was attached to the video recorder to make sure that the communication was clearly recorded. The audio recordings worked as supplementary data to track each group's trajectory of gameplay.

Pre- and Post-course Surveys

In order to understand students' attitudes towards the course and the game, the research method used is surveying. A pre-course survey was conducted before the beginning of the course, and a post-survey was conducted by the end of the course (Appendix A). To investigate students' and teachers' attitudes towards the course, the qualitative research methods of surveys were employed. Pre- and post- surveys were conducted to gauge students' perception of their traditional English courses that they had been taking in China and computer-assisted English courses before and after the course. Pre- and post-course surveys were administered before and after the course to gauge students' perception of game-supported learning and their attitudes

1 A platform for collaborative working documents (similar to Google doc)

2 Instant messaging software service and web portal

towards the game and the course. In the pre-course survey (Appendix A)., students were also asked about their background of language learning. The surveys consisted mostly of open-ended questions and a section using Likert scale asking them to report their perceived progress and their perception of the course activities.

Writing

As explained in the course design section, students were given one hour per day after the group discussion session and gameplay session to write an essay based on a prompt (Appendix B) related to the day's discussion topic. The writing prompts specified that they were expected to write an essay of between 300 and 500 words in length. The reason for having timed writing is that students were expected to participate in timed writing during the second round of the competition based on a given topic. Students wrote the essay by hand as they were expected to write by hand in the competition. All the writing samples (Appendix C) were scanned. I then transcribed the writing maintaining the writers' exact spelling and sentence structure.

Pre- and Post-course Tests

Pre- and post-course tests (Appendix B) were also timed writings, but students were informed of neither the topic nor the prompt before the test. The pre- and post-course tests were administered to measure students' critical thinking in writing before and after the course. In addition, the prompts for pre- and post-course tests were different to make sure that the changes of critical thinking in students' writing performance were not because of the familiarity of the topic. The prompts of the pre- and post-course tests were not related to topics discussed during the course.

Daily Reflections

Students shared daily diaries (Appendix D) on an online multi-user board as shown in Figure 3.4 on which they could see each other's posts. The diary was mainly about their feelings about the activities in which they participated during the f2f sessions

Figure 3.4. Screenshot of Students' Shared Daily Diaries on Padlet

Data Analysis

As this dissertation adopts an ethnographic approach to the design-based research, the designer's designing notes, observations, and reflections are all quintessential data for analysis. Table 3.2 shows the corresponding analysis methods for different types of data collected data.

Table 3.2 *Data Analysis*

	Analysis Methods	
Implementation Data	Video and audio recordings	Video and audio recordings kept track of how students complete their

(from the researcher's perspective)		pedagogical activities and gameplay sessions. The video and audio recordings were transcribed and coded using *Transana*.
	Pre- and Post- surveys (Appendix A)	The pre- and post-course surveys were used to gauge students' experience in game play
	Pre- and post-tests (Appendix B)	The pre-and post-course tests were used to measure if students improved in their critical thinking in writing
	Writing samples (Appendix C)	Students' pre- and post- writing samples rated for critical thinking by two raters based on a rubric created for rating critical thinking in writing.
	Diaries (Appendix D)	Software *Antconc* was used to look for emergent themes from students' daily diaries.

The overarching research method is design-based research. The design-based research method allows the research questions to be investigated separately using individual research methods.

Research Question 1

The first research question is about game-afforded communication. The first part asks how technology and the game-based course changed students' communication in class. In order to analyze the learning environment and study the students' game-afforded communication, the gameplay sessions and group discussions were video recorded and transcribed. The transcription included not only their dialogues, but also their gaze and gestures and the technologies that they used at specific points (Gee, 2014). Detailed transcription processes are provided in the next section. The unit of analysis is a communicative project (Linell, 2009), which refers to dynamic

"tasks carried out by participants in and through their interaction" (p. 190). To be more specific, communicative projects described the actions carried out by participants through talking and doing. For example, a group of team members would use their WIFI-enabled phones to look for the pronunciation of a word "refugee" which appeared in their game quest. All the actions and talking about this theme "looking for the pronunciation of 'refugee'" belong to the communicative project of "looking for the pronunciation of refugee." I used *Transana* for transcription and the timecodes function of *Transana* to stamp the boundaries of communicative projects. To answer the first half of the research question, the relationships between the affordances within the game environment and students' languaging (Swain, 2006) performance/activity were analyzed. As the theoretical grounding of the course design is ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed cognitive approach (Cowley, 2012) to language learning, the focus of the discourse analysis was to dissect the complex learning ecology by identifying the boundaries of communicative projects. Transana does not have the ability to mark CPs; the boundaries of communicative projects were discussed between coders and marked with the timestamps.

The second part of the research question is how the pedagogical drama game affords students' translanguaging. The translanguaging instances, as one type of languaging activities, in the transcription were coded, and the translanguaging instances were identified within each defined communicative project. That means translanguaging instances were identified based on both the language use and the specific actions that learners/players were engaging in at the moment. The communicative projects in which these translanguaging instances were analyzed following the framework of ecological (van Lier, 2004), dialogical (Linell, 2009) and distributed cognitive approach (Cowley, 2012) to language learning by coding the relationships of

affordances within the learning ecology at different times, the communicative activity types and languaging activities at the moment of the talk. Students' gameplay sessions and group discussions were divided into communicative projects, which were unit of analysis. The affordances, languaging activities were identified based on the keyword groups explained in the Section on Coding below.

Transcription. The video and audio recordings were transcribed and coded. The analysis of excerpts of the selected recorded clips follows Gee's (2010) approach to discourse analysis as the big "D" entails behavior, ways of thinking, values and so on which can fully reflect the communication in the gameplay sessions. According to Gee (2010), language is a combination of saying, doing, and being. In a classroom pedagogical-drama game, students use the language (i.e. saying) to exchange their thoughts with their team members and sometimes classmates from other teams, engage in collaborative quest completion (i.e. doing), and take on the identities of a game role, a team member, a student, and a language learner (i.e. being). As students engaged in translanguaging, the Chinese was transcribed first into Chinese characters, then the second line is the glossing, and the third line is the translation of the sentence.

The excerpts were divided into communicative projects (Linell, 2010). Communicative projects are seen as the basic units of the organization of discourse (Linell, 2010). According to Linell (2010), communicative projects must be "characterized in terms of dynamic movements and situated problem-solving" (p. 39). The transcription was the key to the analysis process because, in order to find the relations between different artifacts, agents, and the environment, a multimodal transcription that includes more details from the context was essential. The qualitative transcription software *Transana* was used to transcribe the videos and code the communication. *Transana* was used to capture students' moment-by-moment actions because its

timestamping function in which the transcription could be connected to the video by timestamping the communicative projects as shown in Figure 3.5.

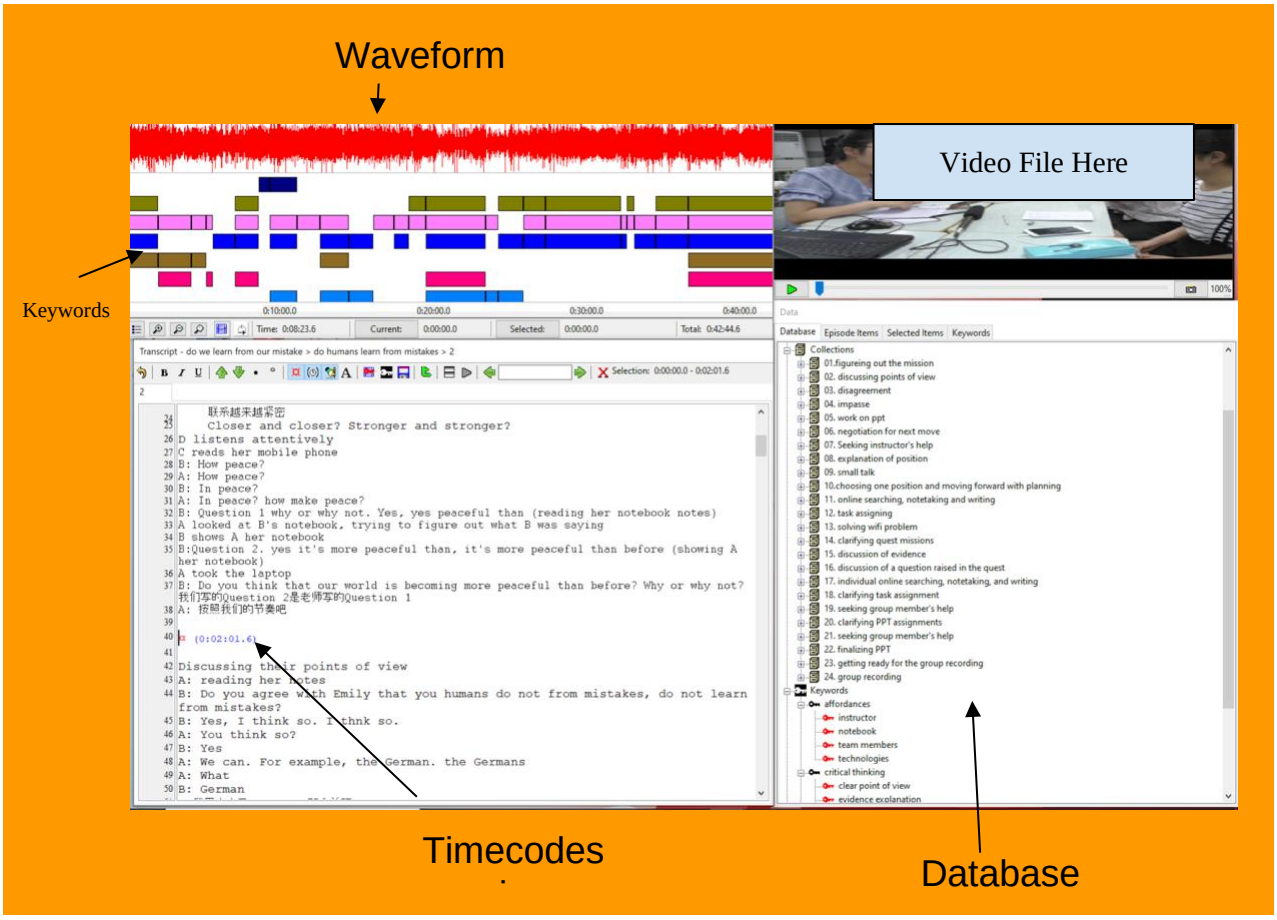


Figure 3.5. A Screenshot of Transcription in Transana

The multimodal transcription was divided into communicative projects, such as figuring out the meaning of a word from the game. The communicative project described what the game players were doing specifically at the specific time. Figure 3.5 shows how the video was connected with the transcription by timestamping the corresponding line. The timecodes were stamped specifically at the boundaries between communicative projects. In Transana, after the timecodes were assigned, each communicative project defined by timecodes was added into the collection of clips, with each clip consisting of the media file of the communicative project. After the collection of clips was created, the coding process followed.

Coding. The coding process, as illustrated in Figure 3.6, took place after the completion of multimodal transcription and defining communicative projects. It involves keywording, keywords mapping, and generating keywords maps.

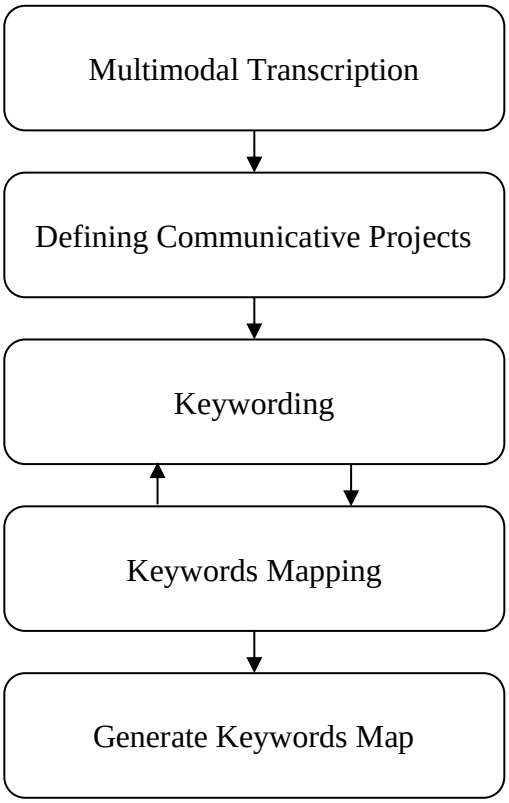


Figure 3.6. The Coding Procedure

After communicative projects were assigned, keywords were defined through further coding based on the purposes of the analysis. The keywords included translanguaging, co-action, use of technologies to look for linguistic resources, and use of technologies to look for information. It is important to note that the keywords arose both from the theories and the data. Therefore, as the videos were being coded, new keywords arose. After the keywords were decided came the process of assigning keywords to each individual communicative project. Defining keywords and keywords mapping proceeded back and forth as the keywords also arose

from the data. The keyword groups and keywords generated to analyze the communication in gameplay sessions are shown in Figure 3.7:

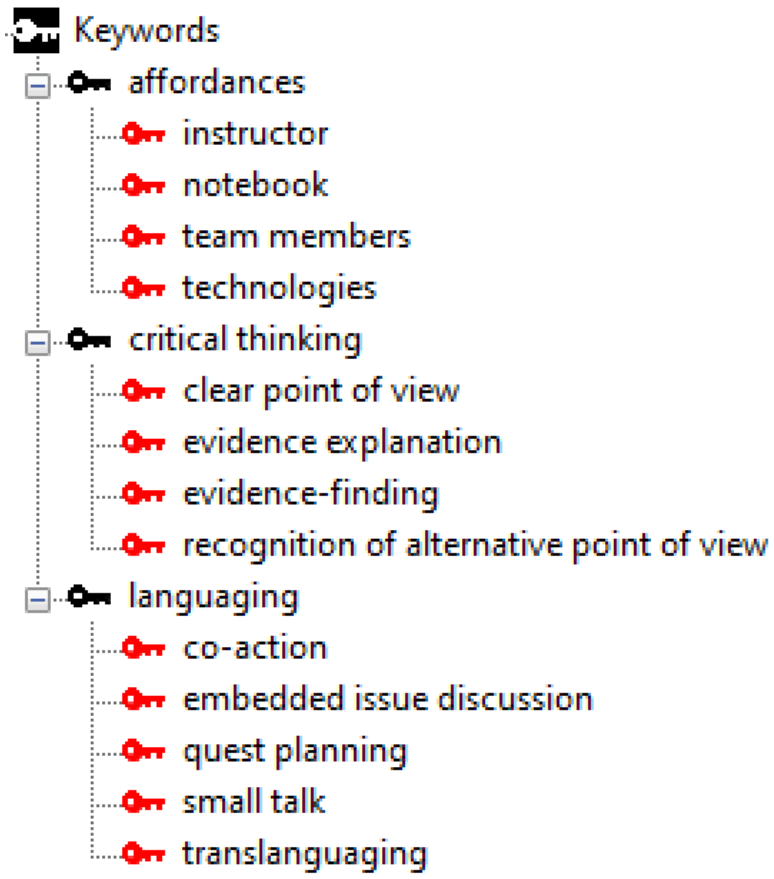


Figure 3.7. Keyword Groups

After the communicative projects were defined and the time codes stamped, keywords were assigned to each communicative project. The keyword groups for the analysis are affordances, critical thinking, and languaging. The theoretical foundation for the design of the game and the course is ecological approach to language learning (van Lier, 2006), and the concept of affordances-effectivities model (Stoffregen, 2003) was the guiding principle in creating the learning environment. Therefore, the keywords of the affordances are instructor, team members, technologies and notebook. These were the identified resources that students picked up during the gameplay sessions. As explained in Chapter 2, the affordances intended by

the designer and the affordances picked up by the students showed how students interacted with the game design. Critical thinking was one of the main objectives of the course, and the keywords were generated based on the rating guidelines of critical thinking and Rhodes's Critical Thinking Value Rubric (2010). The keywords include clear point of view, evidence explanation, evidence-finding, and recognition of alternative points. Languaging was the intended actions that designers hoped to achieve via the creation of the game. The keywords of languaging were generated based on the communicative projects and the nature of their communicative activities. The keywords of languaging include co-action (Steffensen, 2009), embedded issue discussion, quest planning, and small talk. Co-action is a very commonly observed behavior in gaming (Reinhardt & Thorne, 2016; Thorne, Hellermann, Jones, & Lester, 2015), which describes how team members proactively take actions at the same time without the need of instructing or informing each other their next move as it has been understood either because of the context or previous collaborative experience. Embedded issue refers to the socio-political topic that was integrated into the game design, and "embedded issue discussion" specifically means that students were discussing the socio-political topic. For example, in one of the quests, students were discussing whether the world was becoming more peaceful than before. "Quest planning" refers to students' talking about how they were going to progress through the game quest. Small talk describes students' communication that was not related to the completion of the quest.

After the keyword mapping was completed, *Transana* generated a keyword map that depicted the whole communication process. This keyword map provided more information about the relations between the themes identified in the research questions. To ensure intercoder reliability, the transcription data were independently coded (the researcher and the other coder),

and the codings were compared for agreement. The other coder received training regarding the keyword groups and the coding process. In terms of internal consistency of keyword assigning, the two coders did individual coding for 10% data from both cases, and after reaching a 90% agreement on the 10% data, we coded together for the rest of the data. This process is highly contextual and abductive, which requires multiple rounds of negotiation and discussion to reach full agreement of the keyword assignments. The process of formulating and assigning the keywords to the CPs involved correlating and integrating the verbal and action data with the contextualized concepts of the theoretical framework in mind. "I" and "you" refer- to the interlocutors of the communication; "it" refers to the artifacts or objects that the conversation is orienting to, and the coordinate "we" look at the socio-cultural and socio-historical context in which the conversation happens.

Research Question 2

The second question investigates students' attitudes towards technology and pedagogical drama games in English classes, and how their attitudes change as a result of this particular pedagogical drama-game supported course. Students' pre and post- course surveys were collected for the analysis of their attitudes towards the game, the use of technologies and the pedagogical game. Because the surveys consisted of main open-ended questions, the answers were computed into a text file, which was then uploaded into *Antconc* (Anthony, 2004). *Antconc* generated a list of words based on the frequency of these words being used in the surveys. The words on top of the frequency list were then analyzed to study the context of the words, which constituted the emergent themes of students' feedback. In addition, students' daily reflective diaries were also analyzed using *Antconc* to generate keywords so as to find the emergent themes. The diaries were analyzed as first-person narratives and the emergent themes that arose

from the diaries provide valuable information in understanding how students perceive the English classes they normally have and also this game-support course. Each diary was given keywords based on occurring words and phrases as well as the main content, and a wordlist of all the keywords was compiled using *Antconc* (Anthony, 2004) . The wordlist was used to generate the theme that arose from students' writings. Then, the contexts of these frequently occurring phrases/keywords were further studied.

In the course, students participated in a series of pedagogical activities and were asked to list their favorite pedagogical activity in the course on their surveys. The responses to their favorite pedagogical activity were reported and the percentage of all these activities ranked.

Research Question 3

The third research question investigates how a pedagogical drama game-supported course develops students' critical thinking as displayed in writing and speaking samples. The objective of the course was to help students use English more confidently in their speaking and writing and to improve students' critical thinking in their writing. This section provides a description of how the rubric to analyze critical thinking in the students writing was developed. Based on the created rubric, a holistic rating of their pre- and post-test essays was conducted, and these scores were compared using linear mixed effects (LME) models.

LME models can examine development over time while controlling for individual participant behaviors (Gries, 2015). The R (R Core Team, 2016) package *lme4* (Bates, 2010) was used to perform LME analyses. In each analysis, the holistic was set as the dependent variable, Time (which refers to pre and post) was set as a fixed effect, and Participant was set as a random effect (with random intercepts). The LME analysis presumed that while participants may have had different starting points (e.g. pre-test scores), their development would follow similar trends.

Thus, the following equation was used for all analyses: lmer(Holistic score ~ Time + (1|Participant)). The R package *lmerTest* (Kuznetsova, Brockhoff, & Christensen, 2015) was used to estimate *p* values with the default Satterthwaite method (Satterthwaite, 1941). In cases where the Satterthwaite method failed to converge, the Kenward-Roger method (Kenward & Roger, 1997) was used. The R package *MuMIn* (Barton, 2013) was used to generate effect sizes and to estimate the relative importance of fixed factors. Both the marginal R^2 values (R^2m), which indicates the amount of variance explained by only the fixed effects and the conditional R^2 values (R^2c) were reported, which indicate the amount of variance explained by the fixed effects and the random effects.

Development of Critical Thinking Rubric. The rubric used to rate critical thinking (Table 3.3) was adapted from the Critical Thinking Value Rubric (Rhodes, 2010). The Critical Thinking Value Rubric was created by the Association of American Colleges and Universities and was meant to be interdisciplinary. The new critical thinking rubric used in this study was developed and revised by the researcher and another high-school English teacher in China who had experience teaching and rating English language writing. The content validity of the rubric was ensured by building the descriptors of each criterion on the Critical Thinking Value Rubric (Rhodes, 2011). The construct validity of the rubric was ensured by referring to the guidelines for rating critical thinking from Washington State University (Condon & Kelly-Riley, 2004, p. 59).

Table 3.3 *Rubric Created to Rate Critical Thinking for This Course*

Rubric Created to Rate Critical Thinking for This Course
--adapted from the Critical Thinking Value Rubric (Rhodes, 2010)

	Capstone		**Milestones**	**Benchmark**
	4	3	2	1

Introduction identification of a problem or issue establishment of a clear perspective on the issue	*Background of the issue is well illustrated, and a clear thesis statement is provided with both a stance and reason(s) for the stance, delivering all relevant information necessary for full understanding.*	*Background of the issue and the thesis statement are stated, described, and clarified so that understanding is not seriously impeded by omissions.*	*Background of the issue and the thesis statement are stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.*	*Background of the issue and the thesis statement are stated without clarification or description.*
Body Paragraphs *Selecting and using information to investigate a point of view or conclusion* identification and evaluation of evidence	*Solid evidence is provided to support the points of each paragraph. The evidence is well explained with enough interpretation/evaluation to develop a comprehensive analysis.*	*Solid evidence is provided with enough interpretation/evaluation to develop a coherent analysis.*	*Evidence is provided with some interpretation/evaluation, but not enough to develop a coherent analysis.*	*Evidence is provided with no interpretation.*
Influence of context and assumptions location of the issue within an appropriate context(s) recognition of fundamental assumptions implicit or stated by the representation of an issue	*Carefully evaluates the assumptions or relevance of contexts when presenting both own point of view and addressing alternative point of view(s).*	*Identifies assumptions or the relevance of contexts without clear evaluation when presenting both own point of view and addressing alternative point of view(s).*	*Identifies assumptions or the relevance of contexts without clear evaluation when presenting either own point of view or addressing alternative point of view(s).*	*Begins to identify assumptions or contexts when presenting a position.*

Recognition of alternative perspectives	*Alternative perspectives or opinions are well addressed and rebutted with well evaluated evidence.*	*Alternative perspectives or opinions are acknowledged and rebut with some evidence.*	*Alternative perspectives or opinions are acknowledged but not well rebutted*	*Alternative perspective is stated but there was little rebut*
Conclusions and related outcomes (implications and consequences) assessment of implications and potential conclusions	*Conclusion is logical and closely tied to the sub-points discussed in previous paragraphs. The author restates the thesis, summarizes the sub-points clearly and presents implications of the issue derived from sub-points.)*	*Conclusion is relevant. The author restates the thesis, summarizes the points and presents implications of the issue.*	*Conclusion is tied to some of the sub-points. The author restates the thesis, but the summary of the points is not comprehensive or the implication of the issue is missing.*	*Conclusion is inconsistently tied to some of the information discussed* *Conclusion is oversimplified.*

The guidelines for rating critical thinking from Washington State University are the following:

- identification of a problem or issue
- establishment of a clear perspective on the issue
- recognition of alternative perspectives
- location of the issue within an appropriate context(s)
- identification and evaluation of evidence
- recognition of fundamental assumptions implicit or stated by the representation of an issue
- assessment of implications and potential conclusions. (Condon & Kelly-Riley, 2004, p. 59)

The new rubric adopted Rhodes' (2010) understanding of critical thinking as a skill that is not limited to writing. By integrating the guidelines for rating critical thinking from Washington State University (2004), the new rubric is more detailed and clearer in determining the characteristics of critical thinking in students' writing.

Rating of Pre- and Post- Course Test Essays. Holistic scoring is widely used in research about developing writers (Espin, De La Paz, Scierka, & Roelofs, 2005; Olinghouse, 2008), and the participants for this dissertation project are all emergent bilinguals who are developing writers in English. To draw on the benefits of both holistic scoring and analytic rubric, the rating adopts holistic scoring with the analytic rubric (Tomas, Whitt, Lavelle-Hill, & Sevem, 2019) in Table 3.3. By adopting holistic scoring with an analytic rubric, the raters could have a better understanding of the criteria descriptors in the rubric during the training, yet still garner the benefits of holistic scoring including each text receiving just one single score that should capture the overall sense of this entire rubric, raters having to make fewer choices, and the process being more intuitive to rate. In holistic scoring, students' written compositions were evaluated based on an a priori established rubric shown in Table 3.3. Two raters were recruited for the rating of the pre-course and post-course written essays. Before rating the essays, the two raters received a rater training and discussed the rubric by using some of the student writing samples not included in the pre-course and post-course essays. The training also included three rounds of rating student essay samples (submitted as homework during the course) until the final inter-rater reliability reached 90% (calculated as the number of agreement scores divided by the total number of scores). The minimum acceptable inter-rater reliability for holistic scoring is 0.7 (Huot, 1990). This percentage of agreement and the kappa statistic (McHugh, 2012) together ensure the inter-rater reliability of the rating. The intra-rater reliability is ensured by having the

raters rate the essays twice (over two different time points: one week apart) and the average of the scores from the two times were used for the dependent group linear mixed model.

Comparison of Pre- and Post- Course Test Essays. A linear mixed model was employed to measure whether the course helped students' critical thinking in their writing. Students' pre- and post-course tests from three iterations were also computed into a corpus for iteration-based pre- and post-course comparison, which means the pre- and post-course tests were compared for each iteration. Although linguistic competence was not the focus of this dissertation research, the results of whether students' writing changed in terms of syntactic complexity by the end of the course can provide some insights into the connection between the design of the course and students' writing development. Syntactic complexity was measured because it is an important measure of L2 writing proficiency (Larsen-Freeman, 1978; Lu, 2011). The L2 syntactic complexity analyzer (L2SCA) created by Lu (2010) was used for the analysis. L2SCA was chosen to analyze the corpus because it was designed to automate syntactic complexity analysis of written English language samples produced by advanced learners of English, which corresponds with the students in this study. The analyzer takes a written English language sample in plain text format as input and generates 14 indices of syntactic complexity, proposed in the second language development literature, of the sample.

Conclusion

In summary, this design-based research project presented the design of a pedagogical drama game-supported course, explained how the course was conducted, and collected data including students' video recordings during gameplay sessions, students' pre- and post-course surveys and students' pre-and post-course writings to analyze students' moment-by-moment

actions during gameplay sessions, students' feedback of the game and the course, and their performance of critical thinking in writing before and after the course.

CHAPTER 4-COURSE AND GAME DESIGN

This chapter presents the design of both the game and the course for this dissertation project. As this is a design-based study, the design is essential in understanding the context of the study and the analysis of the collected data from students' participation in the course and gameplay sessions. This project underwent three design-implementation cycles, and the core of three iterations and the adjustments made in Iteration 2 and Iteration 3 will be explained here.

Context and Participants

For each iteration, around 75 first-year and second-year high school students (ages 15 and 16) at a high school in China participated in this dissertation project. The students were all intermediate-high level English speakers (ACTFL Proficiency Scale) and were preparing to participate in the Chinese National English Competition. As mentioned in Chapter One, they excelled in grammatical knowledge, but they could use more training and practice for impromptu speaking and writing. The English instructors at the high school believed that their students could benefit from instruction in 21st-century language skills and critical thinking. The intensive summer course designed in this project was created to address these real-world student needs. Students participated in the course for three hours per day for ten days. Table 4.1 reports the participants' average age and proficiency levels.

Table 4.1 *Participants*

	First Iteration	Second Iteration	Third Iteration
No. of Participants	80	74	72
Age of Participants	15 and 16	15 and 16	15 and 16

English Proficiency	intermediate-high	intermediate-high	intermediate-high

The participants were preparing for the *Chuàngxīn* English Competition. *Chuàngxīn* (创新）roughly translates to innovation and creativity. The competition has three phases: For the first phase, the participants write a short essay based on a current issue or topic that is given by the competition committee. The students are allowed to make use of any available resources including teachers, peers, and online resources. Once students finish their writing, they submit their assignments to the competition committee. The committee then chooses the top essays and invites their authors to the second round of competition at a specific venue. In the second phase, students write an essay on their own and without help. It is a timed phase, and the students are evaluated on their English skills as well as their innovation and creativity. There is also a listening and speaking section judged with similar criteria. The top students of the second phase are then chosen to attend a national summer English camp, which comprises the third phase of the competition. The top-rated students display writing and speaking performance that is unique either in the design or perspective of the topic. They display developed critical thinking skills and the ability to relate the topic to pertinent current issues. The course is meant to foster these specific skills.

Description of the Course

Process Writing

All the pedagogical activities designed for the course, including the game, the group face-to-face (f2f) activities, and the pre-f2f pedagogical activities, were part of the writing process. The purpose of each activity was to help students get ready for the in-class timed writing session, and the purpose of the pedagogical drama game in this writing course was to revolutionize EFL students' writing process in such a way that students were truly engaged in quests that let them

co-construct personal experience with their team members regarding a topic, such as refugees in Europe. The game, as a part of the writing process, aimed to create a new experience for language learners. In order to engage students in an experience-oriented writing process, the design of the course adopted the process writing approach. The essence of the process writing approach is that it is "recursive and non-linear" (Seow, 2002, p. 315), which makes the incorporation of a pedagogical drama game and the process writing ideal, and the game guides students through the development of the writing via the writing process.

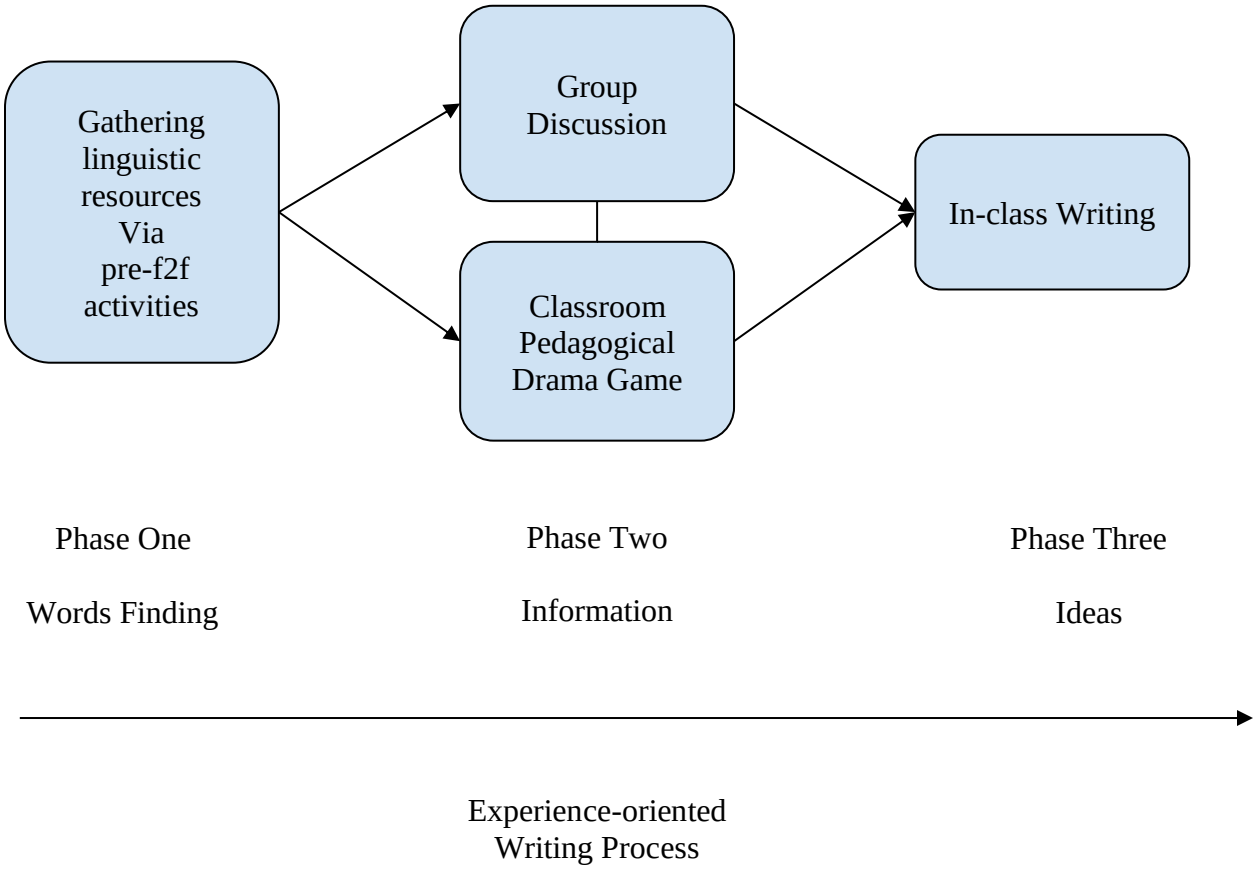


Figure 4.1. Illustrated Experience-oriented Writing Process in this Course

Figure 4.1 depicts the writing process that this particular course aimed to create for students. The first phase, linguistic resources gathering, prepared students for the f2f classroom

activities--group discussion and classroom pedagogical drama game, which were designed to help students explore deeper into a given topic or issue to help them formulate their own perspectives. Then, they could move to individual writing based on the given topic.

Phase One

Phase One is defined as a words-finding phase because the pre-f2f activities aim to expose students to the relevant linguistic resources needed to participate in the group discussion and pedagogical drama game related to socio-political topics. In Iteration 1, students were given readings related to the topics they were going to discuss and write during the face-to-face sessions the next day and they were expected to answer questions either through writing or speaking. By doing so, students practiced both speaking and writing. In Iterations 2 and 3, based on students' feedback regarding the difficulty level of readings, students were scaffolded more with their readings, they were asked to take notes of the words they did not know in their *yiqixie* (online shared document).

Phase Two

Phase two is the information-exploring phase because group discussion and the pedagogical drama game go hand-in-hand in helping students develop critical thinking skills by exploring more deeply a given topic. To be more specific, the pedagogical drama game was designed based on the theory of dialogical language and communication (Linell, 2002) and distributed cognition (Cowley, 2012) to ensure that second language learners engaged in artifacts-afforded meaningful communication (See Chapter 5). The purpose of creating this writing process for students was to let them understand that second language writing is not only a regurgitation of all the words and phrases they have learned, but rather it is a holistic representation of their individual thinking, supported by logic and solid evidence. It is important

to note that although group discussion is a common classroom practice in English-dominant educational contexts, it is still rarely practiced in Chinese classrooms with a large number of students. There are two reasons behind including a one-hour group discussion session in addition to the game session: First, the group discussion session can serve as a baseline for analysis from the research perspective. Second, the group discussion session allows students to focus directly on the topic, while the game session engages students more on the experience of exploring the topic. In other words, from a design perspective, the group discussion was included to supplement the game.

Phase Three

Phase three is when students construct their ideas through writing. Phase three shows that this course adopted not only a process approach to writing but also a product approach for two reasons. First of all, the final writing product could gauge the effectiveness of the writing process; secondly, the purpose of the course was to help students prepare for the national English competition which places a large weight on timed writing based on a given argumentative topic. Altogether, the course creates an experience-oriented writing process for students to learn new linguistic resources, explore a topic through dialogs with their classmates, develop new ideas via playing the game with their team members, and construct their ideas via writing in class.

The pre-f2f sessions engaged students in a series of self-study materials that require them to do reading, writing, listening, and speaking (self-recording activities). F2f sessions included group discussion activity and game sessions. The group discussion session was mainly about involving students in speaking activities with guided discussion questions, while the pedagogical drama game encouraged students to work as a team to complete a series of quests that required speaking and writing in English.

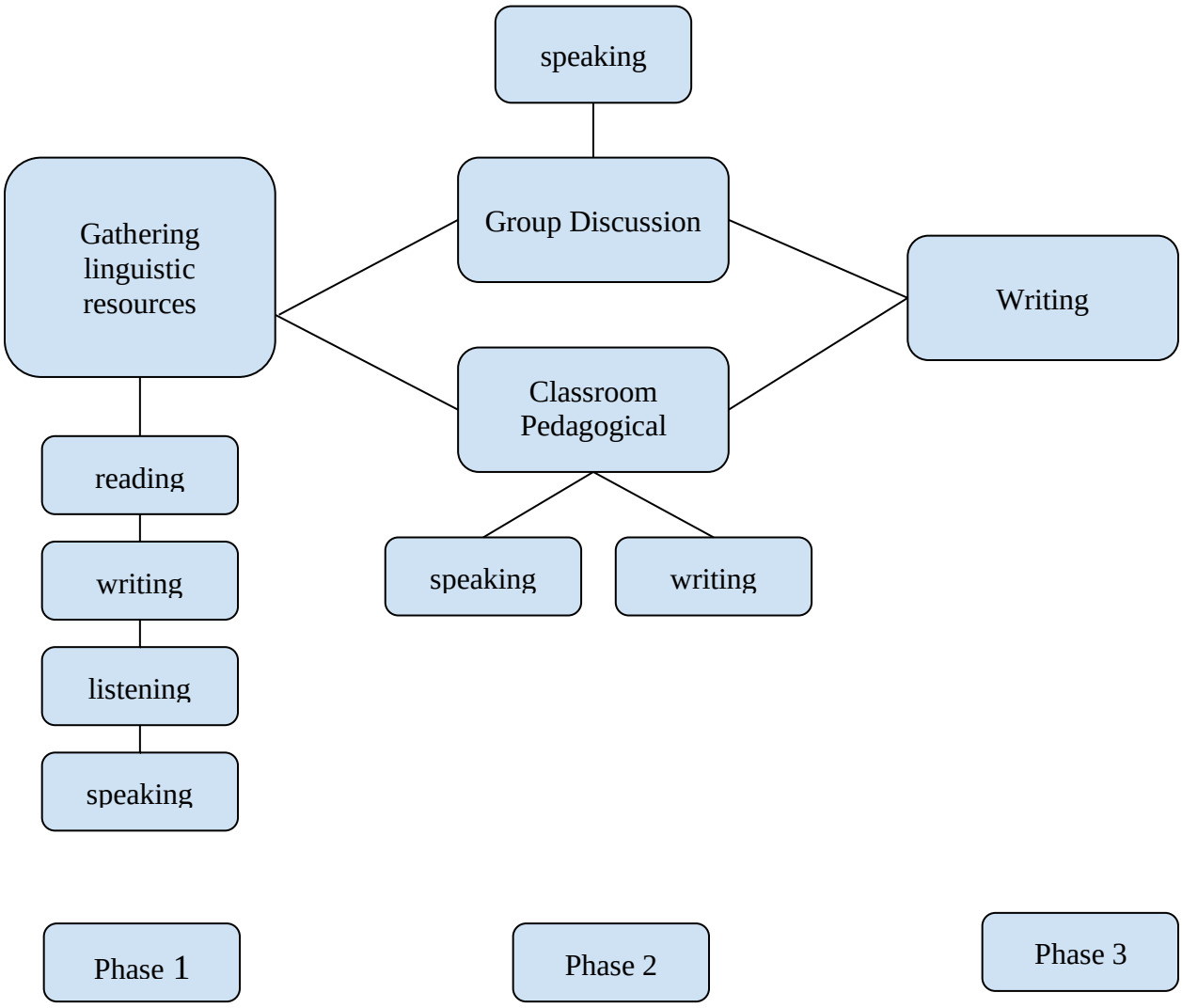


Figure 4.2. Three Phases of the Course

Course Activities

In this research, students were exposed to multimodal literacies: they read articles, watched videos, and played the web-based game. They also expressed their thoughts in multimodal formats: they wrote memos, suggestions, and letters; recorded voice memos to the main character of the game (Jolin); submitted their answers to discussion questions to an

electronic form; and wrote an essay on a given prompt. To see a list of summarized activities, see Appendix E.

Description of the Game

The two games (*Finding Jolin's Way Home* and *God of Time*) used in three iterations were created from scratch by the researcher of this dissertation project. The games were Internet-enabled pedagogical drama games in nature, as they were built around a thematic drama involving one protagonist. Because they were played in a classroom setting, with students working together face-to-face as teams and taking on specific roles in the game, the games are called classroom role-playing games. The objectives of the games were for students to explore topics in-depth and have more discussions with their classmates before writing. The games functioned as part of the writing process. The design of these pedagogical drama games with pedagogical objectives took into consideration the game storyline as well as the pedagogical materials that would be used for in-class discussion. Figure 4.3 shows how the quests of *God of Time* were sequenced from the perspective of designing.

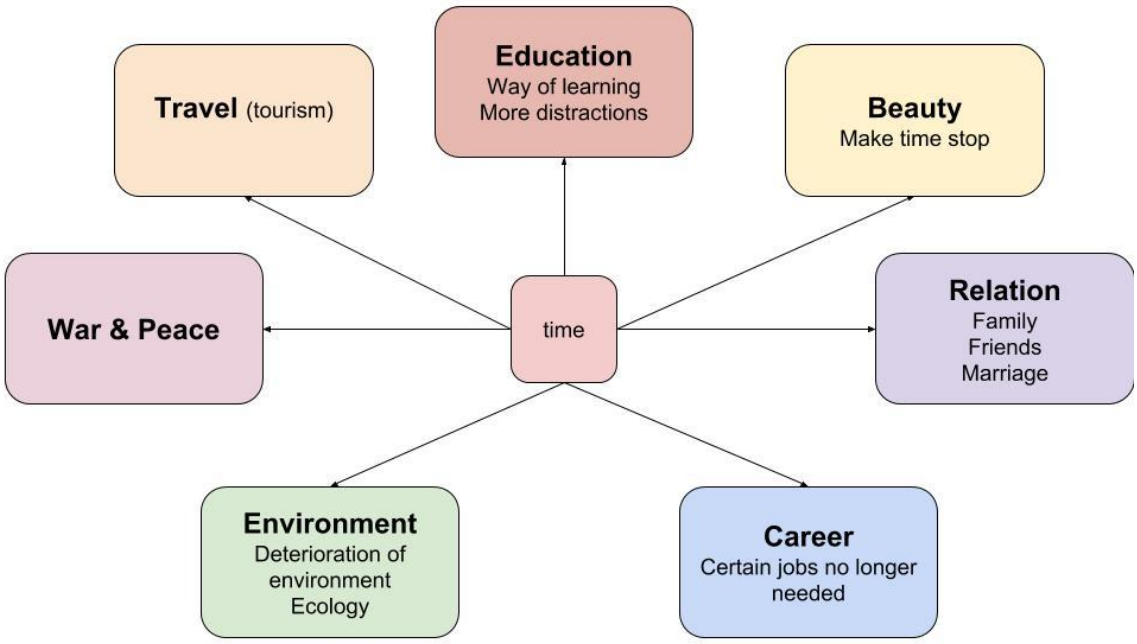


Figure 4.3. Topics Discussed in the Game *GoT*

Pedagogical Drama Game and Quest

I define the games that I created in the course as pedagogical drama games for two reasons: first, the word drama emphasizes that a game is rich in narratives (Barab et al., 2010), which gives students abundant opportunities to explore relevant topics while being exposed to linguistic resources from various sources; second, the word pedagogical highlights the game is unique and different from the other online games we see for entertainment purposes. These pedagogical drama games are fundamentally multi-player role-playing games (RPG) in which the suspense of the storyline lies in whether students successfully complete their quests; this continuous longing for knowing what is next encourages students to keep progressing through the game and keep exploring. The following is a screenshot of some quests from the game *God of Time*, showing how the game consists of a series of quests.

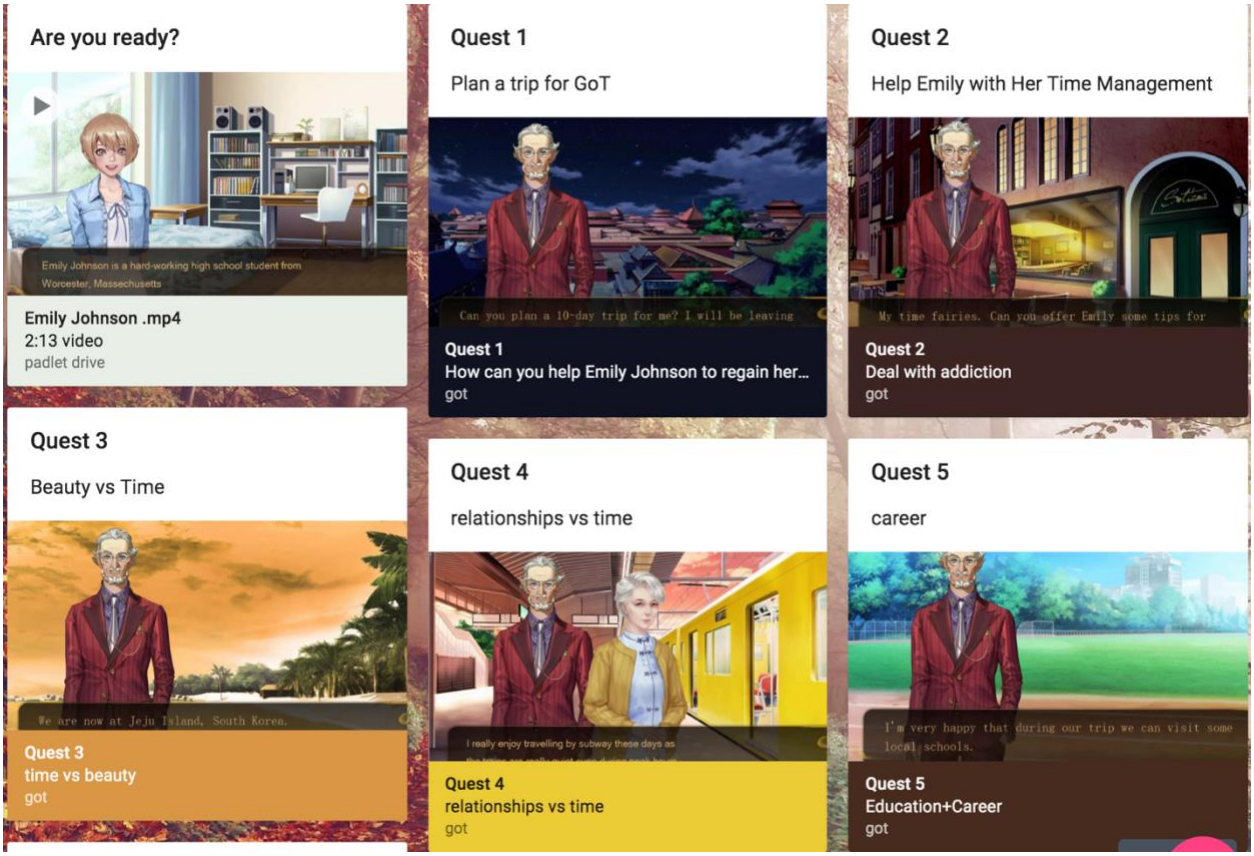


Figure 4.4. Screenshot of the Game God of Time

The game *GoT* was created around the theme of time, and time was the guiding element in sequencing all the topics shown above. The purpose of the game was to create an authentic experience for students, and therefore, when designing the quest, the topic for each quest was related to the theme of time. The same logic applies to the game *Finding Jolin's Way Home.*

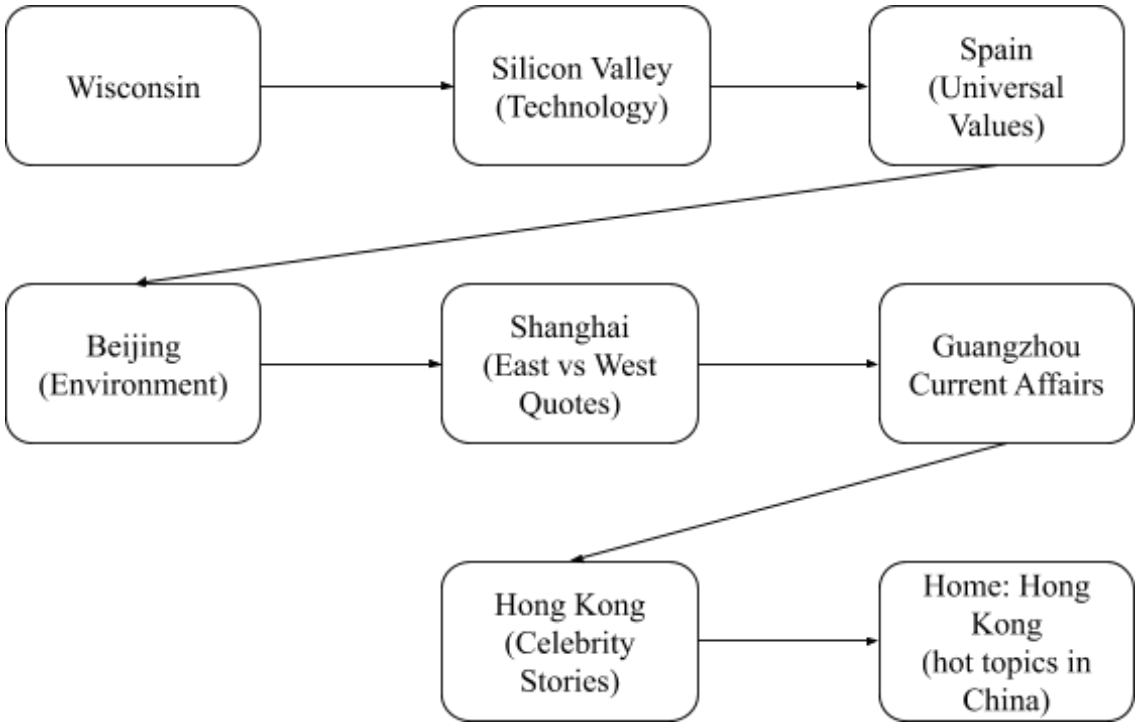


Figure 4.5. Places Visited in the Game Finding Jolin's Way Home

Similar to the game *God of Time,* the design of the game *Finding Jolin's Way Home* followed a key guiding element: location/place. Game quests were designed in accordance with each specific location, which means the game stories were closely related to the specific virtual location set in the game. For example, when the game protagonist and other non-playing characters took our students to Beijing, the topic they were discussing for the day was the environment, which was a real issue the city had been facing for many years. In other words, although students were playing a game that was rooted in virtual reality, the game setting and the issues emerged from and discussed in the game were all real and authentic issues. Zhou (2019) provided six steps to design a pedagogical game below.

