Sussing Out Complexity: Digital Social Deduction Games as an Avenue for Syntax and Grammar Development, Analysis and Pedagogy

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Abstract

With the landscape of gaming constantly changing, new avenues for game-based language learning are ripe for exploration. One such style of game that is currently under researched is the social deduction game, a type of game incorporating collaboration and competition as core, intertwined gameplay elements. This style of game, with its complex outcomes and high degree of social interaction and information exchange, has potential as a tool for language practice appropriate for intermediate learners who are beginning to develop complex language skills. In order to assess the viability of social deduction games, an experiment was carried out involving 5 middle and elementary school aged Japanese-speaking students playing the game *Among Us* using their target language of English alongside a Japanese-speaking English "coach". Analysis involving the use of mixed methods revealed that over the course of 10 weeks, the students showed increased motivation and enthusiasm. The students also showed an increase in complex language use, including use of sentences with multiple modifiers, embedded sentences and questions, and other use of language beyond a simple subject-verb-object construction. Their speech also demonstrated valuable insights into the nature of the Japanese-English interlanguage in language learners, reinforcing previous observations about the order of grammar acquisition and providing new evidence for the interpretation of complex structures between the languages. Use of scaffolding and other pedagogical techniques by the coach was also assessed via an interview and qualitative analysis.

要約

ゲーミングの分野が不断に変更されていることで、ゲームを踏まえて言語学習の新しい方法を調べる機会が多くなっている。そのうちの十分に研究されているゲームの一つの例として、ゲームプレイの革新として協力と競争を組み合わせた社会推理ゲームがある。

このゲームのスタイルは複雑な結果と情報交換と社会交流の高い程度で、複雑な言語能力を発展し始める中級の学習者に向く道具になる可能性がある。

社会推理ゲームの現実味を評価するために、小学生と中学生の５人が、英語を話せる「コーチ」と一緒に英語という目的言語を使って「Among Us」というゲームをした実験が行われた。10週間の期間に、児童生徒のモチベーションと意欲の増進が発現されたことが混合法を利用した分析の結果が明らかとなった。その上に、生徒は簡単な「主語・動詞・目的語」という文章の仕組み以上に多数の修飾語、挿入された従属節、質問等という複雑言語利用の増進も現われた。生徒の発言は言語学者の和英中間言語の性質に利益の見通しを示したので、以前よりも文法獲得の観察を強化し、和英中間言語の仕組みの解釈について新たな証拠が現われた。ゲームで参加したコーチが利用した「スキャフォールディング」という教授法なども面談訂正分析として評価された。

Declaration

Apart from contributions listed in the Acknowledgements section, I confirm that the content of this doctoral thesis is entirely my own work. The author conducted the research abiding by the ethical regulations of the academic institutions where research was conducted.

This research was conducted in collaboration with Gecipe, Inc., a company based in Shinjuku, Tokyo, Japan. Though the researcher had a previous paid working relationship with Gecipe, Inc., this contract was terminated prior to the beginning of the research and the researcher received no financial compensation in connection with this research. While the results of this research have been allowed to be used by Gecipe, Inc. for promotional purposes, and employees and officers of Gecipe, Inc. were involved in the development and execution of the classes connected with this research, Gecipe, Inc., its officers and its employees have had no input on the results of this research or related materials.

All reasonable efforts were made to ensure the informed consent of all parties involved in the experiment. The course offered as part of this experiment was offered to students free of charge as a supplementary course to complement the services offered normally by Gecipe, Inc., and were offered to certain qualifying students at their leisure. Students were informed of the experimental nature of this course, and were made aware of the presence of the researcher in Discord (https://www.discord.com) voice chats and servers used to conduct the course, both verbally in the first session and by appending “(Researcher)” (“研究者”) to the display name of the researcher's account, which was visible whenever the researcher's account was present in a voice chat room.

Consent was also sought from parents or guardians of each student. Consent forms were provided in Japanese to parents or guardians, identifying the researcher and his affiliations, explaining the nature of the research, the specific data and information being gathered, and explaining the possible uses of this data, as well as noting that any identifying personal data, particularly name, voice

or location, will either not be used or anonymized to protect the identity of the participants. Consent was provided by the parent or guardian of all participants discussed in this research. In addition to the five participants discussed in this research, a sixth participant participated in two sessions, but was unable to be contacted after their second session of participation. In order to ensure the sixth participant's privacy, no data from the participant's time will be included in this research. A copy of the specific language used in the consent form in Japanese alongside an English translation is provided in Appendix A.

Date: February 1, 2024

Spencer O'Brien Hanlin

Dedication

To my friends and family all over the globe – thank you for being there through this journey.

Acknowledgments

I wish to thank everyone who supported me throughout this endeavor. First, I need to thank Dr. Mark Peterson, my advisor, who helped me navigate the rough road of a foreign university from start to finish, and who without his help, I would have not had the opportunity I have had to live out my dreams and realize what I have been pursuing for much of my life. I also want to thank him for his academic guidance and his timely feedback. I would also like to thank Takuya Manabe and Yasuhiro Muneyuki from Gecipe, as well as the coaching staff, for all of their help making this experiment happen in the first place.

I must also extend thanks to my colleagues in the Peterson Lab, who have been invaluable as resources to help bounce my ideas around and build my confidence in my work and research. Thank you to Robert Swier for his invaluable feedback on my initial ideas and his encouragement to join the lab, Shawn Andersson for his assistance with this and other work I was composing at the time, Louis Lafleur for being a useful sounding board and giving me guidance on organization, and Kevin Wrobetz for his help with some of the nitty gritty on games. I also want to acknowledge Judy Wang and Michael Hofmeyr, whose experience coming through before me has been invaluable in getting through myself. Thank you also to JALTCALL for letting me publicly air my research and to all those who asked questions at my presentations. I also want to thank Professor Yachiko Zenno of Naragakuen University for her help with my abstract and her support over the past few years.

I also want to thank my colleagues in Boston for helping get me on this track in the first place – with particular thanks to Snejana Iovtcheva and Paul Hagstrom who reignited my love of syntax, and Vera Lee-Schoenfeld and Bill Kretzschmar, who lit the flame in my undergrad days at University of Georgia.

Last but certainly not least, I would like to thank my family, particularly my parents, who have helped me more than I can state, and my friends around the world – including Rachel and Leon, who

have gone through this grad school journey with me, and Nick and Danika for their unwavering support.

Spencer O’Brien Hanlin

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Table of Contents

List of Figures

List of Tables

List of Abbreviations

(In Alphabetical Order)

3D	Three Dimensional
CALL	Computer-Assisted Language Learning
COP	Copula
DGBLL	Digital Game-Based Language Learning
EQ2	*EverQuest2*
IH	Interface Hypothesis
Inc	Incorporated
INF	Infinitive
IO	Indirect Object
L1	First Language
L2	Second Language
LIH	L1+ Input Hypothesis
MMORPG	Massively Multiplayer Online Role-Playing Game
NONF	Non-finite
NONPST	Non-Past Tense
OBJ	(Direct) Object
GER	Gerund
PAST	Past Tense
PROG	Progressive Aspect
PT	Processability Theory
PvE	Player versus Enemy/Environment
PvP	Player versus Player
RQ	Research Question
SLA	Second Language Acquisition
TL	Target Language
TOP	Topic
ZPD	Zone of Proximal Development

Chapter 1:

Introduction

When reviewing previously conducted research on second language acquisition and pedagogy, a clear gap arises in the literature. There has been extensive research conducted on second language acquisition and many theories have been proposed. More broadly, the Input Hypothesis (Krashen, 1980, 1983, 1985), and the Interaction Hypothesis (Long, 1981), the Interface Hypothesis (Sorace, 2011, 2012; Sorace and Filiaci, 2006), and the revision of the Interaction Hypothesis by Ellis (1985), with this revision being widely studied (Loewen and Sato, 2018), all propose frameworks for language acquisition which include grammar and syntax. These exist alongside Processability Theory (Pienemann, 1995, 2005), which tackles syntax specifically.