Steps to Design a Pedagogical Game

1. Identify the role of the game.
2. Identify the teaching/pedagogical objectives.

3. Find out how each objective can be achieved by different game quests.
4. Locate any mismatches between pedagogical objectives and the game.
    A. Decide how to handle the mismatch.
5. Move on with the game design.
    A. Solid and logical storyline
    B. Reward system (game rules)
    C. Game platform
    D. Quests design (closely related to the storyline)
    E. Connection and progression of quests
6. Test gameplay.

As it is a pedagogical drama game, the game storyline is the priority when conceiving the game. At the same time, the game was designed with a pedagogical objective. Therefore, identifying the game role is the first step. For this research, the game is not a stand-alone entity; it is a part of a course and a stage of the writing process. Step three is the most difficult part of the game design as this is the most time-consuming and requires creative writing experience. Once the game storyline is completed, it is crucial to have the reward system installed as rewarding is the key element of a game. Once the game content is ready, it is time to choose a game platform. For a pedagogical game, the game platform should be easy to maneuver, and the best platform should be familiar to students. Then comes the design of game quests which should be based on the completed storyline and pedagogical objectives. After all the game elements and materials are set, the last step is to connect all the quests and confirm the progression of quests in order to finalize the first draft of the game.

First Iteration

The game for the first iteration was called "*Finding Jolin's Way Home*" (as shown in Figure 4.5). The game involves three non-playing characters, Jolin, Brian, and Jessica. Jolin is the main figure who accidentally traveled through time from 1967 to the present day. She was found in a campsite in Wisconsin by Brian and Jessica, and the two high-schoolers decided to help Jolin find her way home. Students/game players participate in this game in a group of three to four. Each day, they take on the role of human helpers and are virtually "going to different places," as shown in the figure below. Every time they finish a quest, Jolin regains a part of her memory. From the perspective of design, every location is carefully chosen because of relevant topics specific to the location. For that specific day, students wrote an essay about the environment.

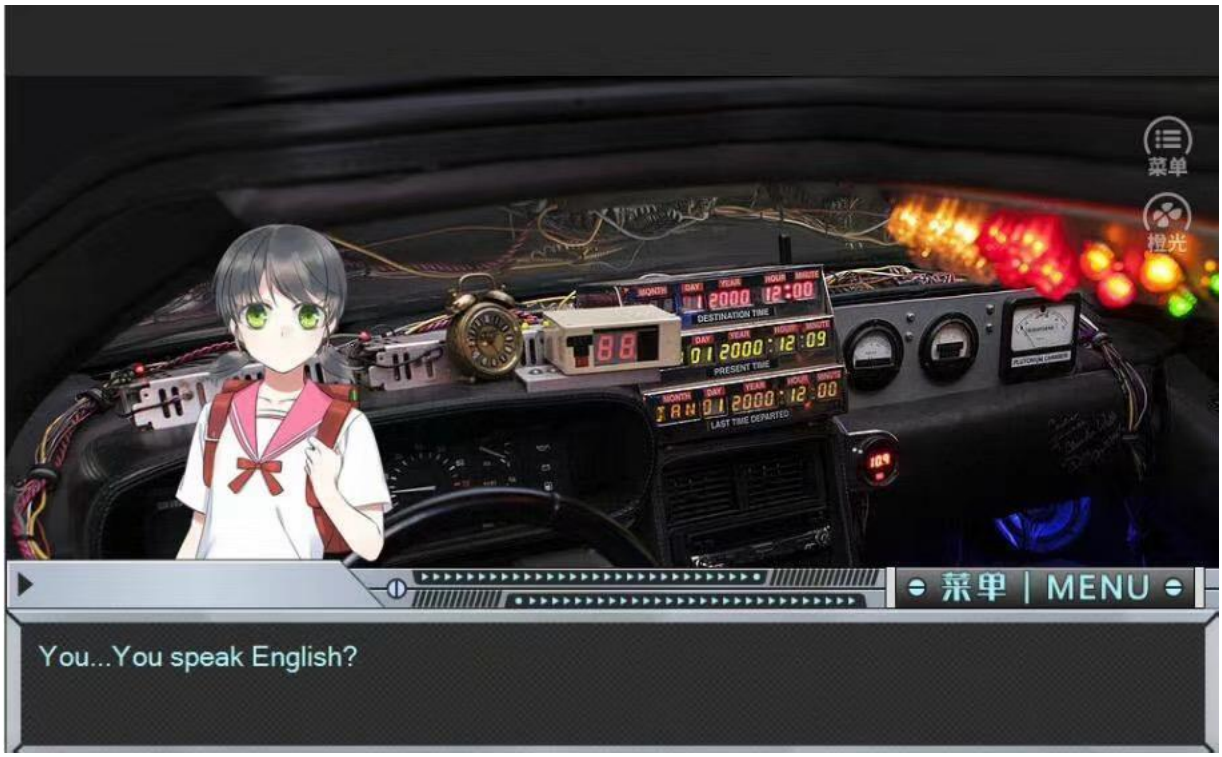


Figure 4.6. Screenshot of Jolin –the Protagonist Found in a Time Machine

Table 4.2 depicts the students' journeys throughout this game. Wisconsin is the place where they found Jolin and starting from there, they visited different places to find clues about where Jolin is from. From the design perspective, each location in the game was specifically chosen because the location could afford further discussions and game activities about a particular topic. Students worked together in class to finish different kinds of quests that needed them to find information and help Jolin to understand the new world, including the development of technologies, current affairs, new celebrities, changing cultural values, etc. Every time students finished a quest, the reward was that Jolin regained part of her memories, which helped the players to progress through the game.

Table 4.2 *Quests in the Game Finding Jolin's Way Home*

Day	Location	Topic	Main Activities
1	Silicon Valley	Technology	Update Jolin on What has happened over the past fifty years.
2	Spain	Universal Values	Help Jolin understand why there are so many refugees in Spain.
3	Beijing	Environment	Help Jolin figure out why are people wearing masks in Beijing?
4	Shanghai	East vs West Philosophies	Why do Chinese attitudes toward Confucius have changed so much over the years? Do you think Confucius thoughts change your way of viewing others?
5	Guangzhou	Current Affairs	Technology has made learning about current affairs easier and more difficult at the same time. Why is that so?
6	Hong Kong	Celebrity Stories	Jolin does not understand why people today are so interested in watching rich and famous people

			living their daily routine in reality TV shows.
7	Home: Hong Kong	Hot Topics in China	Why do more and more mainland students choose to study in Hong Kong?

In the first iteration, students took part in a 10-day course. Seven of the ten days were content delivery, and the other three days were for the pre-test, post-test, and mid-term discussion. Each day students adhered to the following pedagogical procedures. The pre-f2f session involved students completing reading activities related to the topic that was discussed in class the next day. The group discussion was a time where students got to use the linguistic resources that they had gathered in the pre-f2f session the day before to discuss provided group discussion questions. The game session was the focal activity in which students used linguistic resources to fulfill game quests as a group. Individual writing was a session that emulated the real competition setting in which students were asked to write based on a given topic within a limited time.

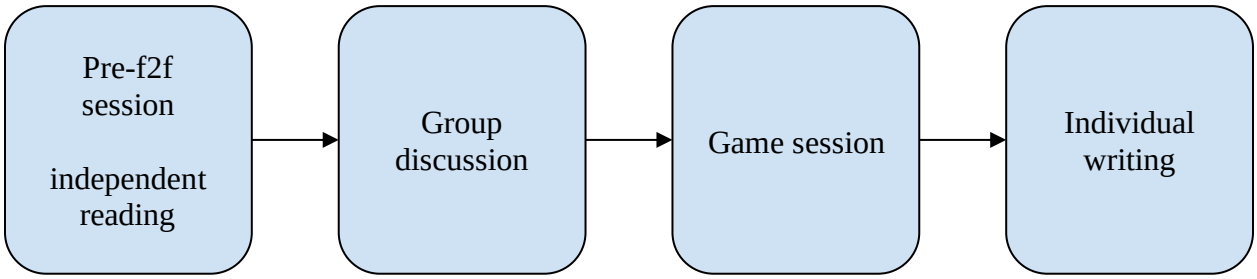


Figure 4.7. Flow of Daily Lessons

Examples of students' pre-f2f sessions (See Appendix F) can be seen here in the following screenshots. Students logged into their individual *Yiqixie* (directly translated to

Writing Together, Yiqixie functions similarly to Google Drive) account and then finished their pre-f2f activities before the f2f class.

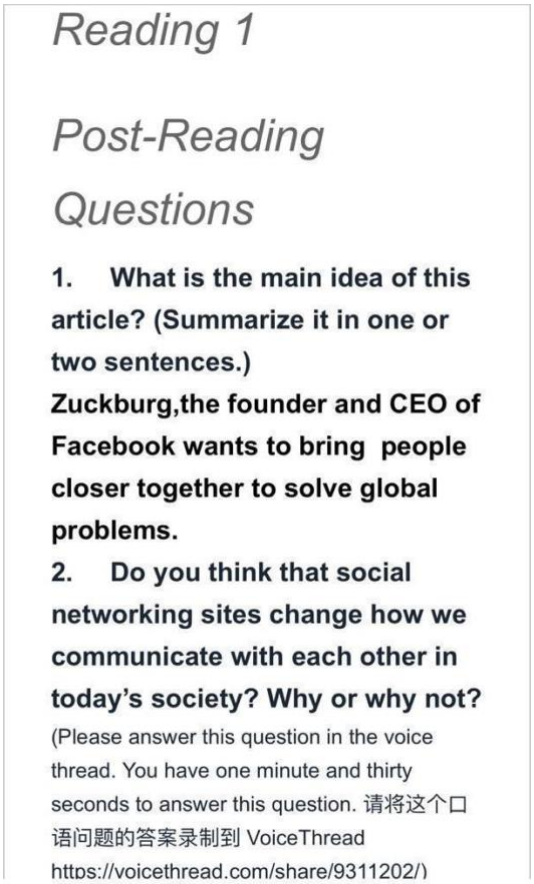


Figure 4.8. Screenshot of the Reading Activities before f2f Sessions

When students logged into their individual Yiqixie account, they were able to see the pre-readings and some questions based on these reading materials. Pre-f2f activities were created to familiarize students with different topics through authentic reading materials; Figure 4.8. is from the pre-f2f activities about the topic of technology. After reading, students demonstrated their understanding of the readings by answering these questions through both writing and speaking. Their responses were recorded using *Voicethread*, which allowed them to also hear their classmates' responses. The pre-f2f activities are summarized in Appendix F.

In-class timed writing (See Appendix G for in-class timed writing prompts) emulated the writing part of the competition that students would participate in. The topic of the timed writing each day is connected to the topic discussed on that day.

Second Iteration

A new game was designed for Iteration 2 because the purpose of this research project was not to prove the effectiveness of one specific game but to demonstrate the designing process of a game-supported second language writing course and showcase how a game-supported second language writing course can help students participate in the writing process, and hence build a new understanding of second language writing. One of the differences between Iteration 1 and Iteration 2 was that students were encouraged during the pre-activities to pay more attention to linguistic resources.

Figure 4.9 is a screenshot of one student's pre-f2f activities showing how he utilized his L1 in understanding the reading. This screenshot shows that students highlighted the words and phrases that s/he did not understand in a different color and typed the Chinese translation right next to the words and phrases in the reading document.

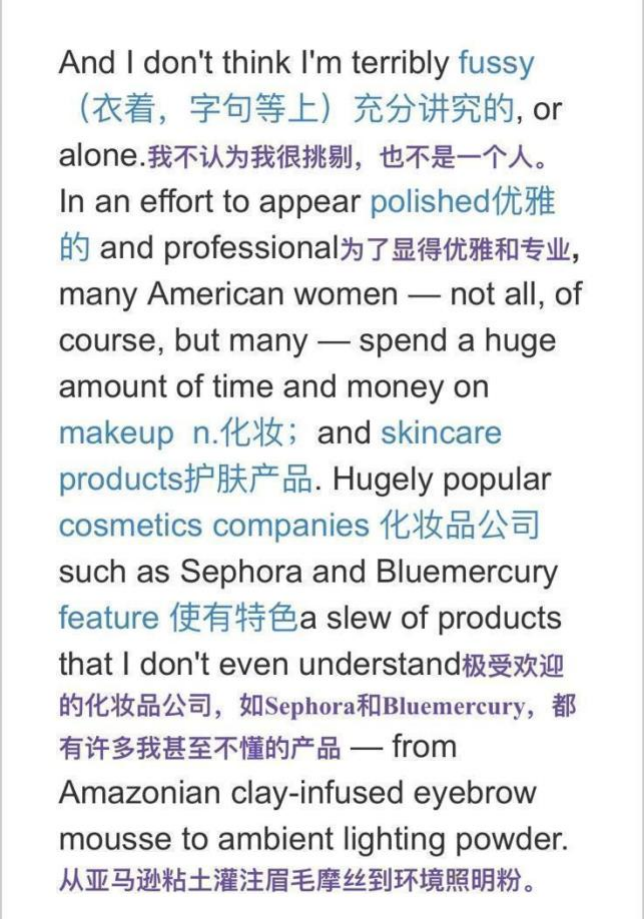


Figure 4.9. Screenshot of Student's Online Notes

In the plot of the game used in the second iteration, *God of Time*, GoT took away 50 years of Emily's life, and in order to help her regain youth, students/game players took on the role of little fairies that needed to complete a series of quests. Each quest completed was rewarded with a certain amount of time coins, which could be used to purchase time back for Emily.

Figure 4.10. Screenshot of Game GoT

Since this was a writing course focusing on argumentative essays, students benefit from writing about different topics. In order to ensure students were exposed to and had the opportunity to discuss issues from a wide range of topics, the game storyline was revised to cater to different topics. From the perspective of design, the writing topics were chosen based on the theme of time. As shown in Table 4.3, each topic was embedded into the game narrative so that the topic could be related to the theme of time in some way. Each day, students worked together on one topic.

Table 4.3 *Game Quests*

Day	Location	Topic	Main Game Quest
1	Outer Space	Travel	Plan a trip for GoT

2	Emily's Home	Education	Help Emily Johnson with her time management—it seems that she has Internet Addiction
3	Jeju Island, South Korea	Beauty	More and more people are trying to make time stop by resorting to cosmetic and plastic surgeries. Help GoT understand why people put so much emphasis on outer beauty.
4	Subways	Relations	People seem to be more comfortable talking and communicating online. Do you think that development in communicative technologies changes our relationships in society?
5	Local schools	Career	Emily said, "If what I am studying is not going to be useful in the future, what is the point of study?"
6	In front of a dirty river	Environment	What can you humans do to stop the deterioration of the environment?
7	South Korea	War and Peace	April 2018 inter-Korean Summit Do you think our world is becoming more peaceful than before?

Examples of Quests

A quest is a game activity that players need to accomplish in order to progress through the game (Howard, 2008). The following example from the game *Finding Jolin's Way Home* is a quest which Jolin posted on her Qzone:

> We had a really good time in Guangzhou, but we didn't find much valuable information about my family or me. However, I have a feeling that I have been here before. So, we decided to go to nearby

places to see if we can find anything that can help me remember at all. We took a bus to Shenzhen and now, we are in Hong Kong! This city has a very popular paparazzi culture. There are a lot of newspapers and magazines about celebrity stories or even their personal lives and gossip. This amazed me. We talked to a few mainland students who had been studying in Hong Kong about this topic and learned that recently a number of reality TV shows with celebrities from the mainland, Hong Kong, Macau, and Taiwan are gaining popularity. The general public is also very interested in watching these reality TV shows. I don't know anything about reality TV shows as there was no such thing 50 years ago. Can you give me some examples of a few reality TV shows that you know of or the ones you really like? Could you explain to me why these reality TV shows are popular? I recently read some Hong Kong newspapers about celebrities and got to know an Olympic Champion Guo Jingjing. The Olympic champion Guo Jingjing and her husband Kenneth Fok from the Fok family who is ranked eighth on Forbes' Hong Kong rich list recently starred in a reality TV show called "amazing race". From the news, they are the reason why this reality TV show has a very high rating. I do not understand why people today are so interested in watching rich and famous people living their daily routine in these reality TV shows. I feel that the audience is not gaining much from these TV shows. Can you leave a message on my Qzone helping me understand the situation here? Why is the general public so drawn towards these reality TV shows? Why do you think Kenneth Fok and Guo Jingjing are so popular even though they are not technically stars?

Quests were designed to involve students to learn more about a given topic through real-life examples. By engaging students in a game setting in which the time and location were specified, these game quests pushed students to embark on a journey of evidence-finding and hence, think more critically. In other words, to encourage students to look beyond the linguistic aspect of learning and demonstrate their thinking while writing, instead of asking them to do so repeatedly, this game provided students with a unique experience in which they strategically used the linguistic resources they had and looked for new linguistic resources to complete the quests. For example, in this particular quest, Jolin traveled to Hong Kong with Jessica and Brian, and she was confused about the Paparazzi culture. Moreover, the quest introduced the phenomenon of craze for reality TV shows, which was a new social phenomenon that was very difficult for someone from fifty years ago to understand. While helping Jolin figure out the situation, players/students were given the opportunity to explore deeper into the issue.

Within the writing process, the game is part of the planning for the final writing. The same could be seen in the game of *God of Time*, as shown in Figure 4.11, which was played by students in Iteration 2. Similar to *Finding Jolin's Way Home*, in the game GoT, the non-playing character directed students to a real-life phenomenon and asked students (in the role of fairies in this game) to help him understand. Students needed to take on a new identity while playing the game, which means they get to analyze an issue from a different angle, and then they need to explain the situation to God of Time.

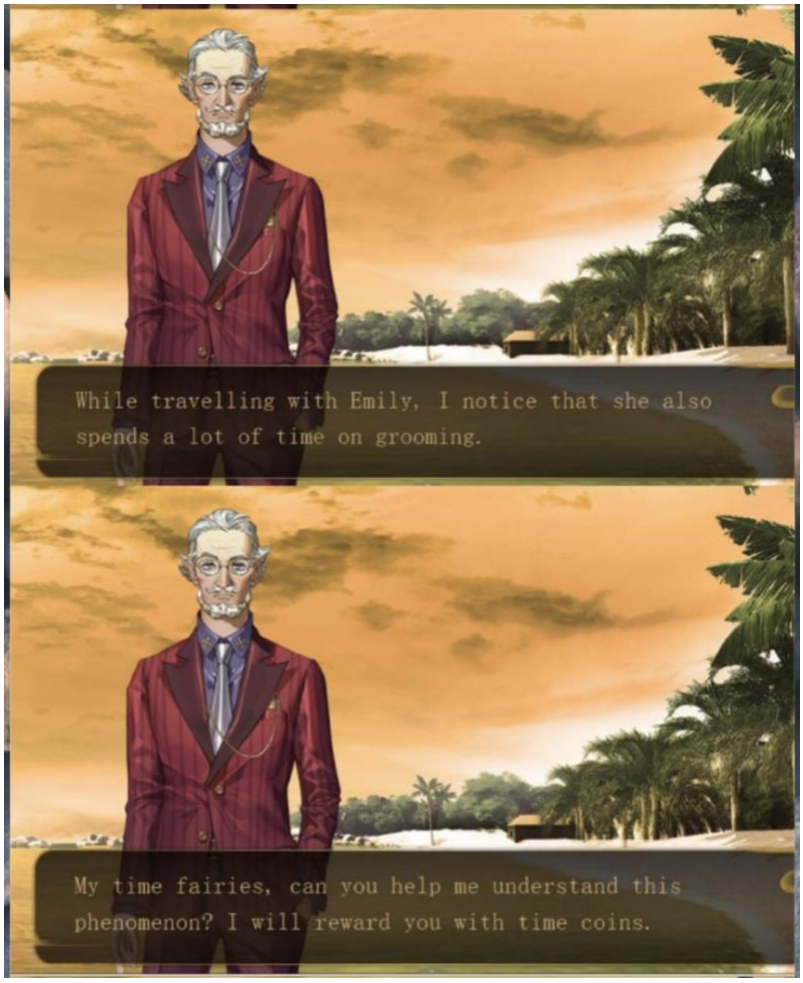


Figure 4.11. A Screenshot of GoT Quest

The pre-f2f self-study activities supporting the Game Session and the group discussion session are summarized in Appendix H**.** In-class timed writing still followed the format of the writing part of the competition in which students were expected to write an essay based on a given topic within 60 minutes. In the second iteration, each student took one of their classmates' writing home and completed a peer-review activity. The writing topics for the second iteration are summarized in Appendix I.

Third Iteration

After the first two iterations, it was confirmed that the game-supported writing course helped students to be more comfortable using English. This could be seen from their personal reflections and final surveys. More importantly, in the end-of-the-course tests of both iterations, students produced more language (words per minute and words per sentence) in both the speaking test and the written test than they had at the beginning of the course. From the designer's point of view, the design-implementation cycle could have ended at Iteration 2, as the pedagogical objectives had been tested and fulfilled by the design and implementation. The school contacted the researcher after Iteration 2, however, and wanted to do a third iteration to prepare students for a new English competition, and the teachers in China wanted to be involved in the project in such a way that they could have a one-hour session each day to teach students grammar, as explicit instruction in grammar had been left out of the previous iterations. At the same time, the school wanted to see if the researcher could introduce more speaking activities so that students would be better prepared for impromptu speeches for the new competition. The third iteration adopted the first game storyline and introduced the reward system that was tested in Iteration 2. The reason behind choosing the first game storyline, that is, *Finding Jolin's Way Home,* is that some students participating in Iteration 3 had already participated in Iteration 2. In the implementation of Iteration 3, students had an additional session of grammar instruction (taught by the Chinese high school teachers) before the timed writing.

The difference between Iteration 3 and the previous two iterations is that students participated in more individual speaking activities that helped them plan their writing before their one-hour in-class timed writing. After they recorded 90-second speaking activities, they

would then proceed with an outlining activity in which they were asked to structure their ideas for the essay in class before the timed-writing activity.

Table 4.4 *Technological Tools Used*

Iteration	Technological Tools
One	QQ group—class management platform Qzone—the game Yiqixie—pre-f2f writing activities Voicethread—pre-f2f and in-class speaking activities
Two	QQ group—class management platform Yiqixie—pre-f2f writing activities and after-class peer review activity Padlet—the game QQ Recording—pre-f2f and in-class speaking activities
Three	QQ group—class management platform Qzone—the game QQ Online Collaborative Writing—pre-f2f writing activities QQ Recording—pre-f2f and in-class speaking activities

It is also worth noting that in Iteration 3 the online platform for students to do their pre-f2f activities was changed from Yiqixie to the collaborative working sites hosted by Tencent QQ. The third iteration was conducted in the summer of 2019, two years after Iteration 1 of the project in the summer of 2017. Tencent QQ, as the biggest technology company in China, successfully expanded its user base. More importantly, by changing the collaborative working site from Yiqixie to QQ, students only needed to work on one technological platform. As shown in Table 4.4, in Iteration 1, students used the QQ group to communicate with the students and the teachers, Voicethread for speaking activities, Qzone for the game, and Yiqixie for pre-f2f activities. In Iteration 2, students used the QQ group, Yiqixie for both pre-f2f activities and peer-feedback activities, and *Padlet* for the game. In Iteration 3, as Tencent QQ had included more functions, all the activities were done using QQ. From the designer's perspective, the choice of each technological tool was based on the affordances of relevant technological tools

and the objectives of each activity. Figure 4.12 is a screenshot showing students' audio responses in their QQ group, and everyone in the group can listen to others' responses.

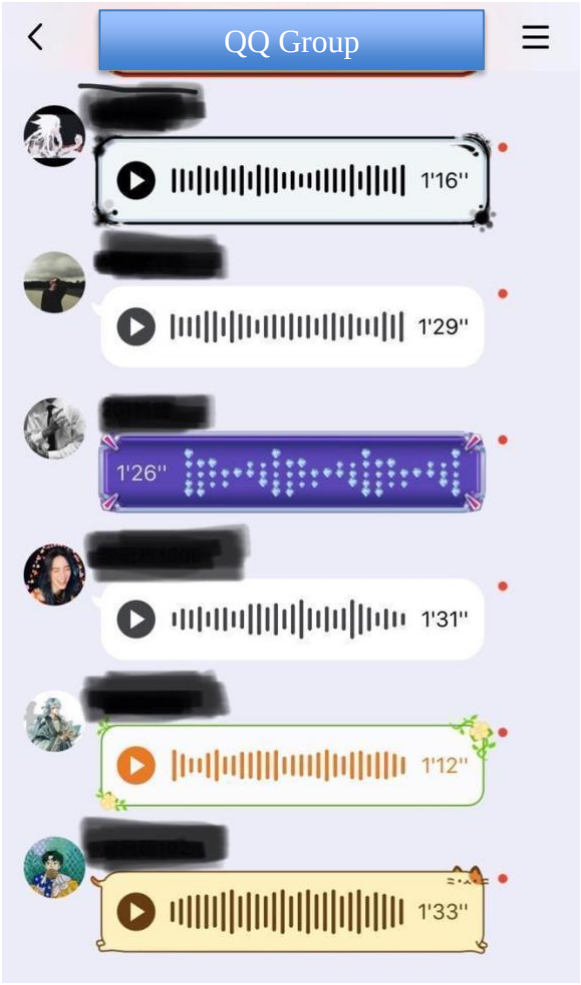


Figure 4.12. A Screenshot of QQ Group and Students' Audio Response Interface

Changes Made after Each Iteration

Changes Made after Iteration 1

One important difference between Iteration 2 and Iteration 1 is the emphasis on the reward system. Based on students' feedback from Iteration 1, although the majority of the students rated the game as fun and interesting, one student wrote in the survey form saying the quests were very much like questions waiting for them to answer, and after a while, these

supposedly fun game quests became like classroom activities for them to complete, which made the activities less fun. The reason behind this feeling is mainly because the reward system was not clearly stated in Iteration 1. Therefore, during the design of Iteration 2, the reward system was emphasized. The reward in Iteration 1 was that every time they finished a quest, Jolin was closer to her home. However, the reward system was not clear and there was no clear winner. The reward system in Iteration 2, clearly stated to the students, was time coins. By counting the time coins, there was a final winner. In addition, there was more emphasis on linguistic resources, and students were required to post the new words they learned from the pre-f2f activities in the QQ group. Figure 4.13. shows one student sharing the words s/he learned from the pre-f2f reading activity in the QQ group. All the students, as well as the teacher, could see the post.

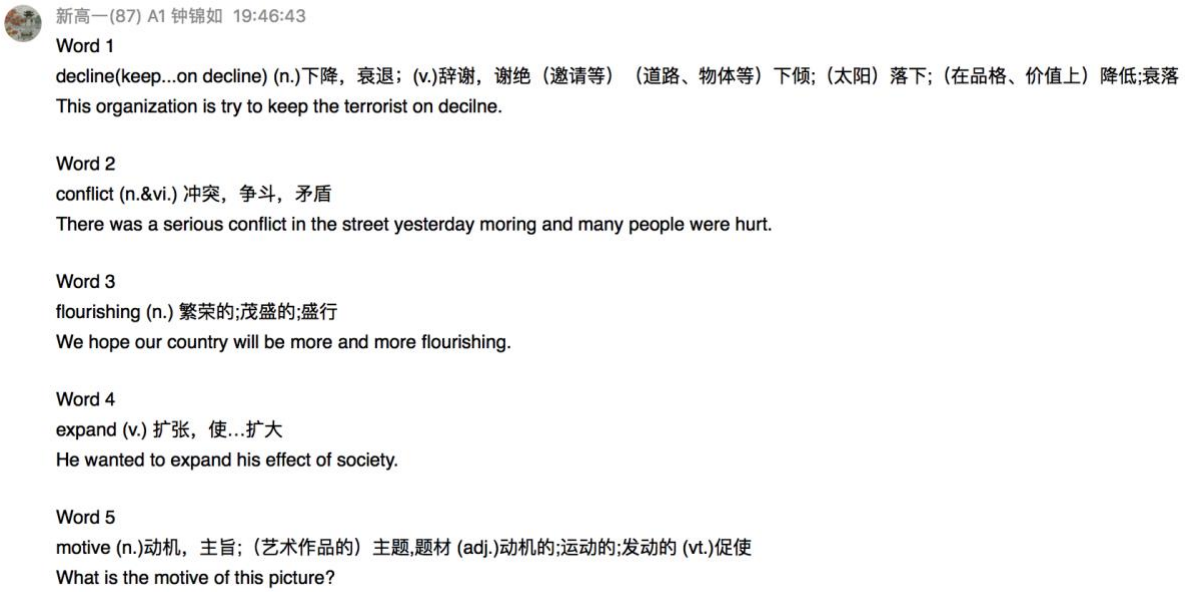


Figure 4.13. Screenshot of Students' Work

Changes Made after Iteration 2

Analyzing the course from the angle of writing, the course can be divided into three parts: pre-writing, during-writing, and post-writing. As can be seen from Figure 5.9, the course was

designed as a whole to portray a writing process by adopting the theory of process writing. The prewriting included pre-f2f activities that students completed on their own before coming to the f2f class sessions, group discussion session ,and the game session that students did during the f2f classroom sessions. The during-writing in this course only entailed the 60-minute timed class writing time (the reasons for only including one timed writing session was explained in Chapter 3: to emulate the real writing part during the competition).

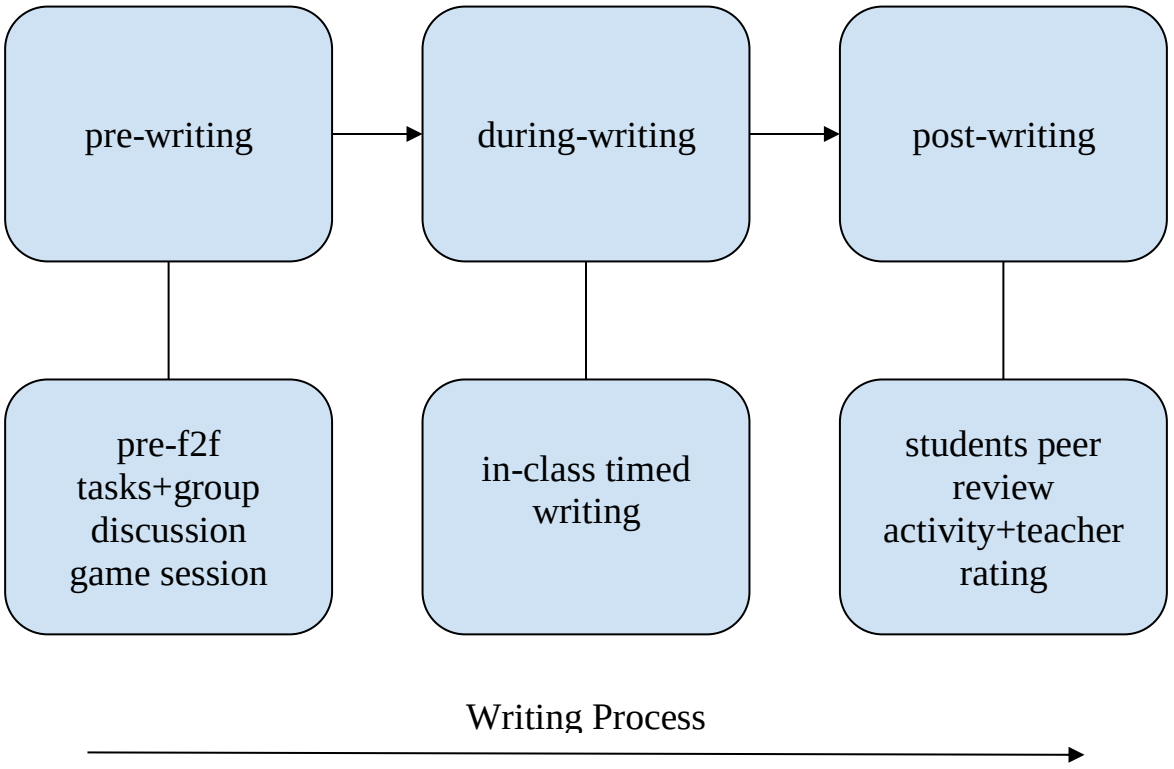


Figure 4.14. Portrayal of the Writing Process

In Iteration 2 of the project, a peer-response activity was introduced into the course as part of the post-writing activity. The peer response activity was set up as homework. Students took one of their classmates' essays home and answered the peer response activity worksheet in *Yiqixie*. Then the author of the essay accessed *Yiqixie* documents, read his/her reviewer's comments, and made relevant edits. Figure 4.14 shows an example of two students' peer response activity. Student A received Student B's writing and gave B comments based on the

provided guidelines, then Student B read the comments from Student A and decided to make relevant changes.

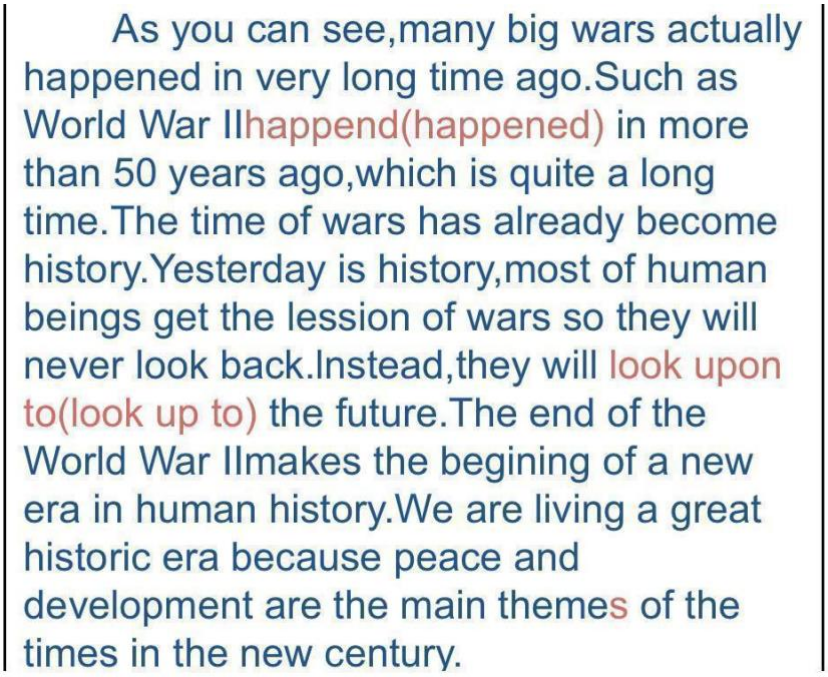


Figure 4.15. A Screenshot of a Peer Review

In Figure 4.15, the blue words were written by the reviewee and the red words were written by the reviewer. This is an example of how the peer review activity helped students with figuring out some linguistic errors, which was not stressed in Iteration 1.

Designer's Reflection

The whole process of creating a course from scratch involves constant communication between the designer, teachers, students, and parents. As these students who volunteered to take the course were minors, communication with the parents was the key before the implementation of the course, especially when it involved the Internet and the word "game." In Iteration 1, students were only asked to bring a laptop to the classroom, and parents were informed of the use of the laptop in the classroom. Since Iteration 2, students were allowed to use mobile phones for completing quests and activities that required audio recording. Some parents were very sensitive

about students using mobile phones and conveyed that these students need supervision when it came to the use of mobile phones; some parents even asked if their children could participate in the course without the use of any technologies. From my communication with the parents, it could be seen that these parents still held a very traditional view of learning, i.e. that it should be classroom-based lectures. Before Iteration 1, I also conducted a survey of the English teachers at the school where I implemented the research. It is interesting to see that the majority of these English teachers also held a more traditional view of the use of technologies. For example, they stated that these students could find answers to their homework online, and that was why they were not "a big fan of the Internet." Some teachers also reported that the students wasted "a lot of time on gaming" whenever they used the computer. Both parents and teachers had concerns with regard to the use of technologies, as students seemed to have wasted time on "playing with computers" and "playing with their smartphones." Doubt from the teachers and resistance from the parents were some of the challenges when implementing the course as it influenced the recruiting of students.

The communication with the teachers and parents reflected a unique power dynamic in the school environment. As these students in China were preparing for Gaokao (college-entrance exams) in China, the course in schools has to be exam-oriented. When hearing about integrating mobile phones and computers in the classroom, both parents and teachers were hesitant. In addition, teachers in China were somehow restrained in their pedagogical practices by the "demands" from parents as everything needs to be exam-oriented in parents' eyes. However, the possibility of being rewarded for doing well in some of the national English competitions (students who do well in these national English contests have the opportunity to be admitted to the university they want to go to with a lower score, provided they take a pre-Gaokao exam set

by the university) swayed them. In other words, doing well in these national English contests gives these students the ticket to take the pre-Gaokao exam set by the university they want to attend. Because of this, both parents and teachers also wanted the students to improve all aspects of English, not just linguistic accuracy. Therefore, the course was designed with a specific audience and a clear objective. As the designer of the course, it was essential for me to present the designing philosophies to the instructors, students, and parents so that all the parties could clearly see the reason behind the designed activities before the implementation of the course for research purposes.

For the purpose of the research, pre-writing and in-the-midst writing were the focus of the analysis as these activities culminate in the final writing, and the connection between the pre-writing and during-writing demonstrates how the designed activities helped students in constructing their thoughts/arguments using the linguistic resources they acquired during the pre-f2f activities as well as the in-class group discussion and game session.

Due to the large population of China, English teachers in the public-school systems do not have the luxury to engage students in the writing process on an individual basis. With the help of technologies as demonstrated in this course, students could embark on an experience-oriented writing process even with minimum teacher guidance. More importantly, from students' participation in the course, the writing process-grounded course helped students in empowering themselves in writing as they started to see how they could develop critical thinking and express their arguments using a language that is in development. From the students' interactions and survey results, one thing that stood out is students' lack of confidence in their "mastery of English" and their determined pursuit of accuracy, which seemed to have hindered their writing progress in general. After the first three days of the course, of all the three iterations, one

common feedback from students is “I can’t believe I can actually write an essay this long (300-500 words).”

Game quests as shown in this study are different from pedagogical activities because the objectives of the two are different. These game quests were designed to immerse students in ecology that encourages them to use the language they know, discover new linguistic resources and most importantly, help them realize their agency in language learning. It is an experience that empowers learners to see language learning as dynamic instead of static. In other words, the languaging experience allows learners to see language learning as being and becoming, and they can feel comfortable using the “interlanguage” they are developing to express their thoughts without the fear of making grammatical mistakes.

Summary of Three Iterations

Figure 4.16 summarizes the three iterations of this design-implementation research project.

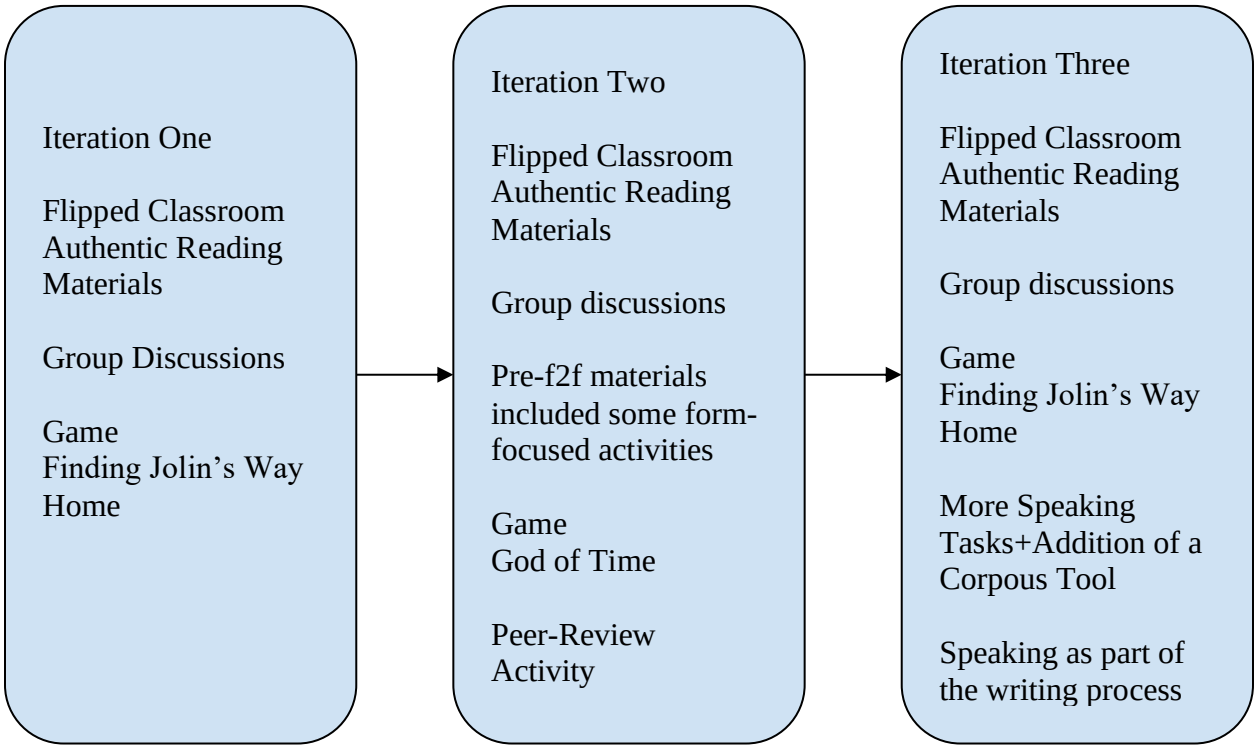


Figure 4.16. Daily Lesson Structure of Three Iterations

As can be seen from Figure 4.16, the core of the three iterations includes the game, the flipped classroom, the group discussion, and the in-class timed writing. The core of the three iterations is also the core of the course design. Table 4.5 explains the core pedagogical activities of the course. The flipped classroom model makes the in-classroom possible because, in order to maximize the learning objectives of the gameplay sessions, students need to be linguistically prepared, which means they need to have the relevant linguistic resources to understand the game quests, communicate effectively with their team members and complete the quests in English. In other words, the flipped classroom model is the foundation of the course, on which the game and group discussion session built. Group discussion sessions were included in the course so that students could revisit the pre-f2f activities they did individually at home.

Table 4.5 *Core of Three Iterations*

Core Pedagogical Activities	Purpose of Each Pedagogical Activity
Pre-f2f Activities (flipped classroom)	Gathering of linguistic resources
Game	Exploration of discussed topics in depth Use linguistic resources in meaningful contexts Immerse students in "languaging"
Group Discussion	Review pre-f2f readings
In-class Timed Writing	Apply what they have learned in pre-f2f readings, group discussion, and game into writing Pre-f2f activities, game session, and group discussion all work as part of the writing process

Based on the core of the course, it is possible to create different variations of the course depending on the needs analysis of future students as well as institutional settings. For example,

if students need more help with linguistic resources, more attention can be paid to the pre-f2f activities so that they are properly scaffolded. In summary, the core of the course can serve as a template for future teachers who intend to use such a game-supported English writing course.

This pedagogical drama game-supported writing course aimed to present to both teachers and students a different way of learning English and English writing. It was designed to create a unique experience for students so that they start to take initiatives in learning English linguistic resources and then use these linguistic resources in their communication in the game and group discussion as well as in their writing.

CHAPTER 5-RESEARCH FINDINGS

This chapter delineates research findings based on the research questions presented at the end of Chapter 1:

1. Game-afforded Communication: How do technology and the game-based course change students' communication in class, and how does the pedagogical drama game afford students' languaging and translanguaging?

2. Attitudes: What are students' attitudes towards technology and pedagogical drama games in English classes, and how do their attitudes change as a result of this particular pedagogical drama-game supported course?

3. Learning outcome of the course: How does a pedagogical drama game-supported course develop students' critical thinking as displayed in writing samples?

This chapter presents the analysis of students' communication in the course, and students' feedback of this design-based research project centering around the creation of a second language writing course that is supported by a classroom pedagogical drama game in a classroom setting so as to answer the research questions. The findings show that first, this pedagogical drama game-supported second language writing course engaged students in an experience-based learning that helped them with deeper exploration, establishing point of view and using the language for meaningful communication and production; second, students responded positively to this innovative course which utilized the Internet and mobile devices; and third, the three iterations demonstrated that this seemingly complex activity-based writing course is feasible in a large classroom of around 40 students, a rare consideration in the literature, as most research done in ESL situations that involve a maximum of 20 students. The first research question is about the implementation of the course and the following section will demonstrate in detail how

a pedagogical drama game-supported course was implemented using the flipped classroom model.

Research Question 1

The following analysis answers the first research question regarding game-afforded communication: How do technology and the game-based course change students' communication in class, and how does the pedagogical drama game afford students' translanguaging?

Quest Products: Written Texts

This section examines the written products of the game quests provided by the students during gameplay. In Iteration 1, web-based quests were provided on QQ (the social media platform that the Chinese students were familiar with and used on a regular basis among themselves). The main character, Jolin, created a QQ space with the username "Jolin from 1967" because her story is that she came to the present day from the year of 1967. She recorded her journey of finding her way back home while regaining her memories, little by little. Through the record of her journey, Jolin also managed to present game quests for learners/students to complete as a group. The following is an example:

> When I first met Brian and Jessica, they helped me set up this QQ account. They were hoping that people all over the world could access my page and some of my relatives might recognize me. Today, I flew to this place called Silicon Valley with my new friends, Brian and Jessica. I was really amazed by these new technologies. It seemed that people can now easily get connected with each other through the Internet. I hope I can learn more about these

technologies and maybe once I learn more about the world, I can remember where I am from.

Quest One

Jolinfrom1967

2017/7/16 06:46

We (Brian, Jessica and me) left the United States yesterday and arrived in Beijing early this morning. After a long flight, I seem to have a little cold. The air quality here is not very good, and I have been coughing ever since we landed. I also saw a lot of people wearing medical masks on the streets in Beijing. I wonder why.

As the game play was conducted during class time, the instructor read through Jolin's posts with the students and then provided a link to the webquest so that students knew clearly what they were supposed to do for the quest. Sometimes, students would double check with the instructor the game quests after watching the game quest. Students then discussed in their groups and tried to give Jolin suggestions by typing out a group response. For instance, for this particular web-quest, two of the groups wrote as follows:

- Lee Group: Hi,Jolin! I suggest you **to wear** a mask when you are out, but I don't think it really works. You know, the poisonous bacteria and other material is so small that they can easily go through the small holes on the mark and then into your throat and then, your lung 😱. So the common masks cannot prevent you from the terrible haze at all, they can just make you feel safe to some extent 😏.

- Mei Group: Hi, Jolin. I don't think wearing masks is effective. It is reported that wearing masks **can not** block most of the **pollutions'** maybe it is the only way we can do to prevent ourselves being polluted by smog. (A8)

Lee Group and Mei Group's written texts for the quest were a group product in which one student typed the texts on behalf of their whole group. Each group was assigned a leader at the beginning of the course to collect their writing assignments and recorders at the end of each day of the course. This is one of the game quests that students were expected to complete. Students worked together in groups, and then they discussed how they were going to help Join and decided on what kind of message they were going to leave on Jolin's Qzone. The topic for the day was environmental issues in China, and the game quest was designed to help students understand and experience the extent of the environmental issue in China. *Lee* and *Mei* are both pseudonyms; in the Qzone[3], Lee and Mei used their QQ names, and A8 is the assigned group name.

These two groups' comments were analyzed from two aspects: language and the content. Language and the content were focused here because languaging and critical thinking were the two areas for investigation in this research. The language and content produced by students via gameplay can provide some insights into the quality of languaging and critical thinking. Table 5.1 summarizes the two aspects.

3 Each QQ user has a homepage called Qzone, and the user can choose who can visit his/her Qzone.

Table 5.1 *Analysis of Students' Comments*

	What do students' comments show?	What messages do the comments convey?
Lee's group	grammar inaccuracy "suggest you to wear"	The environment is so bad that even the facial masks won't help much.
Mei's group	"cannot"	Masks are not effective.

From students' written responses, it is important to note that Iteration 1 lacked a focus on language accuracy or a requirement for students to proofread their comments. For instance, the use of "suggest you to wear" and "pollutions'" show some grammatical inaccuracies in students' written quest product. Such findings prompted me to introduce peer review in Iteration 2 so that students could self-check the grammaticality of their language. However, at the same time, we also need to think about if the grammaticality or the accuracy of their writing is the key here as these are minor compared to what the students can do with English since they do not obscure the meaning. In other words, the experience and languaging were the intentions behind the game quest. From the designer's perspective, language accuracy is not important as long as these game players managed to successfully express their ideas.

The interesting finding here is the content that these groups wrote in their messages to Jolin. They did not just answer Jolin's question of why there were people wearing facial masks on the streets. Instead, both of them expressed how wearing facial masks was not enough. Lee used emojis to express their emotions regarding the detriment the air pollution is doing to their lungs as shown "your lung 😱". This written data matches one of the intentions of the game, to

engage students in an experience of the topic so that they start to explore deeper. One of the indications of critical thinking is the ability to formulate one's point of view, and both teams have shown this. Lee's group stated, "the common masks cannot prevent you from the terrible haze at all, they can just make you feel safe to some extent," and Mei's group stated, "I don't think wearing masks is effective." Step One in writing an argumentative essay and demonstrating critical thinking is to formulate one's stance. As shown here, the game quest allowed students to explore where they stood on the discussed issues and topics instead of just regurgitating opinions they themselves did not relate to for the sake of writing. In addition, students were languaging throughout the gameplay session. According to Swain (2006), "languaging is a process which creates a visible or audible product which one can language further" (p. 97). In order to complete the quest, students needed to communicate with their group members to negotiate if they could reach a consensus on the issue and look for relevant linguistic resources to express their stance.

Communication in the QQ Group Chat

Students used QQ group chats strategically to communicate with each other and the instructor. For instance, students used QQ group chat to show the instructor that their writings had been completed and shared the link to their individual file as shown in the screenshot in Figure 5.1.

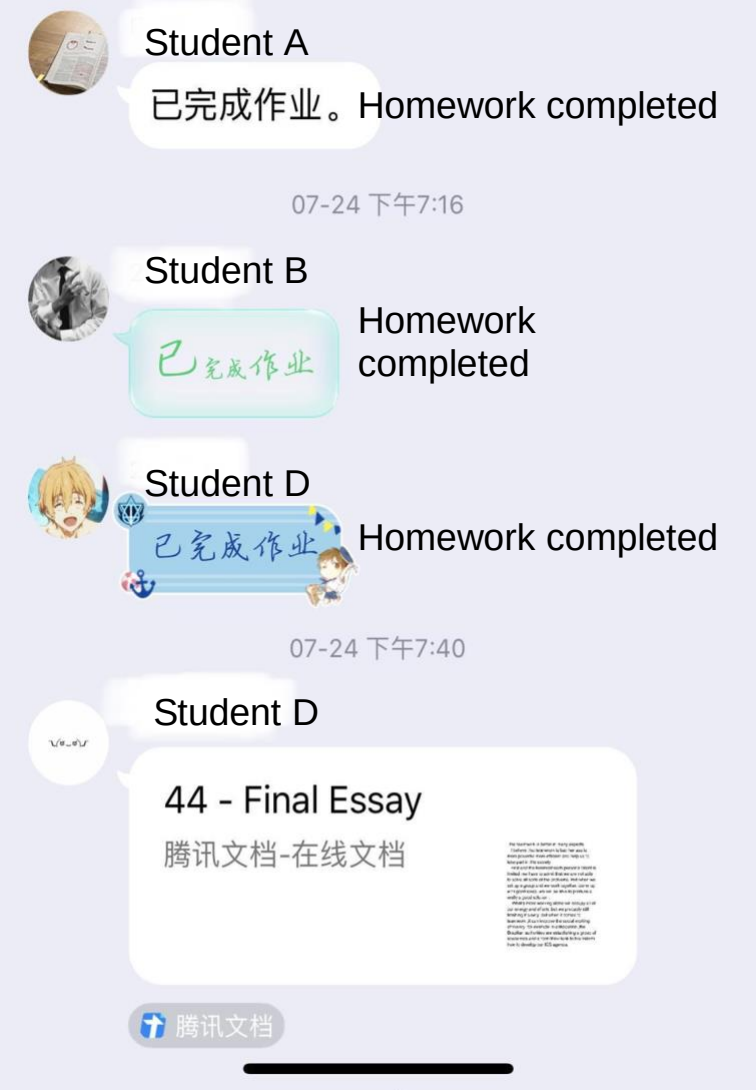


Figure 5.1. A Screenshot of a QQ Chat

Figure 5.1 shows four students informing the instructor that their homework had been completed. Students A, B, and C each typed “Homework completed” in Chinese and Student D shared the link to her/his homework directly. This is a piece of interesting data because the instructor never required students to do so in the group chat. When one student did this in the group chat, the other student followed suit, and this is an interesting conformity behavior being observed in this QQ group Chat.

In Iteration 3, a corpus tool called *www.ludwig.guru* was introduced to students when they encountered language-related issues. For example, if they were not sure what kind of prepositions should be used in a verbal clause, they could use this corpus tool. Out of 74 students, 45 registered and only 31 actually made at least one query. Only 4 made more than 100 queries. I think they were the ones who understood how the tool worked and found it useful. Some of them used it only as a translator, others only as a dictionary. Few of them used it in all ways. This is an example of how certain resources were not fully used by learners in the learning ecology. A resource such as this corpus tool which was not picked up by the learners is not considered an affordance as it does not interact in the perception-action cycle as van Lier (2004) explained.

Game Spoken Data

The above data was taken from students' written products after group discussion, and it does not explain how group members came to the written product. In order to keep a record of students' discussion process, I also collected audio recordings of students working together both in group discussions and game-play sessions. In this conversation, four girls (Jessica, Emily, Arya, and Bella) were participating in a quest in which they were supposed to help Jolin understand why there are so many refugees in Europe. Before Excerpt 1, they were reading Jolin's question, "Why are there so many refugees?"

In Iteration 1, each team had access to one laptop, and they could search for information online. This excerpt shows how the girls used the affordances of online technology and each other to figure out the pronunciation of the word "refugee." Line 01 to Line 10 comprises one communicative project, finding the pronunciation of "refugees."

Communicative Project One: What is the pronunciation of "refugees"?

Excerpt 1:

01 J: >zhègè de fāyīn< .hhh

this GEN pronunciation

This pronunciation

02 (2.0)

03 E: >We can- we can-< we can say political reasons

04 A: ∘bùshì (.) zhègè dāncí∘

no this word

No, this word

05 (3.0)

06 E: ↑What's the pronunciation of <R- E->F- U- G- E- ∘>nàn mín<∘

Refugee

07 B: ∘Re↑fugees (.) I guess∘ (1.0) ∘∘Re↑fugees >sōu yīxià<∘∘

((both of these are /rɛˈfjuʤiz/)) search a bit

Let's look it up.

08 (1.0)

09 B: Be↑cause [they-

10 E: [>↑re(fu)gees<

((sounds like /ˈrɛʤiz/))

This communicative project is an exemplary case of how students made use of the Internet and computer during the gameplay session. J started by drawing other team members' attention to the pronunciation of "this word." E went ahead wanting to focus on the quest question. A picked up J's question and asked E. E then rephrased the question in English and the word J did know how to pronounce is refugees. In Line 07, B suggested searching the pronunciation online and this question was resolved in Line 10.

Communicative Project Two-Try to answer the quest question.

In Communicative Project Two, the group was trying to come up with a response to the quest question based on their existing knowledge.

Excerpt 2:

```
11 B: They lost their [home↑
12 E:                 [Yea  because-=
13 B: =from the war↑
14 E: Yea, >∘because of war∘<, so uh:m=
15 A: =They don't have (.) someplace to live↑ So they (1.0) should=
16 E: =move onto another continent [to-
17 J:                             [yeah (1.5)
18 E:to live [safely
```

B started by answering the quest question by initiating the answer in Line 11. In Line 12, E picked up B's initiation by trying to finish the sentence. B provided the answer: "from the war." E then wanted to go deeper into the reason. A continued by explaining that because of war, people no longer had a place to live. As A paused for a second, E carried on the sentence and proposed that since these people did not have a place to live, they had to move to another continent to live. Excerpt 2 is an excellent example of distributed cognition. The quest allows team members to work together and collaboratively co-construct an answer. The team members in this excerpt shared a distributed cognition demonstrated by how they perceived each other's intentions and tried to finish each other's sentences which were related to the quest.

Communicative Project Three-Read information they found online related to the quest question

In Communicative Project Three, the group found some information online related to the quest and read the information online together. In Line 19, A and J found some information that is related to the quest question in Chinese. Then, J pointed to E and asked E to read it. E translated the information into English in Line 23 and Line 24.

Excerpt 3:

19 A: [Wow So Wow So Hhhhhhh

20 E: Uh hum

21 (5.5)

22 J: dú this

read

read this

23 E: To prevent them from the war and (2.0) out, and the out

24 controi (3.0) shī kòng júmiàn? Situ- uh (1.0)

lose control situation

25 The controi >En bù < the situation which co,which wa,

uhm no

26 which is out of controi

27 J: <Controi>

((Both E and J pronounce control as /kənˈtrɔɪ/))

Line 11 to Line 27 is a communicative project in which the team aims to come back to the quest question of why there are so many refugees in Europe. The uses of Chinese, such as "nàn mín" (refugee in Chinese) in Line 06 and "sōu yīxià" (search it) in Line 07 are occurrences of translanguaging (Garcia, 2009a), which shows that students strategically use their L1, Chinese, for effective communication during the gameplay session. It is important to note that different from codeswitching, which regards learners' languages as separate entities,

translanguaging treats all students' languages—their L1s together with their developmental languages—as one integrated linguistic system. More importantly, as shown in the transcription here, translanguaging means languaging using the holistic linguistic repertoire. For instance, when referring to the content of the game quest, students languaged in English; when it was time to search for information, students languaged in Chinese. Translanguaging is not merely about using different languages; instead it underscores the languaging actions in different languages.

These three communicative projects demonstrated how these four students picked up the action potentials—affordances in this game ecology—and participated in meaningful languaging and translanguaging at the same time. First of all, the affordances being picked up include the computer and other team members. Second, the ecology is the game. The game quest gives the activity meaning, and the four team members were using English meaningfully; once they took on the gamer role, their English output became authentic. A classroom role-playing game affords students opportunities to work in a team collaboratively on a common quest, drawing on the vast online information readily available through the laptop and their mobile phones, as well as the communication with the instructor. In addition, the action of looking for information so as to complete the quest allows them to obtain new information about refugees in Europe, and this contributes to their deeper understanding of the topic and hence, their critical thinking.

Quest Products: Spoken

This pedagogical drama game, in essence, revolutionizes the whole writing process in that it engages students in experiencing the writing topics and gives them opportunities to learn about the topic in depth through online searching, group discussion, and collaborative game

quests. The game quests were designed in such a way that students would become more familiar with writing argumentative essays such as formulating a clear thesis statement.

Let us take the following quest as an example. In the game *Trip with God of Time*, one of the quests is that God of Time (the non-playing character in the Game) asks students why the environment on earth is deteriorating so fast and whether the development of the human world must come at the cost of the destruction of the environment. In this quest, illustrated in Figure 5.2, God of Time was standing in front of a dirty murky lake, shocked by the change of the environment in such a short time. Therefore, he turned to the little fairies, i.e., the students, for help. One of the questions he asked was "Do you think that the development of the human world should come at the cost of the environment? Why?" The following transcription shows how participating in the game allowed students to be familiar with formulating a thesis statement in writing.

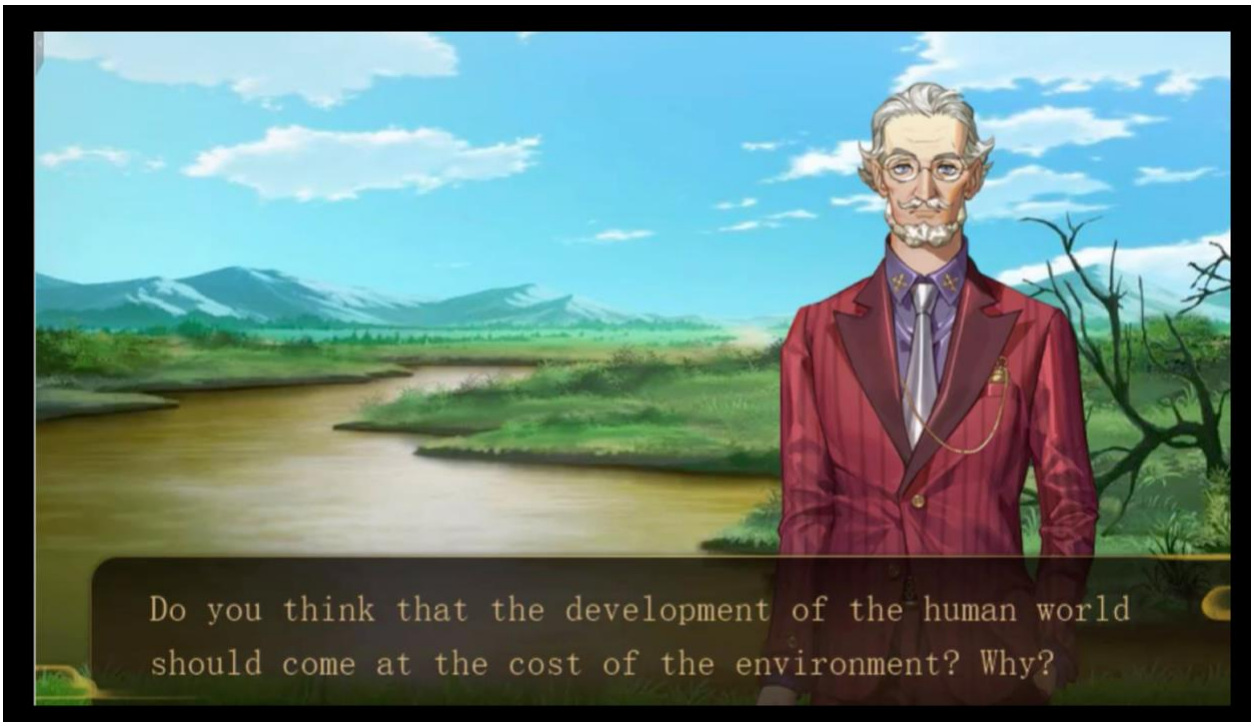


Figure 5.2. Screenshot of the Quest

This is the transcription of one group's submitted recording for their quest to answer God of Time's question. The group video-recorded a group presentation and submitted their recorded presentation as the product for this particular quest. As students were not tech-savvy to create a professional screen-recording within a very short period of time using the computer software, instead they made use of all the available resources: mobile phones, laptops, notepads, and pens to create a less professional video which fulfilled the requirement of the quest. They used their laptop to create a slideshow and their mobile phone to record their narrating the slideshow. Before the video recording with the help of their mobile phone, they used their notepads and pens to take notes while discussing with their team members.

Qi, Jun and Mei (pseudonym)

Excerpt 4:

Slide One

A picture of a city with many factories with chimneys emitting gases into the sky

1 Qi:¤<54258>(0:00:54.3) far as I'm concerned, I don't think the
2 development of the human world should come at the cost of
3 the environment.
4 J:Do you think the destruction of the environment necessary

5 For development? You know many countries often pollute it
6 first and govern it later.
7 Q:I don't think it's necessary because uh uh because people
8 can uh can develop the technology to find some ways to
9 development in some in some ways that that didn't that
10 doesn't do harm to our uh environment
11 J:Yes. Then Do you think which is important? Environment or
12 development?
13 M:Environment often comes first and development should depend
14 on the environment.
15 J:Yes. Next.

In Excerpt 4, this group focuses on answering the first question with a clear angle that requires a yes/no answer. Qi in Line 1 answered the question, and in Line 7-10, he provided the other half of the thesis statement that is his main reason. After Qi put out his stance, J pushed further, which forced Qi to be more specific with his thesis statement. From Line 7, Qi answered J's question and explained that he believed development should not come at the cost of the development because "people can find ways to develop without harming the environment." J then asked which was more important between environment and development. Mei participated in this video recording by summarizing that the environment should come first because development eventually depends on the environment. This audio that the students recorded to go along with the slide in the picture helped these students to formulate a clear thesis statement with the help of each team member. Figure 5.3 summarized how the complete thesis was constructed. One team member asked the main quest question, which was stated in the quest, and Qi answered the question with a no, and this helped them generate a stance. Then J asked the

follow-up question, which was also stated in the game quest. Qi answered the question with a proposal. If we try to analyze the ecology in this system, we can see that the quest questions and team members were two essential affordances in this case. Together, they pushed the communication forward and helped generate a product for the quest, and the quest in fact probably helped students with their writing of a similar topic.

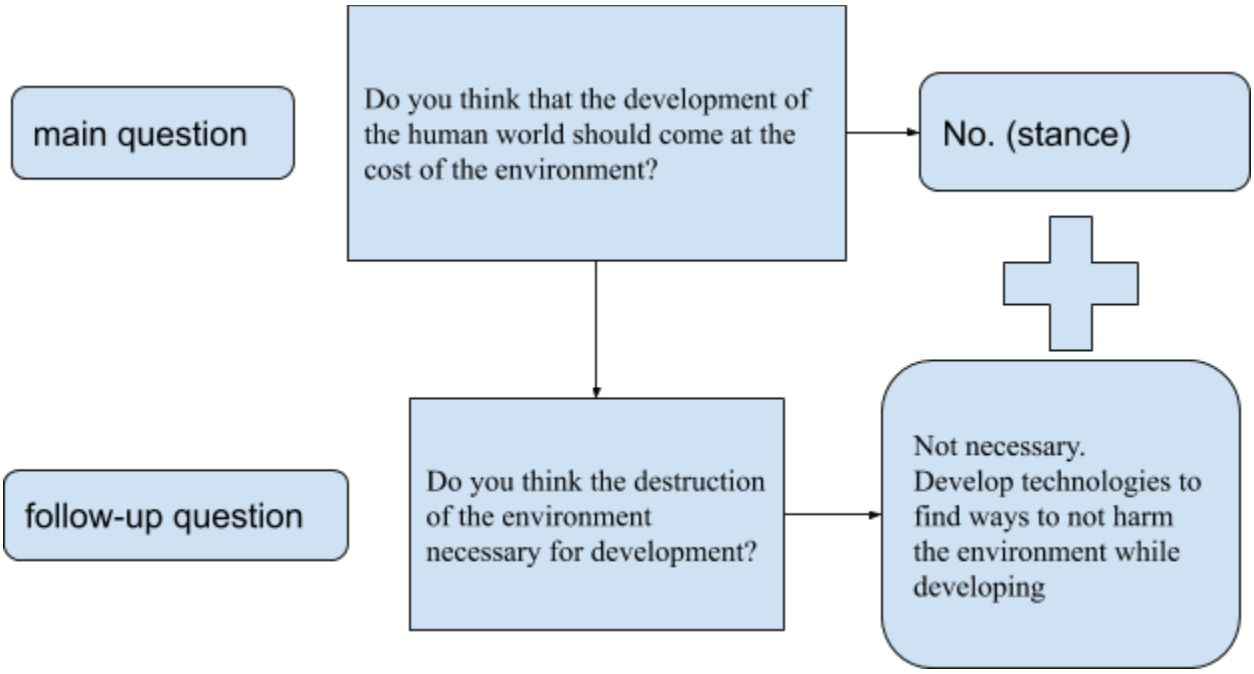


Figure 5.3. Breakdown of the Group's Response

Game quests consist of the non-playing character, God of Time in this case, as the quest provider, and the quest is designed in a social context that students can relate to. Students spent time understanding what the quest was asking for and then worked together to decide on what kind of product they wanted to co-create to submit in order to complete the quest while answering the questions in the quest. In this example, students co-created a narrated video and in the first slide, they managed to formulate a clear thesis statement for an argumentative writing topic.

The following transcription showed how this group supported their thesis with evidence and also proposed suggestions. The group narrated Slide Two with an explanation of solid pollution and Slide Three with a description of how penguins live an unhappy life because of petroleum in the ocean.

Excerpt 5:

Slide Two

A picture of a trash dump

1 J: ¤<56864>(0:00:56.9)Look at the picture. This is solid pollution.

2 Many people litters everywhere and they pollute the soil

3 Q: Yes, it's very dirty and it do harm to our environment.

From a design perspective, the ultimate purpose of the game quest is that students or game players could experience the topic at a deeper level so that they could explore the topic further and discover their inner need to express their beliefs and thinking. This slide shows a picture of solid pollution that students found on the Internet. In order to create such a slide, this group of students first of all needed to agree on the idea that they would look for such a picture. The generation of such an idea in their mind helps them to put thoughts into words. The action of finding the picture, and then creating a video explaining the picture gave students the opportunity

to think, discuss, find, and narrate. Team members scaffolded each other and together, they created a narrated product demonstrating a point, i.e. solid pollution does harm to our environment by polluting the soil.

Excerpt 6:

Slide Three

A picture of many penguins covered by petroleum

1 Q:¤<74329>(0:01:14.3) This pictures is show that the qi'e

2 J: =Penguins

3 M: =Penguins

4 J: Penguins

5 Q: the Penguins are are harmed by the

6 M: They lost their habitat to live, and they live very unhappily

7 Q: because of the pollution from the ship who use oil

8 J: Yes

9 Q: So

As already explained earlier, the game quest located students in a meaningful ecology that made the production or use of language, i.e. languaging, authentic. Students no longer felt uncomfortable using English even though they all spoke the same L1. In Line 1, Q did not know

how to describe the animal shown on the screen in English, he used Chinese. J and M helped out simultaneously. Again, like the previous slide, the group members together went through the process of discussing what point to cover in order to answer the quest question and what picture to use. Once they had the slide ready, the slide became part of the ecology and they could use the slide to start producing language. This showed that the affordances in ecology were constantly evolving depending on what students have done. They were using the resources in the ecology, and at the same time, they were contributing to the ecology.

From Slide Four onwards, the group worked together trying to present solutions to protect the environment. Slide Four and Slide Five are transitional slides that guide audiences to move on to a new point. Slide Six provided a piece of evidence: a quote from Chairman Xi. The student used the Chinese quotation first and tried to provide an English explanation afterward. The word-by-word translation of the quote is “green mountains are gold mountains and silver mountains” which means “green mountains are valuable treasures.”

Excerpt 7:

Slide Four

1 J:¤<103190>(0:01:43.2) So What should we do to protect our

environment

Analyzing the content until Slide Four, we could see that the previous three slides presented the environmental issues that we have observed so far. This slide worked as a connecting slide. At this point, we can draw some connection between this quest completion with process writing. Students were asked to complete a game quest, which was to answer a question asked by God of Time. Students, like fairies, were expected to complete the quest so as to earn time coins and help Emily to purchase time. There was a meaning behind quest completion and the action of doing so, in fact, created a side product, i.e. an outline for a writing topic.

Excerpt 8:

Slide Five

This slide shows a picture of the earth covered by green lands and a greenhouse. The four Chinese characters are directly translated into “protect the environment.”

1 M: ¤<108298>(0:01:48.3)it is our responsibility to protect the
2 environment

After the transition slide, the group stated their belief in taking on the responsibility of protecting the environment. This slide is another example of translanguaging. Students found a

picture of environmental protection in English and used it as the source to express their belief and claim.

Excerpt 9:

Slide Six

Cite a quote from President Xi

1 Q:¤<114436>(0:01:54.4)And as President Xi Jinping has Said that

2 "绿水青山就是金山银山".

Green Mountains are gold Mountains and silver Mountains

Green mountains are valuable treasures

3 it's our duty to protect our most valuable treasure is

environment

This slide is another occasion of translanguaging. They cited a famous quote from President Xi Jinping, the direct translation from Chinese is “green mountains are golden mountains and silver mountains.” They did not just stop there, and the group went further interpreting the sentence and explained that the sentence meant the most valuable treasure was the environment. Analyzing this data from the writing structure, in order to illustrate a point, we

need evidence and explanation. What the group did here is that they actually included an explanation after providing a piece of evidence. The same finding can be seen in Slide Seven.

Slides Seven, Eight, and Nine each provided three possible solutions to the deterioration of the environment including Earth Hour, government intervention and volunteering work.

Excerpt 10:

Slide Seven


```
1 J: ¤<127382>(0:02:07.4)There is an activity named earth hour.
2    It called us to to stop to turn off the light and stop use
3    electricity for an hour every year. It it What it wants to
4    tell people is to save electricity and save resources.
```

At this point, we have established that students have successfully picked up the relevant resources in the game ecology and they were continuously contributing to the ecology by adding new resources such as the slide they have created. Based on this slide they created by adding a picture they found online, they could produce language as they moved onto describing what they saw in the picture. In other words, the languaging at this specific point was very well scaffolded by the graphic resource.

Excerpt 11:

Slide Eight

1 Q:¤<149380>(0:02:29.4)Yeah. And the government also develops
2 some layers (laws) to protect the environment. Uh They punish
3 the factories uh that do harm to the environment.

This slide is another piece of solid evidence supporting their earlier point about ways to protect the environment. This picture they found online demonstrated how translanguaging plays out in the thinking process. At this point, we could not decipher whether they first came up with the point of "laws to protect the environment" in Chinese or English. They have both the Chinese and English linguistic resources in their repertoire. When they tried to create a video to fulfill the quest mission, they found a picture with Chinese on it and successfully narrated the picture in English. From the designer's perspective, they have fulfilled the pedagogical objective which was to explore the topic and use English to express the information that they thought would help explain their point of view.

Excerpt 12:

Slide Nine

A photo of volunteers picking up trash.

¤<169507>(0:02:49.5)

1 J: We can also volunteer to uhm pick up some rubbish and protect our

2 environment.

3 M: As individuals, we can improve awareness to protect the

4 environment and reduce the pollution.

5 Q: 结束

The end

The end.

6 J：That's end. This is end. Thanks for listening.

The final slide is a photo of volunteers picking up trash. The group used the picture to present their appeal as the pronouns they used were “we” instead of a third-person pronoun. This showed that students strategically used new affordances they created for their own benefits. Slide Seven and Eight were used to present possible ways of protecting the environment. If we only look at the picture, we could say that this picture presented another way of protecting the environment. However, when we read the languages they produced, it could be seen that they used this picture and produced some language to present their appeal, i.e., we “can improve our awareness.”

The example above is a narrated video co-created by a group of four students, and if we look closer, what they produced is an outline of an argumentative essay with the topic of “should

the development of the human world come at the cost of the environment." This group not only provided evidence to support the negative effects of environmental pollution, but they also suggested possible ways to solve this problem. The analysis of the game quest can be summarized into the following graph which describes the game ecology. The computer and the Internet were the affordances designed and team members were part of the quest. Effecting the affordances and communicating with team members, the group found pictures online and created nine slides using the pictures found online. Then these slides became new resources in the game ecology. On the time scale, the slides became novel affordances at the new time point. Using the slides, the group managed to create a narrated video. What's more, the group used each slide strategically, by describing the content on the slides but using different linguistic resources, the group conveyed their point of view, evidence and appeals respectively.

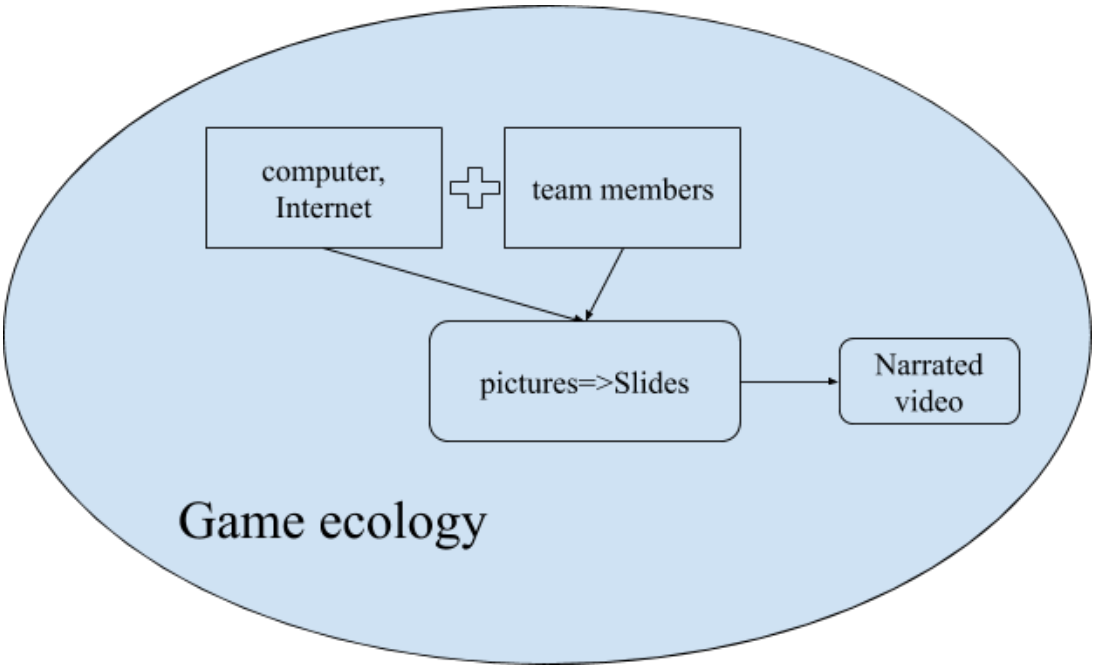


Figure 5.4. Game Ecology during Gameplay

How is this game quest different from a pedagogical activity asking students to write an outline about a given argumentative essay topic? In order to answer this question, it is necessary

to analyze the affordances of the game quest. This game quest involves one computer and the mobile phones that students have access to, and it is a collaborative project. In addition, the non-playing character God of Time (GoT) and the story that GoT told about the deterioration all engaged students in such a way that an outline writing activity does not. Table 5.2 compares the writing process in the game-supported course with a traditional classroom outlining activity.

Table 5.2 *Game Quest vs Outline Activity*

	Game Quest	Outline Activity
Nature	Group work	Individual/Group work
Instruction	Interactive	Informative
Product	Multimodal	Just writing (The outline activity can be multimodal with the help of technologies)
Affordances	Non-playing Character Laptop Mobile Phones Peers	Can have access to online materials if students use the Internet and computers for writing
What is learning ecology like?	A collaborative co-creation team is formed based on the availability of both materialistic and linguistic resources.	An individual student can make use of available resources to write the outline
What kinds of language use happened?	Oral communication in both students' L1 and English and the final narrative video in English	Writing in English

As demonstrated in Table 5.2, it can be seen that the game quests in this course were designed in such a way that students could be scaffolded in the writing process by co-creating a product so as to complete the quest with their team members. The non-playing character and the game narratives aimed to portray a more "authentic" and vivid social-political setting for

students so that they can relate more to a given topic. When students participated in this game, they became a part of the narratives, and the act of finishing the quest with team members placed students in a learning ecology that was filled with multiple potential affordances for language use and learning. The game and the quests in the game construct a meshwork of essential elements with key affordances (van Lier, 2000) for meaningful communication that can contribute to the planning of the essay, the development of critical thinking, or simply the practice of English speaking.

The following analysis showcases the ecology of this pedagogical drama game. One of the theories that guided the design of the course is translanguaging (Garcia & Li, 2014), and students were allowed to make use of their L1, Chinese, whenever they felt that it would be more efficient in quest completion or when they were in a situation where they lacked the necessary linguistic resources in English. Students were allowed to use L1 but were not actively encouraged to use L1. From their quantitative analysis of students' use of L1, White and Lapkin (2000) found that the use of L1 had significant cognitive and functional purposes; they proposed that L1 should be allowed for the effective completion of activities but not encouraged as its purpose is to support not to substitute for language learning. This was also one of the rules when students participated in the games: Chinese was allowed when they were in need of English linguistic resources.

Action Potentials in the Classroom Pedagogical Drama Game

One of the significant underlying theories for the course design is van Lier's (2006) ecological approach to language learning. According to van Lier (2010), analysis of language learning should be conducted from an ecological perspective. He emphasized the importance of learning opportunities, classroom interaction, and educational experience. Table 5.3 summarizes

the resources that students had access to during the classroom pedagogical drama game, and how students made use of such resources and fulfilled the potentials of these resources or properties of resources in relation to the game, learning, and learning environment, that is, the affordances (Chemero, 2003).

Table 5.3 *Affordances Intended vs Affordances Picked up*

Resources in the classroom Pedagogical Drama Game	Affordances intended by the designer	Affordances picked up by the students
Mobile phones	Search engine Online dictionary Communication tools	QQ group Quest instruction Video recording Audio recording Online Dictionary
Laptop	Microsoft software for making PPTs Video creating	Making presentations Play background video
Recorder	Recording	Recording for the purpose of research
Students' L1	Small talk Functional transitioning Translating	Search for information Communication for the planning of game and small talk
Instructor	Teaching Giving Instructions Answering questions	Provide help when students have questions about language or the game
Team members	Co-creating videos Answering questions Support	Teamwork Support Co-creation of the final quest product

In this classroom role-playing game, each group of four students had access to one laptop, and individual students had access to their mobile phones on their desks. The four desks were combined into a rectangle, and four students ABCD (see Figure 5.5) sat on the two opposite sides with two on each side. A classroom role-playing game affords students the opportunities to

work in a team collaboratively on a common quest, drawing on the vast online information readily available through the laptop and their mobile phones, as well as the communication with the instructor. The mobile phone was used to search for information about the discussed topic; an online dictionary can be used to check for words, phrases, and translations of sentences; the mobile application QQ group was used to provide the game quest and communication within the class.

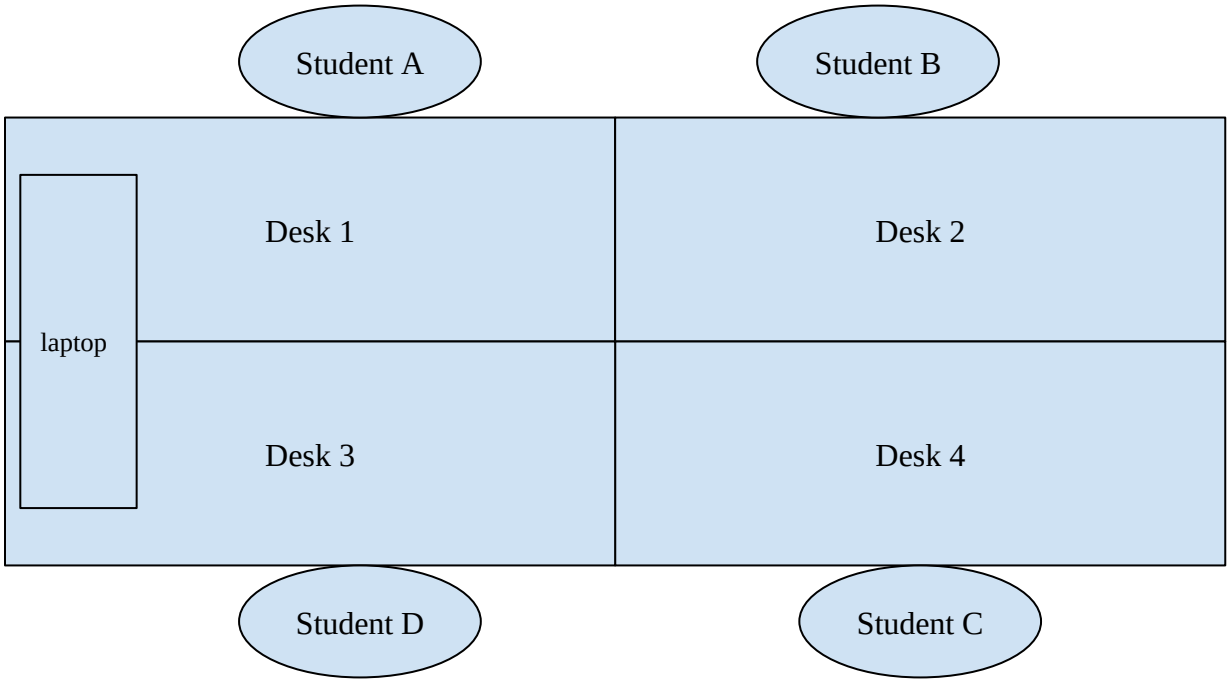


Figure 5.5. The Seating Arrangement during the Gameplay

The four students in Figure 5.5 are from a different group also working on the game quest in which God of Time asked them whether the development of the human world should come at the cost of the environment. The transcription is from the video recording of their group working on the quest. As shown in the complete transcript in Appendix J, students shifted between Chinese and English, and the italicized line is the English translation.

This group found a video online that is related to the topic of pollution and tried to use the video as the backdrop for their video recording. In Communicative Project One, the

affordances that students made use of are their team members to confirm their understanding of what they are supposed to do next, and one team member does refer to the quest information provided in the QQ group. Line 1-10 is a communicative project in which students resort to each other as the reservoir of resources, trying to figure out the main question they need to answer in this quest. In Line 10 J asked M to look at "that", referring to the game quest information provided in the QQ group that everyone can see on their mobile phone. In Communicative Project Two, students and the instructor looked at the projected screen of the quest information and discussed the content of the quest information. Line 11 to Line 17 is another communicative project in which students asked their instructor for help to confirm their understanding of the quest information. In Communicative Project Three, students look at the quest information on their phone closely together, trying to figure out how many questions there are in the game quest. In Communicative Project Four, students start to discuss their plan for completing the quest. They have pulled up the video they wanted to use for the recording on the laptop and start to look at their phones for video function.

Analyzing the transcription closely, students' communication during the game session is scaffolded by the affordances in this game design as shown in Figure 5.6.

Communicative Project One--What do we need to discuss now?

Artifacts involved: mobile phones (QQ group, screenshots of the game quest)

Excerpt 12:

1 M:等一下,我们现在要讨论什么来着?

Wait a minute, what do we need to discuss now?

2 Q:就是那个问题嘛

Just that question.

3 J:就是

Just

4 M:就我一个人不知道

I am the only one who does not know.

5 J:发展是不是要要以牺牲环境为代价.

Should development come at the cost of the environment?

6 Q:发展是不是以牺牲环境为代价？

Does development come at the cost of the environment?

7 J:是不是要吧？

Is it should?

8 B:就是，是发展重要？还是环境重要？发展是不是要要以环境破坏为代价？

It is asking which is more important, development or environment? Should development come at the cost of the environment?

9 M: 还有啊，就这一个问题吗？

There is more. Is it just one question?

10 J: 你看那个嘛。

You can go look at that (game quest).

In this communicative project (CP), the group talks about what the quest is. The design of game quests follows the rule that each quest consists of several questions asked by a non-playing character (NPC). That is why M asks in Line 9 “There is more. Is it just one question?” CP1 is a good example of how team members are affordances in the team-learning environment as each team member works together to figure out possible potential questions they have regarding the game or game quest.

Communicative Project Two--How many questions do we need to answer?

Artifacts involved: mobile phones (QQ group, screenshots of the game quest)

Excerpt 13:

11 M：叫。。。叫什么（pointing to the teacher）

What...what is his name?

12 B waived to the teacher.

13 B：Is it just one question or we have to answer many?

14 T：So, it's just this main question. So, it’s many questions,

15 but they go together into one question.

16 M: Thank you.

17 Q: Thank you very much.

18 T：The biggest question is: what should we do to protect the

19 environment?

CP2 shows how a teacher is involved in the learning ecology of a classroom Internet-supported pedagogical game. Different from other online games, this pedagogical classroom Internet-supported game allows the instructor to naturally participate in the game whenever students need. For instance, in CP2 students resorted to the instructor to ask for help regarding the game quest. There were many questions asked in the quest and students were confused about which question to answer. The teacher explained that there were several questions, but these questions “go together into one.” Different from the search engine, the instructor can provide an immediate response that is relevant to students’ needs during the gameplay. The search engine can provide information, while the instructor can assist students in various aspects including questions regarding the game, language-related issues, and writing issues.

Communicative Project Three--Reading the Quest Information

Artifacts involved: mobile phones (QQ group, screenshots of the game quest)

Excerpt 14:

20 Q：What should we do to protect the environment?

21 我们要做什么做去保护环境？

What should we do to protect the environment?

22 J:对，那个上面有，那个上面有。

Yes. It (the game quest) has the information. It has the information.

23 B:还有，那个是最主要的，还有其他的。

There is more. That is the main one. There is more.

24 J:那个上面有。

It has the information.

25 M: Is the destruction of the environment necessary for development destruction.环境的毁坏对于发展来说很重要吗?很必要吗？

Is the destruction of the environment important to development? Is it necessary?

27 Which is more important? environment or development?

28 What can you humans do to solve the

This group of students is reading the quest together in CP3. This CP reflects the general group learning ecology during the gameplay. In order to showcase the group ecology more clearly, please refer to Figure 5.6.

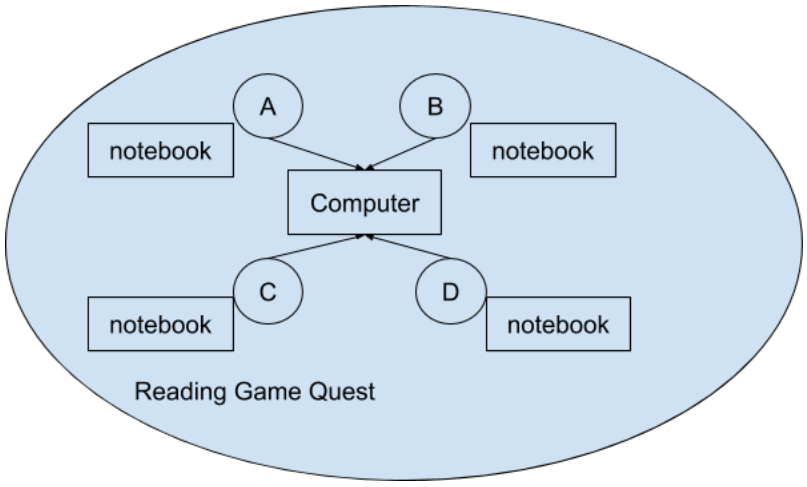


Figure 5.6. The Game Ecology while Reading the Game Quest

In Figure 5.6, students ABCD are four students in this game-playing ecology, and they all have access to a computer. In the first lesson during Iteration 1, each student had a computer and the researcher's observation showed that four computers did not add to the ecology but rather diminishing the effectiveness of the learning ecology because students used their individual computer as a barrier and very little communication happened. Therefore, after the first lesson, the researcher decided to keep only one computer for each group. During the gameplay sessions, each student had a paper notebook in which they took notes and jot down points they wanted to use for the audio or video creation for the game quests. In addition, the distributed cognition approach (Rogers & Ellis, 1994) can be used here to analyze the cognitive process happening during communication. As shown in the graph above, the game quest, the computer, and the group setting created a collaborative space in which students experienced shared cognition. In addition, with the availability of an Internet-enabled computer, we can also observe how the cognition is off-loaded to the computer during the interaction.

Communicative Project Four--Planning

Artifacts involved: laptop

Excerpt 15:

29 B：那个是重点。那个是重点。

That is the main one. That is the main one.

30 M：两个重点嘛，两个答点的是重点。

There are two main questions. The two are both important.

31 B：我们先安排一下顺序吧

Let's discuss the order first.

32 J：什么顺序

What order?

33 B：就是这个问题的回答的顺序，要把最后的那个东西放在最后。

The order of answering the questions, and we should put that thing in the end.

34 J：最后的什么东西？

What thing in the end?

B uses the mouse of the computer to check the video.

35 B：然后这个视频我来看一眼，后面有一段要跳一下，感觉太长了。

Also, let me check this video. We need to skip a part.

The video seems a little too long.

CP4 is the group planning in order to complete the quest. In CP4, the group members are discussing the questions they should focus on for the video they want to create in order to complete the quest.

The following transcription is the part when the team was ready to move on to the spontaneous-talk video recording in order to complete the quest. In the transcription, we can see

how students cooperated to produce a group recording and at the same time made use of their L1 (Chinese) and the technology artifacts to progress through the spontaneous talk recording.