Empirical research into these theories have focused little on syntax or done so broadly, favoring broader research of the particulars of the theory (Loewen and Sato, 2018), and little in the way of practical advice for pedagogical application has been offered. Even when syntax is focused, it is often the focus of developing writing (Chen, 2006; Kroll, 1990), with little consideration for speech or other synchronous language production contexts.

As a complex, dynamic and highly variable aspect of language cross linguistically, teaching or promoting acquisition of syntax faces challenges that are not shared by vocabulary, pronunciation or other aspects of language, particularly at advanced stages (Lozano and Callies, 2018). Due to this, there is an opportunity for alternative strategies and methods to be developed for language learners and teachers looking to achieve native-like competency in their target language, supported by targeted, linguistically-grounded methods.

1.1 Second Language Acquisition Theory

Theories of second language acquisition (SLA) are core to language pedagogy. Many fundamental theories have been proposed to describe the mechanisms by which students learn a second language, and while diverse, all make some fundamentally similar claims about language acquisition. Krashen's Input Hypothesis (1980), Long's Interaction Hypothesis (1981) and its revision by Ellis (1985), and Sorace and Filiaci's Interface Hypothesis (2006) have all proposed input and/or interaction from other speakers as key elements in the acquisition of language. Empirical studies assessing these theories have borne out evidence for the Interaction Hypothesis in particular, in adults (Loewen and Sato 2018) and children (Oliver and Azkarai, 2017).

1.2 Computer-Assisted Language Learning and Digital Game-Based Language Learning

Computer-Assisted Language Learning (CALL) presents a potential avenue for innovation by using tools, games and other computer-based methods to encourage use of complex language, which, in the proper context and with the necessary resources, may help students to build their language skills. As noted by Peterson (2013), CALL has existed since the 1960s, but early forays into the use of computers in language learning had limits that kept them from achieving breakthroughs in methodology to revolutionize language learning. However, CALL has shown to have potential with the continuing influence of Digital Game-Based Language Learning (DGBLL), and the addition of games into a CALL context has shown potential for enhancing learning (Peterson, 2016). However, the landscape of gaming has changed in recent years, and new avenues beyond those previously established need to be carved out to adapt to changing tastes and interests (Reinhard, 2021).

1.3 Multiplayer Games and CALL

The use of multiplayer games have shown promise in other contexts to encourage TL language output (Peterson 2016), though none have specifically targeted sentence complexity or syntax generation

abilities. Previous experiments have demonstrated the merit of multiplayer games for their ability to encourage students to use their target language, such as studies on *World of Warcraft* (Peterson 2012b, 2012c; Thorne, 2008), and *Minecraft* (notable studies including Kuhn (2014), York (2014), and Swier (2014)).

1.4 Linguistic Foundations and Theoretical Feedback

The modern field of linguistics is built largely upon the work of Noam Chomsky and his seminal work making the case for linguistics as a field of study separate from behavioral psychology (1971). From this foundational work, there has been some degree of division between applied linguistics and Chomsky's theoretical foundations on the basis of Chomsky's difficulty describing issues of second language acquisition (Cook, 2008). This divide persists, and theoretical work struggles to explain or give recommendations for pedagogical strategy (Hoque, 2020). However, the complexities of syntax necessitate a deep understanding of the systems to provide pedagogical recommendations beyond the broad implications of wholesale SLA theories.

1.5 Scaffolding in the CALL Classroom

Scaffolding is a long-standing concept in the broad field of education, finding its origins in 1975 with a study by Bruner and Sherwood on child-adult interaction. Alongside the Zone of Proximal Development (Vygotsky, 1978), it has formed a core part of pedagogical approaches in educational contexts, including language pedagogy in particular. Models of scaffolding and its usage in an SLA context have been proposed by scholars (van Lier, 2004; Walqui, 2006) and have been a robust part of a language teacher's toolkit. However, in the context of CALL, instructors are often excluded from the experiment (e.g. York, 2014; Swier, 2014; Peterson, 2006; DuQuette and Hahn, 2010), and investigation into the role of the instructor can reveal unique advantages and opportunities from which students can benefit.

1.6 This Work

This work seeks to investigate the previously mentioned topics through the use of an empirically driven CALL experiment, using mixed methods to analyze both learner outcomes on a linguistic level and the learner's attitudes, motivations and experience with language learning overall. The following chapter, Chapter 2, will outline the previous research on the topics relevant to this experiment and the fundamentals necessary to understand and analyze the data gathered as the result of this experiment. Chapter 3 discusses a pilot study into the pedagogical techniques employed by Gecipe, Inc., a company providing educational services using CALL based methods.

Chapter 4 outlines the experimental methodology used on the basis of the pilot study previously performed, including a brief description of the game chosen, *Among Us* (Intersloth, 2018), and the motivation for using a social deduction game for this application. Chapter 5 contains a quantitative analysis of the data gathered during the experiment, as well as discussion of these results and how they relate to qualitative observations made during the experiment. Chapter 6 uses mixed methods to assess the students observed on an individual basis, as well as discussing the overall trends displayed when comparing the students as individuals. Chapter 7 discusses the interlanguage of the students and the acquisitional phenomenon displayed, assessing data points in depth for their implications for interlanguage and language acquisition broadly. Chapter 8 discusses the role of the instructor in the observed classes, including his use of scaffolding in a CALL context. Chapter 9 discusses these studies as a whole and their implications for the field of CALL, language pedagogy, and linguistics as a whole.

Chapter 2

Literature Review

This chapter aims to provide a broad overview of relevant research on themes to be explored as part of this study. This review will assess Second Language Acquisition (SLA) theories, relevant both to the broader acquisition of language as well as specifically those relevant to syntax and grammar, research in Computer-Assisted Language Learning (CALL), particularly multiplayer and/or competitive games, and pedagogical techniques in the context of language learning, specifically scaffolding.

2.1 Second Language Acquisition Theories

2.1.1 The Input and Interaction Hypotheses

A core component to this research is Second Language Acquisition, henceforth SLA, and the mechanisms by which a language learner acquires the various systems necessary to use a new language. Krashen (1980, 1983, 1985) presents a theory core to the study of Second Language Acquisition, the Input Hypothesis. Put simply, Krashen's hypotheses poses that, in order for a learner to acquire a language, they must receive comprehensible input (i.e. input that is understood by the learner), as well as being at one level above that of their current level, often represented as $i + 1$, that is the current level of their language abilities i, plus the input just above that level.

This idea was expanded on by Long (1981) in his proposal of the Interaction Hypothesis, adding that negotiated interactions, such as the use of strategies or tactics including clarification checks, comprehension checks, and confirmation checks. Ellis (1991) expanded this further by noting that input, while helpful, was not in and of itself necessary, with input modification via meaning negotiation or some other mechanism of modification of received elements, being the necessary aspect of language acquisition, and how these interactions were core to acquisition.