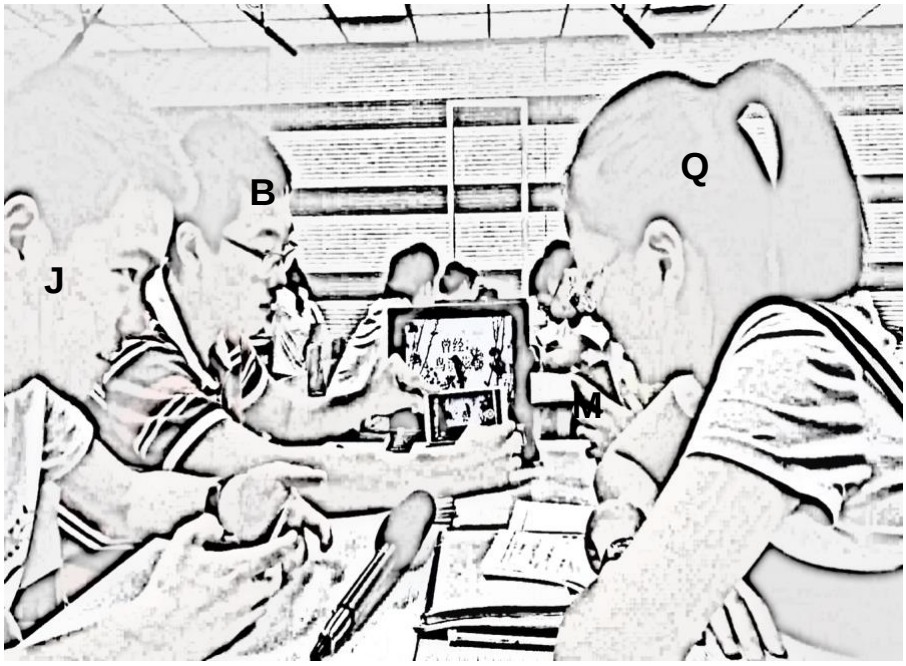


Figure 5.7. A Group Working Together on a Quest

As shown in Figure 5.7, the team found a video about pollution online and decided to use the video as the background for their video recording for the quest by having one student, here called B, holding the mobile phone in front of the laptop. Student J sat next to B and also held onto his mobile phone in his hands throughout the recording process. M sat opposite B with her mobile phone on the desk. Q sat next to M and she also held her mobile phone in her hands. Line 56 to Line 62 (from Appendix H) is an embedded communicative project in which B tries to include the evidence about Chairman Xi of China who has said that sustainable development is the main direction for China. J showed B the phrase "sustainable development" that he found online earlier. In addition, in this embedded communicative project. We can also see how the other team members serve as a reservoir of resources for B when he says, "Xi Jinping," the team corrects him by offering the English version "Chairman Xi." A similar example can be found in

Line 37 when Q asks her team members how to say, “two sides.” Her team members as part of this system of affordances and resources pool offered her the necessary linguistic resources to help her proceed with her expression. This evidence is also supported by Swain and Watanabe (2012), who argue that collaborative dialog is a source of second language learning.

Line 1 to Line 76 is a communicative project in which students in the team recorded their group spontaneous talk to finish the quest. Excerpt 16 (that is, Line 2, Line 10, Line 25, Line 34, Line 47 and Line 50 from the transcript in Appendix J are instances that M took on the job of the coordinator for the video recording activity. Excerpt 10 omitted all the other lines in the full transcript to highlight the incidences of M taking on the role of the coordinator. The rest of the team followed the flow of the video recording based on the cues from M.

Excerpt 16

2 M：Do you think the development of the human world should come

10 M: Why or why not.

25 M：到你了，你刚刚不是想讲吗

It’s your turn. You wanted to say something earlier?

34 M: Yeah. uh I want to listen to your opinion.

47 M: Uhm. is the destruction of the environment necessary for

48 development?

50 M: Is the destruction of the environment necessary for

51 development?

In this video, all four team members use their L1 at some point. J uses Chinese to ask the team to get started on the recording for the quest. B uses Chinese to remind J to be louder so that the mobile phone can catch his voice. M uses Chinese on three occasions. First, she asks what

her team members are looking at while she is speaking. M also uses Chinese to give the floor to B. She comments on the video the team chose to be used as the background for their video recording in Chinese. Q uses Chinese to ask how to say a word in English. These occurrences of use of L1 show that L1 gives students more flexibility in communication. In the final survey, students also reflected that allowing them to use L1 has made it easier for them to participate in various class activities.

Summary

From the analysis, we can conclude that such a classroom pedagogical dram game allows students to make use of all the available resources they have including their L1, technological equipment, and classmates. This research project showed that second language writing can be further advanced by collaborating with development in gaming. The approach of process writing can be enriched by creating a more personal experience for students through such a carefully-designed game so that they can relate more to the topic and be more engaged in looking for relevant information about the writing topic and actively look for linguistic resources to write about their opinions. During the gameplay sessions, the game quest transformed a classroom pedagogical activity into a rewarding playing experience in which the learners were exposed to linguistic resources, actively searched for new linguistic resources and used the linguistic resources to complete the quests through reading, speaking and writing. In addition, the process of completing the quest helped them think deeper and accumulate more relevant evidence.

Communication in a Gameplay Session

This section describes one group's complete gameplay session from their interpretation of the quest mission to their creation of a quest product. The quest the group was doing was about the topic of war and peace. God of Time and Emily went to South Korea, and the country

was still in a celebratory mood after the April 2018 Inter-Korea Summit. Then, GoT asked Emily about her opinion of this event, and from there Emily started to share her thoughts about why humans do not learn from mistakes. She said, “Whenever you turn on TV, you can see news about terrorism, gun violence, refugees, racism and such. I don’t understand why humans don’t learn from history and mistakes.” Figure 5.8 is a screenshot of the quest.

Figure 5.8. The Game Quest about War and Peace

Emily shared her frustration with the fairies, and God asked the fairies (our students) for help. Students could finish the quest by writing Emily a letter, leave her a voice message or send her a video helping her make peace with the imperfect world. As shown in Figure 5.9, GoT asked fairies the following questions:

1. Fairies, what is your opinion about the status quo of international relations?
2. Do you think that our world is becoming more peaceful than before? Why or why not?
3. Do you agree with Emily that you humans do not learn from your mistakes?

4. Can you help Emily make peace with the imperfect world?

Figure 5.9. Screenshot of GoT Providing Quest Information

At the end, GoT motivated the fairies by telling them that their efforts would be rewarded with time coins. This game quest was created in connection with the writing topic about War and Peace, and the writing prompt of the day was "Do you think that the world is becoming more dangerous or more peaceful? Why?"

Using *Transana*, the transcription was divided into 24 communicative projects (See Appendix K for the full transcription) as shown in Figure 5.10. The communicative projects (see Appendix M for the screenshot of communicative projects and assigned keywords) were defined to describe students' communication activities at the moment, and the transcription captured their moment-by-moment actions.

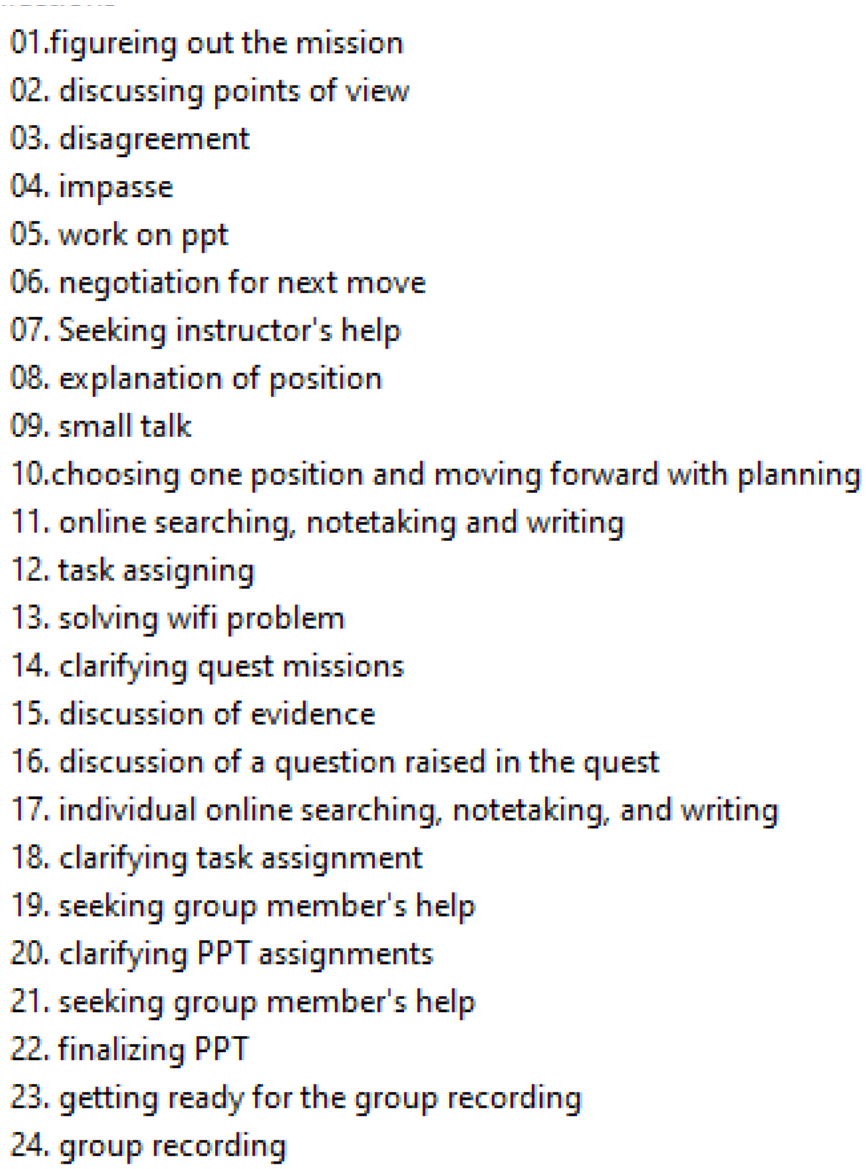
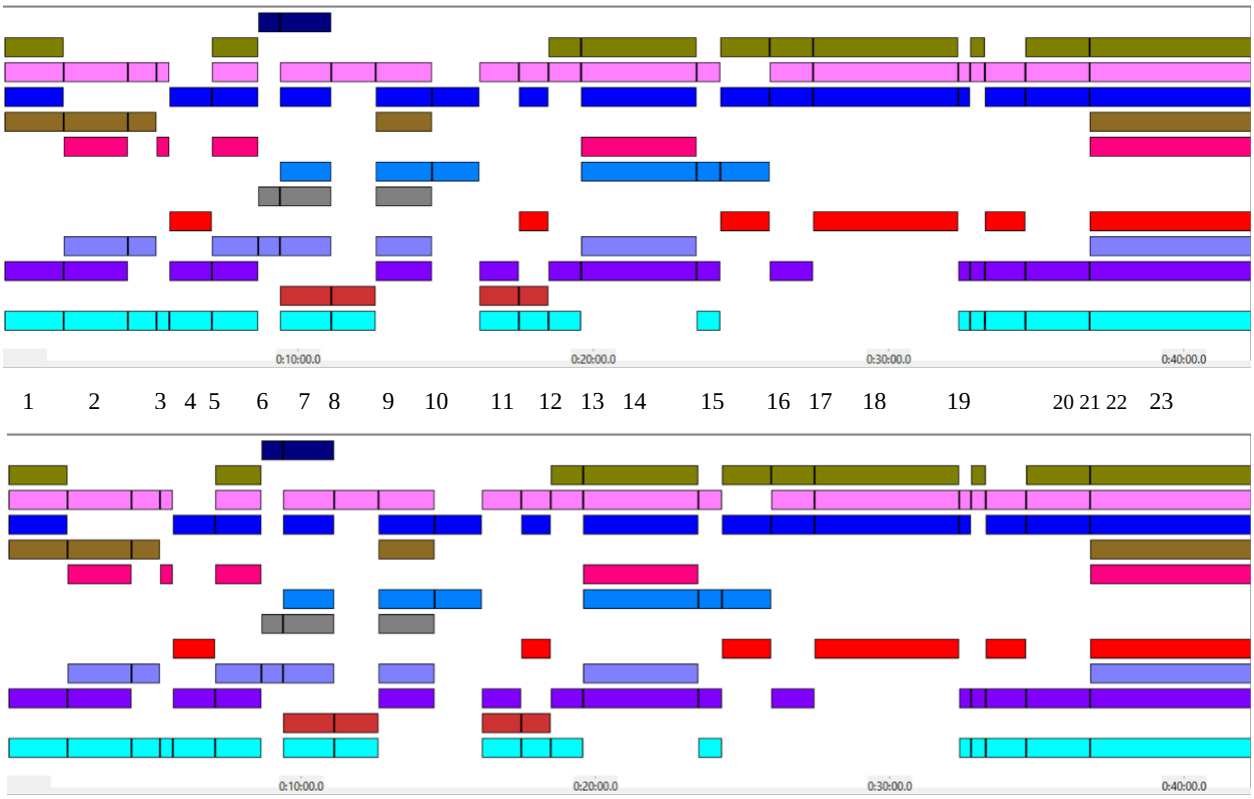


Figure 5.10. Communicative Projects Defined

This *Transana* analysis investigates the connection between the affordances, critical thinking and languaging activities. The figure above presents at what specific times the game session was divided into 24 communicative projects and what keywords each communicative project was assigned to.

After keywords were assigned, *Transana* generated a visualization of keywords map. The keywords map successfully presented all the keywords in all 24 communicative projects. In the

figure below, the horizontal line represents the time of the transcription of 0:00:00 to the end. The colored rectangles represent the keywords and each vertical block of rectangles represents a communicative project, and the number above each vertical block of rectangles represents the exact communicative project being shown in Figure. 5.11.



Keyword Group	Keyword
affordances	instructor
affordances	notebook
affordances	team members
affordances	technologies
critical thinking	clear point of view
critical thinking	evidence explanation
critical thinking	evidence-finding
critical thinking	recognition of alternative point of view
languaging	co-action
languaging	embedded issue discussion
languaging	quest planning
languaging	small talk
languaging	translanguaging

Figure 5.11. Keyword Map

Analyzing the keywords map, Communicative Project (CP) 8, 10, 15 and 24 stood out as these four communicative projects have the largest number of keywords assigned. These communicative projects are: CP8. explanation of position, CP10. choosing one position and moving forward with planning, CP15. discussion of evidence, and CP24. group recording.

CP 8-- Explanation of position

Students Amy, Betty, Cathy and Dana were still trying to agree on a position for the question "Do you agree with Emily that we humans do not learn from our mistakes?"

(0:09:25.7)

1 A: 老师认为 think so (looking at B)

2 *The teacher thinks so.*

3 D：我也认为 think so

4 *I also think so.*

5 B: Think so 是我的观点么? Think so 是你们的观点 (pointing at A and D)

6 *Is "think so" my opinion? "Think so" is your opinion.*

A：她认为世界还是，人们还是

She thought that the world was still, humans are still

B：我刚刚被你说服了，你突然说大部分好像是

I was convinced by you just now. You suddenly said that the majority was

A:你要纠结细节的话，有很多不完美。你讲这个国家好，不代表这个国家每个人都好，就是这个道理。你要是讲，你只能讲整体。

If you pick on the details, there are a lot of imperfections. If you say this country is good, it doesn't mean everyone in the country is good. That is the logic behind. if you really need to make a point, you can only talk about the overall situation.

B:看一下，看看其他人的。(watching her phone and put on one ear plug)

Take a look. Look at others'.

A:看看，哎，我手机呢？(looking for her mobile phone on the table)

Have a look. Where is my phone?

B shows her phone to A

A:这是什么？

What is this?

B:安倍晋三参观神社。

Shinzo Abe visited Yasukuni Shrine.

A:老师的意思是整体是 seem so. 人们还是吸取教训的。日本的可以作为一个你辩论的例子，感觉把它否定掉不好否定。（listens to some of the quest recordings from other groups）

The teacher's point is "seem so". People still learn from the mistake. Japan can be a point for rebuttal. It seems a little difficult to refute it.

B:这上面有一个 Japan never learn from history. (looking at her phone)

It has a "Japan never learn from history" here.

34 A:我想问一下今天的作文怎么写？

35 *I want to ask how to write the essay today?*

36 B shows her phone to A

37 A:南京大屠杀？我真想去南京看一下这个博物馆，我妈说等你大了再带你去。 hhhhhhhhhh

38 *Nanjing Massacre? I really want to go to Nanjing and visit that museum.*

39 My mom said she would take me there when I was older.

In CP8, Amy and Dana first state their position, i.e., humans do learn from their mistakes, which is the same as the instructor's. From the beginning of the episode, C seemed to incline towards the opinion that humans do not learn from their mistakes. At the beginning of this communicative project, the group has asked the instructor about what her response would be for the question. Line 1 to 8, the group is confirming where they stand with reference to the instructor's position. Betty then explained that she was convinced by Amy when she was explaining that the majority part of the world was more peaceful and that was why she believed human beings learn from their mistakes. In Lines 11-16, Amy explained why she said the world was more peaceful than before in general. In Lines 17 to 25, Betty suggested they look at other groups' quest products to gather some ideas on QQ group using their mobile phones. At this point, Betty still has not stated her point of view. Amy wants to persuade Betty so that she can agree with her. In Lines 26 to 31, Betty tried to use the instructor's statement to further convince Betty. Betty mentioned what she found from other group's postings on QQ group, which said "Japan never learned from history" (Lines 32-33). Lines 34-35 shows how Amy has connected the game to her essay writing by asking "how to write the essay today." In lines 36-39, Betty showed Amy a photo of Nanjing Massacre that other groups used for their quest completion that she found on QQ group. The keywords for CP8 for affordances are *instructor, team members,* and *technologies*, which show that the group picked up these resources in this communicative

project. For the keyword group of critical thinking, the assigned keywords are evidence-finding and recognition of alternative point of view. As can be seen from the transcription, Betty was looking for new evidence by looking at the other groups' postings on QQ group. Moreover, the team was discussing two different positions in this communicative project. As for the keywords of languaging assigned, they are embedded issue discussion and small talk. The embedded issue discussion was the theme of CP8, and small talk was assigned because Amy talked about how she wanted to go visit the war museum in Nanjing while her mother said she could go when she was older.

CP 10 is very important for the team as it is the turning point for the team to move forward with their quest-completion. The team agreed on a position to work on for the quest completion and discussed possible evidence that they could use to support their position.

CP10--Chose one position and moved forward with planning

(0:12:43.7)

1 A：把提纲列一下。（starts to write on her notebook）

2 *Let's write down the outline.*

3 A: 交给你一个任务 (give her notebook to D)，express your idea

4 *Let me give you a job.*

5 A: You think it's easy to to

6 D: 但是我不知道为什么你们觉得难

7 *But I don't understand why you thought it was difficult.*

8 A: 这个不提。Show your ideas.

9 *Just ignore that part.*

10 D: 我觉得第二个可以说德国，

11 *I think we can talk about Germany for the second question.*

12 A：I know 德国可以但是她觉得日本(looking at D)

13 *Germany can be used. But she thought Japan*

14 D: 那我们随便用一下谁的观点

15 *Then we can anyhow use whoever's position.*

16 B：随便？

17 *Anyhow?*

18 A：随便的话，那写作文怎么写？

19 *If anyhow, how do we write the essay?*

20 D：写作文的时候她可以写她的观点，我们写我们的的观点。PPT 时候用一个观点不就行了吗。

21 *When we write the essay, she can write about her opinion, and we can*

22 *write about our opinion. When we are doing the PPT recording, we can*

23 *just use one position.*

24 A：所以你被说服了没有？

25 *So are you convinced?*

26 B：(sigh)我被说服了。

27 *I was convinced.*

28 A and D laugh

29 D：那就是反对嘛

30 *Then, disagree with the statement.*

31 D: Don't from (looking at A)

32 A: Don't from

33 A: you think so or

34 B: I think that we learn from mistakes.

35 D:那就找一个日本。(looking at A)

36 *So we look for (evidence of) Japan?*

37 A: 日本？

38 *Japan?*

39 D:不是讲 don't from?

40 *Didn't she say "don't from"?*

41 A:You don't from?

42 B:LEARN FROM

43 B:老师刚才讲的

44 *The teacher said just now*

45 B:哦，德国,找一下相关的资料吧（taking out her mobile phone）

46 *Oh, Germany, let's look for information about that.*

47 A:希特勒，纳粹主义，这些都可以写

48 *Hitler, Nazis, we can write about all these.*

49 B:邓小平的百万裁军

50 *Deng Xiaoping's the great disarmament*

51 A:还有二十万

52 *We still have 20,000.*

pause

53 A:每个人写一点东西，然后汇总一下

54 *Let's all write something, and then consolidate.*

Amy did not succeed in having Betty agree on a position in the previous communicative point. Amy picked up the affordances of team members and turned to Dana for help (Lines 1-13). Dana suggested looking for relevant evidence based on whichever position they choose, although Betsy and Amy believed they should not anyhow choose a position, and it is important for their essay writing after the gaming session (Lines 14-23). Betty suggested looking for information about Germany, Amy followed by providing evidence like "Hitler, Nazis" (Lines 45-50). Dana suggested looking for more information about Japan if they were to say humans do not learn from their mistakes (Lines 35-36). The keywords assigned for CP 15 are notebook, team members, and technologies for the keyword group of affordances; evidence explanation,

recognition of alternative point of view and evidence explanation for the keyword group of critical thinking and embedded issue discussion for the keyword group of languaging.

Communicative Project 15 took place after the team members were each given a task to work on and during the time when the team members were working on their individual task by online searching, note-taking and writing.

CP 15 Discussion of Evidence

(0:19:44.5)

A tries to rehearse what she is going to say.

C and B continue searching on their mobile phone.

Individual writing and searching for information on their phone

1 A:德国那个总理要不要署名一下 (pointing to the PPT)

2 *Should we put the name of that German chancellor?*

3 B:默克尔

4 *Merkel*

5 D: (looking at B) 默克尔？不是默克尔吧

6 *Merkel? I don't think it's Merkel?*

7 B:我不记得

8 *I don't remember.*

9 A:就是下跪的那个，在那个

10 *The one who kneeled down? at the..*

11 D:哦,对对，有两个，一男一女的， 就是这个 (pointing to one of the picture on the

12 slides she found earlier)

13 *Oh, right, there were two. One male and one female. This is the one.*

14 A:后来诺贝尔和平奖，获得诺贝尔和平奖

15 *Later the Nobel Prize, received the Nobel Prize.*

16 D:好像是的 (searches on the computer)

17 *Seems to be the case.*

18 C:我没有任何东西找到

19 *I didn't find anything.*

pause

20 C: 找不到，勃兰特？

21 can't find. Brandt?

22 students went back to their individual question

CP 15 discussed the evidence they want to use to support the position that humans do learn from their mistakes. The team was trying to figure out the name of the German Chancellor who knelt before the Memorial to Jewish Insurgents. The keywords assigned for CP 15 are notebook, team members, technologies for the keyword group of affordances; evidence explanation and evidence-finding for the keyword group of affordances, and embedded issue discussion for the keyword group of languaging.

CP 24 is the final communicative project for this game session in which the team got ready for the game and recorded a narrated PPT as the product to complete the quest.

CP 24 Group recording

(0:37:07.1)

1 A:可以录了，时间差不多了。

2 We can start recording now. It's about time.

3 B:把幻灯片弄好 哦

4 *Make sure your PPTs are ready. Oh*

5 C holds the mobile phone in front of the laptop screen

6 D:重新来吧

7 *Let's start over.*

8 B:谁是第一个？

9 Who is the first one?

10 D:王欣然

11 Wang Xinran

12 A:你找别人拿一下

13 *Ask someone to hold it(the phone) for you.*

14 B stands up and takes over C's mobile phone for her

15 D:你们开始了吗？

16 *Have you started?*

17 C:没有

18 *No*

19 B:没有没有

20 *No, no.*

21 C:点一下

22 *Click on this.*

23 D:可是它有一个动画吖

24 *But this one has an animation.*

25 B:啊？

26 Huh?

27 C clicks on the laptop

28 D:就是它本来就有的

29 *It's that it has a*

30 A:那说开始的时候点哦.1.2

31 *Click it when we say start.*

32 B:等一下，动画啊。

33 *Wait a minute. Animation?*

34 C:等一下（takes A's notebook and looks at the questions）

35 *Wait a second.*

36 D:就是有一个人 （moves both her hands forward trying to show the motion of

37 the gif format on PPT)

38 *There was one person.*

39 A:推动的 (moves one of her hands showing the motion)

40 *Pushing forward.*

41 A:你们开始了吗？开始了点。

42 *Did you start? Click when you start.*

43 B:你把这个推开干嘛？

44 *Why did you push this open?*

45 A:没事，不用管它

46 *It's okay. Don't worry about it.*

47 D:它本来就

48 *It comes with it.*

49 A:自动设定

50 *It's an automatic setting.*

51 D:对

52 *Right.*

53 B:你确定？

54 *Are you sure?*

55 D:挺好的

56 *Pretty sure.*

57 A:3,2,1,开始

58 *3,2,1, start.*

59 C:Nowadays the international relations will become closer. Peace and

60 D:它有那个

61 *It has that*

62 D tried to wave her hands

63 A:要有什么早说

64 *If you have something to say, say it beforehand*

65 C:哈？

66 *Huh?*

67 D:可以往后调一点

68 You can push the phone a little back

69 B:What do you want to do? One, two, three, go

70 C:Nowadays, the international relationship

71 B waves at C asking to sit back so that she does not block the laptop

72 screen

73 C:Nowadays, the international relationship will become closer. Peace and

74 development is today's world's topic. The treat between countries also

75 make the relationships become better. With uhm economic globalization, I

76 believe we human will have a better future.

77 A takes over B and holds the mobile phone in front of the laptop

78 D: Our world is becoming more peaceful than before as we can see, there

79 are less and less wars between two great powers and two rich countries.

80 As more and more people start to realize the value of peace and threats

81 of wars. Peace and development has become, have become the topic of

82 today's world. Also the United Nations proves the trend of peace.

83 D takes over the phone and holds it in front of the screen

84 A;声音大一点

85 *A little louder.*

86 C:凑近一点可以

87 *I can stand a little closer.*

88 B reads her notebook while standing so she could be close to the mic

88 B: We don't agree that humans learn from the mistakes.

90 D: uh? (looking at A)

91 A shows D an Okay signal

92 B:For example, you can see German. That you can see the German has
93 repeatedly repent for its crimes in World War Two. For example, uh,
94 December 7, 1970, the Federal Republic of Germany Brandt kneeled on his
95 knee in front of the plaques, plaques for Jewish victims in war sites
96 guilty to crimes committed by German. The media commented that Brandt
97 kneeled on his knees and all the German stood up completely.
98 A takes the mic from B and continues
99 A: As far as I'm concerned, Emily isn't satisfied with the imperfect
100 world because uhm there are many uhm violent things may appearing in the
101 world. As a mentor of Emily and to en enlighten her, I think we can show
102 Emily some posi, positive examples uhm, after all not everything is
103 perfect. No matter how hard we try, we cannot promise that there is
104 nothing violent appearing in the world. We need to keep a positive
105 attitude towards the world and, save,much, as much as ,as much people as
106 we can. Ok.

CP 24 consists of both the preparation of recording (Line 1 to Line 72) and the actual recording of the narrated PPT (Line 73 to Line 108). The keywords assigned to CP 24 are notebook, team members, technologies, clear point of view, evidence explanation, co-action, embedded issue discussion and quest planning. The keywords for affordances were assigned for students' actions when preparing for the recording. The keywords for critical thinking were assigned for students' recording content, and the keywords for languaging were assigned for the content and nature of communicative activities.

All the four communicative projects have demonstrated students' efforts of critical thinking in one way or another. In these four communicative projects, when students were engaged in critical thinking-related activities, such as trying to decide on a clear point of view, evidence-finding, or explanation of evidence, and recognition of alternative points, they acted on

the action potentials by exploiting the available resources in the game environment. For example, when they struggled with choosing a position as there was disagreement within the group, the team members resorted to their team members, their instructor and technologies for help. In other words, we can infer that in order for critical thinking to happen, the ecology should be enriched with relevant action potentials from the perspective of game design.

In order to see the connection between critical thinking and languaging more clearly, Figure 5.13 was modified to show only these two keyword groups.

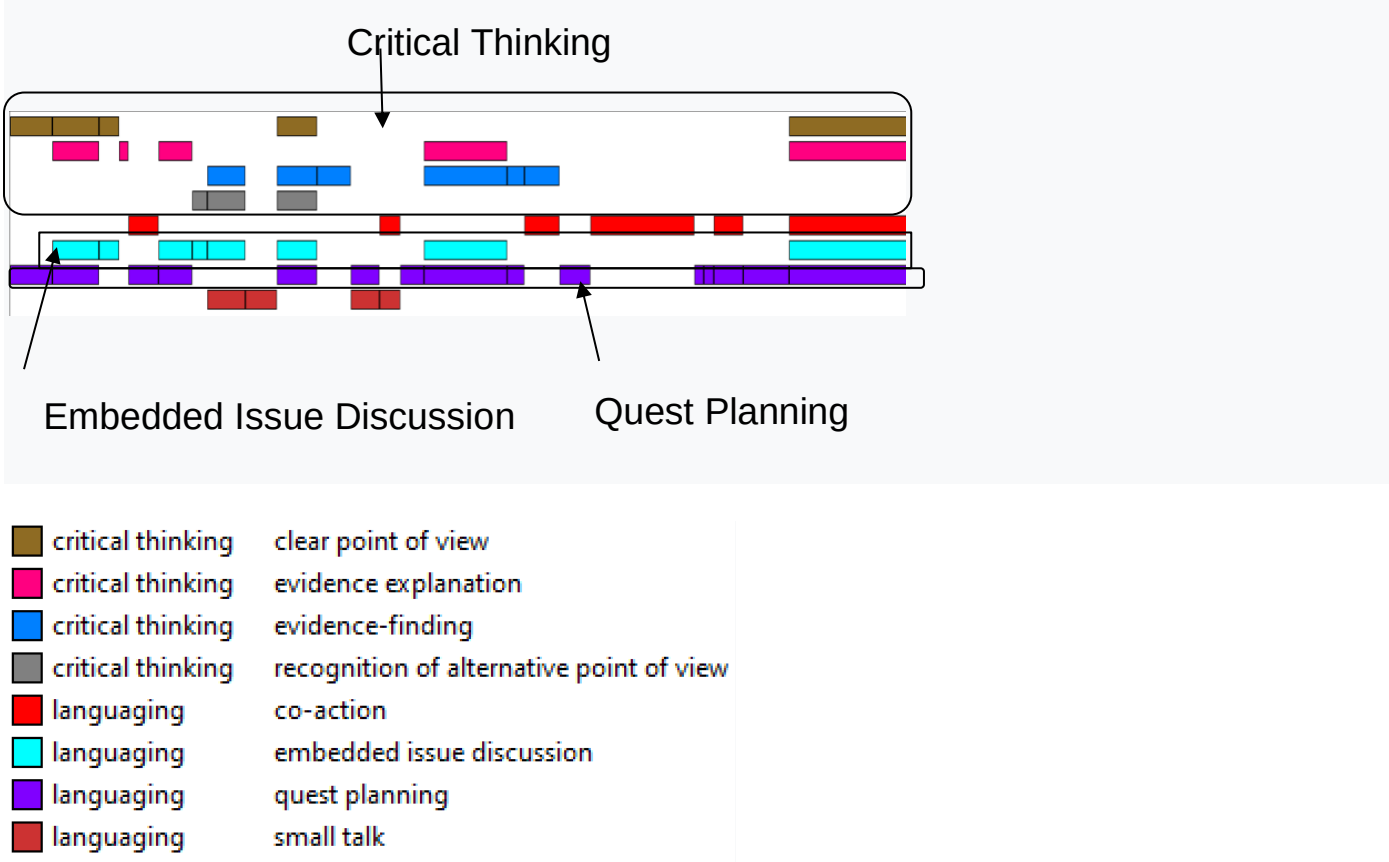


Figure 5.12. Keyword Map of Critical Thinking and Languaging

In this keyword map Figure 5.12, the first four rows are critical thinking keywords: a clear point of view, evidence explanation, evidence finding and recognition of alternative point

of view. The second four rows are languaging keywords: co-action, embedded issue discussion, quest planning and small talk. From the keyword map, embedded issue discussion co-occurred with critical thinking. In other words, whenever students discussed the socio-political topic embedded in the game quest, they engaged in critical thinking. Quest planning took place throughout the gameplay session, during critical thinking, after critical thinking and before critical thinking.

To show how affordances interact languaging, a keyword map of affordances and languaging was created Figure 5.13. The first four rows are keywords of affordances, and the second four rows are keywords of languaging.

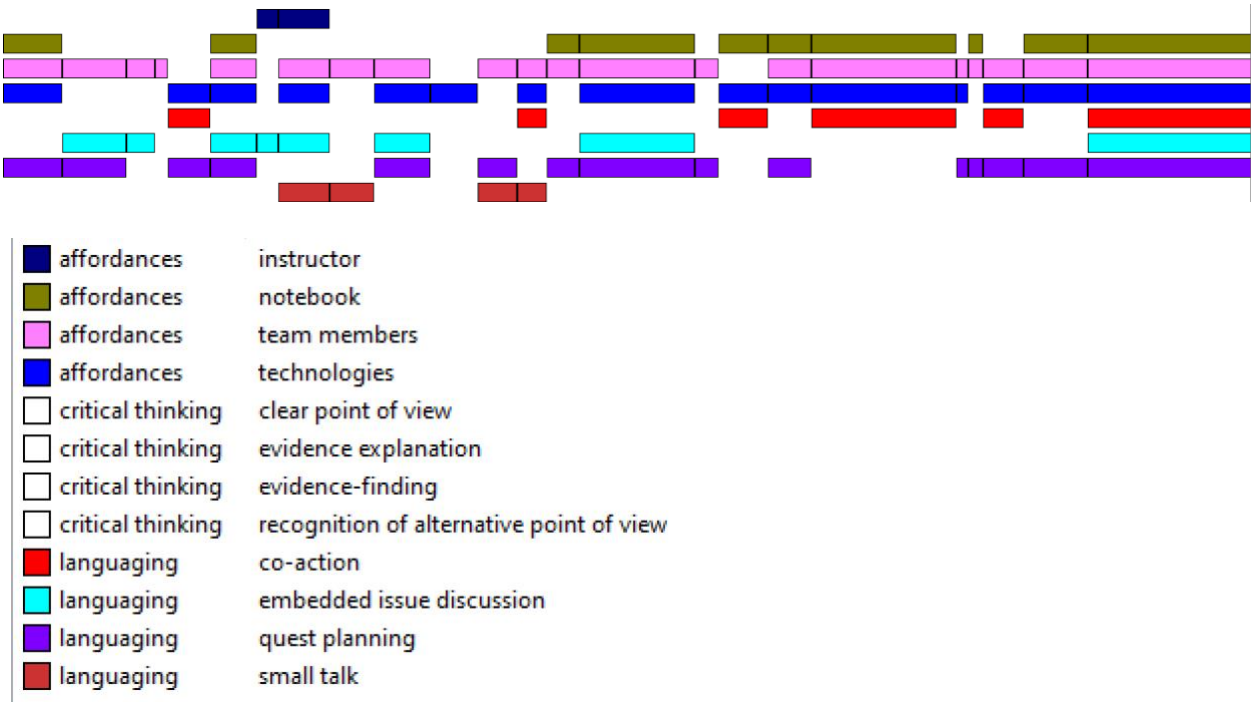


Figure 5.13. Keyword Map of Affordances and Languaging

The keyword map of affordances and languaging shows that languaging did not take place on its own. All the languaging activities correspond with some type of affordances in the game ecology.

To show how affordances interact critical thinking, a keyword map of affordances and critical thinking was created in Figure 5.14. The first four rows are keywords of affordances, and the second four rows are keywords of critical thinking.

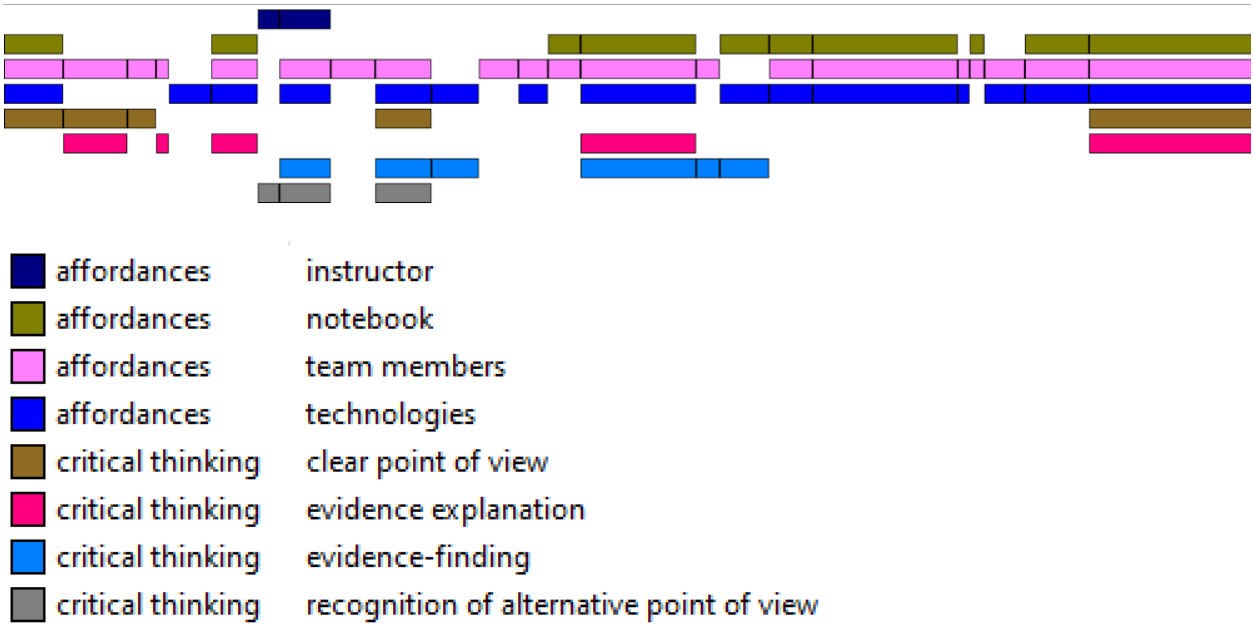
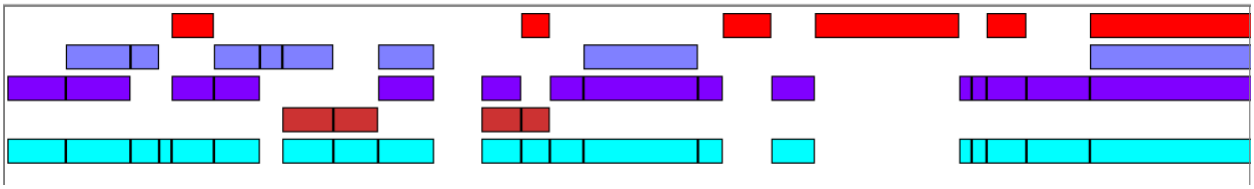


Figure 5.14. Keyword Map of Affordances and Critical Thinking

Similar to the results of affordances and languaging, the keyword map of affordances and critical thinking indicates that critical thinking did not take place on its own. All the instances of critical thinking correspond with some type of affordances. All the instances of evidence explanation and clear point of view co-occurs with the affordance of team members. Five out of six instances of evidence-finding co-occur with the affordance of technologies, and one instance occurs with the affordance of team members.



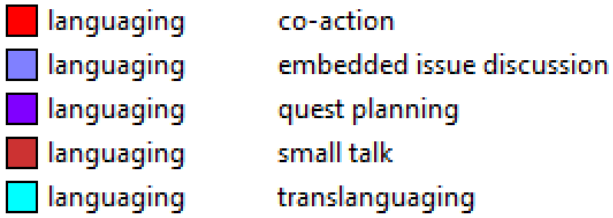


Figure 5.15. Keyword Map of Languaging

Figure 5.15 shows all the keywords in the keyword group of languaging. It shows that other than co-action, translanguaging occurred in all the instances of embedded issue discussion, quest planning, and small talk.

Summary

The analysis of students' participation progressing through the game quest showed that students actively engaged in languaging, translanguaging, and critical thinking during quest-completion. They acted on the majority of the action potentials injected into the game ecology by the designer successfully and managed to produce quest products using the available educational affordances (the instructor and their team members) they had access to and the both linguistic affordances they found online using their mobile phone and the linguistic repertoire they had (translanguaging).

Research Question 2

The following section answers the second research question about attitudes:"What are students' attitudes towards technology and pedagogical drama games in English classes, and how do their attitudes change as a result of this particular pedagogical drama game-supported course?"

A pre-course survey was conducted at the beginning of each iteration to gauge students' familiarity with technologies and their use of online technologies as well as their previous English learning experiences. From the pre-course survey, it can be concluded as follows:

1. Students in all three iterations were all familiar with the online platform for the course, QQ.
2. Students did not have opportunities to use English in their classrooms.
3. They had not participated in group discussions in class before the course.
4. Although students did not use technologies in the classroom, they had been using technology on a daily basis to search for information, communicate with friends, and look for study-related materials.

Iteration 1 functions as the benchmark for this dissertation project. The survey questions for Iteration 1 focused on students' experience of playing the game in class and their learning experience in the course. In the survey, students were asked to share the challenges and surprises they encountered during the course. Common themes that emerged from students' responses include the following:

1. Different from the English classes they had before, the course was new and refreshing.
2. They had a lot of opportunities to communicate in English.
3. The use of technologies made them feel more confident using English.
4. The activities were all interconnected.
5. When they saw their group members were all trying to use English, they were motivated to try.
6. They enjoyed the group work in both the group discussion sessions prompted by discussion questions and the gameplay sessions.

By the end of the course in Iteration 1, students were asked to rate their favorite activity in the class: the group discussion session prompted by discussion questions, game session

(*Finding Jolin's Way Home*), and the in-class timed writing. Out of 73 students who responded, 15 students chose the group discussion prompted by discussion session as their favorite activity, 51 students rated game session as their favorite activity, and 7 students chose the in-class writing as their favorite activity. The pie chart in Figure 5.16. shows the breakdown of this survey item.

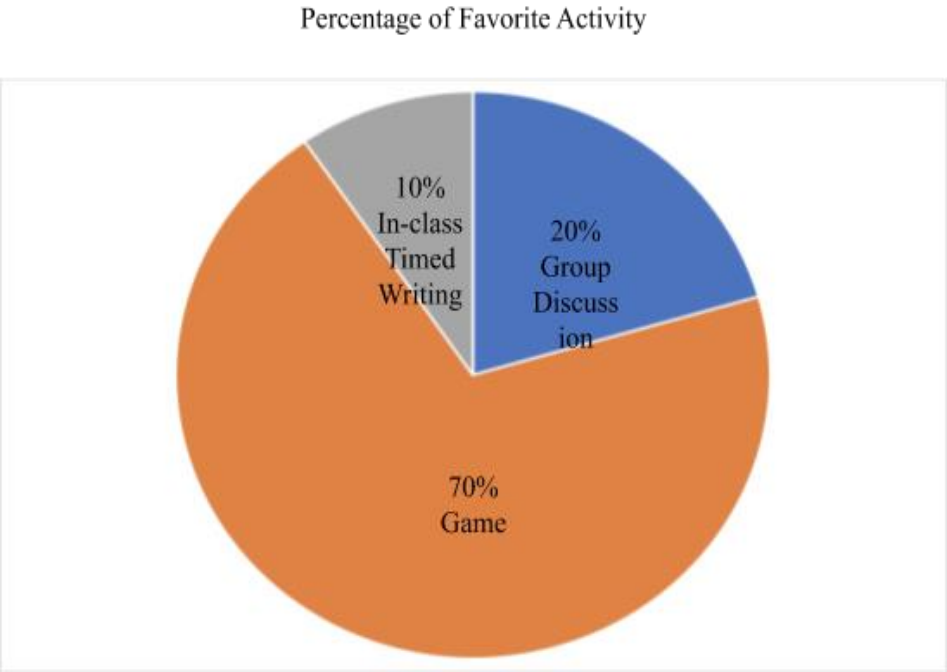


Figure 5.16. Percentage of Favorite Activity: Iteration 1

Students' reasons for choosing the game (*Finding Jolin's Way Home*) can be summarized as follows:

1. By participating in the game, students could freely and actively express their opinions. They reflected that sometimes they would have two completely opposite points of view in a group, yet they enjoyed the "clash of ideas."
2. The quests and questions they encountered in the game were very open-minded and helped them build more knowledge.

3. The game involved them in a story that gave them a strong sense of immersion, which made the process of playing the game relaxing and fun.
4. The game gave them a sense of achievement as they were helping Jolin, and during the collaboration, they were also helping their classmates.
5. The quest-completion process involved the group members looking for information, planning, and producing a product together, and this process was especially rewarding and enjoyable.

By the end of the course in Iteration 2, one of the emergent themes from students' diaries is that they started to be able to talk spontaneously instead of writing their thoughts down before speaking. Many students mentioned how they used to need to prepare a written draft for the video creation during the game session and no longer needed to do so by the end of the course as the group members can spontaneously talk. In the diaries, these students wrote that they felt happy about this change. Writing in English in her diary, one student said she managed to use the content from the game and the discussion in her writing on that day. Students also translanguaged in their diaries, which is evidence that at this point that they were aware that L1 was part of their linguistic repertoire that they could make use of.

In the final surveys, students were asked to rate their preferences of all the activities they participated in the course including pre-face2face assignments, classroom discussions, game sessions (*God of Time*), in-class timed writing, in-class impromptu speaking recording, online day, and peer feedback activity. Among 71 students who completed the final survey, 46% ranked the game as their favorite activity, 24% ranked the group discussion as their favorite activity, 14% chose the one online session as their favorite activity, and 7% chose essay peer feedback as their favorite activity. The least favorite activity was the pre-class assignment, which only 1% of

students chose as their favorite. The pie chart in Figure 5.17. shows the breakdown of this survey item.

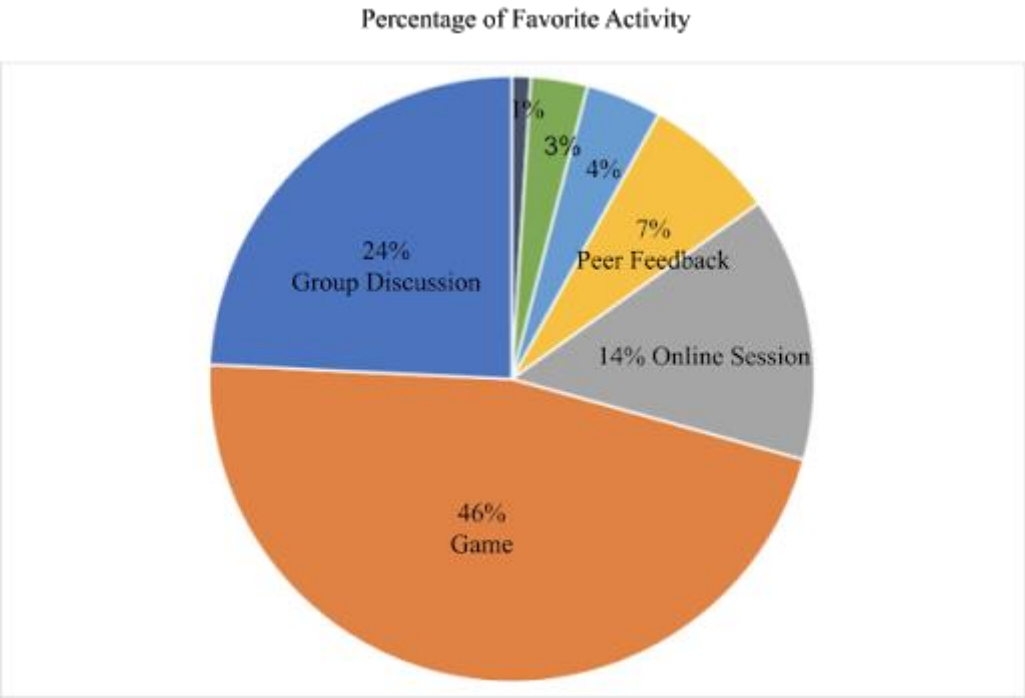


Figure 5.17. Percentage of Favorite Activity: Iteration 2

The reasons students provided were grouped based on common themes. Of all the students who picked the game as their favorite activity, their reasons are summarized as the following:

1. It was very fun to play.
2. They had many interesting discussions during the game session.
3. The game was competitive, and the team was motivated.
4. They get to use the language while playing the game.
5. The idea of using a game was very new and refreshing.
6. The game allowed them to practice their thinking and speaking.