While these theories form an important basis for the research into the acquisition of second language, they have since been expanded upon with further research in recent years to hone their predictive power in the context of syntax and discourse acquisition in second language learners, as well as explain the instances in which acquisition appears to fail or be incomplete.

2.1.2 The Interface Hypothesis

The Interface Hypothesis (IH) (Sorace, 2011, 2012; Sorace and Filiaci, 2006) is one such theory which seeks to explain tendencies in even advance-level speakers to demonstrate optionality (i.e. non-target forms or forms that are otherwise not used by competent or native speakers from which they may receive input). This hypothesis claims that for speakers who are sufficiently advanced as to have acquired a language to an end-state, the near-native level, do have full command over their grammar-internal interfaces and narrow syntactic properties, the errors arise out of the interactions between syntax and areas outside of the sphere of grammar, namely discourse. This is explained as being a consequence of the differences between processing of monolingual and bilingual speakers, rather than purely a phenomenon borne of interference from the speakers L1 (Sorace, 2011). This is expanded by Sorace (2011) into the processing resources account, which seeks to explain this non-target syntax and grammar as a consequence of cognitive load, where the need for a bilingual to inhibit the grammar of other languages they may know in order to process their target language may be a greater burden, causing inefficiencies that may lead to non-target speech when engaging with discourse information.

While this account may serve to explain the persistent non-target optionality in near-native speakers, it does not entirely exclude L1 interaction, nor does it necessarily serve to explain non-target grammar usage in other stages of acquisition. A further refinement of this theory evidenced by work from Dominguez and Arche (2014) and Slabakova (2015), referred to in Teixeira (2020) as the L1+Input Hypotheses (LIH), poses that these problems only arise in cases where the L1 and L2 differ

in their structure and where there is insufficient evidence based on input to make these differences transparent due to being infrequent or otherwise unclear to the learner.

Teixeria (2020) has gone on to show further that, while there are key phenomena that these two hypotheses account for, evidence as presented through their experiment on comparing a rare structure in English grammar (two verb-subject inversions – locative inversion, such as in "on the horizon appeared a large ship" and *there*-constructions, such as in "there appeared a ship on the horizon"). The results of the study demonstrate that there is not one particular level of complete optionality demonstrated by a non-native speaker with regards to grammar that interfaces with extragrammatical domains, but rather a spectrum of optionality, demonstrating that four factors appear to influence the usage of non-native forms – quantity and distance of context, frequency of the target construction, similarity between L1 and L2, and the overall L2 proficiency of the speaker.

2.1.3 Processability Theory

Although these theories explain the source of some non-target speech among L2 learners, their limited scope in terms of speakers of high L2 proficiency only explains persistent optionality of syntactic structures at the far end of the line for L2 acquisition, described as the "best attainable final state of L2 acquisition" by Teixeira (2020). There do exist other frameworks with which to explain the full process of L2 syntax and grammar acquisition, core of which is Processability Theory (PT) (Pienemann 1995, 2005). Processability Theory provides an outline for the stages of syntax acquisition, separating acquisition into five stages, lemma access, in which individual words or short phrases are accessible, the category procedure, in which words are sorted into relevant categories (noun, verb, adjective, etc.) by the speaker for use in sentence construction, the phrasal procedure, in which phrases are built from those categories, the S-procedure, in which full sentences are constructed, and finally the subordinate clause procedure, in which complex sentences are constructed. Each of these stages, while not entirely discrete, do necessitate that the learner master a lower stage before

being able to process the higher stage (e.g. before a student is able to form a full sentence, she must be able to produce the phrases needed to form it). Processability Theory in combination with IH serve to provide a broad account of the acquisition of syntax through an overall account of the stages as provided by PT and the ultimate outcome as demonstrated by research into IH, but intermediate learners, i.e. those who have yet to achieve near-native competency but have advanced past the initial levels of PT and are in the initial stages of the subordinate clause procedure or mastering the S-procedure, are not captured by these theories.

2.1.4 Theories of L1 Transfer

Another aspect of L1-L2 interaction that is mentioned but not fully explored by these theories is L1 transfer. L1 transfer is a long-standing pillar of the theory of language acquisition, having been noted by scholars well over 100 years prior with works such as Sweet (1899), described as a transfer of grammatical or syntactic structures (as well as lexical, phonetic or phonological features) from the speaker's first language to their second or subsequent language. Early theories of L1 transfer, however, were lacking in rigor as noted by Weinreich (1953) were based on the notion of simple borrowings from the L1, whereas it is more accurate to place these L1 transfers in the context of the system of both the L1 and L2.

Several theories exist as to the degree to which L2 learners have access to their L1 grammar. Schwartz & Sprouse (1994, 1996) propose the most generous access to L1, positing that L2 learners have full access to L1, and based on the parameters set by their L1 do they reconstruct this grammar to form the L2 – any lack of positive input results in non-native acquisition of features and therefore fossilization.

An opposing theory is derived from the competition model, which models language learning and processing in both children and adults, favoring the learner's role in determining the relationship between forms and their roles within the system of the language they are seeking to acquire or process

(Bates & MacWhinney, 1981, 1982, 1987; MacWhinney, 2005). This approach predicts that, on the basis of differing outcomes in L1 and L2 acquisition, L2 learners are using patterns in their L1 to acquire L2 structures, which leads to overgeneralizations and other errors. However, MacWhinney (1997) notes that not all structures in the L1 can result in L2, citing the lack of transfer of grammatical gender from German to English in German-speaking L2 English learners.

When looking specifically at L1 transfer in the case of syntax, Pienemann et al. (2005) pose that transfer between L1 and L2 occurs in the interlanguage but is heavily constrained based on both the accessibility of the specific structure that they are trying to acquire, in that structures from L1 that are higher on the processability hierarchy are inaccessible to the learner. Essentially, L1 features can and will transfer, but only in cases where the understanding and ability of the L2 learner is advanced enough to employ these features in the L2. These theories, taken together, suggest that while there is evidence for L1 transfer overall, this transfer is limited and constrained by the systems present in both languages, and only allows for transfer that is both informed by L1 (i.e. created on the basis of existing systemic knowledge of the learner's L2) but also constrained by the system of the L2 (i.e. structures or features that have no clear equivalent in the L2 will not be transferred).

2.1.5 Interlanguage

The concept of interlanguage has long been discussed in the context of second language acquisition (SLA). An early paper on the topic from Selinker (1972) presents interlanguage as a "separate linguistic system based on the observable output which results from a learner's attempted production of a TL norm." In other words, interlanguage is the incomplete TL-like system that learners produce before they reach a native or native-like stage. Interlanguage is by nature incomplete, and in addition to the target language features learned and acquired by a learner, is built as a result of five "central processes", language transfer (a direct transfer from L1 to L2), transfer-of-training (perhaps characterized as a learned error), strategies of second-language learning (errors that come

about as an artifact of the strategies used by the learner to facilitate language learning), strategies of second-language communication (non-canonical language used to facilitate communication), or overgeneralization (application of a grammatical or syntactic form where it would not normally be appropriate in native speech).

Some studies suggest that a large number of L2 errors (i.e., non-canonical forms) are attributable to L1 interference or transfer. An experiment by Chen (2006) yielded significant evidence for transfer of a number of syntactic aspects of the subjects' first language (Mandarin Chinese) into their English writing. Chen notes on the basis of this evidence that students will refer to their existing grammatical repertoires when finding difficult communicating in their target language, that repertoire being their first language.