Students' feedback matches the objective of the course, that is, to engage students more in experiencing these argumentative topics so that they can explore deeper and think more

critically. From the final survey, we can see that the game was voted the most favorite activity in the course by the biggest number of students. This shows the level of engagement that the game has.

After the third iteration, students were asked to rate their preferences of all the activities they participated in the course including pre-face2face activities/assignments, classroom discussions prompted by discussion questions, game session (*Finding Jolin's Way Home*), in-class timed writing, in-class impromptu speaking recording, and peer feedback activity.

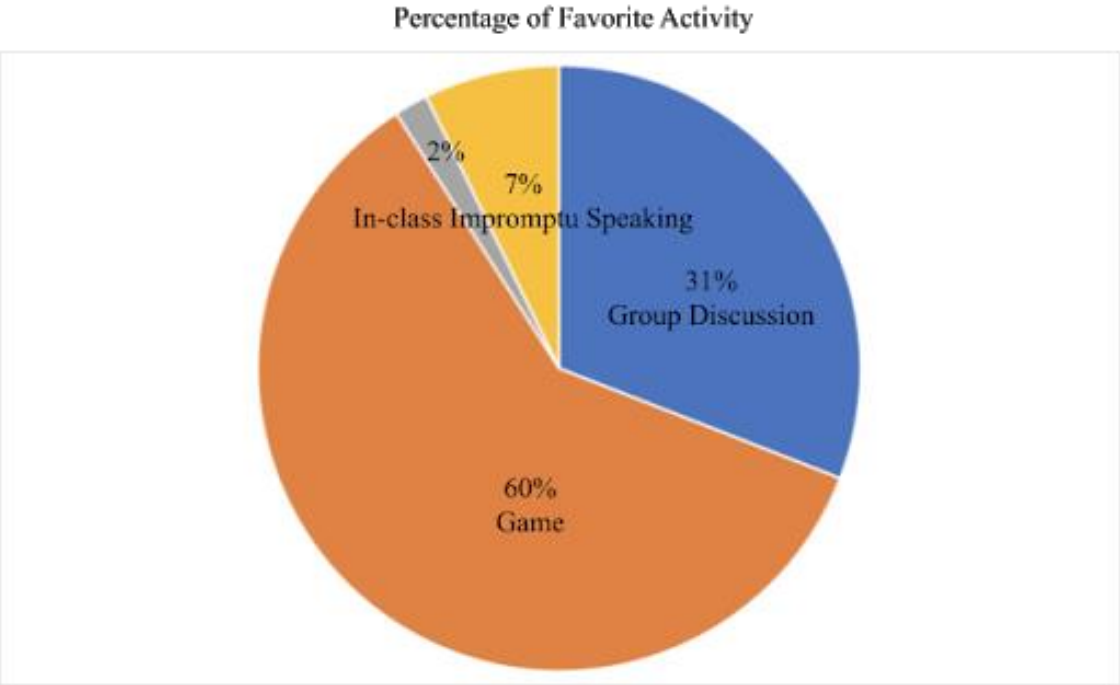


Figure 5.18. Percentage of Favorite Activity: Iteration 3

Among 55 students who completed the final survey, 60% ranked the game as their favorite activity, 31% ranked the group discussion as their favorite activity, 7% chose the in-class impromptu speaking (recording) activity as their favorite activity, and 2% chose pre-f2f activities as their favorite activity. The pie chart in Figure 5.18. shows the breakdown of this survey item. The reasons students provided were grouped based on common themes. Of all the

students who picked the game as their favorite activity, their reasons are summarized as the following:

1. The game allowed them to discuss freely.
2. They had never played a game during class, and the idea was really new.
3. The game allowed them to learn while having fun.
4. They get to experience life while playing the game.
5. The game gave them a sense of immersion, and it involved many topics for discussion.

As shown from the results, the percentage of students who named the game as the favorite activity is the highest across all three iterations, and the percentage choosing group discussion is the second highest across all three iterations. These results show that students enjoyed teamwork in the English classroom, which was seldom practiced in the English classrooms in China.

Student Feedback

In Iteration 2, every day after class, students wrote a diary entry and posted it on the class online collaborative boards sharing their feelings about the daily class experience including the game session, discussion session, and in-class writing. These diaries provide valuable data regarding students' perceptions of their English classes. In their daily sharing diaries, students showed a tendency to compare this pedagogical drama game-supported course with the English classes they had in their regular high schools in China.

This paragraph presents common themes, generated using *Anctonc,* that emerged from the students' sharing diaries. In their sharing diaries, they use the words and phrases including "grammar-focused," "traditional," "stuffing," "not effective," "teacher-leading," and "students passively take in" to describe the English classes they had in their previous middle school or

their high school and described this summer course as “unique” especially in the “pedagogical mode.” They used words and phrases like “different,” “a new experience,” “nervous,” “triggered their interests,” “big breakthrough,” “interactive,” “group as a unit,” and “exciting” to describe this summer course. They stated that the pedagogical drama game-supported writing course gave them the opportunity to do “group discussion” and “multiplayer collaboration” and to improve their “cooperation skill.” They stated that in their “traditional” English classes, they just needed to focus on “listening” and “memorizing.” On the contrary, the summer course “increased their frequency of using English in class.” The most important data collected from students’ feedback is that students said, “the game session helped [them] prepare for the writing” and they “started to plan for the writing during the gameplay sessions.”

Throughout the course, students’ diaries reflected that they paid more attention to the cooperation experience they had during the game session than they did in their usual English classes, and they cared very much about how they worked together as a team as they emphasized again and again that they understood the importance of cooperation. The point of designing a game in the writing course is that students can experience a given topic so that they have more to write about. During the process of exploring deeper into a topic, they can, first of all, find more information about the topic which can then be used in their writing as supporting evidence, and secondly, they can become more critical once they are exposed to more opinions either from their team members or from the information they found online. The pre-surveys from the students showed that at the time, students still believed that their weakness in writing lay primarily in their lack of words and phrases. The game was designed in the hope that students would be brave enough to use the language that they already possessed to learn more linguistic resources for oral communication and writing.

Students' Impression Towards Jolin

By the end of the course, students in Iterations 1 and 3 had helped Jolin find her home, Hong Kong, but her family was nowhere to be found as sixty years had already passed. As design-based research, it is important to evaluate how students perceive the course and the game. Jolin is the main non-playing character in the game, and students had daily interactions with her. Figure 5.19 summarizes the game ecology in terms of agents. The main role of the instructor in this course is coordinating the activities, while Jolin is the bridge between students and all the game quests. Sometimes, Jolin even shouldered some responsibilities of an instructor. As a quest provider, she took on the job of assigning activities for students. Since Jolin plays such a significant role in the game and in the course, how students perceive Jolin reflects the learning experience they had while taking the course and playing the game.

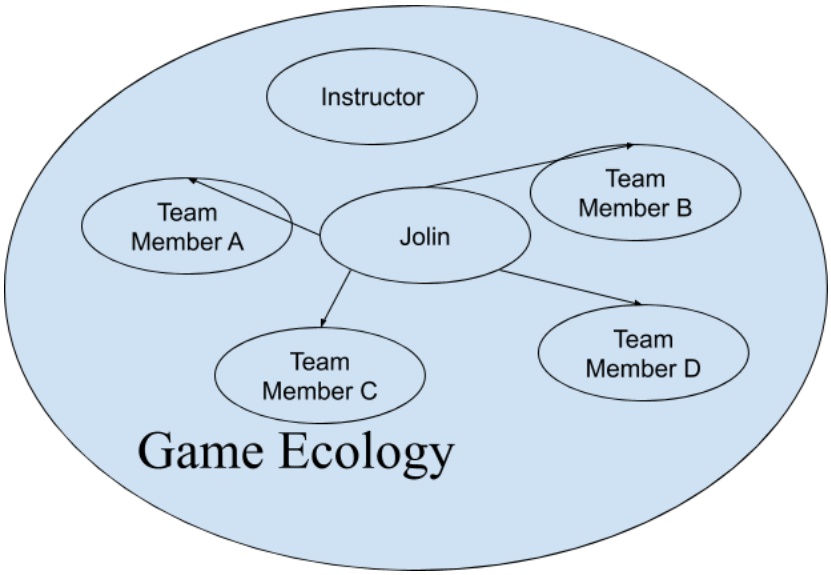


Figure 5.19. Game Ecology Supported by the Protagonist

By the end of the course, each group wrote Jolin an email. The emails collectively (as shown in Appendix N) indicate that students treated Jolin as if she was a "real person" as they showed compassion and care towards her. For example, they used words including

"unforgettable" and "happy" to describe the journey they had shared with Jolin. They used words like "satisfied," "glad," and "happy" to describe their feelings about Jolin's finding her home in the end. In the email, the instances that show that they treated Jolin like a girl that they knew in real life include the following:

"You are really a smart and cute girl, we all love you!"

"We will miss you."

"it is important for you, a girl, to protect yourself"

"I know your parents might have gone, you have to be strong."

"Don't forget us. 

"now you have to face a new world alone"

Students' emails indicate that the game successfully engaged them in a journey of learning and experiencing, felt for Jolin as a high-school student, and treasured the time shared with her. Analyzing students' impressions of Jolin, it can be concluded that the pedagogical drama game, as part of the course, afforded a communicative space for students to use English for meaningful purposes. Students treated Jolin as a real person, and hence, the communication they produced, in this case, can be considered authentic; therefore, this dissertation proposes a new definition of authenticity in English learning. That is, the authenticity of a task or activity should be defined based on learners' languaging experience, as students had with Jolin, instead of only based on whether it is done in real life.

Jolin, as the protagonist of the game, contributed greatly to the meaning potential (van Lier, 2004) of the game environment. Students, as demonstrated in the final emails, did internalize the role of Jolin and interacted with Jolin on a personal level. One month after the course had ended, one student left a message on Jolin's Qzone saying, "I miss you."

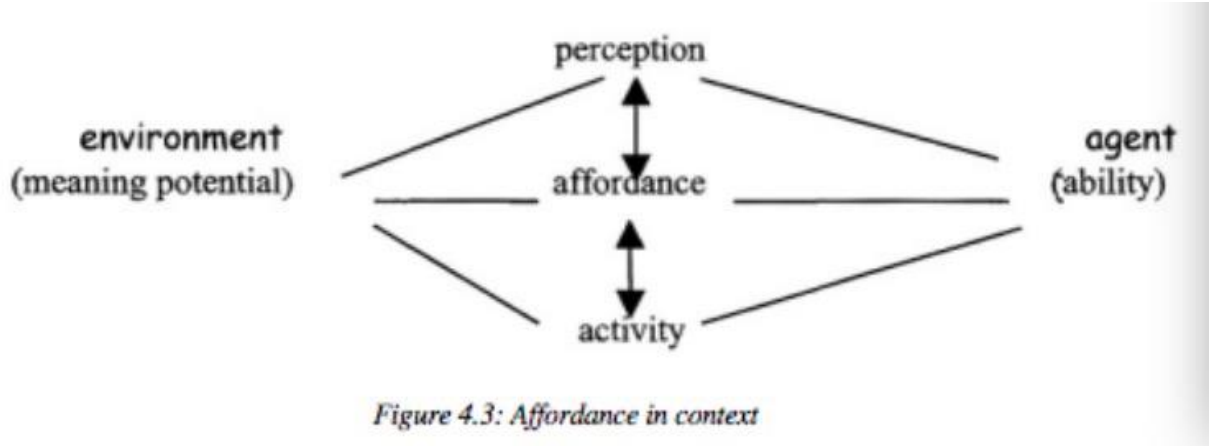


Figure 4.3: Affordance in context

(van Lier, 2004, p. 96)

Figure 5.20. van Lier's (2004) Illustration of Affordance

van Lier's (2004) illustration of affordance in context as shown in Figure 5.20 explains why students' perception of Jolin is essential in the design of the game as well as the course: affordance is the key to activity, which is languaging in this case. The ultimate objective of the course is to engage students in meaningful and authentic languaging so that students can use the language and experience relevant socio-political topics in depth. Therefore, how students perceive Jolin determines the quality of the languaging activity, and hence influences the final objective.

Students' Impressions toward God of Time and Emily

Students' impressions toward God of Time and Emily, the characters in the game used in the second iteration of the course, help gauge how authentic they felt about the game. From the designer's perspective, the more authentic they felt about the game, the better the learning experience, which translates into more learning opportunities

In the final surveys of Iteration 2, students responded how they perceived God of Time and Emily, and their responses are summarized as follows:

1. God of Time was like a guru who had a lot of knowledge and gave us advice on life, while Emily was like any one of us who also had time management issues
2. God of Time and Emily were not two individual entities. They represented two groups of people with different mindsets.
3. Very vivid and real. God of Time and Emily were like people in real life and what happened to Emily served as a reminder to us (students).
4. Both Emily and God of Time had their points of view and managed to express their opinions from real-life incidents.
5. Emily and God of Time helped to connect all the topics together, and they were like our guides of the course.
6. God of Time and Emily made the course more interesting, and the conversations between Emily and God of Time gave us opportunities to learn some new words.
7. God of Time constantly challenged us while Emily was a troubled teenager who needed our help.

From students' responses, it can be easily seen that when students were asked about God of Time and Emily, they would always describe these two non-playing characters with reference to themselves. For example, they are "our guide," they "gave us opportunities," and they "needed our help." The same can be found in students' letters to Jolin in which students, consciously or unconsciously, emphasized the relationship between Jolin and themselves, such as "Don't forget us," "we all love you," and "we will miss you". van Lier's (2010) ecological approach talks about the learning ecology as "the relationships among elements in an environment or ecosystem" (p. 4). Students' way of describing the non-playing characters shows that the gaming experience that students had while participating in the course allowed them to make close

connections with the non-playing characters, which were designed to create more learning opportunities for students. Their description of the non-playing characters shows the quality of the relationship between the non-playing characters and themselves, and most importantly, reflects the quality of these learning opportunities generated by the addition of the non-playing characters into the game and the course.

Summary

By the end of the course, students responded very positively towards both the course and the game created across three iterations. Students in all three iterations stated that they managed to speak more and write more in the limited-time speaking and writing activities. Students described both games (*Finding Jolin's Way Home* and *God of Time*) as fun and motivating, and they responded in the surveys saying that the game helped them plan the writing, which aligns with the design objective of the game, i.e. help students explore a topic in depth. In addition, students wrote in the surveys that they enjoyed the group work, as it allowed them to listen to different opinions and reasoning on a given topic. Students in all three iterations liked the use of technologies in the classroom which allowed them to look for information about socio-political topics being discussed for the day and linguistic resources they needed for communication or completing a game quest.

From the students' descriptions of the non-playing characters in the game, Jolin, Emily, and GoT, it could be seen that game quests helped give authenticity to students' languaging in the classroom setting. The surveys showed that students, in fact, liked the idea of having instructors pushing them to use English as much as possible while at the same time allowing them to use Chinese when they lack the relevant English linguistic resources for oral communication. They said that this allowed them to take note of the words or phrases that they

did not know and look for them using *Baidu* (the most popular search engine in China). In addition, they liked how the teachers encouraged them to use both English and Chinese to search for information over the Internet, as this gave them a lot more information if they were searching for information only in English or Chinese.

Students reflected in the surveys that they saw the game as a way to explore the topics that they were to discuss and write about for the day, which also matched the designer's intention. In other words, students did not just enjoy the game for its fun and excitement. At the same time, they also saw the value of playing the game from the pedagogical perspective.

Research Question 3

This section analyzes the learning outcome of the course by answering Research Question 3: "How does a pedagogical drama game-supported course develop students' critical thinking as displayed in writing samples?"

As can be seen from the analysis, students produced more content within the limited time in both their writing and speaking throughout the course. The essays students wrote in class were produced within a 60-minute time limit. The average words per essay increased from 353 to 363 for Iteration 1, from 280 to 380 for Iteration 2, and from 262 to 380 for Iteration 3. As for the impromptu speaking activity, one of the ways to measure critical thinking in their speaking is students' ability to go in depth about a given topic. At the beginning of the course, students were given an impromptu speaking prompt and were asked to record their response in the QQ group within 90 seconds (this was to emulate the impromptu speaking activity in the English competition). At the beginning of the course, no student managed to produce a recording of 90 seconds, and the average length of the recordings is 20 seconds. The responses that they produced at this time were only statements like "I agree with … because...". Students did not

demonstrate any critical thinking in their speaking at the beginning of the course. However, by the end of the course, students were able to produce more in the impromptu speaking activity. The average length of the recordings produced is 87 seconds (see Appendix O for a speaking activity).

The results can also be supported by students' feedback in their surveys. Students responded in the essay saying that the writing course let them see that it is possible to "write that many words," and they were able to produce more during oral speaking activities.

Students' writings for pre-course and post-course tests were rated by two raters using the rubric (Table 3.3 in Chapter 3) adapted from the Critical Thinking Value Rubric (Rhodes, 2010). The prompts for all the three iterations can be found in Appendix B. Before the rating of all three iterations, the inter-rater reliability is 92%. Forty-four pre- and post-course essays were collected in Iteration 1, 61 in Iteration 2, and 50 in Iteration 3.

Ratings for Iteration 1

The rating results for Iteration 1 are shown in Figure 5.22.

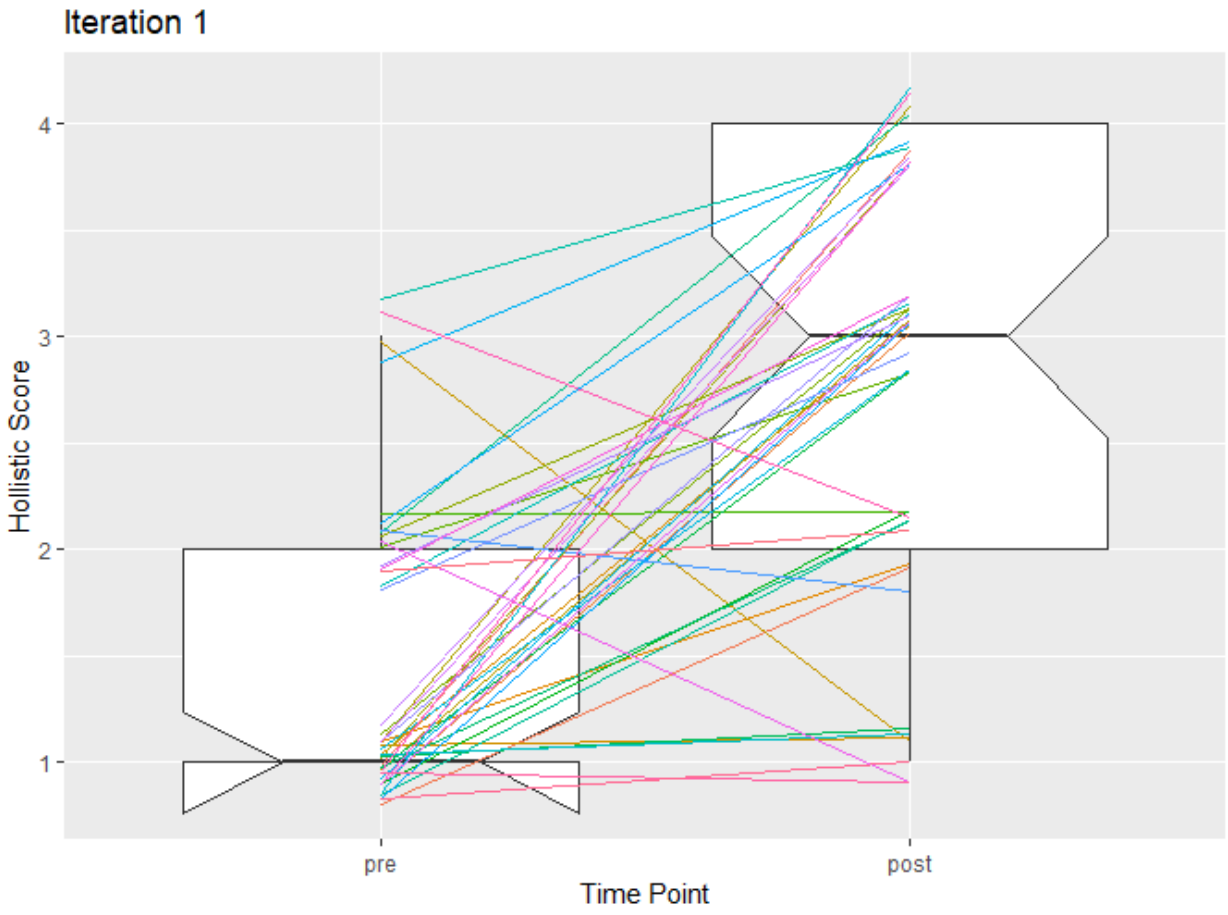


Figure 5.21. Pre- and Post-test Results Iteration 1

A linear mixed effects (LME) model indicated a significant positive relationship between time and holistic essay scores ($p < .001$, $R^2m = .364$, $R^2c = .365$). A summary of the model can be found in Table 5.4. The results indicate that the participants' critical thinking in writing improved by the end of the course. Figure 5.21 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.4 *LME model predicting holistic writing score*

Random Effects	***Variance***	***Standard Deviation***

Participant	< 0.001	< 0.1		
Residual	0.740	0.860		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	2.102	0.092	22.914	< .001
Time	0.916	0.130	7.063	< .001

Ratings for Iteration 2

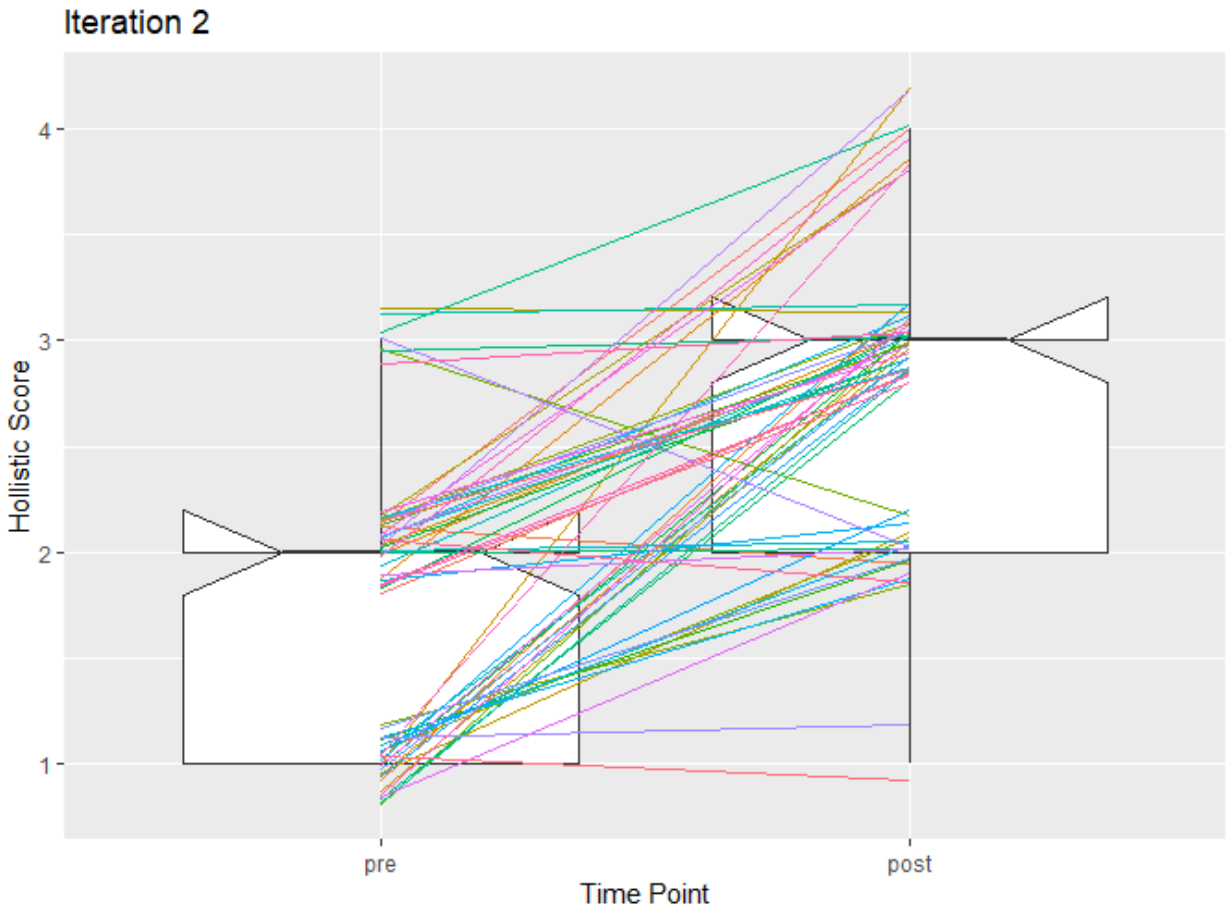


Figure 5.22. Pre- and Post-test Results Iteration 2

A linear mixed effects (LME) model indicated a significant positive relationship between time and holistic essay scores ($p < .001$, $R^2m = .397$, $R^2c = .526$). A summary of the model can be found in Table 5.5. The results indicate that the participants' critical thinking improved by the end of the course. Figure 5.22 includes plots of the holistic scores given to each participant's

essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.5 *LME model predicting holistic writing score*

Random Effects	***Variance***	***Standard Deviation***		
Participant	0.102	0.319		
Residual	0.373	0.612		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	2.250	0.068	32.990	< .001
Time	0.787	0.078	10.150	< .001

Ratings for Iteration 3

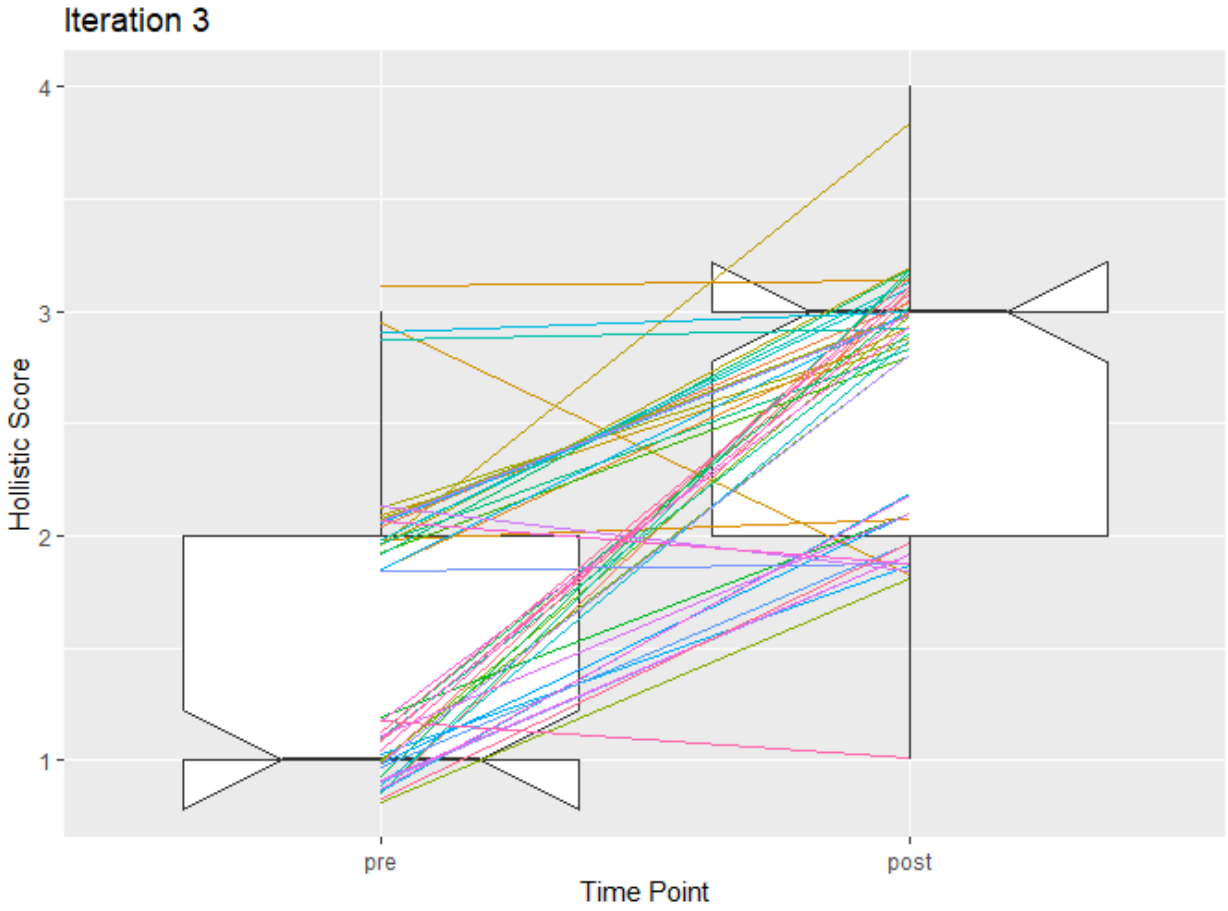


Figure 5.23. Pre- and Post-test Results Iteration 3

A linear mixed effects (LME) model indicated a significant positive relationship between time and holistic essay scores ($p < .001$, $R^2m = .471$, $R^2c = .595$). A summary of the model can be found in Table 5.6. The results indicate that the participants' critical thinking improved by the end of the course. Figure 5.23 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.6 *LME model predicting holistic writing score*

Random Effects	***Variance***	***Standard Deviation***		
Participant	0.084	0.289		
Residual	0.273	0.522		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	2.100	0.066	31.66	< .001
Time	0.792	0.073	10.72	< .001

Syntactic Complexity

In order to evaluate the syntactic complexity of pre- and post-course essays from all three iterations, the syntactic complexity analyzer L2 Syntactic Complexity Analyzer (L2SCA) (Lu, 2010) was used. L2 Syntactic Complexity Analyzer (L2SCA) developed by Xiaofei Lu at Pennsylvania State University, is a computational tool which produces syntactic complexity indices of written English language texts. Lu's (2010) automatic syntactic complexity analyzer covers 14 indices explained in the following table.

Table 1. The fourteen syntactic complexity measures automated

Measure	Code	Definition
Type 1: Length of production unit		
Mean length of clause	MLC	# of words / # of clauses
Mean length of sentence	MLS	# of words / # of sentences
Mean length of T-unit	MLT	# of words / # of T-units
Type 2: *Sentence complexity*		
Sentence complexity ratio	C/S	# of clauses / # of sentences
Type 3: *Subordination*		
T-unit complexity ratio	C/T	# of clauses / # of T-units
Complex T-unit ratio	CT/T	# of complex T-units / # of T-units
Dependent clause ratio	DC/C	# of dependent clauses / # of clauses
Dependent clauses per T-unit	DC/T	# of dependent clauses / # of T-units
Type 4: *Coordination*		
Coordinate phrases per clause	CP/C	# of coordinate phrases / # of clauses
Coordinate phrases per T-unit	CP/T	# of coordinate phrases / # of T-units
Sentence coordination ratio	T/S	# of T-units / # of sentences
Type 5: Particular structures		
Complex nominals per clause	CN/C	# of complex nominals / # of clauses
Complex nominals per T-unit	CN/T	# of complex nominals / # of T-units
Verb phrases per T-unit	VP/T	# of verb phrases / # of T-units

(Lu, 2010, p. 480)

Using syntactic complexity analyzer (Lu, 2010), the results are shown in Table 5.7

Iteration 1

Table 5.7 *Syntactic Complexity Analysis Iteration 1*

	MLS	MLT	MLC	C/S	VP/T	C/T	DC/C	DC/T	T/S	CT/T	CP/T	CP/C	CN/T	CN/C
pre-	16.12	14.66	9.40	1.72	2.13	1.57	0.32	0.52	1.10	0.40	0.34	0.22	1.64	1.05
post-	14.32	13.06	8.62	1.67	2.18	1.52	0.32	0.50	1.09	0.40	0.28	0.18	1.27	0.84

difference	-1.80	-1.60	-0.77	-0.05	0.05	-0.04	0.00	-0.02	0.00	0.01	-0.06	-0.03	-0.37	-0.21

The L2SCA results showed that in Iteration 1, there was no improvement in students' syntactic complexity indicated by these indices.

Iteration 2

Table 5.8 *Syntactic Complexity Analysis Iteration 2*

	MLS	MLT	MLC	C/S	VP/T	C/T	DC/C	DC/T	T/S	CT/T	CP/T	CP/C	CN/T	CN/C
pre	14.68	13.47	8.43	1.77	2.19	1.61	0.35	0.58	1.09	0.41	0.28	0.18	1.32	0.83
post	18.08	16.07	8.74	2.08	2.51	1.85	0.41	0.78	1.13	0.53	0.32	0.17	1.63	0.88
difference	3.40	2.60	0.31	0.32	0.33	0.23	0.06	0.20	0.04	0.12	0.04	0.00	0.30	0.04

Using linear mixed model to analyze the L2SCA results, Table 5.8 shows that there are significant changes in some syntactic indices, such as MLC, DC/C, as shown in Figure 5.24.

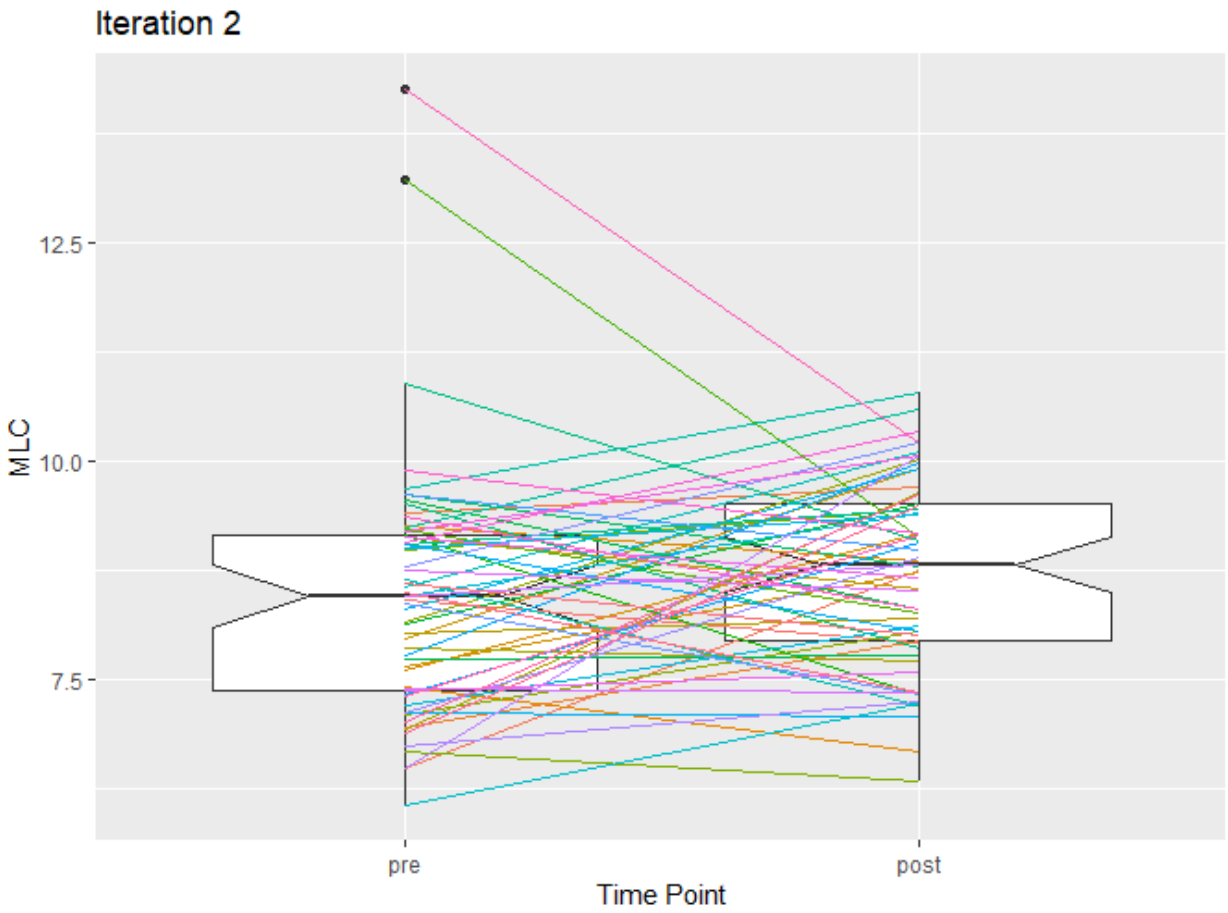


Figure 5.24. Pre- and Post MLC Results Iteration 2

A linear mixed effects (LME) model indicated a significant positive relationship between time and MLC index ($p < .001$, $R^2m = .125$, $R^2c = .365$). A summary of the model can be found in Table 5.9. Figure 5.24 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.9 *LME model predicting MLC results Iteration 2*

Random Effects	***Variance***	***Standard Deviation***		
Participant	0.626	0.791		
Residual	1.655	1.286		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	8.906	0.171	52.24	< .001

Time	0.802	0.182	4.41	< .001

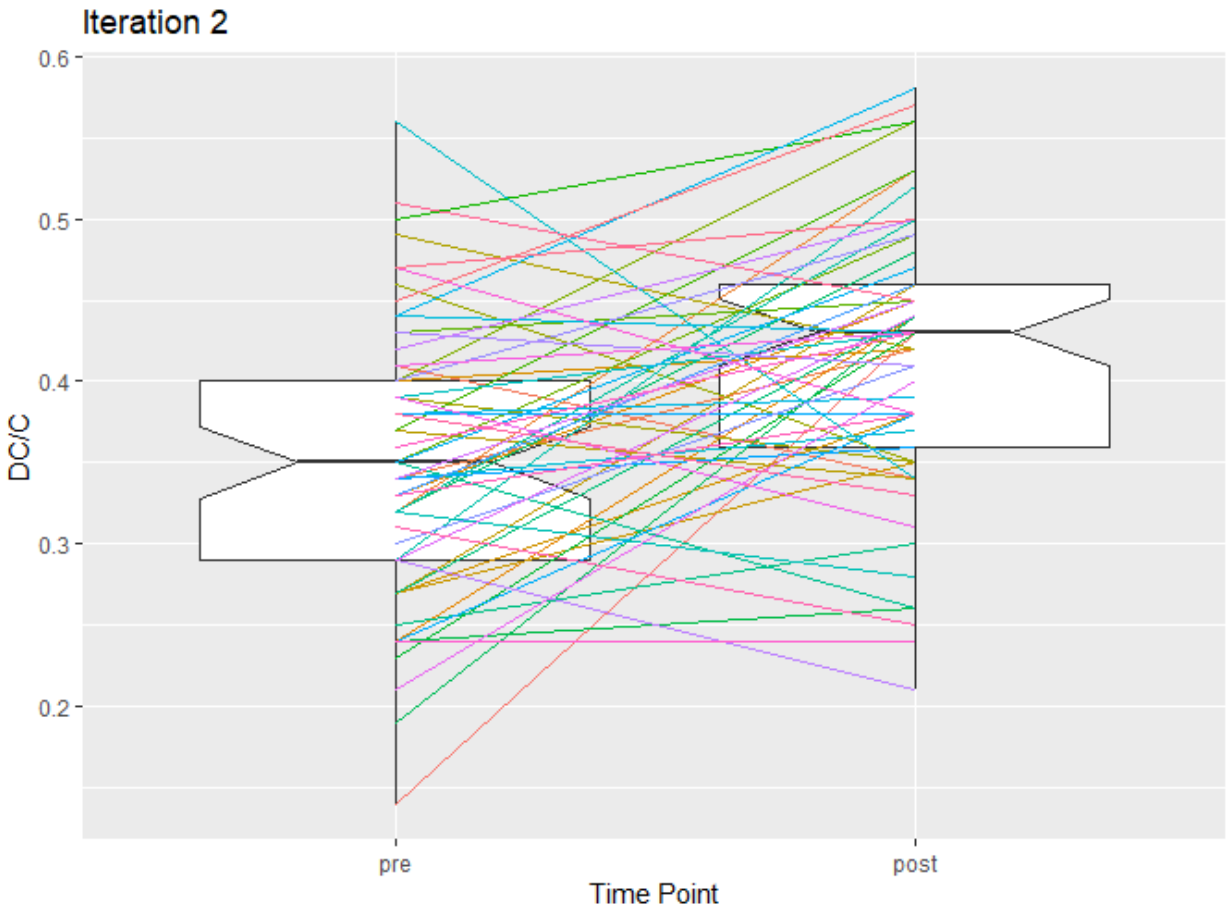


Figure 5.25. Pre- and Post-DC/C Results Iteration 2

A linear mixed effects (LME) model indicated a significant positive relationship between time and DC/C index ($p < .001$, $R^2m = .123$, $R^2c = .331$). A summary of the model can be found in Table 5.10. Figure 5.25 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.10 *LME model predicting DC/C results Iteration 2*

Random Effects	***Variance***	***Standard Deviation***
Participant	0.002	0.041
Residual	0.005	0.073

Fixed Effects	*Estimate*	*Standard Error*	*t*	*p*
(Intercept)	0.382	0.008	45.45	< .001
Time	0.044	0.009	4.72	< .001

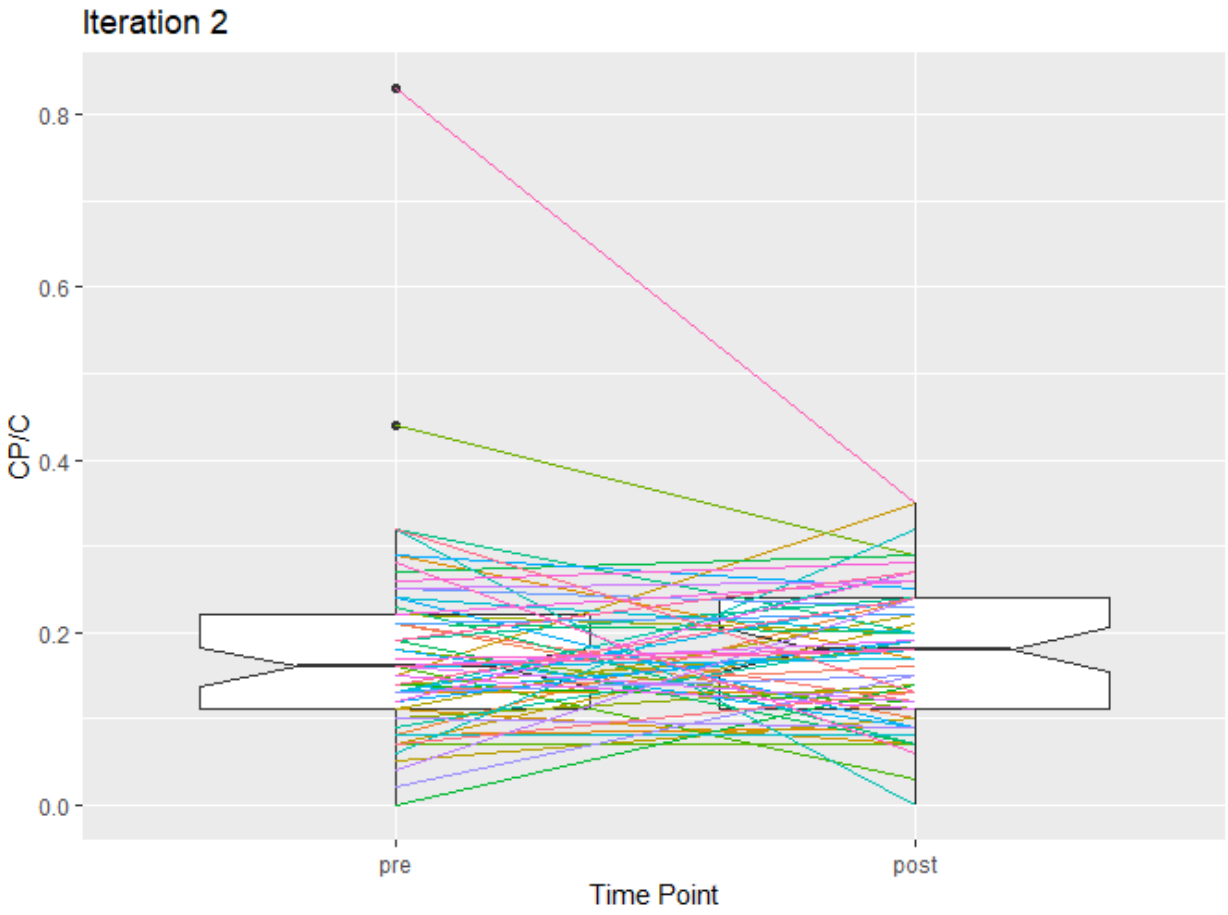


Figure 5.26. Pre- and Post CP/C Results Iteration 2

A linear mixed effects (LME) model indicated no significant relationship between time and CP/C index ($p < .001$, $R^2m = .0002$, $R^2c = .249$). Figure 5.26. includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

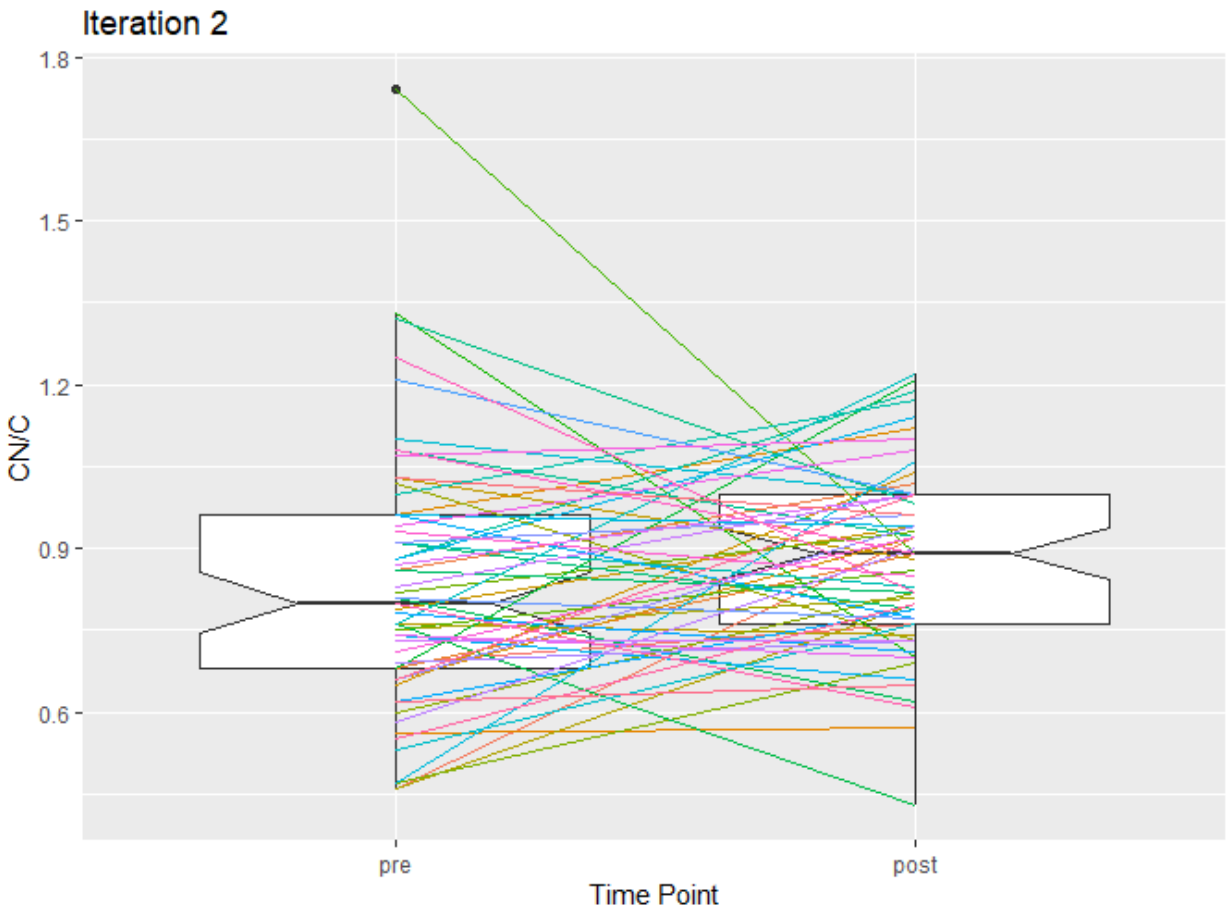


Figure 5.27. Pre- and Post CN/C Results Iteration 2

A linear mixed effects (LME) model indicated no significant relationship between time and CN/C index ($p < .001$, $R^2m = .012$, $R^2c = .186$). A summary of the model can be found in Table 5.11. Figure 5.27. includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.11 *LME model predicting CN/C results Iteration 2*

Random Effects	***Variance***	***Standard Deviation***
Participant	0.003	0.050
Residual	0.008	0.088

Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	0.177	0.010	17.29	< .001
Time	-0.002	0.011	-0.196	Not significant

Table 5.12 *Syntactic Complexity Analysis Iteration 3*

	MLS	MLT	MLC	C/S	VP/T	C/T	DC/C	DC/T	T/S	CT/T	CP/T	CP/C	CN/T	CN/C
pre	15.12	13.93	8.34	1.83	2.23	1.69	0.37	0.65	1.08	0.44	0.28	0.17	1.48	0.88
post	18.07	16.16	9.47	1.88	2.50	1.68	0.35	0.60	1.11	0.45	0.37	0.23	1.52	18.07
difference	2.96	2.22	1.13	0.05	0.27	-0.01	-0.02	-0.05	0.03	0.01	0.09	0.06	0.04	-0.88

Using linear mixed model to analyze the L2SCA results (shown in Table 5.12) , changes were observed in some syntactic indices between pre- and post- test, such as MLC and CP/C.

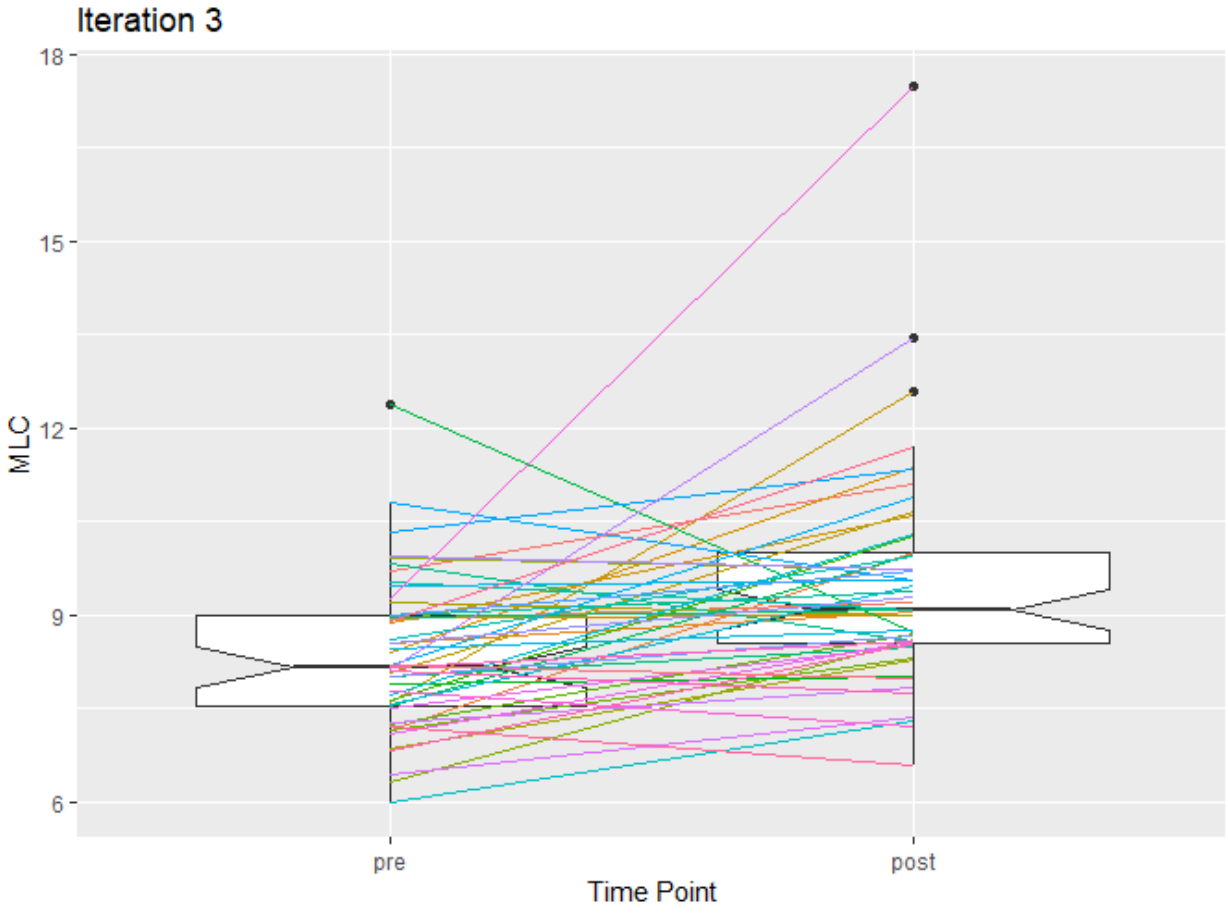


Figure 5.28. Pre- and Post MLC Results Iteration 3

A linear mixed effects (LME) model indicated significant change ($p < .001$, $R^2m = .125$, $R^2c = .365$). A summary of the model can be found in Table 5.13. Figure 5.28 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.13 *LME model predicting MLC results Iteration 3*

Random Effects	***Variance***	***Standard Deviation***
Participant	0.626	0.791

Residual	1.655	1.286		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	8.906	0.171	52.24	< .001
Time	0.802	0.182	4.41	< .001

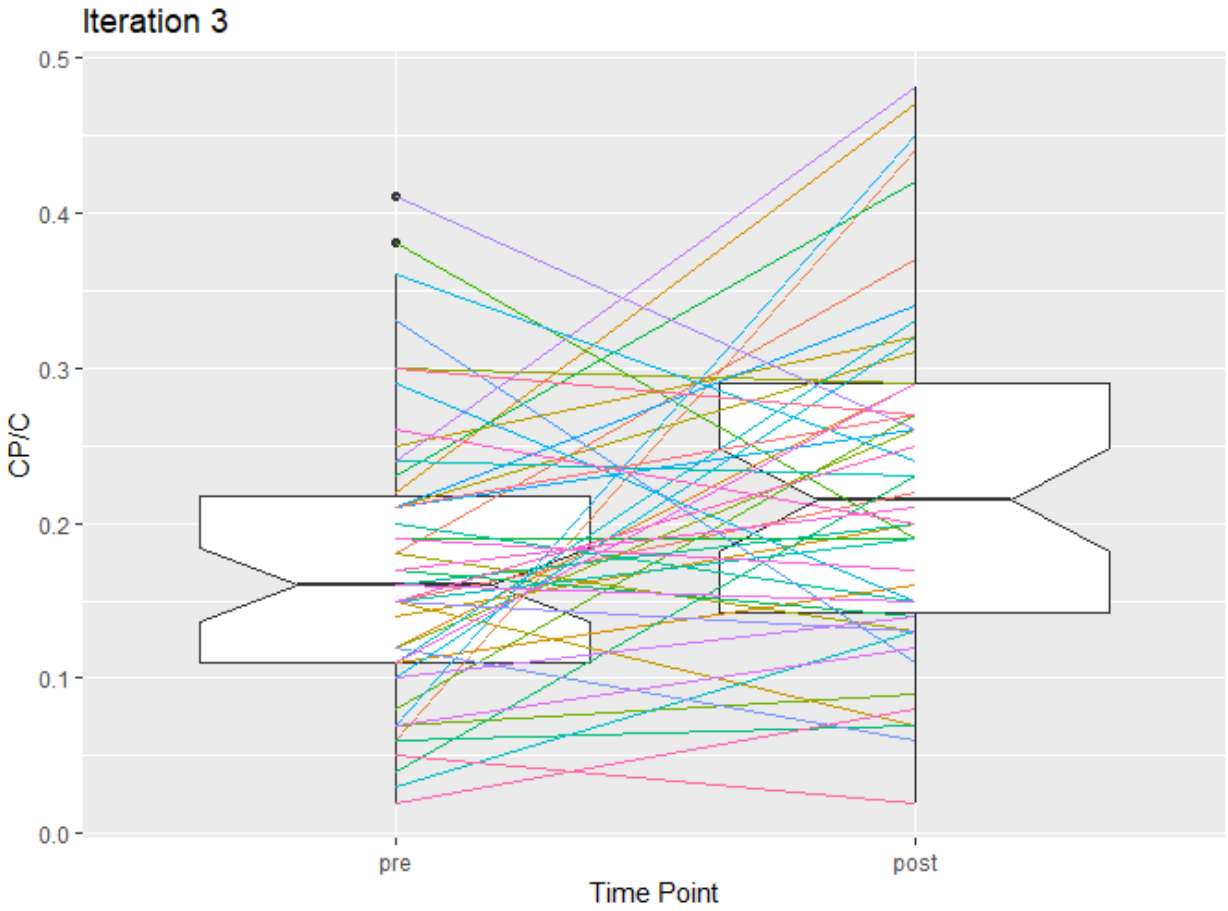


Figure 5.29. Pre- and Post CP/C Results Iteration 3

A linear mixed effects (LME) model indicated no significant change (p < .001, R^2m = .069, R^2c = .250). A summary of the model can be found in Table 5.14. Figure 5.29 includes

plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.14 *LME model predicting CP/C results Iteration 3*

Random Effects	***Variance***	***Standard Deviation***		
Participant	0.002	0.044		
Residual	0.008	0.091		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***
(Intercept)	0.199	0.011	18.02	< .001
Time	0.039	0.013	3.03	< .001

However, differences in indices such as CN/C were found to be due to random effects as shown in Figure 5.30.

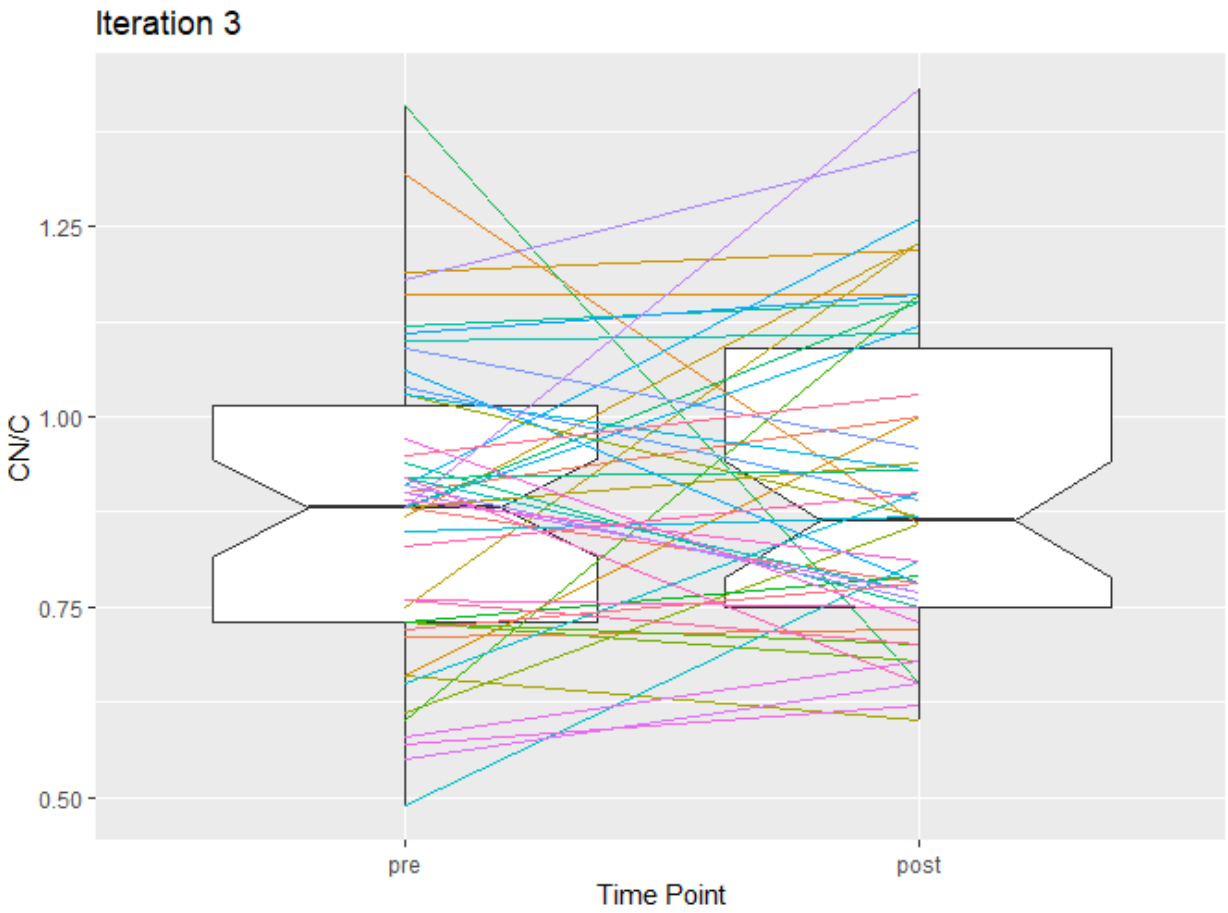


Figure 5.31. Pre- and Post CN/C Results Iteration 3

A linear mixed effects (LME) model indicated no significant change ($p < .001$, $R^2m = .004$, $R^2c = .331$). A summary of the model can be found in Table 5.15. Figure 5.30 includes plots of the holistic scores given to each participant's essays before and after the course with the regression line (indicated by the dashed line) produced by the model.

Table 5.15 *LME model predicting CN/C results Iteration 3*

Random Effects	***Variance***	***Standard Deviation***		
Participant	0.014	0.118		
Residual	0.028	0.168		
Fixed Effects	***Estimate***	***Standard Error***	***t***	***p***

(Intercept)	0.892	0.024	37.75	< .001
Time	0.019	0.024	0.809	Not significant

Summary

Linear mixed effects modeling showed significant difference in critical thinking ratings between the pre- and post-tests, and the effect size is large for all three iterations. This indicates that students' critical thinking in writing improved significantly by the end of the course for all three iterations. Although the syntactic complexity analyzer results and linear mixed effects model of pre- and post-course test of Iteration 2 and 3 showed significant difference in some areas, there was no pattern emergent from the changes. This is consistent with the design of the dissertation project, as the linguistic aspect was not the focus of the research.

Chapter 5 analyzed the data collected from the implementation of the course and the pedagogical drama game including the communication during multiple gameplay sessions, student feedback on the course and the game, and students' pre- and post-course test writings. The analysis showed that students interacted with the affordances in the learning ecology, participated in various kinds of languaging activities, and showed improvement in critical thinking in their writing. The implications of these findings will be further discussed in Chapter 6.

CHAPTER 6-DISCUSSION

Introduction

This dissertation has presented the design and implementation of an EDD-grounded pedagogical drama game-supported second language writing course and showcased a new model of a flipped classroom in which the f2f time was used to play a pedagogical-drama game in a group. Other than the research findings, this DBR study created two final products that can be used for advanced-level English as a foreign language writing courses: one second language writing course design and two pedagogical games. Chapter 6 summarizes the research findings of this design-based research from the three iterations of design-implementations and discusses these findings in the context of the ecological, dialogical, and distributed cognitive theoretical framework.

Summary of Findings

Game-afforded Communication

The first research question asked: How do technology and the game-based course change students' communication in class, and how does the pedagogical drama game afford students' languaging and translanguaging?

Both the technologies that students used in the course and the pedagogical drama game that students played in the course created an action-oriented learning experience for them. Students were not sitting in the classroom listening to the instructor explaining grammar structure or writing tips, but instead, they were constantly busy working and doing something with their group members. When students were playing the pedagogical drama game, they were immersed in a storyline with non-playing characters with their group members. Each team needed to negotiate among themselves to plan their limited class time strategically to complete

the game quest in order to be the one winner of the game. In essence, students were not communicating so as to produce an utterance in the target language that they learned for the day. They were communicating to accomplish a collective goal (see Steinkuehler, 2008, for team collaboration as distributed cognition in massively multiplayer online games). Hence, the technology and the game-based course changed students' communication in class by creating a learning environment that engaged their actions, emotions, holistic linguistic repertoire, and relationships within the gaming ecology. The discourse analysis showed that a game-supported second language writing course is not only feasible but also beneficial to students because of the following affordances of an educational game:

1. active engagement as can be seen from both the multimodal analysis and students' positive feedback of the game
2. meaningful collaboration
3. opportunities to play with the language
4. opportunities to translanguage
5. opportunities to explore a given topic in depth

The discourse analysis investigated the translanguaging interactivities in this EFL writing class, in which students engaged in a technology-assisted pedagogical drama game as part of the writing process. In the game, students worked in teams to complete quests that were designed to help them develop critical thinking skills in writing by exploring various socio-political topics. The analysis of the gameplay recordings shows that students systematically utilized and sequentially organized multiple linguistic resources to achieve intersubjectivity among the group members, to orient to task progression in game, and to develop their critical thinking skills in writing. First, in this technology-assisted classroom, students resorted to translanguaging while

completing the educational game quest as a team. Second, translanguaging is situated and highly contextualized as students voluntarily and strategically practiced translanguaging in accordance with the progression of the game quest.

Finally, translanguaging not only serves as a mediating structure (Cowley, 2012; Hutchins, 1995) helping the students make sense of the game narratives and coordinate quest-completion action plans, but it also becomes a part of their "metadiscursive regime" (Garcia, 2011) that they performed to access academic content with semiotic resources they bring while acquiring new ones (Blackledge & Creese, 2010). Translanguaging was first applied as a pedagogical method in classrooms serving multilingual or bilingual students, and to date has been more prevalent in multilingual/bilingual contexts. This research looked into the possibility of applying translanguaging in the context of emergent bilinguals in a foreign language context so that the language learners felt more confident in using the target language. The analysis showed that by acknowledging Chinese as a resource they could tap into, students felt more confident in expressing themselves in English. The majority of students who participated in the course said that one main reason that they had not dared to use English previously was that they were not able to fully express an idea in English. They reported that they would feel hesitant to use English when there were words that they did not know how to say in English, or they had some uncertainties regarding the use of a phrase. They were constantly worried about the accuracy of their English output. In addition, they always used Chinese to search for the information that they might need to write about in English. This could be attributed to both online habits in using search engines and the political environment in which Google was not accessible in China. In other words, students knew that they would obtain more relevant information if they searched Chinese search engines in Chinese, and they were used to searching

in Chinese even though they were writing in English. Using van Lier's (2004) ecological approach to explain students' behavior, language learning is not only about mastering the linguistic resources, but it is also action in context. Translanguaging is not merely switching between languages, but rather the ability to use all the languages as one linguistic repertoire for different purposes and in different contexts strategically by the agents. In this study, the emergent bilinguals demonstrated their ability to use English to complete game quests, group discussions, and writing, and to use both Chinese and English to look for information online. To restate our emphasis on the difference between translanguaging and code-switching in Chapter 2, translanguaging, as a pedagogical method, acknowledges language learning as an action in which multilinguals/bilinguals as well as emergent bilinguals can use all of their languages as a holistic repertoire for different actions.

In addition, translanguaging, as one type of languaging identified in students' communication during gameplay sessions, was also practiced as a pedagogical approach in the course. However, it is important to note that the translanguaging policy needs to be administered carefully in an English language writing course. In this dissertation, translanguaging was observed as a group behavior in the first iteration. Based on the transcription and analysis of those interactions, which showed that students strategically utilized their L1 in looking for information on their laptop, explaining game quests, and discussing different points of views, translanguaging was implemented as a policy in the subsequent iterations. However, instructors should be careful in administering this policy as students' use of English should still be constantly encouraged. The most ideal situation is when students feel comfortable using English as much as they can while using their L1 strategically to progress through their pedagogical activities. In other words, in this study, instructors were very careful during the implementation

phase in administering the translanguaging policy. Students were encouraged to use English, while at the same time they were allowed to use their L1 during the gameplay sessions to search for information or linguistic resources needed.

The *Transana* coding showed the interconnection between languaging activities, critical thinking, and affordances. From the keyword map (Figure 5.13), it can be seen that when the socio-political topic was embedded into the game quests, students were able to engage in critical thinking while progressing through the game quest. Moreover, quest planning took place throughout the gameplay session, before, during, and after critical thinking. This indicates that the game, designed as part of the writing process, successfully engaged students in critical thinking via languaging activities. Quest-planning functioned like a glue to connect students' critical thinking-based languaging activities so that they were focused and goal-oriented within a limited period of time. This interplay between critical thinking and quest-completion shown in the transcription and coding fulfilled the objective of the game, which was to encourage students to think more critically about a topic during the writing process and eventually write more critically. In addition, analyzing the connection between affordances and critical thinking showed that all the critical thinking incidences co-occurred with some form of affordances, which indicates that in the learning ecology of a game quest, for critical thinking to take place, a system of rich possible action potentials would be ideal to students. Last but not least, all the languaging instances also co-occurred with some form of affordances identified in the game quest. This finding is in alignment with the theoretical understanding of both languaging and affordances. Languaging is a way of knowing, sensemaking, and identity forming (Lankiewics, 2014), and affordances are "relations of possibility" (p. 95) that provide learners with opportunities for action to achieve certain goals. Whether they arise naturally or are created

intentionally, affordances can be used for learning when the learner recognizes them (van Lier, 2004). In the game quest, students recognized the affordances injected into the quest ecology and used them for languaging activities.

In conclusion, the game-afforded communication is unique in that it involves a complex system at play in which the languaging activity performed by students was engendered by the game design that created an immersive environment and a series of goals that prompted students to continue working. Students' surveys showed that the game and the course were very well received because they felt a sense of achievement from both the gameplay and the writing. Students reflected that they could not believe they were able to write that much. When students were asked to compare the speaking activities between the beginning of the course recording and the end of the course recording, they could not believe that they were able to speak much more fluently in such a short period of time.

Attitudes

What are students' attitudes towards technology and pedagogical drama games in English classes, and how do their attitudes change as a result of this particular pedagogical drama-game supported course?

This research question asks about students' learning experience in the game and the course. For an experience-oriented writing course, the reported experience reflects students' quality of learning and the effectiveness of the design. Students enjoyed playing the game across the three iterations, and what emerged from their feedback is that they "enjoyed the thinking and working together with their team members" (as one student wrote) during the gameplay sessions. None of the students had had a similar learning experience before the course; hence, the majority of the students were curious about what such a course was like. Although almost all of the

students had used technologies to look for information online, communicate with friends, none of the students had used online technologies in classes. By the end of the course, students responded that they believed technologies helped them in learning, although they doubted that they would ever have the opportunities to use them in future classes at school. The results showed that students saw the difference between this game-supported course and the English courses they took at school, and the technologies used in this game-supported course were not employed in their usual English classrooms. This also indicated that implementing similar types of instruction as shown in this study still faces potential challenges in exam-oriented English learning contexts as the type of instruction adopted in the classroom was not determined by students' learning experience. This dissertation hereby calls for the consideration of students' learning experience when determining the type of instruction in the classroom as this dissertation project showed that learning experience contributes to the learning effectiveness.

Learning Outcome of the Course

How does a pedagogical drama game-supported course develop students' critical thinking as displayed in writing samples?

Based on the rubric adapted from the Critical Thinking Value Rubric (Rhodes, 2010) and the guidelines for rating critical thinking from Washington State University, raters discussed the interpretation of the rubric and agreed on the standards for evaluation. The ratings of critical thinking in the pre-course test and post-course test showed that students' critical thinking in writing improved significantly across all three iterations. In addition, the effect size of the change between the pre-course test and the post-course test was substantial across all three iterations. The results also showed that critical thinking was not related to the length of the writing or the syntactic complexity. Referring back to the objective of the course, one of the main goals was to

help students improve their critical thinking in writing. The ratings show that the pedagogical drama-game supported course fulfilled this objective successfully. Students' pre- and post-course writings from three iterations were also compiled into a corpus for the analysis of syntactic complexity Although the design of the game did not take linguistic competency into consideration, the results of syntactic complexity analysis can indicate if such a pedagogical drama game-supported writing course had some impact on students' writing in such aspects. The results showed that students did make some improvement in some areas of syntactic complexity. When designing this game-supported course, the role of the game was to help students to use language, English in this case, to complete quests collaboratively. While completing quests, students not only understood more about a particular topic but also learned new linguistic resources that helped them critically present their point of view in the writing session.

Discussion

This design-based dissertation study entailed two main parts (design and implementation), and the analysis consisted of three parts: student communication during the class, student feedback on the course, and student performance in critical thinking in the class. The challenge for design research was whether the design could be implemented. There were concerns before the implementation of the course about whether such an experience-oriented course would be feasible in a large-class setting in China. Teachers from the school where this dissertation project was implemented were very skeptical, as they were afraid that such an innovative course would cause chaos when students participated in the game or group discussions. These teachers held the belief that an orderly classroom environment was one factor in determining whether a class would be going well. Teachers tended to think that these "fancy" pedagogical approaches that researchers have been discussing for decades would not work in

EFL contexts such as China, because the education system is exam-oriented and the class size is large. The outcomes of this course show that we *can* create an authentic languaging (Swain, 2009) or language usage-based learning experience for students even though one of the course objectives is to help students to excel in exams/competitions. In addition, as long as there is a clear organization or a set of rules applied to game and group activities, large class size is not an obstacle that cannot be overcome.

Students' communication in class reflected the quality of the game, and the various facets of communication indicated the effectiveness of the learning ecology design based on van Lier's (2004) ecological approach to language learning. Moreover, the multi-directional exchange of ideas and thoughts indicated how the dialogical (Linell, 2009) and distributed cognitive (Steffensen, 2011; Thibault, 2011) approach to language learning were applied in the game-supported environment. One of the major issues with English learning in China is that students did not have the opportunity to use the language in authentic contexts. The game solved this problem by giving students new identities in the game and by injecting action potentials (affordances) into the game design so that students could engage in various kinds of languaging activities. The discourse analysis showed that students picked up the intended affordances in the game and made full use of all these available resources for their communication and quest-completion. In the survey, students responded that they "enjoy the happiness of thinking and talking." The design of the game in the course aimed to encourage students to think deeply about a given topic instead of only looking at an issue from the surface level. In order to achieve this goal, the design of the course and the game adopted the experiential learning approach in which the learners could relate to the issues embedded in the game. For example, in the game *Finding Jolin's Way Home*, one of the quests was that Jolin felt confused why there were so many

refugees in Spain and wanted the gamers to help her understand the situation. In such a quest-prompted group mini-project, students needed to coordinate within the team and utilize all the available resources including the Wifi, laptop, mobile phones, their L1, the instructor in the classroom, and each other. From the back and forth communication, they needed to agree on how they wanted to produce a post, an audio recording, or a video to help Jolin. As a student wrote in the feedback, "it was common to have someone in the team with completely different opinions, but these opinions helped me with my writing as the discussions helped me know where I stand." Languaging in the game was not the final goal in this study from the designer's perspective; it was instead the intended action for the students during class. The ultimate goal was that languaging would help students with their critical thinking. The results did show that daily gameplay sessions allowed students as a group to explore an issue by helping the protagonist in the game. The mission of completing each game quest motivated the students to work together, language together, and think together.

To motivate students to think critically is a challenging task, different from teaching students grammar rules; thinking critically demands the activation of students' agency. The game was introduced into the design as the major intervention for this design-based research so that students could enjoy the experience and hence, actively participate in critical thinking. In other words, it is important that students like the game as it was designed to create a fun and unique experience for the students. From the analysis reported in Chapter 5, it can be seen that students in all three iterations very well received the course and the game. In the surveys, students responded that it was their first-time using technologies and playing a game in the classroom. Although they were randomly assigned into groups, the quality of the gameplay sessions and the group discussion sessions was not affected from not knowing their team members before the

course. The interesting part from their surveys and also the communication threads saved in the game is that students in all three iterations became very emotionally attached to the game protagonist. This is an indication that the design of the game was successful in creating an immersive learning and playing environment in such a way that students managed to take on a new identity assigned by the game and game quests. From the design perspective, this indicates the importance of narrative writing during the creation of such a pedagogical drama game.

The analysis reported in Chapter 5 showed how the design elements in both the course and the game successfully supported students through their journey of learning, doing, and thinking. Re-analyzing the holistic learning ecology (van Lier, 2010) with reference to the concept of affordance-effectivity (Gee, 2008) duality can explain why students responded positively to the game and the course. To review one of the main concepts for the design of the course and the game, *affordances* refer to the opportunities for learners to take actions employing their capabilities (effectivities), and decisions to take actions are made based on their perceptions of the learning ecology. The design of the course aimed to involve students in deeper thinking regarding a series of socio-political topics by engaging them in collaborative work realized through the designed game quests. When students were working on the game quests, their agency was activated. Instead of being asked to finish pedagogical work, they took on new identities other than language learner and interacted with the non-playing characters in the game as helpers and friends. They worked with their team members, trying to win the game and bring the team honor. The socio-political issues embedded in the game made the game completion not an easy endeavor and pushed the team to think deeper and explore more. The quest products the team created via writing, audio-recording, and video-recording would be shown to all the teams playing the game, which then became part of the learning ecology. For instance, when some

teams were stuck with their discussion of how they should help the game character and were uncertain of what kind of suggestion they should offer the protagonist, they would resort to the quest products that had already been submitted to the QQ platform by other teams for inspiration. This is an example of how the learning ecology is dynamic and evolving while the learners/students were still participating in the game. The game successfully placed the learners/gamers in the center of this learning ecology by giving them new identities, missions, and rewards. At this point, it could be seen that, in the EDD framework, the ecological planning laid the foundation for the dialogical and distributed cognitive languaging to take place.

In addition, not only did students enjoy the learning experience afforded by the game in the course, but their performance also improved, as shown by the improvement in critical thinking in their writing as well as some improvement in syntactic complexity in their final writing. Languaging not only gave students the opportunity to use the language in meaningful situations; it also engaged students in distributed critical thinking which was reflected in their final writing. Critical thinking is a skill that needs continuous training, and it seems to be contradictory to the Chinese traditional culture of Confucius Thinking of "Zhong Yong" (the doctrine of the mean), which values not taking a position (See Ji, Li, and Guo, 2010, for the thinking styles of Chinese People). However, one of the key elements in critical thinking is that students need to be able to demonstrate their stance on an issue. To provide a clear-cut position demonstrated to be especially challenging for these students. In the pre-course writings in all three iterations, one sentence that was been popularly used in students' writings was "every coin has two sides." The pre-course essays which received a rating of 1 or 2 failed to demonstrate critical thinking in their writing and had the following problems: 1. There was no clear stance found throughout the essay; 2. They did not provide evidence to support their claims; 3. They did

not address the alternative sides; and 4. For those students who did provide both sides, they did not provide an in-depth analysis of the context of the issue or a clear stance. It can be seen that sometimes these students were struggling between their cultural heritage and the learning of English writing. However, we cannot confirm from this study whether these problems in argumentative writing students demonstrated was due to lack of familiarity with the genre expectations or their struggles between different cultural thinking. This could be a potential research project for further investigation. During the gameplay sessions, they were constantly challenged by quests which required them to be clear about their point so that the protagonist in the game could understand them. Also, during the gameplay sessions, they were constantly challenged by team members with different points of view. In such circumstances, they had to either look for evidence to support their point of view in order to persuade their team members, or they had to elicit further explanation from their team members to understand their points. The continuous negotiation, evidence-seeking, and explanation in quest-completion contributes to the development of students' critical thinking.

To review the design, approaches, and theories of the research, Figure 6.1 was created to portray the relationship of different theories and approaches in this design-based research.

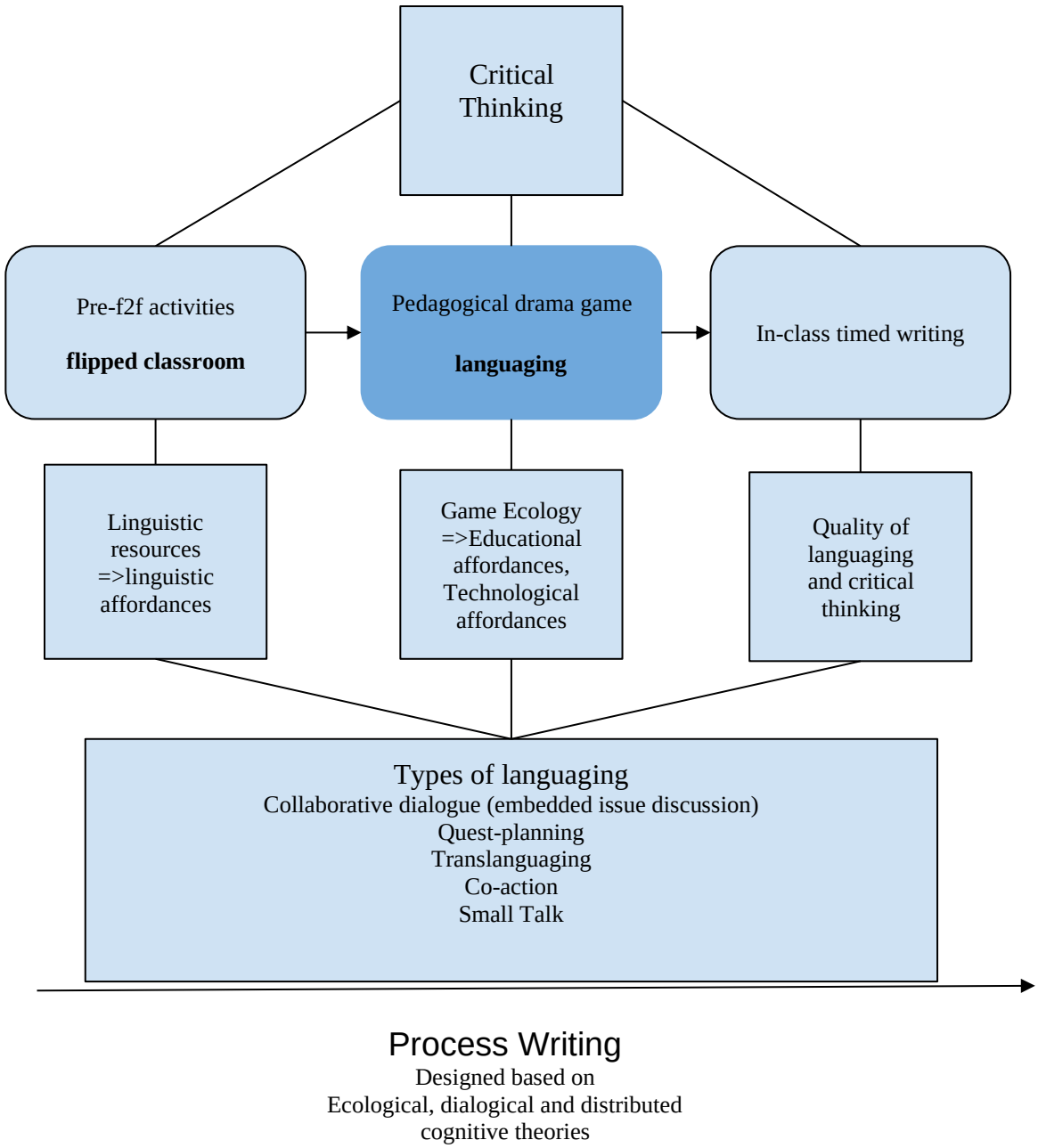


Figure 6.1. Theories, Approaches, and Designed Activities in the Course

As shown in Figure 6.1, the course adopted the approach of process writing, and the main activity of the process writing was the pedagogical drama game, which was created to elicit languaging activities from students. In order to encourage students to engage in languaging, the flipped classroom approach was adopted to help students gather linguistic resources and build

some knowledge of a socio-political topic to be discussed during the face-to face session the next day. Based on the results, it can be seen that the flipped classroom prepared students for the languaging activities during the gameplay session, and the educational affordances and technological affordances (Bin, 2016) of the gaming ecology further scaffolded students in the languaging, which was found to support students' critical thinking during the gameplay sessions. The timed writings reflect the quality of their languaging and critical thinking. By analyzing the communicative projects during the gameplay session, different types of languaging activities were found: collaborative dialogue-embedded issue discussion, translanguaging, quest-planning, co-action, and small talk. These languaging activities were specific to the game designed for the course and were the results of the injected action potentials in both the game and the course. Thibault's (2011) proposal of understanding language as a combination of first-order languaging and second-order language addresses language learners' or emergent bilinguals' issue of lack of critical thinking in English language writing. The course and the game in the course aimed to help students participate in constant languaging events, and the languaging events worked as part of the writing process that could help them plan their writing. Gameplay encouraged the learners to actively perform languaging activities so that they could win in the game. From a design perspective, languaging was the intended goal and the means for students to improve their critical thinking in English writing. According to the results, students successfully engaged in a series of languaging activities, and these emergent bilinguals benefited significantly from the training in second-order languaging. In summary, languaging events could help emergent bilinguals establish their confidence in using the target language and develop other language-related skills such as critical thinking in writing.

CHAPTER 7-CONCLUSION

This dissertation study showed how a pedagogical drama game could be incorporated into process writing approach to English writing and how languaging could be solicited with a game ecology enriched with relevant affordances. In addition, this transdisciplinary study portrayed how the theories of ecological psychology, dialogism, and distributed cognition could be applied in the design of a pedagogical drama game-supported second language writing course.

In essence, this design-based research project demonstrated how naturalistic research was conducted. As it adopted a naturalistic approach, it investigated several different topics including second language writing (mainly process writing in this case), course and game designing, languaging, and translanguaging during gameplay. This design-based research project entailed three iterations of design-implementation-revision, and the process of conducting the research demonstrated to language educators and course designers the complete cycle of designing a course and a pedagogical game from scratch. The design built on van Lier's (2004) ecological, Linell's (2009) dialogical, and Hutchin's (1991) distributed cognitive approach to language learning broadens the learning from an individual mind to distributed cognition realized through collaborative experience-based (Dewey, 1938; Kolb, 1984) languaging (Swain, 2006; Thibault, 2011) activities. Based on the analysis, it can be concluded that: 1. The technology and game-based course changed students' communication in class in such a way that they were much more scaffolded in searching for relevant linguistic resources to express their thoughts; 2. The pedagogical drama game afforded students' (emergent bilinguals) languaging and translanguaging during the gameplay sessions, and the translanguaging also made students realize that their L1-Chinese was a resource instead of hindrance in their English learning; 3. students' attitudes towards technology and pedagogical drama games in English classes were

positive by the end of the course, and their attitudes towards gaming in the classroom changed to be more positive as a result of this particular pedagogical drama game-supported course; 4. The students in the study responded that this ecologically designed course was fun and unique; the general comments were that the course helped them with using English, and they felt more confident in speaking and writing; and 5. Students' critical thinking in writing improved significantly by the end of the course, and some areas of their syntactic complexity also improved.

Empowerment is the keyword in this dissertation project. Educators have been talking about shifting from teacher-centered pedagogies to student-centered learning for decades (Kain, 2003), yet we have rarely been successful in creating a pedagogical experience that engages students in proactive and enjoyable learning while fulfilling the learning/teaching objectives due to practical constraints such as institutional realities and students' expectations and experiences. This dissertation project proposed a new student-centered pedagogy that starts with design and calls for a new definition of "student-centered learning" which should take on an added layer of experience that demonstrates to students how languaging activities that they performed in the classroom are transferable in real-life situations.

In an EDD perspective on language learning and teaching, student-centered learning is represented by the self-organizing and self-orienting of different languaging events in the learning ecology. Students were fully aware of their missions and the learning objectives behind all these actions throughout the whole process. In other words, while students were having fun playing the game, they did not forget the purpose of the game; as shown in the game discourse, students would make connections to the writing while discussing their plan for the quest product. This ecological, dialogical, and distributed cognitive framework-rooted course went beyond

commonly known student-centered pedagogies such as project-based learning and task-based learning by empowering students with affordances injected into the course during the design and giving students' freedom in terms of the how they collaboratively completed the game quests. The experience of gameplay during the course allowed students to see that they had access to abundant resources around them that they could make use of for their learning even after they completed the course. In addition, such a game-supported course design bridges the gap between advances in second language pedagogical research and institutional reality by designing a game-supported writing course specifically based on the teaching objective of improving students' critical thinking in writing. Both project-based learning and task-based learning rely heavily on teachers, who determine the quality of projects and tasks. However, such a game-supported course places the heavy work on the designers instead of the teachers. Teachers, as part of the learning ecology, support students in various kinds of actions during the game. Yet, this does not reduce teachers to merely being operators or technicians. As shown from the multimodal analysis in the results section, teachers needed to be very aware of the pedagogical purpose of the game and help students whenever they have questions. At the same time, teachers still needed to be the experts in the field as students' questions are constantly evolving. To be more specific, with the design coming from someone other than the teacher, teachers still need to have a core understanding of their field in order to support students' learning when they are participating in a course like the one you designed. More studies need to be done in order to investigate the effectiveness of such a EDD-rooted course design in other areas of language learning.

Restatement of Purpose

This dissertation was built on the understanding that language is not static and language learning does not happen in a laboratory-like environment. On the contrary, language is dynamic, social, and cultural, and language learning takes place in a complex system in which individuals are constantly positioned in an environment full of intertwined artifacts, interlocutors, and relationships. During the gameplay sessions, students continuously faced emergent communicative projects (Linell, 2009) that they had to orient to and complete collaboratively, and this languaging experience they had during the gameplay session is very similar to real-life communication in which the need for languaging is not rehearsed. Instead, the contexts and all the necessary elements of communication such as the purpose of communication and the interlocutors involved in the communication oftentimes in real life cannot be foreseen or rehearsed.

This is a writing course supported by a pedagogical drama game that was created to lead students on a journey of process writing. As stated in the introduction, these emergent bilinguals were not confident in English or writing because the English classes they had taken in the schools focused mainly (only) on linguistic competency. Moreover, they were constantly being graded and corrected based solely on linguistic competency. Therefore, in order to produce only accurate language, they felt more comfortable staying on the safe side and producing language that they felt was accurate. Because of this mindset, they were not able to fully express their critical thinking and thoughts even though they had relevant linguistic resources and digital resources available that can scaffold them in producing languages that can help convey their critical thinking. In other words, students were not required to demonstrate critical thinking in English writing in the current exam-oriented classrooms. Therefore, they worked only with the

pool of linguistic resources that they were certain about instead of expanding their use of linguistic resources that they were uncertain of. Based on this mentality, their language learning was passive and less rewarding because they took in the linguistic resources that teachers fed them according to the textbooks and then they applied whichever linguistic features they learned at the time in their writing. This dissertation project showed students that they could improve their own writing by making use of all the resources they have, including their L1, their classmates, and their digital literacy.

The game functions as the glue that connects all the pedagogical activities in the course together and adds a fun element to the whole course. More importantly, the game presents an environment in which students see meaning in actively participating in talking about socio-political topics and exploring these topics, which is the opposite to their "traditional" English classes. During the gameplay sessions, students took on the role of a game player in the game storyline in which they were expected to contribute as a member of the team via exploring, finding relevant linguistic resources in completing game quests, speaking, and writing. In addition, the game designed in this course is one of many ways of creating a unique writing process for students who need opportunities to improve their critical thinking. Every writing process can be different depending on the needs of students and writing teachers, and course developers can think of ways to create ways for students to embark on their individual journey of process writing.

To conclude from a theoretical perspective, this research showed how languaging (Swain, 2009) activities were fit into an ecological (van Lier, 2004), dialogical (Linell, 2009), and distributed cognitive (Steffensen, 2009) framework. A flipped classroom (King, 1993) model allowed students to gather linguistic resources they needed for future languaging activities during

gameplay sessions, and languaging with the team members helped students with their process writing (Seow, 2002) such as planning their writing by deciding their point of view, looking for supporting evidence with the help of wifi-enabled laptop or mobile phones, and discussing with their team members.

Implications for Teaching

This dissertation project first showcased quasi-longitudinal design-based research from which a course was created, and two pedagogical drama games were designed. It is important to note that the game is one significant link of the course and connects the linguistic resources gathering phase and the final writing phase. Although it is a key part of the writing course, it is not the endpoint of the course. Therefore, the design of the game took into consideration the objectives of the course, the topics that students would write about, and also the intended outcome of different quests. The serious games in general can be developed with a different goal and purpose, and that can form a different project. For example, the games can be tweaked to become part of a listening and speaking course or a stand-alone language learning game on its own. At the same time, this writing course can also be further developed and revised to meet different pedagogical objectives. This research project has presented one possible model that future language teachers can adopt for course creation or materials development, and it also presents itself as a prototype of an educational game.

This dissertation project also demonstrates to teachers who are interested in course or game development the complete process of design-implementation-redesign. Learning in a classroom is dynamic and not controlled, and by approaching the design and learning from ecological (van Lier, 2004) and experiential (Dewey, 1938; Kolb, 1985) approaches, students embarked on a journey of exploration, collaboration, and learning. In such a game-supported

classroom, students were given more autonomy, and the teachers' role changed from lecturer and sole knowledge provider to coordinator. More importantly, this design focused on each individual student in the class and acknowledged that every learning path is different.

The game created as part of the writing course aimed to engage students in languaging (Swain, 2006). It is important to reiterate Swain's definition of languaging: "the process of making meaning and shaping knowledge and experience through language" (2009, p. 98) that "convey[s] an action—a dynamic, never-ending process of using language to make meaning" (2006, p. 96). As students took on the role of gameplayer and embarked on the journey with the protagonist in the story and their team members, they started to be immersed in a languaging ecology in which they needed to engage in collaborative dialogues to co-work on a series of quests. One of the difficult issues that language teachers face in both ESL and EFL contexts is encouraging students to participate in meaningful languaging activities, as students see these activities as "fake" and "made up" according to students' feedback on the surveys in this study. This is a problem with both task-prompted languaging and teacher-imposed languaging. This dissertation proposes that in order to engage students in more authentic and naturalistic languaging, we educators/course designers need to go beyond the scope of a pedagogical activity that only focuses on the relationship between a pedagogical prompt and a response; instead we should create a more authentic context, a system and an environment in which students can take on a new identity other than a language learner and see that they are emergent bilinguals instead of people with a defective language that they are not confident in using.

In summary, this dissertation project showed that a pedagogical drama game was successful in creating authentic contexts for students to engage in languaging, which in turn helped them with their critical thinking in writing. Teachers or course designers can benefit from

the findings by designing or applying pedagogical drama games in language writing classrooms or finding ways to create similar authentic contexts for students to engage in languaging.