The influence of the L1 on the interlanguage is broad. As Odlin (1989) noted, transfer occurs in every subsystem of language, including syntax, as well as in children and adults alike. Transfer can also involve "unusual structures", i.e., those that are not common typologically. It can also result in a wide range of non-canonical usages, ranging from lexical (word choice, collocations, direct borrowings of L1), semantic (calques, overgeneralization of meaning), grammar (tense, subject-verb agreement), and syntax (base word order, phrasal word order, adjuncts, tense marking, etc.). Plurality and articles (Luk and Shirai, 2009) have been demonstrated as sites of negative transfer, particularly in regards to the Japanese-speaking learners of English such as the subjects of the experiment discussed in the following chapters.

2.1.6 Sociocultural Theory, Scaffolding and Language Pedagogy

Scaffolding is a concept in education that dates back to 1975, where the term was first introduced in English research by Bruner and Sherwood in the context of child learning. Scaffolding in this context referred to how the parent intervened in a child's play during a game. This was expanded upon by Wood, Bruner and Ross (1976) where they further clarified it as the just-in-time

assistance from an adult to assist in problem solving or task completion. Wood et al. also outlined features of this help: recruitment of interest, reduction of degrees of freedom, maintaining orientation towards a goal, marking features of the task, control of frustration and modeling solutions. These features are “non-rule bound” (i.e., optional), but help the child acquire knowledge about the game.

Scaffolding is also often associated with another core concept in sociocultural theory of learning – the Zone of Proximal Development (ZPD). ZPD, proposed by Vygotsky (1978), characterized as the “distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.” Put into the context of language education, scaffolding is the tool by which teachers or peers bridge knowledge gaps that are represented by the ZPD.

Scaffolding as a practice can be divided into two elements per Walqui (2006): a “conventionalized, ritualized structure” of a game or practice, or a process which is constructed by the participants actively throughout the activity in which they are participating. Walqui further notes scaffolding can be thought of in three 'scales', each progressively more momentary, process-focused and unplanned in their implementation (van Lier, 2004). Walqui characterizes them as follows:

Scaffolding 1	Curriculum and related planned tasks or rituals
Scaffolding 2	Rules or procedures of an activity
Scaffolding 3	Collaboration as part of interactions

Table 1. Walqui's types of scaffolding

van Lier (2004) asserts that there are six features that these three scales share. As outlined in specific detail by Walqui (2006), they are:

Continuity	Tasks are repeated and continue with related variations
Contextual Support	Encourages exploration and promotes access to means and goals
Intersubjectivity	Encouragement of participation in a community of practice
Contingency	Tasks adjusted based on learners, actions oriented towards each other or the community
Handover/Takeover	Student role is increasingly expanded as their skill and confidence improves
Flow	Balance of skills and challenges

Table 2. Features of Scaffolding

This concept of scaffolding has since been extended to education contexts generally, particularly in the context of second language acquisition and language education. Scaffolding, in the context of language learning and education in general, is useful for introducing new information or concepts to students, and can serve to teach both the specific, English-specific learning and general content area learning (techniques language learning as a whole) (Walqui, 2006). Walqui (2006) outlines six main types of scaffolding approaches to assist students:

Modeling	Demonstrations, collaborative projects with the instructor or other knowledgeable person, or modeling appropriate language use
Bridging	“Activating student's prior knowledge”, incorporating previous knowledge or concepts, linking to students' personal experience/life
Contextualizing	Put language in context with media or realia, or analogizing
Schema building	Provide pre-lesson context and/or organization to facilitate understanding
Re-presenting text	Presenting a text in a new way to make the language more accessible to the student
Developing metacognition	Giving students the tools and skills to consider and monitor their own thinking and learning

Table 3. Main scaffolding approaches

These approaches can be used individually or in tandem to enhance and facilitate language learning, with these specific approaches being targeted towards language acquisition by focusing on specific skills or contextualizing language use in a way that makes the language more salient and memorable for the learner. With this foundational background in mind, approaches employing these

techniques can be developed, including those that incorporate technology and games, such as Computer-Assisted Language Learning (CALL).

2.2 Computer-Assisted Language Learning

2.2.1 Multiplayer Games and Collaborative Learning

One of the most popular genres of games for CALL application studies that incorporates collaborative elements is the Massively Multiplayer Online Role Playing Game (MMORPG). Peterson (2016) in a review of a multitude of studies using video games as a language learning tool finds the research bares out a wide range of advantages to this approach, showing that MMORPGs in particular are useful for eliciting a student's target language, encouraging language socialization, and increasing motivation. However, Peterson notes that there is not conclusive evidence across the studies for the free and frequent elicitation of interactions key to second language acquisition, such as negotiation.

However, with the rise of popular, widely available and easily accessible multiplayer, collaborative games, a new avenue for collaborative CALL is possible. As noted by Reinhardt (2021), massively multiplayer games outside of the genre of MMORPGs, e.g. *Fortnite*, *Minecraft* and *Among Us*, offer multiplayer experiences in a collaborative setting and hold potential for CALL applications. Many of these new games not only have collaborative elements that have been well studied, but incorporate competitive elements that offer new avenues for engaging and motivating learners as well.

There is a wealth of research on various multiplayer games in CALL applications, focusing largely on collaborative elements. A wide range of games with multiplayer elements have been assessed with collaboration as a core element, but existing off-the-shelf games with competitive elements have not been assessed widely, with a few limited examples of games with collaborative and competitive elements also being looked at. Table 4 outlines a number of these games into which research has previously been performed.

Game	Studies	Competitive	Collaborative	Findings
Minecraft	Kuhn (2014), York (2014), Swier (2014)	No	Yes	Assigned collaborative tasks can facilitate learning
Second Life	Deutschmann, Panichi, and Molka-Danielsen (2009), Deutschmann and Panichi (2009), Peterson (2010), etc.	No	No	Virtual environments are useful for learning tasks
World of Warcraft	Peterson (2012b, 2012c), Thorne (2008)	Indirectly	Yes	Learners elicit TL through collaborative tasks
Ragnarok Online	Reinders & Wattana (2012, 2014), Chotipaktanasook & Reinders (2018)	Indirectly	Yes	Increased TL output
EverQuest II	Rankin et al. (2009)	Indirectly	Yes	Increased communication but lower vocabulary score
Divine Divinity	Vandercruysse et. al. (2013)	Not multiplayer, but progress can be compared	No	Slight, near negligible increase in test score, increase in perception of confidence

Table 4. A summary of notable games with competitive or collaborative elements previously assessed for CALL purposes.

The virtual world social simulation *Second Life* has been used as a platform for CALL applications in numerous studies. The nature of *Second Life* is inherently multiplayer as the platform itself involves primarily interacting with others in a virtual environment, with little in the way of

player-to-program interactivity. Most studies utilizing *Second Life* use it as a platform for communication, essentially a virtual classroom in which students can converse about topics provided by the instructor. Studies such as Deutschmann, Panichi, and Molka-Danielsen (2009), Deutschmann and Panichi (2009), and Peterson (2010, 2012a) all have students both engage in conversation as well as give presentations, largely employing typical classroom activities. While the game is an effective platform for digitizing classroom activities, the game itself is somewhat limited in what it can present as input for the learners and does not provide any particular environment that elicits speech that cannot be produced in a typical classroom setting.

Some studies go further to include more direct student collaboration via *Second Life*. DuQuette and Hahn (2010) employed a series of information gap tasks. The researchers directed students to collaborate by having one student explain a route to another, who then must follow it per their directions, as well as a second task where one partner must provide directions to another to arrange furniture in a space in a predetermined way, providing an avenue for meaning negotiation. Peterson (2006) also presents tasks where students must collaborate and negotiate to achieve an outcome. One task involves the students reconstructing a narrative where each pair is given half of the full story in the form of pictures. The second has pairs selecting a gift from a list of choices, from which they must agree on one. While these tasks demonstrate the potential for collaborative learning through virtual environments, these tasks are given through assignments that must be created by the instructor and understood by the students. Although the game can facilitate some creative tasks that would be impossible or impractical in a real-life situation, the game itself does very little to provide learners with goals or motivation.

Minecraft, a game characterized by collaborative and creative gameplay in multiplayer settings, has also been assessed by various sources for its utility as a tool for CALL by numerous studies. Kuhn (2014) discussed its application as a tool for a second language writing course, citing the broad possibility space, its high level of engagement and the flexibility of that engagement

allowing for various lengths or degrees of play, and the intentionality of the game in that the engine of the game itself provides built-in obstacles to clear as the player sees fit. *Minecraft* was also utilized by York (2014) as a tool for teaching Japanese to English-speaking students. The high level of customizability, ease of ability to assign tasks, and useful context provided by game mechanics are noted as benefits by York, but the use of multiplayer elements was limited to pair work tasks and group conversations, demonstrating some limited use of collaborative learning. Swier (2014) extends these techniques, using tasks to guide a group of learners to facilitate conversation and information exchange. These groups, arranged in pairs, were given more complex tasks that incorporated longer game play sessions requiring the players to navigate the world to locate specific blocks in order to build a structure. This study demonstrated the viability of collaborative platforms such as *Minecraft* for encouraging and facilitating student communication and collaboration, which can lead to increased learning outcomes.

2.2.2 MMORPGs and Collaborative/Competitive Learning

One genre of game that has shown positive results and can incorporate competitive and collaborative gameplay is the aforementioned Massively Multiplayer Online Role-Playing Games (MMORPGs). As Peterson (2016) notes, MMORPGs such as *World of Warcraft* have an inherent collaborative element, where players join guilds and other groups to complete quests collaboratively, requiring communication. Studies on such games are summarized below in Table 5.

Game	Studies	Hypothesized Benefit(s) and Finding(s)
World of Warcraft	Peterson (2012a, 2012b), Throne (2008)	Significant language output through socialization in TL
EverQuest II	Rankin et al. (2009)	Increased TL output, increased communication, decrease in vocabulary retention
Ragnarok Online	Reinders & Wattana (2012, 2014), Chotipaktanasook & Reinders (2018)	More TL output, more willingness to communicate in TL

Table 5. MMORPGs and their hypothesized benefits for CALL applications.

Peterson (2012a, 2012b) and Thorne (2008) have demonstrated that collaboration in *World of Warcraft* through quests elicits significant target language (TL) production by exposing them to target language socialization. Further, learners respond positively to the game as a learning tool. Due to its popularity, *World of Warcraft* has been studied extensively, but other MMORPGs have been assessed for their fit for CALL applications. Reinders & Wattana (2012, 2014) and a follow-up study by Chotipaktanasook & Reinders (2018) incorporated sessions of *Ragnarok Online* alongside traditional classroom instruction, demonstrating that students produced more output in their target language and more discourse function than the traditional classroom setting and found that students were more willing to communicate in their target language while playing MMORPGs.

A particularly noteworthy study on collaboration in MMORPGs is Rankin et al. (2009), which used *EverQuest II* (EQ2) as its learning tool. Three groups were assessed, one with traditional drill and rote instructions, one with students solely playing EQ2 alone, and one playing EQ2 alongside native speakers. While they were found to have improved less on a test of their ability to define and use vocabulary than the drill and rote students, the students playing EQ2 still showed increased ability to communicate and demonstrated acquisition and understanding of unfamiliar vocabulary through in-game contexts. These collaborative elements in working with other players, notably native speakers, were able to provide methods for improving the participants' target language abilities in communication and vocabulary, despite not comparing favorably in raw vocabulary recall.

MMORPGs, however, do present notable drawbacks in the present day. MMORPGs often involve significant time spent in tutorial sections, reading game or story information, or undergoing individualized tasks. Furthermore, while these games do boast the potential for a robust social aspect that facilitates communication and negotiation, these occasions are not frequent and must often be sought out (e.g., in many games one must join a guild or otherwise form a party to play with other players). The social hierarchy inherent in these games may also discourage learners and limit their access to the game and by extension to opportunities to socialize, learn and build their language skills.

MMORPGs have also been cited as having waning popularity, as noted by Reinhardt (2018), and the lack of familiarity and popularity among potential learners have made these games less than ideal as a tool for motivating students, as well as the particularities of the language used, which may be unfamiliar to certain learning groups. As such, new, emerging genres that share aspects of MMORPGs that are popular and widely familiar with students should be considered for use.

2.2.3 Competition and Learning

While there has been some limited study on the use of competition in games as a language tool, studies on games with competitive elements are significantly limited though the results are promising. Cheng et al. (2009) demonstrates that competition on its own or between students can be a useful tool but does present some potential issues. Equal opportunity games that reduced the gap in ability between students showed promise for building confidence (and thus motivation) for students. This increase in perception and motivation was further demonstrated in Vandercruysse et al. (2013). The researchers found that Dutch-speaking students playing a single-player game *Divine Divinity* and comparing their outcomes had a slight increase in their English test scores, but more notably reported increased confidence when set in a competitive context. The researchers conclude that there may not be a clear correlation between competition broadly speaking and testable outcomes, but the increased positive perception and motivation can be beneficial.

2.3 Competitive and Collaborative Games in CALL

With the lessened popularity of MMORPGs and similar multiplayer games, other genres of multiplayer games can fill the gap left. In particular, games with collaborative and competitive elements can be used to similar effect, and potentially offer additional benefits beyond what MMORPGs and other multiplayer games can. Collaborative/competitive multiplayer games share MMORPGs' advantage of clear and targeted tasks and a built-in source of motivation, as well as scenarios which encourage negotiation and target language use.

In order to appeal to students exposed to the more recently popular genres and styles of video games while still benefiting from the advantages demonstrated by previous studies into collaborative games in CALL applications, researchers can turn to competitive/collaborative games. Competitive/collaborative games take elements from two major categories of popular, widely known multiplayer games - competitive games (or PvP, player versus player), which includes a number of shooters, such as *Call of Duty*, *Overwatch*, or *Fortnite*, in which an individual or a small team competes against other players for a common goal, and collaborative games (often termed PvE, player versus enemy/environment), including games like *Minecraft* where players work together to build, progress or simply socialize.

Competitive games provide learners with a clear, targeted task that gives learners a focus with which to use their language skills (Cheng et. al. 2009, Vandercruysse et al. 2013). This goal, as well as the support and communication from other team members, helps encourage target language use and negotiating of needs. The required language skills and topics of communication needed to collaborate in a team-based game has potential to facilitate the kinds of language skills that can help build vocabulary, syntax and speech ability out of a need to communicate clearly, quickly and concisely with teammates in often fast-paced or high-pressure settings. Team settings can act similarly to the equal opportunity competitive environments as noted by Cheng et al. (2009), as competing as a team can help level skill differences by having teammates support each other while playing the game, both in their language abilities and in their game play proficiency.