Implications for Game Design

Other than the final products of a game-supported second language writing course and two pedagogical drama games, this design-based research has generalized pedagogical theories about the role of pedagogical drama games in process writing, by delineating the relationships between different types of affordances, languaging, and critical thinking. For teachers who are interested in game design in second language courses, this dissertation presented the key take away points for designing, i.e., constantly referring to the affordance-effectivity set in the learning ecology throughout the designing phase. To design a game specifically for a course, designers need to first establish a learning ecology based on the learning objectives. This learning ecology includes both the physical and virtual elements depending on the type of games that the teachers want to design. For instance, in this dissertation, the virtual elements include non-playing characters of the game storyline, the game rewarding system, the interlocking quests in the game while the physical elements include students' seating arrangement during the gameplay sessions, the physical technologies that games have access to, and all the other artifacts that they use during the quest completing process. In the meanwhile, designers need to be aware that some intended affordances may not be picked up by students due to other factors such as their lack of familiarity with a tool and the learning curve of a new technology. Moreover, this dissertation showcased how a virtual game interacts with the physical classroom setting to create a hybrid gaming environment that engaged students in both playing and learning, and hence produced talking, thinking, and doing simultaneously.

Two guiding principles of a serious game are learning and fun. Educators interested in designing serious games need to balance the two by constantly connecting the learning objective and the gaming components. Understanding the fundamental difference between a serious game for educational purposes and a game for entertainment available in the commercial market, designers need to envision the possible actions that students/players could take by utilizing all the affordances injected into the gaming ecology. This dissertation showed that the game quests worked as a glue that connected students' various languaging activities during process writing. What matters in a serious game design is that potential gamers/learners could actively interact with the gaming environment and enjoy a fun learning experience.

As the game designed for this dissertation was a pedagogical drama game, the storyline was an important factor in the game design. First of all, the storyline connected all the quests together; secondly, a coherent storyline could embed the socio-political topics naturally and logically; lastly, a captivating storyline with non-playing characters that students could relate to would help create a more immersive gaming environment.

Because this dissertation aimed to create a process writing experience, the game designed was comparatively more comprehensive. However, it is possible for teachers to design and create a smaller game that could be played over a course of a class period or a module, depending on the objective of the game and learning. In addition, teachers could collaborate with artists and writers during the designing process in creating virtual characters and creative writing the storylines for the game.

However, it is also important to note that teachers do not have to be the ones designing the games. As demonstrated from this dissertation, designers can create games that teachers can implement.

Implications for Research

This research centered around the design and implementation of a game-supported course, and the focus was on critical thinking of second language writing instead of linguistic competency. To be more specific, the course in this study was created to study students' second-order languaging behavior (Thibault, 2011), and the first-order language was not the focus of the study. Analysis showed that in general, students' syntactic complexity (a measure of grammatical accuracy) did not improve significantly even when they increased the length and amount of critical thinking in their writing. Future research can investigate if a similar course or game can be designed to help students with their linguistic competency. In addition, this study showed that students made significant improvement in some areas of syntactic complexity, more research can be done to analyze what kind of languaging activities can specifically help students with their syntactic complexity.

This dissertation created a course by adopting a combination of pedagogical approaches of flipped classroom, pedagogical drama game, and process writing. This shows that many existing pedagogical approaches have the potential of being incorporated into new educational practices. Due to the lack of time, the peer response/review activity was not successfully implemented. Future research can investigate whether peer response/review activity could complement the current pedagogical drama game-supported course by helping students with their language-related issues and genre expectations.

This design-based research worked on the creation of a course of second language writing. The same design philosophies could be applied to create a game-supported course of second language listening and speaking with different teaching objectives to investigate whether such a game-supported course would be effective in improving students' listening and speaking.

Moreover, as fun was one designing principle of the pedagogical drama game, more research could study the relationship between motivation and second language writing course-rooted pedagogical drama game.

Limitations of Research

For the purpose of research, the designed course was executed as an intensive course over a period of ten days, and students reflected in the post-course surveys in all the three iterations that the "homework" was "too much," as they had to do the readings and reading-related assignments on a daily basis. Students might feel less motivated during the pre-f2f session when the workload was too much for them, and hence they would not gain as many linguistic resources necessary for the f2f activities, which in turn would help them during the writing. It is important to note that such a game-supported writing course can be dispersed over a period of a regular semester so that students have more time to finish relevant pedagogical activities before the f2f sessions.

The second iteration did include some peer review exercises, but the time given to students for essay revision was limited as it was a ten-day intensive course, so the peer review exercises increased students' workload. Due to the workload within a short period of time, the potential impact of the peer review may have been diminished. The third iteration involved the cooperation of local English teachers. These English teachers proposed teaching grammar lessons to the students together with the designed game-supported course. The grammar lessons were not created based on the pre-course writing test, but rather from their existing curriculum. While it helps to give students some lectures on grammar (Hinkel, 2013; Sipe, 2006), the course would have been more holistic if the focus of the grammar points were generated from students' writing or the grammar instruction were more contextualized (Jones, Myhill, & Bailey, 2013).

Based on the results from the syntactic complexity analyzer, the syntactic complexity of Iteration 3 post-course writings did not show more significant improvement than the previous two iterations. This could indicate that the grammar lessons did not significantly help students with their linguistic competence.

In the third iteration, a corpus tool was introduced into the course with an intention to give students an additional resource when they encountered language-related issues. However, the results showed that students did not perceive this resource as a useful tool; hence, the objective of injecting this tool as an affordance into the learning ecology from the designer's perspective failed. However, this result does not contradict the effectiveness of such a tool. It only shows that in a complex learning ecology, students demonstrated their agency in picking and choosing the available resources that they perceived as relevant to their learning.

Conclusion

This three-year dissertation project created one second language writing course and two pedagogical drama games, *Finding Jolin's Way Home* and *God of Time.* The course was implemented over three iterations, and all three iterations fulfilled the course objective of helping students improve their critical thinking in writing. This is a pedagogical study that integrated design and teaching during which a space was created for research investigation. It is important to note that although the design-implementation cycles were specific to a group of students with a clear learning objective in this design-based research, the findings which informed theories about languaging, critical thinking, and EDD are generalizable and could be applied to future pedagogical practices.

From the iterations, it can be concluded that the ecological, dialogical, and distributed cognitive framework guided the design of a pedagogical drama game-supported second language

writing course, which successfully engaged students in various kinds of languaging activities. These languaging activities in turn contributed to students' improvement in critical thinking in their writing. In addition, the pedagogical approaches of flipped classroom allowed the effective implementation of the pedagogical drama game in a process writing-based second language writing course. All the findings contribute to the understanding of language learning being dynamic instead of static, and language consisting of both first-order language and second-order languaging instead of merely a system of codes. In summary, with the availability of technologies, educators and designers could develop and create games and courses that embrace language learning as a dynamic and evolving endeavor.

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APPENDICES

Appendix A

Pre-course Survey Questions

1. Have you ever taken a class that uses technologies such as computers and mobile phones?

Yes.
(Please specify what kind of class and what you did with the technologies)
No.

2. How often do you use internet-enabled electronic devices such as computers, cellphones, and etc.?

Every day
More than once a day
Once a day
Once a week
Less than once a week

3. On average, how many hours per week do you use such internet-enabled electronic devices?

1-2 hr/week
3-4 hr/week
5-6 hr/week
7-8 hr/week
More than 9 hours/week

4. What do you use technologies for?

Chatting with friends
Watching videos
Online reading
Online shopping
Online forums
Finding information
Other

5. Have you ever played any computer games?

Yes.
No.

6. What is your attitude towards computer games?

Not interested
Fun but detrimental to my studies
Fun and have no impact on my studies
Other. Please specify.

7. Have you ever done any group work in class?

Yes.
No.

8. What is your opinion about group work in class? (Do you like/dislike group work? Why or why not?)

9. Do your parents limit your use of internet-enabled electronic devices? Why or why not?

10. Do your teachers limit your use of internet-enabled electronic devices? Why or why not?

Post-course Survey

课程前期调查表

1 年龄 Age

2 年级 Grade

3 班级 Class

4 如果这是你第二次参加课程，请问跟第一次课程相比有什么相同和不同的感受吗？（如果是第一次，请忽略此题）

If this is your second time taking the course, do you think the second time taking the course similar or different from the first time? How? (Please ignore the question if this is your first time taking the course.)

5 对于这次课程，整体的感受是什么样的？请具体描述。

What is your overall impression of the course? Please elaborate.

5 请将课程的以下各个环节，按照你的喜好排列。 例： abcde 即 a 为相比下最喜欢，e 为相比下最不喜欢的。

Please rank the following class activities based on your preferences.

a. 课前作业　pre-f2f activities
b. 课堂讨论　group discussion
c. 时神游戏　game
d. 课堂写作　in-class writing
e. 课堂录音　in-class recording
f. 网络课程　　online session
g. 同学写作反馈　peer review

你的排列 Your ranking：

5.1 请分别解释你的最喜欢和最不喜欢的选项的原因。
Please explain your choices of the most favorite and the least favorite activity.

6 对于这个课程，按照你认为对你最有帮助的顺序排列？例：abcde 即 a 为相比下最有用，e 为相比下最没有用的。
Please rank the following class activities based on the usefulness your perceived.
a. 课前作业　pre-f2f activities
b. 课堂讨论　group discussion
c. 时神游戏　game
d. 课堂写作　in-class writing
e. 课堂录音　in-class recording
f. 网络课程　　online session
g. 同学写作反馈　peer review

你的排列：
6.1 请分别解释你的最有用和最没用的选项的原因。
Please explain your choices of the most useful and the least useful activity.

7 现在课程结束了， 你认为好的英语写作（特别是好的议论文）应该是什么样的？
Now the course is over, what do you think a good argumentative writing is like?

8 通过这次暑期的学习，你认为你最大的收获是什么？
What do you think is the biggest takeaway point from the course?

9 请在 1-5 的标尺上，评价你们组在课堂讨论环节的配合和讨论质量。 （1 为最弱，5 为最好）
On a scale of 1-5, please rate the quality of your teamwork and discussion during group discussion.

1 2 3 4 5

10 在 1-5 的标尺上，评价你们组在游戏环节的配合和讨论质量。 （1 为最弱，5 为最好）
On a scale of 1-5, please rate the quality of your teamwork and discussion during gameplay session.

1 2 3 4 5

11 你觉得在课堂讨论环节和游戏环节，你们组的讨论状态有什么相同和不同么？请具体说明。
Are there similarities or differences between the discussion during gameplay sessions and the group discussion sessions? Please elaborate.

12 这是否是你第一次课堂参与深度团队合作？你对于团队合作有什么体验和感想？
Is this your first time taking part in teamwork? What is your understanding and feeling of teamwork during class time?

13 经历了这次课程，在 1-5 的标尺上，你认为自己的英语说的能力是几？（1 为最弱，5 为最好）
On a scale of 1-5, please rate your overall English ability.

1 2 3 4 5

如果你认为有提高，请说明原因；如果你认为没有提高，请说明原因。
If you think there is an improvement, please explain. If not, please explain .

14 经历了这次课程，你认为自己的英语读的能力是几？（1 为最弱，5 为最好）
On a scale of 1-5, please rate your reading proficiency.
1　2　3　4　5

如果你认为有提高，请说明原因；如果你认为没有提高，请说明原因。
If you think there is an improvement, please explain. If not, please explain.

15 经历了这次课程，你认为自己的英语写的能力是几？（1 为最弱，5 为最好）
On a scale of 1-5, please rate your writing proficiency.

1　2　3　4　5

如果你认为有提高，请说明原因；如果你认为没有提高，请说明原因。
If you think there is an improvement, please explain. If not, please explain.

16 在这次课程中，你认为允许你们适度使用中文是否对于你有帮助还是有碍于你进一步说英语？请具体说明。
Do you think that the policy of allowing the use of Chinese in class helps or impedes your speaking in English? Please explain.

17 当老师提醒你们多使用英语表达的时候，你认为这是促进你英语听说还是影响到了你英语听说？请具体说明？
When the instructor encourages you to use English more, do you think it helps you with your communication or impedes your communication? Please elaborate.

19 课程结束，你认为 critical thinking 应该是什么？你应该如何体现你的 critical thinking?
Now the course is over, what do you think critical thinking is? How do you demonstrate your critical thinking?

20 课程里面，我们广泛地使用电脑科技，你对于整个过程中的电脑/手机的使用有什么感受和想法？请具体说明。
Throughout the course, we have used online technologies. What is your feeling about the use of computer and mobile phones during the course? Please elaborate.

21 在完成课堂的任务的时候，你们通常用中文还是英文来搜索资料。请具体说明你搜索的网站有哪些。
When you were completing the game quests, do you use English or Chinese to search for information? Please provide the sides or applications you used.

21 你对同学写作反馈任务有什么感受和想法？请具体说明。
What is your opinion of the peer review activity? Please elaborate.

22 对于 Jolin 这两个我们课程游戏人物，你有什么感受吗？请具体说明。
What are your feelings toward the game non-playing characters? Please elaborate.

23 在整个课程中，对于科技这方面有没有遇到什么挑战和阻碍？请具体说明。
Throughout the course, have you encountered any difficulties or challenges because of the use of technologies? Please elaborate.

24 我们整个课程包含了以下话题，请说说你对于这些话题的选择有什么看法。
We have covered the following topics over the course. Please elaborate on your opinions of the choice of these topics.
a.Technology
b.Environment
c.Universal Values
d.Eastern vs Western Philosophies
e.Current Affairs
f.Celebrities
g.Education

如果有机会，在未来的课程里面，有什么你想要探讨的话题么？请说明。
If we have the opportunity, what other topics do you want to explore in future courses. Please elaborate.

25 课堂讨论，经历了 written response（书写回答） 到 audio response （录音回答）的转变，请说说你认为哪一种反馈更能调动你的积极性？ 为什么？
During group discussion we have a shift from written response to audio response, which motivates you more? why?

26 课堂讨论，经历了 written response（书写回答） 到 audio response （录音回答）的转变，请说说你认为哪一种你认为对你个人更有用？为什么？
During group discussion, we have a shift from written response to audio response, which do you think is more useful? why?

27 游戏，经历了录音到录像回答的转变，请说说你认为哪一种你认为更能调动你的积极性？为什么？
During gameplay, we have a shift from written response to audio/video response, which motivates you more? why?

28 游戏，经历了录音到录像回答的转变，请说说你认为哪一种你认为对你个人更有用？为什么？
During gameplay, we have a shift from written response to audio/video response, which do you think is more useful? why?

29 写作之前的 brainstorming 头脑风暴环节，你认为让你们思考每个环节学到了什么对于写作更有帮助还是让你们做写作题目的口语录音对于写作更有帮助？
During the brainstorming before writing, which do you think is more helpful: reflecting on what you have learnt during the group discussion and gameplay or recording your thoughts about the prompt orally?

31 这次课程哪些符合了你的期待？哪些超出了你的期待？哪些地方低于了你的期待？
What aspects of the course match/ exceed/ fall below your expectations?

Appendix B

	Number	Pre-course Prompt	Post-course Prompt
Iteration 1	44	Directions: Read the following paragraph and then write an essay about 300 words on the following topic: Nursing homes are private institutions providing residential accommodation with health care, especially for elderly people. With the fast-paced life and stress from work, many adults do not have the time to take care of their parents, so they choose to send their parents to nursing homes. What do you think of this phenomenon? Write your opinion on the benefits and drawbacks of nursing homes and the ideal situation for the elderly that cannot live on their own anymore.	During your schooling years, most of your work and evaluations are done individually. You have to complete homework assignments, tests, and college exams on your own. However, once you enter the workforce, you are very likely to work in groups or teams to complete your job. What are the benefits and drawbacks of working alone or in groups? Which is better? Why?
Iteration 2	61	Does advertising influence our choices as consumers? Why or why not? Please write an essay of 300 to 500 words. In your essay, please state your point of view and illustrate your point using specific evidence.	Should parents be held responsible for children's actions? Please write an essay of 300 to 500 words. In your essay, please state your point of view and illustrate your point using specific evidence.
Iteration 3	50	Does advertising influence our choices as consumers? Why or why not? Please write an essay of 300 to 500 words. In your essay, please state your point of view and illustrate your point using specific evidence.	During your schooling years, most of your work and evaluations are done individually. You have to complete homework assignments, tests, and college exams on your own. However, once you enter the workforce, you are very likely to work in groups or teams to complete your job. What are the benefits and drawbacks of working alone or in groups? Which is better? Why?

Speaking Questions:

Pre-test
Today, it is less important for young people to know how to cook. Do you know how to cook? Do you feel that it is important for everyone to know how to cook? Why or why not?

Post-test
Some people think that money is the source of happiness while others think that it is the root of all evil. What is your opinion?

Appendix C

Writing Sample

Rating of Critical Thinking: 4

Many people find that there is a big difference between college and other period of study, which the former encourages workforce while the latter prefers to do things individually. To my eye, the teamwork is better.

Teamwork is often stressed for its benefits. First of all, it can take full advantage of everyone's benefit and finally achieve success. For example, as the beginning of the time of reform and opening-up, our country is poor in making cars. At the same time, both Chongqing and Chengdu wanted to develop the industry of making car. Chongqing was good at technology and Chengdu had abundant resources, so they planned to work together and finally got success. From this, we can realize that teamwork leads to success by using everyone's benefits.

Secondly, teamwork is beneficial for us to see things in different aspects and raise our efficiency of doing things. My experience can be seeing as evidence. One day, our class was going to organize one trip, everyone wanted to say their opinions and we can't gain achievement. Finally, our teacher asked every student to write their advice on a paper. To our surprise, the trip was perfect and everything had been considered serious because the advice of all students, our teacher said: "This is the power of teamwork" as we all known, many hands make greater work.

Last but not least, if we have the awareness of teamwork, we'll have better communication with other people. Compared with the students of other country, we Chinese students are often too shy to express ourselves because of we lack the awareness of teamwork.

However, many people think that we'll lose the ability of thinking by our own as we often depends on teamwork. I don't agree with it, every star makes contribution to the sky, the sky will not be effected by some stars which are brighter.

All in all, we should pay more attention to teamwork and don't lose ourselves in teamwork. Only in this way, can we achieve success.

Rating of Critical Thinking: 3

Nowadays, more and more adults choose to send their parents to Nursing homes. I think nursing homes is truly helpful to these adults, but is also has some problems are not easy to be solved.

With the fast-paced life and stress from work, many adults is so busy that they don't have enough time to take care of their parents, so a good choose to deal with this problem is send these elderly people to nursing homes so they can save many times to look after their parents. For elderly people, they can not only be cared better but also a good chance for them to meet new friends. They can play chess or read books together so they weren't be too bored.

But there are many problems should be pay attention to. First, if these elderly people living in nursing homes, they will have less communication with their children. The emotion between parents and children will be less and less. I think it isn't a good phenomenon. The emotion is truly important but these adults have ignored it. And then, elderly people's safe is also a question. There were many reporters about the staff workers in nursing homes abuse elderly

people. Such as let them doing houseworks. They can't get good service from the nursing homes but they haven't told their children because they don't want to trouble their children.

What's more, send their parents to nursing homes need lots of money. It will be burden for many adults. It's difficult for them to afford both their parent's life and a living by themselves, they even need to support their children.

From what has been mentioned above, we can to the conclusion that the adults send their parents to nursing home is convenient, but they should choose the nursing homes seriously.

Rating of Critical Thinking: 2

Since the education developed in a rapid speed in China, students are receiving better education. During our schooling years, we had lots of homework to do. Maybe we will feel boring and tired, we still have to finish our works. Studying is an important thing, which is not only for ourselves, but also for the whole society.

So we students have more choices about how to have fun through studying. In my opinion, study together might help us more. We can discuss with others, learn other opinions, and see the two sides or moreover on one thing. We will become wisely and get more knowledge by working together. Also we can have fun, play games together, find the fantastic ideas of studying. Maybe the school life will become interesting and we'll pay more attention to studying, and soon make more progress in studying.

Drawwork is a good thing, I think. From it, we can make our friendship forever. From Junior School to Middle school, from senior high school to the university, we need friends, and we can't get on well alone. We someone meet trouble, we ought to try our best to help them and make them happy, encourage them. Studying together means group learning. We can discuss, argue or compete with each other, and put more effort in working together. We can share our happiness and sadness, wishes and hopeless. Good ideas often be created from a together group, and can always make good progress. We are not only competing from cooperating, but also cooperating from competing. But no doubt however we are competing, we are still friends that value our relationship together.

Generally speaking, I think teamwork is the most important part in our schooling life. It's a sweet memory of us when we remind us of our happier life, studying might a little boring and tiring, but teamwork is our happiness.

I want to cooperate with my friends in the next three years! Hope to see you soon!

Rating of Critical Thinking: 1

In our world, the methods to complete the work are mainly divided into two kinds—working alone and in groups. What is called every coin has two sides, both working alone and in groups not only have benefits but also have drawbacks. Now let us discuss this problem.

First of all, let us start from working alone. At our age, studying is our main task, and more and more activities about studying need us to do alone, such as homework and exams. It can help us to develop our spirit of hard-working, independent and brave. It makes us believe in ourselves that we have own abilities to do everything by ourselves. We can be more and more confident, with it. However, if all work be done by ourselves rather than ask for help, we will not think the solution of something from more angles. The more serious one is that you will not get on well with others around yourself such as your friends and families.

Then, let us talk about working in groups. When we really enter in the society, we must face this problem about it. Working in groups can make us realize the importance of teams, and

we can get more forces to solve the problems and difficulties. But we will may be dependent by teams because of working in groups.

In my opinion, working in groups is better. If we choose to work in groups, there will be someone to point out our mistakes.

Appendix D

Examples of Daily Reflections

1

想到明天就是最后一堂内容课了，既有即将脱离苦海的小激动，又有一些离别的不舍与怅然。这八天，收获满满，开阔了眼界，又结交了新朋友，写作文也收获了一些经验，至少不再茫然。至于口语么。。。。我越来越能体会到它的重要性，至少每次面对外教结结巴巴无法交流的时候都十分汗颜。。。😓
在一个充满正能量与竞争力的环境里，我这个懒虫看来也要努力了呀~感觉自己越来越放松。。。😴😷
The secret of being successful is always working with a strong will. ☆

2

在这几天的学习里，我收获了很多。90s 的录音也比以前要流畅自然，写文章时掌握了方法，有了更多想说的话，不会显得磕磕巴巴。与小组成员的搭配更加默契，完成任务的质量相比以前有了很大提高。而那些欢笑的瞬间将是我们学习过程中最宝贵的礼物

3

今天过得很开心，这几天学到了不少，90 秒录音也能差不多到 90 秒，今天视频大家完成的很好，还配了 BGM，不过明天就是最后一堂内容课了，珍惜机会吧，估计学校上课就没有这种英语课了。

4

首先向方源,方怡宁和赵笑儒同学道谢,感谢你们对我的包含,以及我们优秀的小组合作。愿友然后要向周老师和 L 老师说声谢谢，你们付出了很多，我受益匪浅，或许以后不能上你们的课了，但你们和你们教我的。最后，对自己说一句话：继续努力吧！

5

连续上了几天课，我逐渐找到了课堂的节奏，进行小组活动时可以和组员更加流畅地交流。明天是最后一天内容课，希望明天为我们这段旅行画上圆满句号！

6

我觉得团队的合作越来越 6 啦。但是后天就要考试了 555555.课程就要结束了，感觉好不舍，不舍到我都不想打字了.....　　我感觉自己在各方面都提升了很多，决定这些天来都很有意义。

7

转眼间课程接近尾声，这几天过得充实而满足。在小组合作制作视频时，并没有准备稿件配音，而是在找图片时讨论了每张图片的主题，录制时以一种随意的 freetalk 方式配音，当组员卡住时，总有另一个人赶忙救场，真心为我们小组的团队精神点赞!转眼间课程接近尾声，这几天过得充实而满足。在小组合作制作视频时，并没有准备稿件配音，而是在找图片时讨论了每张图片的主题，录制时以一种

随意的 freetalk 方式配音，当组员卡住时，总有另一个人赶忙救场，真心为我们小组的团队精神点赞！

Appendix E

Summarized List of Activities for the Course

1. Pre-f2f (face-to-face) self-study assignments: Before class each day, students are expected to complete the pre-f2f self-study assignments in which they will read articles about the topic to be discussed next day and complete the summary of readings and participate in speaking activities.
2. Group Discussion Session: Group discussion session is guided by group discussion questions, and it is an opportunity for students to discuss what they have learned from the readings they read the day before and learn from each other's point of view.
3. Game Session: Each day, students will play a one-hour pedagogical drama game using a laptop as a group. The game quests vary depending on the topic of the day. When students play the game, they have access to Wi-Fi and various kinds of technological tools such as recorder application on the phone with which they can record their quest product.
4. In-class Timed Writing: In-class timed writing emulates the writing part of the competition that students will participate in. The topic of the timed writing each day is connected to the topic discussed on that day.

Appendix F

Pre-f2f (face-to-face) Self-study Calendar (Iteration 1)

Day	Readings	Topic	Main Activities
0	Mark Zuckerberg: Facebook Can Help Build Global Community/	Technology	Summary of the readings Speaking activity Do you think that these social networking sites change how we communicate with each other in today's society? Why do you think so?
	You Asked: Is My Smartphone Making Me Dumber?		Do you agree with the article that smartphone is making us stupid? Why or why not?
	"Is technology really helping us progress?"		Is technology controlling your life, or are you empowered to take advantage of what technology has to offer?
1	Banyan - Asia's new family values | Asia	Universal Values	Summary of the reading Speaking activity What are Asia's new family values mentioned in the article? Why do you think there are such changes?
	Syrian refugee gets top results at Australian school		What is Saad Alkassab's story? What did you learn from Saad Alkassab's story? What is the meaning of "the universal language of kebab" in the article?
2	China's premier unveils smog-busting plan to 'make skies blue again'	Environment	Summary of the reading Speaking activity Why do you think that air pollution continues even though it is not good for the health of humans and the environment? What are some things that you feel you can do to improve the cleanliness and health of your environment?
	How did China save the giant panda?		How do you feel about pandas? How do you feel about the fact that the number of pandas in the world is growing?

			The article states that one of the reasons pandas have become endangered is the fact that humans have moved into their natural habitats. Where should we draw the line between city expansion into new areas and the preservation of natural habitats? According to another news article, while panda numbers are increasing, gorilla numbers are dwindling dangerously close to extinction. Do you think that the world will pay as much attention to gorillas as they do to pandas? Why do you think that Baba Dioum said that we only conserve what we love? Is that true?
3	How Millennials today compare with their grandparents 50 years ago Famous Quotes from the East and the West	East vs West Philosophies	Summary of the reading Speaking activity We are hoping to help you think from both the Eastern and Western perspectives in this module. The first reading composes some English translations from Confucius thoughts and some famous quotes from the West. Why do you think that when it comes to the Eastern perspective, people in general tend to go to Confucius thoughts? Do you think that Confucius is a good representative of Eastern thinking? Why or why not? The second reading talked about some generational differences in the US, do you think there is the same phenomenon in China?
4	Why Current Affairs Knowledge is important? Passenger dragged off overbooked United flight	Current Affairs	Summary of the reading Speaking activity 1. Why is the current affair knowledge important? Please explain using your own words. 2. What do you think is the best way to keep in touch with current affairs? 1. How did you feel after you finish reading this news?

			2. Have you ever had any bad experience in airports? 3. If you were the man in the news, what would you do?
	China Wants People to Stop Stealing Great Wall Bricks		1. Why are people stealing bricks from the Great Wall? 2. What can we do to stop people from stealing from the Great Wall? 3. How do you feel when you read the news about Chinese people stealing from the Great Wall?
	'Rules of conduct' for tourists in historic Dutch towns		4. Why do you think these historic Dutch towns come up with the code of conduct for tourists? 5. How would you feel if you are a tourist facing the code of conduct? 6. How would you feel if you are a resident living in these historic Dutch communities?
5	How YouTube changed the world	Celebrity Stories	Summary of the reading Speaking activity 1. What happened to Justin Bieber in the story? 2. Do you know any celebrity stories that inspire you? 3. Do you have a favorite celebrity? How did s/he become famous? 4. It seems that now anyone can become a celebrity. Do you think that celebrities should be role models for adolescents, or do you think that celebrities shoulder should some social or moral responsibilities?
6	Middle School Announcement Sparks Controversy	Hot Topics in China	Summary of the reading Speaking activity 1. What is your opinion regarding this school's announcement? 2. What do you think is the future of

Karaoke in the Digital Age: China's M-Bar Public Karaoke Rooms	Karaoke in the digital age? 3. Do you think people still go to Karaoke as often today as they used to? Why or why not?
Battling the Keyboard Warriors: How China's Netizens Address Online Harassment	4. What do you think are the consequences of online violence? 5. What do you think can we do to prevent such online violence and improve the online environment?

Appendix G

In-Class Timed Writing Prompts (Iteration 1)

Day	Topic	Essay Prompts
1	Technology	There is a prevalent argument in the world today that technology makes people dumber and lazier. How do you feel about this statement? What are some of the pros and cons of technology in our daily lives? Please write a response essay of 300–500 words. Notes: Summarizing/identifying the problem. State your own stance. Consider other perspectives (finding their assumptions)
2	Universal Values	We are lucky to live in a peaceful place and age; however, there are high schoolers like us who are still struggling in war and conflicts. With the world becoming more and more connected, we are seeing more incidents of intolerance and hatred because of differences in culture, religion, and upbringing. From today's discussion, we have seen that regardless of these differences, we as human beings share universal values such as love, family and respect for knowledge and many more. How can we promote acceptance and tolerance among us in spite of our differences in culture, religion, and upbringing? Please write an essay between 300 and 500 words to explain your point of view. Notes: State your own stance. Consider other perspectives. Provide critical suggestions and examples
3	Environment	Many people in larger cities today are choosing to live minimalist lifestyles, which means they choose to live with fewer material possessions, and they believe in the joy of owning less. Please write an essay of 300-500 words addressing this phenomenon of minimalistic lifestyles and how it might influence the environment. State your point of view and provide suggestions on how you can change the current environmental situation. You can refer to the following questions while planning your essay:

		Reflecting on your own style of living, what are your views on minimalist lifestyles? Do you think that living a minimalist lifestyle contributes to the preservation of the environment? Drawing on the principles of minimalist lifestyles, do you think you have the ability to help improve the environmental issue in China as an individual? Why or why not?
4	East vs West Philosophies	What is one quote that has influenced your life the most? First, please explain the quote or share the story or history behind the quote. Then, tell and explain in detail why this quote has influenced your life. Please write an essay between 300 and 500 words to explain your point of view. Notes: State your own stance. Consider other perspectives. Provide critical suggestions and examples
5	Current Affairs	In this day and age, we have access to enormous quantities of information. One of the problems we face is to distinguish true from false information. How can we as high schoolers ensure that the content we consume from different news sources is accurate and relevant? (for example, when you use search engines, how can you ensure what you found is accurate or trustworthy?) Please write a 300-500-word essay regarding this issue. Notes: State your own stance. Consider other perspectives. Provide critical suggestions and examples
6	Celebrity Stories	Recently, one celebrity in China called Qin Hailu openly disclosed in an interview saying that “celebrities are really making a lot of money. For actresses, if we star in one TV show, the money we earn will be enough for an average family to live for a lifetime”. Do you think that celebrities with enormous wealth should shoulder any social responsibilities? Why or why not? Please write an essay between 300 and 500 words to explain your point of view. Notes: State your own stance. Consider other perspectives. Provide critical suggestions and examples
7	Hot Topics in China	From today’s lesson, we can see that oftentimes our thinking is strongly influenced by our culture. In order to see a much more complete picture of phenomena, we need to think from different perspectives and try not to be

	influenced by our very own culture. What are some steps that people can take in order to see the world from a more critical perspective? Share an experience you have had that exemplifies these steps. Please write an essay between 300 and 500 words to explain your point of view. Notes: State your own stance. Consider other perspectives. Provide critical suggestions and examples

Appendix H

Pre-f2f (face-to-face) Self-study Activities (Iteration 2)

Day	Readings	Topic	Main Activities
0	Why so many women spend so much time getting ready	Beauty	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?
1	Bet You Didn't See This Coming: 10 Jobs That Will Be Replaced By Robots	Career	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?

2	Is College a Waste of Time and Money?	Education	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?
3	Are We Spending Too Much Time On Entertainment?	Entertainment	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?
4	Young people 'care about environment but do nothing'	Environment	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not

			understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?
5	How Technology Is Changing Our Relationships	Relationships	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?
6	Is the World Becoming More Dangerous?	War and Peace	Summary of the readings Words and Phrases Now read the article again and highlight three sentences that you do not understand. Find five new words in this article. Free Write

	What are your thoughts after reading this article? Structured Writing Do you agree or disagree with the main idea proposed by the author? Why or why not? Speaking Activity What are your thoughts after reading this article?

Appendix I

In-Class Timed Writing Prompts (Iteration 2)

Day	Topic	Essay Prompts
1	Beauty	Is there too much emphasis on beauty in today's society? Why or why not? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading, group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins) State your own stance. Consider other perspectives (finding their assumptions)
2	Career	Is technology creating or destroying jobs? Why or why not? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading, group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)
3	Education	Is college a waste of time? Why or why not? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading,

		group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)
4	Entertainment	Are We Spending Too Much Time on Entertainment? Why or why not? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading, group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)
5	Environment	"We know that the environment is deteriorating, but there is nothing much we could do." Do you agree or disagree with such a statement? Why or why not? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading, group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)
6	Relationship	Do you think that technology has a positive or negative impact on our relationships? Why? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading,

		group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)
7	War and Peace	Do you think that the world is becoming more dangerous or more peaceful? Why? (300-500 words) Step 1: Brainstorming What are the things you have learned from the reading, group activities, and the game session? Among these things, what are the ones that can be used in your writing? Step 2: Outline Step 3: Write (60 mins)

Appendix J

Transcription of Game Quest on the Topic of Environment

J：开始吧。
Let's get started.
M：Do you think the development of the human world should come at the cost of the environment?
B: I think it is not. I don't agree.
J: I think it shouldn't
M points to J.
M: Yeah. I think so.
Q: So.
J: You think so. What?
M: Why or why not.
J: Why or why not. Because the service is the first thing. If we only development but not care about the environment. how can we survive a
B: 声音再大一点
Speak louder.
J: After the earth is polluted, where do we live
M: I think if the planet is our common environment, so we must uh so we must protect it and save the source, and the Development of productivity uh can make progress on and on but the environment cannot be, but the environment cannot be
你们都在看什么
What are you looking at?
The team is very attentively listening to M and they are looking into space, not looking at M.M waves her hands in front of their eyes.
All laugh.
M: but the environment, the environment can't can't get back
M taps on B.
M：到你了，你刚刚不是想讲吗
It's your turn. You wanted to say something earlier?
B：we can make a lot of money.
M:视频还蛮好看的
The video we chose is pretty good.
B：if we damage the environment, we can make so much money, but we can't make uh a better environment. The environment is everyone's uh. Everyone's life base on the environment. so Uh when you. when you can't live in the on the earth on Earth, there is no use to use to make so much money because you are going to die
M: Yeah. uh I want to listen to your opinion.
M looks at Q
Q: I think that the development of the human world and the protect of the environment may be just two 两面怎么讲
How to say two sides?
Q looks at J and B
J and B: ah?
Q: 两面
Two sides
B: Two sides

Q: Two sides. Because we can develop the human world and at the same moment we can also protect the environment.
B and J Laughs
B & J: hhhhhhhhhh
M: Uhm. is the destruction of the environment necessary for development?
J: Uhm?
M: Is the destruction of the environment necessary for development?
B: No. It's not necessary
J: No. We must keep the
B: As the Xijinping said
All laugh.
B: Xi Jinping Says the
M: Chairman Xi
Q: Chairman Xi
J shows B his mobile phone and reads the phrase that he found 60 earlier during the preparation on his phone.
J: Sustainable development
B: Sustainable development. Uh We must development in a green way,
J clicks on his phone to let the online dictionary to pronounce the word "sustainable"
B: so we could make money uhm for all the time. if we uh if we develop if we choose the development before the Environment, uh I'm afraid that uh we can't make any money even we can't live in uhm we can't live a better life in the future.
M: Yeah. I think so. I don't think the destruction of environment necessary for development because we can uhm do some green activities and uhm and it also can be a development of productivity. but
All laugh at the video as the video is showing two dinosaurs catching fire because of the greenhouse effect.
M: but the destruction of the environment is really really terrible for us humans so I think the destruction of the environment, I don't think the destruction of the environment necessary for development.

Appendix K

Transcription of Game Quest on the Topic of Environment

Translanguaging Cases
Line 1: transcription in Chinese
Line 2: *translation in English (Italicized)*
When there is no translanguaging, the transcription in English is not italicized.

CP 1-Figuring out the mission of the quests
A:Why people
Why people
Why people don't learn from the mistake?
B: Uhm? (frowning)
A: And it means she
B waves her hands
B: There`s a question 2
A: Uh? Question 2?
I write down the four questions (taking B's notebook and look at B's notes)
Question 2? Where is Question 2?
B: 老师写的是 Question 2 (pointing to her notebbook)
The teacher wrote
A: What is Question 1? (Looking at B)
I think the the the Emily isn't satis
B: What is your opinion about the situation of international relationships?
situation?
哦，我怎么划掉了
Oh, how did I cross that out?
B: Are there some words? In some parts of the world. Uhm
A: International relations.
B: the tendency our time is peace
A: and development
A: but uh, It's about the international relations. It's become stronger and stronger 联系越来越紧密
The connection is becoming closer and closer
Closer and closer? Stronger and stronger?
D listens attentively
C reads her mobile phone
B: How peace?
A: How peace?
B: In peace?
A: In peace? how make peace?
B: Question 1 why or why not. Yes, yes peaceful than (reading her notebook notes)
A looked at B's notebook, trying to figure out what B was saying
B shows A her notebook
B:Question 2. yes it's more peaceful than, it's more peaceful than before (showing A her notebook)
A took the laptop
B: Do you think that our world is becoming more peaceful than before? Why or why not? 我们写的 Question 2 是老师写的 Question 1
We wrote *Teacher wrote*

45 A: 按照我们的节奏吧
46 *Let's follow our tempo.*

CP 2-Discussing their points of view
1 A: reading her notes
2 B: Do you agree with Emily that you humans do not from mistakes, do not
3 learn from mistakes?
4 B: Yes, I think so. I think so.
5 A: You think so?
6 B: Yes
7 A: We can. For example, the German. the Germans
8 A: What
9 B: German
10 A:我用中文了，German,那个总理
11 I'm using Chinese here. That prime minister.
12 B: =but Japan didn't realize it。
13 C: =总理默克尔吧。总理默克尔。不是默克尔吗？ (looking at D)
14 Prime Minister Merkel. Prime Minister Merkel. Not Merkel?
15 D shook her head. A and B paused and looked towards C.
16 All paused.
17 B: 没有，没有我是，我用中文了，因为我是觉得，战争肯定是要发生的，
18 No, I think. I'm using Chinese now. Because I think, war is bound to
19 happen.
20 A: Hmm? (A and D looked at B)
21 B: 战争肯定是要发生的，因为会牵扯到利益
22 War is bound to happen because it involves interests.
23 A:是有利益，但是你这个利益，利益现在可以通过商业话来表达出来，不一定要动刀动枪，一旦动刀
24 动枪,牵扯到核武器，感觉现在不能打战，打仗的话代价太大了 (B yawns)
25 Yes, there are interests. But the interests you talked about. Interests
26 could be realized through commercial activities. It doesn't necessarily
27 need knives and guns. Once guns and knives were involved, or nuclear
28 weapons were involved. I feel we cannot have a war now. The price for
war
29 is too big.
30 B listens and thinks
31 D listens and smiles
32 pause
33 A: 我们这个问题出在哪儿？(A looks at B)
34 What is our problem here?
35 pause
36 B: Let's call Miss Zhou for help?
37 A: 是要 for help, what's our problem？
38 *Yes, we need*
39 问题出在哪里？(A looks at B, D looks at A and B)
40 *What is the problem?*
41 B: We all don't know the
42 A: 问题不至于走不动了？
43 *The problem is we cannot move forward.*
44 D: 没睡好¤<254342>
45 *Didn't sleep well.*

CP 3-Disagreement
1 All laugh
2 B:That's the problem

3 D：我觉得我们想得好复杂。我觉得，状况比以前要好
4 *I think we are overthinking this (issue). I think the situation is*
5 *better than before.*
6 B：要好一些
7 *Better.*
8 D：对呀，相对来对
9 *Yes, comparatively.*
10 B：什么状况？
11 *What situation?*
12 A：打仗的状况,整体以前，相对以前要好一点
13 *The situation of war. Overall is better, compared to before.*
14 B：好了一点，但是我觉得
15 *A little better, but I think*
16 A：个别特例还存在，老师过来呀¤<313299>
17 *Individual cases still exist. Teacher, come here.*

CP 4-Impasse--not able to agree on a position
1 pause
2 D：为什么做不了呢？我觉得很好讲啊。hhhhhhh （D looks at A and B）
3 A and D laughed
4 A: you can show your understanding
5 D: 头脑简单，四肢发达。
6 *(I have) a simple mind and strong muscles.*
7 A: You can express. You can show your
8 B：我举两次世界大战的例子，因为第一次世界大战因为领土和殖民地问题打了起来,第二次世界大战
9 ¤<339934>
10 *I will use two world wars as examples. The WWI was because of the*
dispute
11 *over land and colony. The second world war*

CP 5－Start to work on PPT
1 A moved the laptop so that everybody can see the ppt
2 They found some pictures online about wars before class and have pasted
3 the pictures into the PPT document.
4 C:这是什么？（looking at the computer）
5 *What is this?*
6 A: 之前下载的ppt,你把里面的字体换一下
7 *PPT slides that I downloaded beforehand. Can you change the font in it?*
8 D：战火吧？
9 *About war?*
10 A: 太少了，关于战争的，能找到这个已经就不错了
11 *Very few about war. That is the only one I could find.*
12 B laughed
13 A: 都是十九大的
14 *It's all about the 19th National Congress.*
15 A clicks on the PPT and shows group members the pictures she found
16 A: Can you see?
17 B stands up and tries to see.
18 A: 有点反光是吗？（adjusting the laptop so that A can see）
19 *Is the screen reflecting light?*
20 D adjusts the laptop
21 A: 对对对，竖起来 （A adusts the laptop screen and looks at B）
22 *Yes, yes, yes, pull it up.*
23 可以吗？

Is it alright?
B nods her head
A and D look at the PPT slides
B presents a thinking poster.
A: 不好讲
Difficult to argue.
A talks to D and shows her the slides
A: 你把中文字删掉，换成英文 （A clicks on the PPT using the mouse）
Delete all the Chinese words, change them to English ones.
=战争，和平，有关键字就行了
War, peace, as long as we have keywords.
D:要加内容吗？加什么内容吗？
Do we need to add some content? Add something?
A:讨论一下，你要加内容，两个小时都没时间
=你把这个中文字删掉，换成英文字
DIscuss a little. If you add more content, we won't be able to finish within two hours.
B:=我觉得这个课题推动比不了足以反映我们对实事的不关注 ¤<426133>
I think that the reason that we could not move forward on this issues shows how little we pay attention to current affairs.

CP 6-Negotiation for next step
A:如果我们求助老师，我们要问什么问题？
If we are to ask the teacher for help, what question should we ask?
D:关键是你有什么问题
The key is what question you have.
B: 我也不知道我们
I don't know we
B took out her mobile phone, and looked at QQ group
B: 我们看一下他们之前的，可以不
Let's take a look at their previous, shall we
A reads her notebook and shows her notebook to B
B: 最后一个，Emily isn't satisfied with the human world.
Just like she said, she doesn't understand why human world didn't doesn't learn from the mistakes. That means she didn't isn't satisfied. 她对这个人们，uhm，不满意
The last.
She is not satisfied with human beings.
BL 我觉得这个完全可以接受，我觉得世界本来就不完美
I think this is completely acceptable. I think the world was not perfect inherently.
A:这句话怎么翻译，如果
How do you translate this, if
B:它要帮助 Emily，我们没有这么方面的观念和立场，所以我就
It wants to help Emily. We do not have the relevant position and ideas. so 24 I
A:与不和谐的世界言归于好
Make peace with the imperfect world
Pause
B: 接纳这个不完美的世界
Accept the imperfect world
A:我们可以来问问老师有什么想法
We can ask the teacher about her point of view.