Similarly, collaborative games, while more free form and often without a built-in, simply understood goal, give players more opportunity to negotiate between them and their fellow players. These creatively oriented games allow learners to test the waters of scenarios that emulate real life, needing to discuss specific plans, spatial relationships, learn words for common, useful items, and negotiate with collaborators to acquire materials, finish tasks or accomplish goals. *Minecraft* has been given as an example of a useful tool for education largely because of its hands-on approach, allowing

players to manipulate objects in a virtual space, which can be applied to language learning tasks as well, as shown in the aforementioned studies by York (2014) and Swier (2014).

Further, the use of CALL methods in collaborative settings has been shown to be effective over more traditional, individualized methods. A recent demonstration of this comes from a study of second language learners of English in Taiwan conducted by Wang and Liao (2017) have clearly demonstrated an increase in language competency among groups using collaborative CALL methods over more traditional approaches, specifically student-to-student discussion boards centered around real-world target language media. Beyond simple student-to-student discussions centered around consuming media passively, interactive media, specifically online multiplayer video games, has potential to further enhance the learning of students.

There are games that combine these two approaches, utilizing a mix of competitive and collaborative elements, allowing learners to draw benefits from both while helping to alleviate some of the issues that have arisen in previous studies. One example is the popular game *Among Us* (2018), which combines both competitive aspects, where a group is working together while competing against an unknown player or players whose goal is to secretively eliminate all others from the game. The learners must suss out the guilty player or players by combining their efforts and providing specific accounts of their actions and the actions of others, a useful skill that combines many essential parts of language to build a strong narrative to argue one's case. However, the lack of knowledge as to the role of the of the guilty player or players requires the entire party to assess player motivations, bring in memory, build accounts and utilize clear and complex speech to build narratives of guilt or innocence.

This dynamic draws both from competitive games, where a clear goal is presented and communication is necessary to achieve it, and collaborative games, where information must be presented in a clear and easily understood manner to convey specific intent. These complex actions mimic the type of negotiation learners may undergo in real world situations, giving them opportunities

to practice complex speech in context and in a dynamic way. The simple and clear goals also make the game easily learned and accessible to a wide range of learners, making negative interference from the game itself less of a potential issue.

These team-based multiplayer experiences will provide a unique setting for language learning that has not yet been fully explored. In team shooters such as *Overwatch*, *Team Fortress 2, Apex Legends* and multiplayer team modes in *Fortnite*, players must collaborate and communicate actively in order to best the opposing team or be the last group standing. Success in this style of game is contingent not solely on the skill of the player, but the ability of the individual team members to coordinate their actions and communicate with each other as clearly, accurately and frequently as possible under time pressure, aligning with the Thomas-Kilmann Conflict Mode Instrument (Thomas & Killmann, 1997).

There is some limited evidence that games such as *Fortnite*, which includes modes for team-based competition, show promise as learning tools. Games like *Fortnite* allow for players to compete against others in small teams of two to four and possibly larger, collaborating and communicating with teammates to best their opponents. One small survey of students from Jurenec (2018) assesses the relationship between English skill and playing *Fortnite*. Jurenec surveyed a group of 55 students between the ages of 13 and 14, with students providing information about their gaming habits, specifically with *Fortnite*. Students were then tested on their knowledge of English words used frequently within the game as well as common Internet acronyms (e.g. LOL, AFK, PvP) and online gaming jargon (e.g. noob, lag). Jurenec demonstrates a correlation between playing *Fortnite* and their knowledge of English. However, this study is limited by the methods used, as its assessment of game play fails to consider time spent in-game, and the focus on in-game terminology and jargon does not assess an overall increase in broad language competency, simply their ability to acquire specific terms that assist in game play that are not necessarily generalizable to other real-world applications. Though

this preliminary investigations shows promise, more detailed assessment should be undertaken before conclusions can be drawn.

2.4 Research Gaps

2.4.1 Suitable Methods for Promoting Acquisition of Syntax and Grammar

As demonstrated in the previous sections, when assessing the current state of research into Computer-Assisted Language Learning, the target of previous research has been somewhat narrow, focusing on three core aspects: vocabulary acquisition (Rankin et. al., 2009; Vandercryusse et. al., 2013), beginning or lower-level learners (Rankin, Gold and Gooch, 2006), and largely single-player (Vandercryusse et. al., 2013) or primarily player-directed games including MMORPGs (Peterson, 2016). A meta-analysis of 26 DGBLL studies between 2008 and 2022 revealed that a majority targeted vocabulary, with fluency and grammar also targeted, but not syntax, as well as the majority of games being single player or MMORPGs, with only a few small-scale multiplayer games being tested across the studies (Dixon et al., 2020). While this narrow scope has yielded insightful results and brought about the development of useful pedagogical techniques, it has failed to cover a wide breadth of possible applications of CALL, focusing largely on smaller, targetable aspects of language, such as vocabulary (e.g., Rankin et. al., 2009; Vandercryusse et. al., 2013).

While vocabulary acquisition is a core part of language learning, it is only one aspect of a much wider range of competencies necessary to be able to speak a language. One such competency that has yet to be addressed fully is grammar and syntax, which, likely due to their complexity and long tail of acquisition compared to core vocabulary, may be difficult to target in a classroom setting. Syntax and grammar are often aspect of language that even otherwise highly competent speakers fail to fully master (Kroll, 1990), despite being core to language.

This apparently lack of mastery of these competencies may well due to their inherent complexity, and a class or lesson focusing on syntax and grammar may be inaccessible to less

advanced students, who may experience cognitive overload from complexity not unlike that demonstrated in Rankin, Gold and Gooch (2006), or be too low on the Processibility Hierarchy (Pieneman, 1995) to have access to important syntactic or grammatical structures needed to further develop their skills. As such, it is likely that only more advanced students with a firm basis of understanding and competency will be suitable for such a lesson.

2.4.2 CALL and Syntax

With this gap and the inherent challenge to confronting it established, the next issue to be tackled is as follows: if focus is being shifted to morphosyntax, which will need more advanced students, what kind of computer-aided tool or game can accommodate both of these requirements? Previous research, such as that summarized in Peterson (2016), has focused on video games, particularly multiplayer games, as an avenue for research. However, as noted by Reinhardt (2021), the style of multiplayer game once regularly studied for CALL purposes has fallen out of favor among students and gamers as a whole.

Furthermore, the types of games previously used are not necessarily conducive to practice of complex forms, as they often involve passive learning in single player games (Vandercruysse et al., 2013), games with optional multiplayer elements such as *Minecraft* (e.g. York, 2014; and Swier, 2014), or multiplayer games with incidental communication not necessarily core to the gameplay loop (see Peterson (2016) for a thorough review of games of this type). While these titles have clear advantages, they all lack a useful constellation of elements that make them less than ideal for building complex syntax skills and practicing conversation actively.

2.4.3 L1 Transfer

Another open question that can be assessed is the question of the degree or role of L1 transfer in learning. As discussed in Section 2.1.4, competing theories, from the most generous (Schwartz & Sprouse, 1994, 1996) to the most restrictive (Bates & MacWhinney, 1981, 1982, 1987; MackWhinney

& Kroll, 2005) have both found considerable traction in strands of L2 acquisition research. While a wealth of empirical studies exists assessing these theories in the context of syntax, such as Luk and Shirai's (2009) study of transfer of pluralization in Spanish-, Chinese-, Korean- and Japanese-speaking learners of English, or Snape et. al.'s (2013) study of the acquisition of determiners in Japanese-speakers, there is still room for more research assessing these claims in a more naturalistic setting. Data gathered from English learners in a setting where they are speaking freely, such as while playing a game, may be useful for testing previous findings in less naturalistic settings.

Furthermore, there is potential to make this data useful not just for pedagogical applications, but theoretical ones as well. In addition to testing the various theories as discussed in Section 2.1, there may be some application for testing deeper, Chomskian models of syntax. As noted by Hoque (2020), theoretical linguistics is limited in its explanatory power of SLA outcomes. However, data from a naturalistic source, particularly an interlanguage that shares features of multiple languages, could provide new insight into those languages, and even be relayed back to an applied setting to inform pedagogical approaches.

2.5 Research Questions

With the previous research into CALL, DGBLL and its applications in mind the following questions are being raised with regard to pedagogical advancements to be made.

RQ1: Do games with competitive and collaborative elements (i.e., social deduction games) encourage production of complex sentences?

RQ2: Do competitive and collaborative games result in learning of complex sentence forms?

RQ3: Do competitive and collaborative games motivate students to participate actively in lessons?

Questions 1, 2 and 3 seek to assess the fit of competitive/collaborative games in a classroom setting, as well as how effective said games are in achieving development of complex syntactic forms beyond a simple base sentence.

RQ4: What observations about learner interlanguage can we observe on the basis of the utterances made over the course of the experiment?

RQ5: What is the nature of L1 morphosyntactic transfer, both between Japanese and English and in general?

Questions 4 and 5 seek to assess what can be learned from the data gathered from the experiment conducted to expand our knowledge of syntax and grammar more broadly, and to see if this can be useful as applied and theoretical knowledge.

Chapter 3:

Why *Among Us*?: A Pilot Study of Gecipe

In an effort to meet the requirements for a game suitable for promoting the development of syntax as discussed in Chapter 2, in this experiment, the researcher chose to assess the 2018 game *Among Us* as a venue for this application of CALL. This choice of game was motivated in part due to an initial pilot investigation conducted into the use of another game with competitive and collaborative elements, *Fortnite* (Epic Games, 2017), by Gecipe, Inc., a company offering English lessons to Japanese-speaking children in their "eSports English Conversation" school. This pilot is discussed in Section 3.1. The specifics of *Among Us* and its game play loop are discussed in Section 2.2. The specific game genre to which *Among Us* belongs, social deduction games, is discussed briefly, as is the motivation for using *Among Us* over the game studied in the pilot investigation.

3.1 Initial Pilot Investigation – Gecipe and *Fortnite*

Prior to the experiment involving *Among Us* discussed in the following chapters, an initial pilot investigation of a company already using CALL methods with competitive and collaborative games was conducted. The goal of this pilot was to assess the company's use of CALL methods, particularly those using a game whose game play elements are such a radical departure from those employed by previous research, such as that described in Peterson (2016).

3.1.1 Methodology

This pilot study was conducted on the basis of observation and gathering of information and data on Gecipe and its pedagogical approaches. Information posted publicly on their website (Gecipe, 2022) and similar media posted as promotional material were assessed, and discussions and short interviews were conducted with the CEO, Takuya Manabe, and his officers, including Yasuhiro Muneyuki, an

instructor and manager at Gecipe. Numerical data reported by Gecipe from their website on enrollment and class sizes, including specific data requested directly from the company, was also assessed as part of this study.

3.1.2 Gecipe

Gecipe, Inc. (in Japanese ゲシペ株式会社 *geshipe kabushiki-gaisha*), henceforth known as "Gecipe", is a company based in Shinjuku, Tokyo, Japan. Gecipe specializes in e-sports ("electronic sports", typically competitive video games) in various contexts, but a significant focus of their business model is on using e-sports games as a tool for teaching English. Their business model focuses primarily on children as their target audience, with a wide range of English abilities served by their classes.

Gecipe has seen continued success since their founding in 2018 through their use of e-sports games as a tool for teaching English and improving English ability in their clients. As of their most

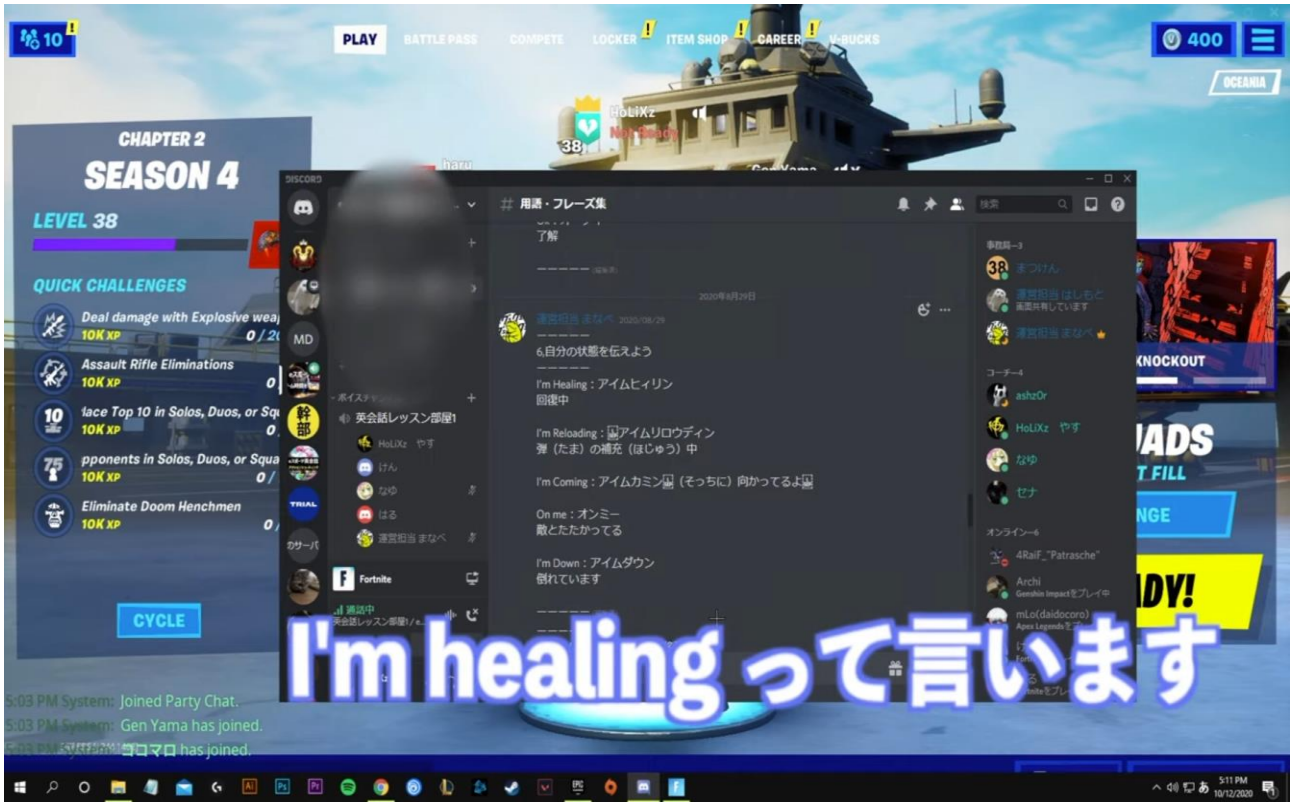

Figure 1. A screenshot of a promotional video from Gecipe, demonstrating the general setup used for classes on Discord.

recently reported statistics in 2022, according to their own metrics, they have offered over 50,000 lessons to students, with 93% of students retained within the first six months of starting classes with Gecipe (Gecipe, 2022). Gecipe offers three levels of classes, beginner, intermediate and advanced. In the beginner classes, their initial focus is building motivation, enjoyment of English, self-confidence and interest in the English as a language to learn. Intermediate classes focus on building conversational skills and confidence in those skills and communicative abilities, while advanced classes focus on diverse expressions, and expressing opinion and their own ideas. Students are able to progress through these levels as their abilities grow (Gecipe, 2022).