32 B:可以
33 Okay.
34 A:可以¤<520855>
35 Okay.

CP 7-Seeking instructor's help
1 A：Zhoulin, I want to learn about your idea about whether (rehearsing the
2 question in English)
3 A waives her hand at the teacher
4 A：We want to know about your opinion about whether human beings learn from
5 their mistake.
6 teacher: What do you think? pause
7 We always learn from our mistakes right? You need to find some evidence.
We
8 have WWI and WWII, we are not going to have WWIII
9 A: But what about Japan? They didn't, they don't learn from the mistakes
10 Teacher: That's their government. That could be your supporting evidence.
11 A, B and D smiled at each other¤<565689>

CP 8-Explanation of position
1 A: 老师认为 think so (looking at B)
2 *The teacher thinks so.*
3 D：我也认为 think so
4 *I also think so.*
5 B: Think so 是我的观点么? Think so 是你们的观点 (pointing at A and D)
6 *Is "think so" my opinion? "Think so" is your opinion.*
7 A: 她认为世界还是，人们还是
8 *She thought that the world was still, humans are still*
9 B: 我刚刚被你说服了，你突然说大部分好像是
10 *I was convinced by you just now. You suddenly said that the majority was*
11 A:你要纠结细节的话，有很多不完美。你讲这个国家好，不代表这个国家每个人都好，就是这个道
12 理。你要是讲，你只能讲整体。
13 *If you pick on the details, there are a lot of imperfections. If you say*
14 *this country is good, it doesn't mean everyone in the country is good.*
15 *That is the logic behind. if you really need to make a point, you can*
16 *only talk about the overall situation.*
17 B:看一下，看看其他人的。(watching her phone and put on one ear plug)
18 *Take a look. Look at others'.*
19 A:看看，哎，我手机呢？(looking for her mobile phone on the table)
20 *Have a look. Where is my phone?*
21 B shows her phone to A
22 A:这是什么？
23 *What is this?*
24 B:安倍晋三参观神社。
25 *Shinzo Abe visited Yasukuni Shrine.*
26 A:老师的意思是整体是 seem so. 人们还是吸取教训的。日本的可以作为一个你辩论的例子，感觉把
27 它否定掉不好否定。（listens to some of the quest recordings from other
28 groups）
29 *The teacher's point is "seem so". People still learn from the mistake.*
30 *Japan can be a point for rebuttal. It seems a little difficult to refute*
31 *it.*
32 B:这上面有一个 Japan never learn from history. (looking at her phone)
33 *It has a "Japan never learn from history" here.*
34 A:我想问一下今天的作文怎么写？

35 *I want to ask how to write the essay today?*
36 B shows her phone to A
37 A:南京大屠杀？我真想去南京看一下这个博物馆，我妈说等你大了再带你去。 hhhhhhhhhh
38 *Nanjing Massacre? I really want to go to Nanjing and visit that museum.*
39 My mom said she would take me there when I was older.
Small talk

CP 9-Listening to other groups' recordings.
1 B:我觉得我们陷入了死胡同。
2 *I think we are stuck at a dead end.*
3 A：你昨天的作文交了吗？
4 *Did you turn in your homework for yesterday?*
5 B looks into her drawer.
6 B: 没有
7 Nope.
8 A：交一下，先交一下
9 *Turn it in. Turn it in.*
10 B：我们现想这个，到时候我，作文下课交不急。
11 *Let's focus on this (quest) first. There is no hurry to turn in the*
12 *homework.*
13 D：我觉得这个还好讲。
14 *I feel this is easy to talk about.*
15 B：主要我现在的思路卡住了。
16 *The main issue is that my thoughts are study.*
17 A: PPT 大致这样就可以了。(talking to D) ¤<763689>
18 *PPTs should be good like that.*

CP 10-Chose one position and moved forward with planning
(0:12:43.7)

1 A：把提纲列一下。（starts to write on her notebook）
2 *Let's write down the outline.*
3 A: 交给你一个任务 (give her notebook to D), express your idea
4 *Let me give you a job.*
5 A: You think it's easy to to.
6 D: 但是我不知道为什么你们觉得难
7 *But I don't understand why you thought it was difficult.*
8 A: 这个不提。Show your ideas.
9 *Just ignore that part.*
10 D: 我觉得第二个可以说德国，
11 *I think we can talk about Germany for the second question.*
12 A：I know 德国可以但是她觉得日本(looking at D)
13 *Germany can be used. But she thought Japan*
14 D: 那我们随便用一下谁的观点
15 *Then we can anyhow use whoever's position.*
16 B：随便？
17 *Anyhow?*
18 A：随便的话，那写作文怎么写？
19 *If anyhow, how do we write the essay?*
20 D：写作文的时候她可以写她的观点，我们写我们的的观点。PPT 时候用一个观点不就行了吗。
21 *When we write the essay, she can write about her opinion, and we can*
22 *write about our opinion. When we are doing the PPT recording, we can*
23 *just use one position.*
24 A：所以你被说服了没有？

25 *So are you convinced?*
26 B：(sigh)我被说服了。
27 *I was convinced.*
28 A and D laugh
29 D：那就是反对嘛
30 *Then, disagree with the statement.*
31 D: Don't from (looking at A)
32 A: Don't from
33 A: you think so or
34 B: I think that we learn from mistakes.
35 D:那就找一个日本。(looking at A)
36 *So we look for (evidence of) Japan?*
37 A: 日本？
38 *Japan?*
39 D:不是讲 don't from?
40 *Didn't she say "don't from"?*
41 A:You don't from?
42 B:LEARN FROM
43 B:老师刚才讲的
44 *The teacher said just now*
45 B:哦，德国,找一下相关的资料吧（taking out her mobile phone）
46 *Oh, Germany, let's look for information about that.*
47 A:希特勒，纳粹主义，这些都可以写
48 *Hitler, Nazis, we can write about all these.*
49 B:邓小平的百万裁军
50 *Deng Xiaoping's the great disarmament*
51 A:还有二十万
52 *We still have 20,000.*
pause
53 A:每个人写一点东西，然后汇总一下
54 *Let's all write something, and then consolidate.*

CP 11- Task assigning
1 B:我写第三个问题
2 *I am going write about the third question.*
3 A:你写第三个啊？
4 *You are going to write about the third question?*
5 B:我写第三个问题，你写第四个。
6 *I write about the third, and you write about the fourth.*
7 A:分配一下任务，她在忙 PPT
8 *Let's assign the task. She is working on PPT.*
9 A:你可以处理第二个问题吗？（looking at C）
10 *Can you work on the second question?*
11 C:我在找国际关系
12 *I'm looking for (information about) international relations.*
13 A:OK，你在找第一个问题，第二个问题我们已经差不多了
14 *Ok, you are working on the first question. We are almost done with the*
15 *second question.*
16 B:就是我那个
17 *That's mine.*
18 A:第二个可以 cut out 了
19 *The second one can be cut out.*

20 B:然后我第三， three (pointing to herself), four (pointing to A)
21 *Then, I'm the third*
22 A:她准备 PPT（pointing to D）第四个问题啊，hhhhhh 感觉有点难吖
23 *She is preparing PPT. The fourth question, seems a little difficult*
24 B:hhhhh 因为这个我是完全不知道，一点思路都没有。 （searching on their phone）
25 *I have no idea about that one. I have not thoughts.*
26 B reads the question
27 A:我又想求助老师了 。
28 *I want to ask the teacher for help again.*
29 B:她应该去找心理专家。 Laughing ¤<1057282>
30 *She should look for a psychological expert.*

CP 12-Solving wifi problem
1 D is looking for pictures on a laptop to add to PPT slides.
2 A, B and C are searching for information on their mobile phones and writing
3 down their thoughts.
4 D:没网了吖， A tried to help D reconnect to wifi.
5 No wi-fi here.
6 A:这个，这个不是吗，往下移（pointing to the laptop screen）
7 This one. Isn't this the wi-fi? Move down.
8 A takes the mouse and clicks on the screen.
9 D:哦可以了，这是谁的网？¤<1116937>
10 Oh. It's okay now. Who's wi-fi is it?

CP 13-Clarifying quest missions
1 B and C continues working on
2 D:第一个问题就是，
3 The first question is
4 A: 是这四个问题
5 These are the four questions
6 D:不是三个问题？老师上面写三个问题？(pointing to the white board).
7 Not three questions? The teacher wrote three questions
8 A looks at the board
9 D: 不管它，三个四个都一样。第一个找什么？（D takes A's notebook and reads her
10 notebook）Then D searches on the computer. ¤<1184505>
11 It's okay. Three and four are the same. What are we looking for for the
12 first question?

CP 15-Discussion of evidence
(0:19:44.5)

A tries to rehearse what she is going to say.
C and B continue searching on their mobile phone.
Individual writing and searching for information on their phone
1 A:德国那个总理要不要署名一下 （pointing to the PPT）
2 *Should we put the name of that German chancellor?*
3 B:默克尔
4 *Merkel*
5 D:（looking at B）默克尔？不是默克尔吧
6 *Merkel? I don't think it's Merkel?*
7 B:我不记得
8 *I don't remember.*

9 A:就是下跪的那个，在那个
10 *The one who kneeled down? at the..*
11 D:哦,对对，有两个，一男一女的， 就是这个（pointing to one of the picture on the
12 slides she found earlier）
13 *Oh, right, there were two. One male and one female. This is the one.*
14 A:后来诺贝尔和平奖，获得诺贝尔和平奖
15 *Later the Nobel Prize, received the Nobel Prize.*
16 D:好像是的 (searches on the computer)
17 *Seems to be the case.*
18 C:我没有任何东西找到
19 *I didn't find anything.*
pause
20 C: 找不到，勃兰特？
21 *can't find. Brandt?*
students went back to their individual question

CP 16-Discussion of a question raised in the quest
1 A:(looking at BB)我们说服 Emily 的就是,我们不能保证世界都是和平的
2 *We convince Emily (by saying), we can't ensure the whole world is*
3 *peaceful*
4 B:Show her 一些美好的例子
5 *Show her some positive examples*
6 A:Show her some positive examples of the world
7 B:keep a positive attitude to to to
8 B:and keep a positive attitude towards the world.
9 B: Yes. ¤<1470290>

CP 17-individual writing and searching¤<1570956>

CP 18-Clarifying task assignment
1 Teacher: ten minutes
2 A: (checks her watch) ten minutes left
3 A: 我们每个人准备一个问题，正好四个问题。(showing her notebook to D)
4 Each of us work on one question. A total of four questions.
5 你准备这个。(point to her notebook）our world is becoming
6 You work on this
8 7 D nods her head
9 C:这个我已经写了吖。
10 I have already written something on this.
11 A:你不是写国际关系吗？
12 Weren't you working on International relations?
13 C：就是那个
14 That's the one.
15 A：你两个都写了啊？
16 You worked on both?
17 C:你让她写哪一个？
18 Which one did you ask her to work on?
19 A:我让她写第二个。是什么？
20 I asked her to work on the second. What is it?
21 C:世界是不是比以前更和平
22 Whether the world is more peaceful than before?
23 A:你准备的是哪一个？
24 Which one did you work on?

25 C:我看一下，我准备的就是
26 Let me see. I worked on
27 A:=你刚刚不是说你准备的是国际关系，international relations
28 Didn’t you work on international relations?
29 pause, C looks at her notebook
30 C:我准备的就是，我看一下 （takes A's notebooke）
31 The one I worked on was, let me see.
32 A:Question 2 啊，不会吧。
33 Question 2? No.
34 C reads A;s note book
35 A: Question 1 呢？
36 What about Question 1
37 C: Question 1 我没有
38 I didn’t workin on Question 1.
39 C double checks A's notebook
40 C:那你准备 Question 2. 我没写多少。
41 Then you can work on Question 2. I didn’t write much.
42 A:你们相互吧
43 You can help each other.
44 D:=差不多嘛，
45 It’s the same.
46 A:=那你准备 Question 2，你准备 Question 1 吧。¤<1660089>
47 Then you can work on Question 2. You can work on Question 1.

CP 19-Seeking group member's help
1 Individual writing
2 A and B practices what they just wrote out loud.
3 C:Economic，这怎么读啊？searches the phrase on her mobile phone. Economic
4 *How to pronounce this?*
5 globalization (trying to pronounce the words)
6 individual writing and online searching
7 A helps B check pronunciation of some words and write pronunciation on her
8 notebook.
9 A returns the notebook to B.¤<1957265>

CP 20-Clarifying PPT assignments
1 Teacher: five minutes
2 A:我们只有五分钟了 (addressing the whole group)
3 *We only have five minutes left.*
4 A:差不多了
5 *It’s almost (time).*
6 D:那个德国的是谁说的？
7 *Who is in charge of the German (evidence)?*
8 B looks at D and points to herself.
9 A: 什么？
10 *What?*
11 B:我的？我看看几张.
12 *Mine? Let me see how many slides there are.*
13 D:两张
14 *Two*
15 B:这可以，我说得很短
16 *This will do. I won’t talk for too long.*
17 D nods her head¤<1982555>

CP 21-Seeking group member's help
1 B shows A her notebook (asking A for help with the pronunciation of a word)
2 B:这个怎么念
3 A; Commemorate,英标会吗
4 do you know phonetics?
5 B:这个 (pointing to her notebook)
6 This
7 A:rate
8 B:你查的第一段还是第二段，我只讲第一段
9 Did you search the first paragraph or the second paragraph? I will only
10 talk about points from the first paragraph.
11 A:你只讲第一段？¤<2012885>
12 You talk about the first paragraph?

CP 22-Finalizing PPT
1 D:你要几张照片？
2 How many pictures do you need?
3 A:一共几张
4 How many are there?
5 D:好几张 你想要几张
6 Quite some. How many do you want?
7 A：什么叫好几张，我想要几张，都行，随便
8 What do you mean by "quite some"? How many do I want? I'm fine with any
9 number.
10 D：要几张？
11 How many?
12 A:一共多少张,每人三张就可以了
13 How many in total? Three slides for each of us.
14 D:多少张啊 （clicking on the computer to the computer to check）
15 How many?
16 A:十二张是吧，每人三张就可以了
17 Twelve will be good. Three for each of us.
18 D:每人三张，（clicking on the computer）哦，对对对，好了
19 Three per person. Oh, yes yes yes, okay.
20 A:我是最后的
21 I'm the last one.
22 B:谁是第一个个
23 Who is the first?
24 A:她
25 She is.
26 B:那你来拍
27 Then you will be the videorecording.
28 C:我拍啊？
29 I video record?
30 B:嗯
31 Uhm.
32 C:啊？
33 Huh
34 A:1,2,3,4(point to each member while counting)
35 A:我需要两张就够了，我的比较短
36 I need two slides. Mine is short.
37 D=我也就需要两张

38 I also only need two.
39 C=:我要一张就可以了 hhhhhh
40 I only need one.
41 A:hhhhhh，那三张好了，不许吵
42 Three is good. No more arguments (on that).
43 D:那就可以删一点 （looking at D）
44 Then we can delete a few.
45 A:有一些坦克什么的
46 There are some (pictures of) tanks.
47 D:这个可以不要了
48 This can be deleted.

CP 23-Deciding which PPT slides to delete
1 C:=谁给我耳机
2 *Who can give me an earplug?*
3 A:=那这个也不要了 (clicking on PPT)
4 *Then we don't need this either*
5 D:这个要吗？
6 *Do we need this?*
7 A:那这个不要
8 *That one too.*
9 D:这个不要
10 *Delete this one.*
11 A:这个打仗干什么的
12 *What is this war picture?*
13 A:好的，可以了.就剩下了一张¤<2095425>
14 *Ok, it's ready. Only one (for each).*

CP 23-Getting ready for the group recording
1 B:啊，这个单词我又不会了
2 *Ah, I don't know this word again.*
3 C:什么时候开始？
4 *When do we start?*
5 D:=哇，这个还有动画的。hhhhh
6 *Wow, this one has an animation (embedded).*
7 C:=拍呀
8 *Let's shoot.*
9 C is holding the mobile phone and is getting ready to video record the
10 narrated PPT using the video recording function of the phone.
11 B:拍吧，我那些单词真的都不会
12 *Let's shoot. I still don't know some of the words.*
13 A takes B's notebook
14 B:没有没有，刚才好像都没有查我不会的单词
15 *No, no. (We) didn't check the words I don't know.*
16 A:没有啊，你还有哪个不会？
17 *Can't be. Which are the words you still don't know?*
18 C:算了，还是等一会吧，看样子你不行。
19 *Ok. Let's wait for a little while.It seems that you are not ready.*
20 A:拍啊，现在开始拍吗？
21 *Let's start recording. Shall we record now?*
22 A:你说不出来就根据自己的那个
23 *If you don't know how to pronounce, you can try based on your -*
24 B:我那些单词真的都不会

25 *I really don't know those words.*
26 A:还有哪个不会
27 *Which ones?*
28 C:那我还是等一会吧
29 *Then I can wait for a little while.*
30 D:把这个这个弄一下（making the last change to the PPT），好
31 (Let me) fix this. Done.
32 C:把那个放一下（holding the mobile phone, talking to D, pointing to the
33 laptop screen）
34 *Play that.*
35 C:就是你试一下,就是现在开始拍
36 *Try to play that, then we can start.*
37 D:哈？她不是还没有准备好吧。
38 *Huh? Isn't she not ready?*
39 B:等，等，等，等
40 *Wati, wait, wait, wait*
41 B:你帮我查，快点快点（giving her notebook to A）
42 *Help me check. Faster.*
43 D:不要紧
44 *No worries.*
45 A starts to help B check the pronunciations of the words and write the
46 pronunciation on the notebook.
47 A returns the notebook to B
48 B:那个第二个， 前两个不用
49 *The second one. Don't worry about the first two*
50 D:the development ¤<2227057>

CP 24-Group recording
1 A:可以录了，时间差不多了。
2 *We can start recording now. It's about time.*
3 B:把幻灯片弄好 哦
4 *Make sure your PPTs ready. Oh*
5 C holds the mobile phone in front of the laptop screen
6 D:重新来吧
7 *Let's start over.*
8 B:谁是第一个？
9 *Who is the first one?*
10 D:王欣然
11 *Wang Xinran*
12 A:你找别人拿一下
13 *Ask someone to hold it(the phone) for you.*
14 B stands up and takes over C's mobile phone for her
15 D:你们开始了吗？
16 *Have you started?*
17 C:没有
18 *No*
19 B:没有没有
20 *No, no.*
21 C:点一下
22 *Click on this.*
23 D:可是它有一个动画吖
24 *But this one has an animation.*
25 B:啊？

Huh?
C clicks on the laptop
D:就是它本来就有的
It's that it has a
A:那说开始的时候点哦.1.2
Click it when we say start.
B:等一下，动画啊。
Wait a minute. Animation?
C:等一下（takes A's notebook and looks at the questions）
Wait a second.
D:就是有一个人 （moves both her hands forward trying to show the motion of the gif format on PPT）
There was one person.
A:推动的（moves one of her hands showing the motion）
Pushing forward.
A:你们开始了吗？开始了点。
Did you start? Click when you start.
B:你把这个推开干嘛？
Why did you push this open?
A:没事，不用管它
It's okay. Don't worry about it.
D:它本来就
It comes with it.
A:自动设定
It's automatic setting.
D:对
Right.
B:你确定？
Are you sure?
D:挺好的
Pretty sure.
A:3,2,1,开始
3,2,1, start.
C:Nowadays the international relations will become closer. Peace and
D:它有那个
It has that
D tried to wave her hands
A:要有什么早说
If you have something to say, say it beforehand
C:哈？
Huh?
D:可以往后调一点
You can push the phone a little back
B:What do you want to do? One, two, three, go
C:Nowadays, the international relationship
B waves at C asking to sit back so that she does not block the laptop screen
C:Nowadays, the international relationship will become closer. Peace and development is today's world's topic. The treat between countries also make the relationships become better. With uhm economic globalization, I believe we human will have a better future.
A takes over B and holds the mobile phone in front of the laptop
D: Our world is becoming more peaceful than before as we can see, there

are less and less wars between two great powers and two rich countries. As more and more people start to realize the value of peace and threats of wars. Peace and development has become, have become the topic of today's world. Also the United Nations proves the trend of peace.
D takes over the phone and holds it in front of the screen
A;声音大一点
A little louder.
C:凑近一点可以
I can stand a little closer.
B reads her notebook while standing so she could be close to the mic
B: We don't agree that humans learn from the mistakes.
D: uh? (looking at A)
A shows D an Okay signal
B:For example, you can see German. That you can see the German has repeatedly repent for its crimes in World War Two. For example, uh, December 7, 1970, the Federal Republic of Germany Brandt kneeled on his knee in front of the plaques, plaques for Jewish victims in war sites guilty to crimes committed by German. The media commented that Brandt kneeled on his knees and all the German stood up completely.
A takes the mic from B and continues
A: As far as I'm concerned, Emily isn't satisfied with the imperfect world because uhm there are many uhm violent things may appearing in the world. As a mentor of Emily and to en enlighten her, I think we can show Emily some posi, positive examples uhm, after all not everything is perfect. No matter how hard we try, we cannot promise that there is nothing violent appearing in the world. We need to keep a positive attitude towards the world and, save,much, as much as ,as much people as we can. Ok.

Appendix L

Transcription Notes (translanguaging)

Line 1: transcription in Chinese characters

Line 2: *English translation (Italicized)*

(The conversation was conducted in Chinese; and hence, the recordings were transcribed into Chinese characters, not pinyin as how they pronounce the Chinese is not the focus here. There was no grammatical gloss as the grammar of the Chinese is not needed for the analysis.)

Transcription Convention

(.) denotes a micro pause, a notable pause but of no significant length.

(0.2) denotes a timed pause. This is a pause long enough to time and subsequently show in transcription.

[denotes a point where overlapping speech occurs.

> < shows that the pace of the speech has quickened

< > shows that the pace of the speech has slowed down

( ) that the words spoken here were too unclear to transcribe

(( )) denotes some contextual information where no symbol of representation was available.

Under When a word or part of a word is underlines it denotes a raise in volume or emphasis

↑ means there is a rise in intonation

↓ it means there is a drop in intonation

→ denotes a particular sentence of interest to the analyst

CAPITALS denotes that something was said loudly or even shouted

Hum(h)our appears it means that there was laughter within the talk

= represents latched speech, a continuation of talk

:: represents elongated speech, a stretched sound

Appendix M

The Screenshot of Communicative Projects and Assigned Keywords

Time	Item ID	Keywords
0:00:00.0 - 0:02:01.6	01.figureing out the mission > 1	affordances : notebook affordances : team members affordances : technologies critical thinking : clear point of view languaging : quest planning languaging : translanguaging
0:02:01.6 - 0:04:14.3	02. discussing points of view > 2	affordances : team members critical thinking : clear point of view critical thinking : evidence explanation languaging : embedded issue discussion languaging : quest planning languaging : translanguaging
0:04:14.3 - 0:05:13.3	03. disagreement > 3	affordances : team members critical thinking : clear point of view languaging : embedded issue discussion languaging : translanguaging
0:05:13.3 - 0:05:39.9	04. impasse > 4	affordances : team members critical thinking : evidence explanation languaging : translanguaging
0:05:39.9 - 0:07:06.1	05. work on ppt > 5	affordances : technologies languaging : co-action languaging : quest planning languaging : translanguaging
0:07:06.1 - 0:08:40.9	06. negotiation for next move > 6	affordances : notebook affordances : team members affordances : technologies critical thinking : evidence explanation languaging : embedded issue discussion languaging : quest planning languaging : translanguaging
0:08:40.9 - 0:09:25.7	07. Seeking instructor's help > 7	affordances : instructor critical thinking : recognition of alternative poi languaging : embedded issue discussion
0:09:25.7 - 0:11:12.4	08. explanation of position > 8	affordances : instructor affordances : team members affordances : technologies critical thinking : evidence-finding critical thinking : recognition of alternative poi languaging : embedded issue discussion languaging : small talk languaging : translanguaging

0:11:12.4 - 0:12:43.7	09. small talk > 9	affordances : team members languaging : small talk languaging : translanguaging
0:12:43.7 - 0:14:38.1	10.choosing one position and moving forward with planning > 10	affordances : team members affordances : technologies critical thinking : clear point of view critical thinking : evidence-finding critical thinking : recognition of alternative poi languaging : embedded issue discussion languaging : quest planning languaging : translanguaging
0:14:38.1 - 0:16:14.8	11. online searching, notetaking and writing > 11	affordances : technologies critical thinking : evidence-finding
0:16:14.8 - 0:17:37.3	12. task assigning > 12	affordances : team members languaging : quest planning languaging : small talk languaging : translanguaging
0:17:37.3 - 0:18:36.9	13. solving wifi problem > 13	affordances : team members affordances : technologies languaging : co-action languaging : small talk languaging : translanguaging
0:18:36.9 - 0:19:44.5	14. clarifying quest missions > 14	affordances : notebook affordances : team members languaging : quest planning languaging : translanguaging
0:19:44.5 - 0:23:40.7	15. discussion of evidence > 15	affordances : notebook affordances : team members affordances : technologies critical thinking : evidence explanation critical thinking : evidence-finding languaging : embedded issue discussion languaging : quest planning languaging : translanguaging
0:23:40.7 - 0:24:30.3	16. discussion of a question raised in the quest > 16	affordances : team members critical thinking : evidence-finding languaging : quest planning languaging : translanguaging

0:24:30.3 - 0:26:11.0	17. individual online searching, notetaking, and writing > 17	affordances : notebook affordances : technologies critical thinking : evidence-finding languaging : co-action
0:26:11.0 - 0:27:40.1	18. clarifying task assignment > 18	affordances : notebook affordances : team members affordances : technologies languaging : quest planning languaging : translanguaging
0:27:40.1 - 0:32:37.3	19. seeking group member's help > 19	affordances : notebook affordances : team members affordances : technologies languaging : co-action
0:32:37.3 - 0:33:02.6	20. clarifying PPT assignments > 20	affordances : team members affordances : technologies languaging : quest planning languaging : translanguaging
0:33:02.6 - 0:33:32.9	21. seeking group member's help > 21	affordances : notebook affordances : team members languaging : quest planning languaging : translanguaging
0:33:32.9 - 0:34:55.4	22. finalizing PPT > 22	affordances : team members affordances : technologies languaging : co-action languaging : quest planning languaging : translanguaging
0:34:55.4 - 0:37:07.1	23. getting ready for the group recording > 23	affordances : notebook affordances : team members affordances : technologies languaging : quest planning languaging : translanguaging
0:37:07.1 - 0:42:44.6	24. group recording > 24	affordances : notebook affordances : team members affordances : technologies critical thinking : clear point of view critical thinking : evidence explanation languaging : co-action languaging : embedded issue discussion languaging : quest planning languaging : translanguaging

Appendix N

Group Letters to Jolin

Dear Jolin,

I am very glad to have a good time with you and the days which I spent with you must be the unforgettable memories. I still remember when I first meet you, you are a so lovely girl. Your questions help us improve our speaking level and be close to my groupmates. Through these days, I can be brave enough to use English to express my opinions. Today is the ninth day we spent together and tomorrow we must be separated. You will never know how sad I am!

In the end, I am looking forward to you reply. Hope that you will start a new life in 2017!

Yours,
B6

Dear Jolin,

I am very glad to hear that you found your memories. Nowadays, the technology in Hong Kong develops faster and faster. But the pollution of environments has increased a lot. So I want you can aware of the solutions of governing the environments.

I think it is a good way to protect our health by wearing masks. If I am in Hong Kong, I will also wear masks. We can go out less and if we go out, we can wear medical masks. Besides, the governments are supposed to make some laws to control companies to make pollution.

During the journey with you, I learned a lot. Thank you, see you again!

Hi, Jolin. We are very happy to help you. We spent a lot of time finding your home. We will miss you.

You also taught me a lot. During these days, we went to many places. We also get more knowledge and made a big progress on English speaking.I wish you will have a happy life. Don't forget us. 

MISS YOU

Dear Jolin:

How are you? What are you doing now? We are B4.

Well, we heard that you had found your home in Hongkong finally. Congratulations! We are so glad to help you these days!

Hongkong has changed lots in the past fifty years, maybe you will feel strange and afraid now. Don’t fare, we are here! Now, Hongkong is a part of China again instead of sending away to the British. And also, Hongkong and Shenzhen are increasingly linked together, not only about Economy, but also about culture and society. At the same time, lots of building are came up, tourists and students are coming here with jammed.

We are so glad to travel with you all around the world! Looking back of our memory, we came to a lot of places together: America, Beijing, Guangzhou, Shanghai... You are really a smart and cute girl, we all love you!

You have more fifty years than the others, don't waste! Go out to make more friends, travel to building of interests. Life is so wonderful as sunshine, have a good day **!**

Hope you could find your family members very soon. We are always here to help you! Best wishes to you!

Your's ,
Group B4

Hi! Jolin,

I am so glad to give you an email. I am happy to have ten days together. I got a lot of fun when I stayed with you. I learnt a lot of knowledge in the past 10 days such as the development of technology, the situation of the world environment, the universal values nowadays, the different cultures between west and east and so on. I also got some writing skills such as identity the question, state my position on the issue and consider others position.

I am happy that you can find your home today. And I hope that you can have a happy life in modern city Hong Kong. I believe that you will be accustomed to living with high technology life.

Yours
B2

Hi,Jolin! This is B10.We are very glad to hear that you have already find your home in Hong Kong.

The development of science and technology is very rapid in today's society. We can use our mobile phone to search for information, and we can use the Internet to better understand international facts. Transport is also developing. Now there are new forms of transportation such as driverless cars and new energy cars, which greatly facilitate our lives.

With the development of science and technology, environmental problems are becoming more and more serious. More and more cars and factories are polluting the air and water. If we don't act to protect the environment, our society will be in chaos.

At the same time, with the development of modern society, it is more and more important for us to know the facts. We want to know the world outside, so you can keep up with the tide of The Times.

Hi Jolin, this is a letter from A5. During the last eight days, we worked hard on a process that not only helped you to find your home but also aided you to understand this generation. From what we have experienced these days, we can naturally reach a conclusion that this is a time when everything in in every area is changing second by second. Don’t give up finding your house, and maybe after several days we will have the ability to send you to your generation. We are happy to meet you, bye.

Hi**,** Jolin. We are A4. How time flies! We all feel depressed about your left. Through these days, we shared your happiness and sadness in your journey.

We are delighted to find your living city----Hong Kong. Also, we hope you can find your family members as soon as possible. We all know about how China has taken changes greatly in

the past 50 years. I know it is hard to accept, but you should learn to adapt the modern life and keep on living. I know your parents might have gone, you have to be strong. This is a wonderful world with so many miracles happen every day. I hope you can be a part of them.

Sincerely,
Gu, Ge and Chen from A4

Dear Jolin,

We are glad to help you and make great friends with you. Because of you, we learn lots of knowledge. We take a great travel around the world. Although there were plenty of difficulties these days, when we helped you found you memories, we all feel satisfied.

Now you have to stay in our world. So we prepare to give you some advice about living in modern society. First, you need to study hard, because it's the age of knowledge explosion. Second, you should change a new identity. Then you can be a member of us. Last but not least, it is important for you, a girl, to protect yourself is not very safe nowadays.

We all hope that you will better.

Yours,
a6

Dear Jolin,

Hi, Jolin. Here is A3. We are glad to know that you have found you homeland. Now we will give you some good suggesstions.so that you can live better in Hong Kong:

First of all, you should register a new account in the local police station. Without an account, you can do nothing in Hong Kong. And then you should find a place to live and try to find her family in Hong Kong. Also, you should adapt the culture in Hong Kong. Maybe you can ask your friends to help you.

We are hoping that you can have a good life in Hong Kong.

Dear Jolin：

How time flies！We are happy to go with you during these 7 days. Hope you can have a happy life in Hongkong.

In Hong Kong, you have to be fluent in Chinese. Second, you should learn Chinese manners. When you can't find a home, you can turn to the police for help.

The people of Hong Kong are very friendly, and I am sure you can adapt yourself to the new life soon!

No matter how fast time flies, our friendship stands forever!

Yours a7

Dear Jolin,

I am very happy that you have find your sweet home in the past, we are very honor to help you.

In the first day, we have gone to Silicon Valley, we all felt the power of technology Next, we came to Bengjing and we realize the significance of environment protection. Then, we went to Spain and we face with refugee problems. And Shanghai, Guangdong, Hongkong...
Now, you have faced with a new life in the modern society. Firstly, you should go to school and continue your education. Secondly, you can ask some help from the Police station, they may help you find your a new ID card.

Hope you can have a good time in Hong Kong.

your friend,
A2

Dear Jolin,

We are group A8. In the past 9 days, we had a good time with you. We will miss you a lot. I still remember the first day we met. You lost your memory and didn't know the way home. We tried our best to help you find your memory. Luckily， we finally find your hometown. Thanks to Brain and Jessica's hardwork. Without them, we can't successfully find your home. Our journey is going to end. We will miss you forever. Hope you live happily.

Yours,
A8.

Dear Jolin,

How time flies! This is the last time I send you an e-mail. We feel very happy that you finally found your home.

Looking back on the past nine days, you had a long journey, but now you have to face a new world alone.

There is no perfect way to execute a goodbye. There is the lightness and the familiarity that we all want, the feeling that even its final moments, a relationship is still just as fun as it always was. Because when we are saying goodbye to someone, we're not just talking to them, we're talking to the person that we are at this very moment. We know, even if we don't want to admit it, that we will never be in this exact same spot again. We will never see the world the same way and closing the door on someone's chapter means committing it officially to memory — that it's no longer an organic, living thing.

We feel glad to see that you found your home, but we feel sad to say goodbye to you. Without our accompany, your story will never have to come to a real ending. If you have any problems, you must send an e-mail to us.

Your sincerely,

A10.

Dear Jolin,

It is so nice to hear that you finally find your home.First of all,I want to appreciate that you showed up in my life just in time.I have never read so much about the world and express my own ideas about the world to others.I saw many differences between countries and decades.For the first time I learned more than just my boring textbooks.Through this activity,I became more active and more outgoing.Your showing up makes my life colorful.
What's more,my spoken-English has greatly improved throughout these days .The process of helping you to find the way home also helped me to improve my English.I really had a good time with all of you.I don't want to say goodbye with you.

I am not good at saying goodbye with people.I hope that we can meet each other someday!

Yours,
SXP

Appendix O

The following transcription is a recording produced by students for an impromptu speaking activity.

Hello everyone. I'm really glad to give you a short speech about environment. And Nowadays the world is changing rapidly and quickly, and our life is also changing. More and more high technology come to our life, and make us live happier and easier. And Especially for the environment. Science should be made a compulsory subject. Why I say that? Because environment is becoming more and more important to today's society and especially environment. And nowadays environmental problems are becoming more and more important in our daily life. As we only have one earth and we need to face all the environmental problems and solve it so that we can live longer. And Why I say that science should be made a compulsory subject? Because science is really important and can help a lot. In the future, science can play the most important role in our daily life. And if we want to solve the environmental problem, we need to use the high technology help us. Why I say that? Because high technology can make our life become better and can solve a lot of problems. For example, the high technology can make the water cleaner, and can make some bad smokers to be polluted or the environment. And that's what I want to say. (215 words, 101 seconds)

Appendix P

Linear mixed model Reports for Pre-Post Test Rating

Iteration 1

```
Linear mixed model fit by maximum likelihood. t-tests use Satterthwaite's method [
lmerModLmerTest]
Formula: score ~ pre_post + (1 | participantf)
   Data: mydata

     AIC      BIC   logLik deviance df.resid
   231.3    241.2   -111.6    223.3       84

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.0340 -0.5287 -0.1186  0.6336  1.7965

Random effects:
 Groups       Name        Variance  Std.Dev.
 participantf (Intercept) 0.0002994 0.0173
 Residual                 0.7401450 0.8603
Number of obs: 88, groups:  participantf, 44

Fixed effects:
            Estimate Std. Error       df t value Pr(>|t|)
(Intercept)  2.10227    0.09175 52.77442  22.914  < 2e-16 ***
pre_post.L   0.91602    0.12970 52.80858   7.063 3.64e-09 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
          (Intr)
pre_post.L 0.000

#random intercept adjustments (for reference)
$participantf
     (Intercept)
1   3.214871e-04
2  -4.868233e-04
3  -8.266811e-05
4  -4.868233e-04
5  -8.266811e-05
6  -8.909785e-04
7  -8.266811e-05
8  -8.266811e-05
9   3.214871e-04
10  3.214871e-04
11  3.214871e-04
12 -8.266811e-05
13  3.214871e-04
14 -8.266811e-05
15 -4.868233e-04
16 -8.266811e-05
17 -8.909785e-04
18 -4.868233e-04
```

19 7.256423e-04
20 -4.868233e-04
21 1.129797e-03
22 3.214871e-04
23 -8.909785e-04
24 3.214871e-04
25 -8.266811e-05
26 -8.266811e-05
27 1.129797e-03
28 7.256423e-04
29 -8.266811e-05
30 -8.266811e-05
31 3.214871e-04
32 -8.266811e-05
33 3.214871e-04
34 3.214871e-04
35 3.214871e-04
36 -8.266811e-05
37 -4.868233e-04
38 3.214871e-04
39 3.214871e-04
40 3.214871e-04
41 3.214871e-04
42 -8.909785e-04
43 -8.909785e-04
44 -8.266811e-05

Iteration 2

Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's method [
lmerModLmerTest]
Formula: score ~ pre_post + (1 | participantf)
   Data: mydata

     AIC   BIC   logLik deviance df.resid
   264.6   275.8   -128.3   256.6   120

Scaled residuals:
    Min   1Q Median   3Q   Max
-2.2349 -0.8865 0.1722 0.4619 1.9953

Random effects:
 Groups   Name   Variance Std.Dev.
 participantf (Intercept) 0.1020   0.3193
 Residual   0.3727   0.6105
Number of obs: 124, groups: participantf, 62

Fixed effects:
            Estimate Std. Error   df t value Pr(>|t|)
(Intercept) 2.25000   0.06819 62.00000   32.99 < 2e-16 ***
pre_post.L   0.78694   0.07753 62.00000   10.15 8.36e-15 ***

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
            (Intr)

pre_post.L 0.000
R2m R2c

[1,] 0.3967452 0.5263565
#random intercept adjustments (for reference)
$participantf
(Intercept)
1 0.2652831
2 0.0884277
3 -0.0884277
4 -0.0884277
5 0.2652831
6 0.0884277
7 -0.0884277
8 0.0884277
9 0.0884277
10 -0.2652831
11 -0.0884277
12 0.2652831
13 0.2652831
14 -0.2652831
15 0.0884277
16 -0.2652831
17 0.0884277
18 -0.0884277
19 0.0884277
20 -0.2652831
21 -0.0884277
22 0.0884277
23 0.0884277
24 -0.0884277
25 -0.0884277
26 0.2652831
27 0.4421385
28 -0.0884277
29 0.2652831
30 -0.0884277
31 0.0884277
32 0.0884277
33 -0.0884277
34 0.0884277
35 0.0884277
36 -0.2652831
37 -0.2652831
38 -0.0884277
39 -0.0884277
40 -0.2652831
41 -0.0884277
42 -0.0884277
43 -0.2652831
44 0.0884277
45 -0.4421385
46 0.0884277
47 0.2652831
48 0.0884277
49 -0.0884277

```
50  -0.2652831
51  -0.0884277
52   0.2652831
53   0.0884277
54  -0.0884277
55   0.2652831
56   0.0884277
57   0.0884277
58   0.2652831
59   0.0884277
60  -0.0884277
61   0.0884277
62  -0.4421385
```

Iteration 3

```
Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's method [
lmerModLmerTest]
Formula: score ~ pre_post + (1 | participantf)
   Data: mydata

     AIC      BIC   logLik deviance df.resid
   185.8    196.2    -88.9    177.8       96

Scaled residuals:
    Min      1Q  Median      3Q     Max
-2.3779 -0.8271  0.3599  0.5897  2.5043

Random effects:
 Groups       Name        Variance Std.Dev.
 participantf (Intercept) 0.0836   0.2891
 Residual                 0.2728   0.5223
Number of obs: 100, groups:  participantf, 50

Fixed effects:
            Estimate Std. Error       df t value Pr(>|t|)
(Intercept)  2.10000    0.06633 50.00000   31.66  < 2e-16 ***
pre_post.L   0.79196    0.07386 50.00000   10.72 1.46e-14 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:
          (Intr)
pre_post.L 0.000

> r.squaredGLMM(Iter_1_RI) #Get effect size - note that the R2c is only the tiniest bit bigger than the R2m, meanin
g that the individual variation did .... [TRUNCATED]
          R2m       R2c
[1,] 0.4705628 0.5947518


#random intercept adjustments (for reference)
```

$participantf

	(Intercept)
1	-0.038
2	-0.038
3	0.152
4	0.152
5	-0.038
6	0.342
7	0.152
8	0.152
9	0.342
10	0.152
11	0.152
12	0.152
13	-0.228
14	-0.038
15	-0.038
16	0.152
17	-0.228
18	-0.038
19	-0.038
20	0.152
21	0.152
22	-0.038
23	-0.038
24	0.342
25	0.152
26	0.152
27	-0.038
28	0.342
29	-0.228
30	0.152
31	0.152
32	-0.228
33	-0.228
34	-0.228
35	-0.038
36	-0.228
37	-0.038
38	0.152
39	-0.038
40	-0.228
41	-0.228
42	-0.228
43	-0.038
44	-0.038
45	-0.038
46	-0.038
47	-0.418
48	-0.038
49	-0.228
50	-0.038

Appendix Q

Consent Forms- Students

同意书

研究课题
教学故事游戏为中心的英语写作技能课程设计

我是周琳，是夏威夷马诺阿分校的博士候选人、课程讲师和研究员。我主要从事应用语言学、教育学和学习科学相关得研究。现在我致力于电脑教学故事游戏为中心的英语课程设计。该设计项目旨在帮助学生在真实的有意义的语用环境里学习并使用英语，在完成游戏的过程中，训练学生的自学能力和批判性思维能力。此次暑期课程是帮助学生为全国创新英语大赛做准备，同时同学们可以在课程中锻炼听说读写的能力。

此次暑期课程由夏威夷大学马诺阿分校的博士生周琳策划、制作并教授，在课程的过程中，老师和研究人员会收集课程中学生的对话录音、录像和学生口语以及写作内容用于学术研究和未来进一步优化课程。为该研究课题收集的对话录音和录像内容以及作业数据会被进一步用于语言学和教育学相关的数据分析，分析的结果会被最终发表于学术期刊并展示在学术研讨会上。我们收集的内容会被保管在加密的硬盘中从而确保学生的信息安全。不论是发表在学术期刊还是学术研讨会上，学生的个人信息都不会由任何泄漏。请学生本人在此同意书上签字。

我自愿参加该课程，并明白我在课堂上的对话录音录像以及相关作业和考试内容会被用于语言学和教育学的相关数据分析。

_____学生签字

_____日期

Consent Forms- Parents

同意书

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此次暑期课程由夏威夷大学马诺阿分校的博士生周琳策划、制作并教授，在课程的过程中，老师和研究人员会收集课程中学生的对话录音、录像和学生口语以及写作内容用于学术研究和未来进一步优化课程。为该研究课题收集的对话录音和录像内容以及作业数据会被进一步用于语言学和教育学相关的数据分析，分析的结果会被最终发表于学术期刊并展示在学术研讨会上。我们收集的内容会被保管在加密的硬盘中从而确保学生的信息安全。不论是发表在学术期刊还是学术研讨会上，学生的个人信息都不会由任何泄漏。请学生本人在此同意书上签字。

我同意我的孩子参加该课程，并明白她 / 他在课堂上的对话录音录像以及相关作业和考试内容会被用于语言学和教育学的相关数据分析。

_____家长签字

_____日期

CHILD ASSENT STATEMENT

Consent Form: Design-based Research: Pedagogical Drama Game-Supported Writing Curriculum

Lin Zhou, Ph.D. Student, Department of Second Language Studies, University of Hawaii.

My name is Lin Zhou, and I am a Ph.D. student in the Department of Second Language Studies (SLS) at the University of Hawaii, Manoa. As a teacher and researcher, I do research on designing pedagogical drama-game supported curriculum to engage students to immerse themselves in gameplay for learning a foreign language. My current project is to design a pedagogical drama-game supported curriculum to help prepare your child for the national English competition. We need your child's help not only to design a curriculum that kids enjoy but also we would like to help your child learn and use English in a fun and challenging way and introduce your child to authentic use of English. As part of the evaluation process, we will observe how your child interacts with other students in the classroom. We will also interview your child with a few questions, ask them to fill out a few surveys, and record their interactions with each other during the class discussion and gameplay sessions with a video camera.

We invite you to participate in this project. Because you are a minor (under 18), we will ask your parents for their consent before you can participate in this project.

Project Description – Activities and Time Commitment:

If you decide to allow your child to take part in this study, they will be expected to attend the 7-day course in the summer of 2018. The purpose of this course is to help students improve their English writing and speaking skills. The curriculum being developed is focused on having students discuss and explore current social issues. The curriculum we are using is innovative in two key ways. First, we are aiming to develop computer-guided peer discussions. Students will work in groups to progress through several modules of a game environment that is set completely in English. Each module is designed to help them explore key topics from several different perspectives. After completing a module, students will have to discuss their thoughts with each other and answer questions that are intended to promote critical thought.

You will be also asked to fill out a pre-and post-survey. These surveys will consist of mostly multiple-choice questions with a few open-ended responses. Both surveys will be completed before and after the course. Each survey will take approximately 20 minutes to complete.

Benefits and Risks:

By participating in this project, you will be able to use English to achieve meaningful game quests, engage in discussion questions about current social issues and practice English writing in class.

Compensation:

There will be no compensation for the participation of this project.

Confidentiality and Privacy:

Your privacy is very important to us, all surveys and interview questions will not be used for any other purpose other than for this study. We will not publish any of your names and will replace them with pseudonyms if need be. Each gameplay session will be video and voice captured by a participating researcher who will be accompanying you. Voice and video data will be uploaded to a password protected cloud drive that only my project members can access. The video recordings will help us understand how you make use of designs provided in the app to actively pick up clues in your surroundings to help you solve problems. After all data has been analyzed, all surveys, voice, and video records will be destroyed.

Voluntary Participation:

You can freely choose to take part or to not take part in this study. There will be no penalty for either decision.

Questions:

If you have any questions regarding this research project, please contact the researcher, Lin Zhou at (401) 867-1288 or linzhou@hawaii.edu. Or, the principal investigator Gilliland, Elizabeth at (808)956-8610 or egillila@hawaii.edu. If you have any concerns, you may contact the UH Human Studies Program at (808) 956-5007 or uhirb@hawaii.edu. to discuss problems, concerns and questions; obtain information, or offer input with an informed individual who is unaffiliated

with the specific research protocol. Please visit https://www,hawaii.edu/researchcompliance/information-research-participants for more information on your rights as a research participant.

Assent Signature:

My signature below indicates that I agree to participate in the research project titled, "**Design-based Research: Pedagogical Drama Game-Supported Writing**" I understand that I can end participation at any time by notifying the researcher.

I have read and understood all the information provided. I agree to participate in this research study.

Name (Print)_____ Signature_____

Date_____

I agree to be filmed and have my voice recorded.

Name (Print)_____ Signature_____

Date_____

* You must agree to both conditions to participate in this study.

INFORMED CONSENT STATEMENT

Design-based Research:

Pedagogical Drama Game-Supported Writing Curriculum

Lin Zhou, Ph.D. Student, Department of Second Language Studies, University of Hawaii.

My name is Lin Zhou, and I am a Ph.D. student in the Department of Second Language Studies (SLS) at the University of Hawaii, Manoa. As a teacher and researcher, I do research on designing pedagogical drama-game supported curriculum to engage students to immerse themselves in gameplay for learning a foreign language. My current project is to design a pedagogical drama-game supported curriculum to help prepare your child for the national English competition. I need your child's help not only to design a curriculum that kids enjoy but also we would like to help your child learn and use English in a fun and challenging way and introduce your child to authentic use of English. As part of the evaluation process, we will observe how your child interacts with other students in the classroom. We will also interview your child with a few questions, ask them to fill out a few surveys, and record their interactions with each other during the class discussion and gameplay sessions with a video camera.

We invite your child to participate in this project. Because s/he is a minor (under age 18), we will also ask your child for her/his consent before they can participate in this project.

Project Description – Activities and Time Commitment:

If you decide to allow your child to take part in this study, they will be expected to attend the 7-day course in the summer of 2018. The purpose of this course is to help students improve their English writing and speaking skills. The curriculum being developed is focused on having students discuss and explore current social issues. The curriculum we are using is innovative in two key ways. First, we are aiming to develop computer-guided peer discussions. Students will work in groups to progress through several modules of a game environment that is set completely in English. Each module is designed to help them explore key topics from several different perspectives. After completing a module, students will have to discuss their thoughts

with each other and answer questions that are intended to promote critical thought.

Your child will be also asked to fill out a pre and post-survey. These surveys will consist of mostly multiple-choice questions with a few open-ended responses. Both surveys will be completed before and after the course. Each survey will take approximately 20 minutes to complete.

At the end of each session, a short group interview will be done. Interview questions will ask your child how we can make the course better. Interviews should take approximately 10-15 minutes.

Benefits and Risks:

By participating in this project, your child will be able to use English to achieve meaningful game quests, engage in discussion questions about current social issues and practice English writing in class.

Compensation:

There will be no compensation for the participation of this project.

Confidentiality and Privacy:

Your child's privacy is very important to us, all surveys and interview questions will not be used for any other purpose other than for this study. We will not publish your child's names and will replace them with pseudonyms if need be. Each gameplay and group discussion session will be video and voice captured by me in class. Voice and video data will be uploaded to a password protected cloud drive that only I can access. The video recordings will help us understand how they make use of designs provided in the curriculum to actively pick up clues in their learning environment to help them solve problems. After all data has been analyzed, all surveys, voice, and video records will be destroyed.

Voluntary Participation:

Your child can freely choose to take part or to not take part in this study. There will be no penalty for either decision.

Questions:

If you have any questions regarding this research project, please contact the researcher, Lin Zhou at (401) 867-1288 or linzhou@hawaii.edu. Or, the principal investigator Gilliland, Elizabeth at (808)956-8610 or egillila@hawaii.edu. If you have any concerns, you may contact the UH Human Studies Program at (808) 956-5007 or uhirb@hawaii.edu. to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit https://www,hawaii.edu/researchcompliance/information-research-participants for more information on your rights as a research participant.

Please keep the prior portion of this consent form for your records.
If you consent for your child to participate in this project, please sign the following signature portion of this consent form.

Tear or cut here

Signature(s) for Consent:

My signature below indicates that I agree to participate in the research project titled, "**Design-based Research: Pedagogical Drama Game-Supported Writing**" I understand that I can end participation at any time by notifying the researcher.

I have read and understood all the information provided. I agree to allow my child to participate in this research study.

Name of Child (Print)_____

Name of Parent/Guardian (Print)_____

Parent/Guardian's Signature_____

Date_____

I agree to my child to be filmed and voice recorded.

Name of Child (Print)_____

Name of Parent/Guardian (Print)_____

Parent/Guardian's Signature_____

Date_____

* You must agree to both conditions for your child to participate in this study.