Gecipe, as an entirely online English conversation school, conducts their classes through the popular chat client Discord, primarily using their voice channel feature to conduct classes in a live setting, and leveraging screen sharing and streaming to enhance these lessons by showing class materials or game play to the students. As shown in Figure 1, classes are coordinated over Discord, and conducted via the voice channels, in which students and the teacher communicate directly. Each class is structured similarly, with 2-3 students in one class alongside a teacher, termed “coach”, who both leads the class and provides instruction, as well as participating in game play alongside the students. This is somewhat of a deviation from many other CALL approaches discussed in literature, where instructors played a passive role by giving a task to students (e.g. York, 2014; or Swier, 2014;) or where teachers were removed from the equation altogether in favor of allowing students to explore the game they are playing on their own (Peterson, 2012a; 2012b).

Classes are conducted in roughly 60 minute periods once a week. Generally, classes will begin with 10-15 minutes of instruction on vocabulary or grammar, with 40-50 minutes of game play, focusing on the terms presented if possible and relevant, and with any remaining time dedicated to a review of that lesson’s content. Although other games have been used or tested by Gecipe, the primary game which is used by the company is *Fortnite*.

3.1.3 Fortnite

Originally released in 2017 by Epic Games as a standalone single-player experience, *Fortnite* is now widely known as a popular multiplayer third-person shooter game (Petty, 2018). Though a wide variety of modes exist within the game, the mode that is leveraged primarily by Gecipe for the purpose of their e-sports English conversation service is the Battle Royale mode. Battle Royale is a game mode in which approximately 100 players are put into a large map, where the winner is the last individual or team left standing at the end of the round. Players can be eliminated through a wide variety of means, including environmental dangers, events or friendly fire, but are primarily eliminated through losing their health as a result of another player's assault.

Players drop into the map from above, scattering them around the area. Upon landing, players must gather weapons and resources in order to survive and succeed against their fellow players. They begin with few resources, generally only a tool that allows them to destroy map elements for usable items or resources, but will be able to gather them from chests, events, map elements and downed players over the course of the game.

Game play in classes conducted by Gecipe generally focus on the Battle Royale mode, with teams of three or four depending on the size of the class. As they play in the small team submodes of *Fortnite*, instead of the free-for-all typical of a Battle Royale game, the game becomes team-oriented and collaborative, with team members needing to work together to best their competing players. While it is possible to win without coordination, the fast-paced nature of the game and the sheer number of players on the map at any given time favor collaboration as a key element to success. Resource gathering and distribution of said resources equitably or to favor the play style or current load out of players, as well as coordination to best opposing teams or defend or revive teammates are important, all of which require active communication to share and negotiate information between the players.

Nearly all speech and language practice conducted during the lesson occurred during the game itself, in the midst of the action-based game play. While some speech practice was conducted before and after this game play, a majority of the speech leveraged the game itself to elicit speech. As such, much of the speech produced is done in high pressure situations, where the threat of opposing players constantly looms, and much of the communication is in short, contentful bursts in which the coach or students share information in short phrases with minimal complexity. While there is room for more complex speech, such as when describing pathing, the environment or other more complex elements and events, a significant portion of the communication is brief and simple.

3.1.4 Fortnite *as a CALL Teaching Tool*

On the basis of the research described in Chapter 2, *Fortnite* demonstrates a number of advantages that suggest its viability as a teaching tool in a CALL context. Its fundamental nature as a competitive game with collaborative elements in its team-based modes leverages two major advantages to both competitive and collaborative games.

As was demonstrated in Cheng et al. (2009) and Vandercruysse et al. (2013), games with competitive elements help increase motivation in students help build confidence in learners, which leads to increased motivation. Vandercruysse et al. (2013) also demonstrates that these games can lead to some positive learning outcomes. This level of interaction alone, however, has not been demonstrated to be a sole determiner of increased language learning outcomes broadly. However, the addition of a collaborative element, in this case, team game play, can help leverage other advantages found in collaborative games.

Collaborative tasks and games with collaborative elements have been shown to be useful for promoting language acquisition (e.g. York, 2014; Swier, 2014; Peterson, 2006; Wang and Liao, 2017), though a key element of a game such as *Fortnite* that may be more meaningful to language development is the type of actions undertaken during team-based play. The type of discussion

necessary in cooperation – providing and sharing information, discussing and debating actions, items, resources and strategy, etc. - are all types of meaning negotiation, which are deemed necessary for language development under a number of SLA theories, namely the Input Hypothesis (Krashen, 1980) and the Interaction Hypothesis (Long, 1981). This fundamental element of the game play being so central to success gives *Fortnite* significant potential as a useful tool for CALL elements and demonstrates more broadly how games that incorporate both of these elements show potential as being useful for these applications.

Continued student enrollment also reflects an overall enthusiasm and effectiveness of these methods. As reported by Takuya Manabe, CEO and founder of Gecipe, Inc. in a message provided directly to the researcher (personal communication, June 28, 2023), as of 2022, roughly the period when this research began, enrollment in Gecipe's classes was roughly 1,000 students, increasing to roughly 2,000 students by 2023. These students participated in a total of roughly 500 scheduled weekly classes, each consisting of approximately 3 students each with a coach. Though rough and self-reported numbers from the CEO himself, these metrics are an indication of both rapid growth of the popularity of this approach, and satisfaction from students and parents alike on the basis of the retention and addition of students over the course of the year.

While these statistics are gathered and presented by the company itself, they do reflect observations made independently by the researcher into the practices of the company in its implementation of CALL as a method for teaching English. One such observation is the number of students and classes conducted on a weekly basis. During the period of the initial investigation, multiple 60 minute classes were conducted on a weekly basis, every day of the week, which many students taking multiple classes per week with different coaches.

3.1.5 Why not Fortnite*?*

Although *Fortnite* itself has been demonstrated through this pilot investigation into the methods used by Gecipe, it is not a one-size-fits-all solution to all CALL applications, particularly when assessing games for use in a context which seeks to promote more complex language use. *Fortnite* is useful for demonstrating that, when used for CALL, it can be useful for promoting use of English overall and increasing TL output, these advantages are limited in their scope by the game play itself.

As shown in previous studies collected by Peterson (2016), particularly in a pilot study assessing students in an MMORPG setting by Rankin, Gold and Gooch (2006), complex games can cause cognitive overload, particularly in low level or beginning learners. Competitive/collaborative games are not free from this issue. The fast-paced and often frenzied nature of shooters such as *Fortnite* (many of which belong to this category) has the potential to overwhelm new players, especially if they have a relatively low level of language competency.

Further, these games often require significant knowledge of specialized jargon, community-specific slang, and other unfamiliar words, creating a barrier to those who are not knowledgeable about the game prior to beginning second language play. The frequent use of jargon and slang may also interfere with or detract from the acquisition of new general use vocabulary that can be applied in broader situations, making these games less than ideal for learners in a business setting for example. This, however, is potentially mitigated in more popular games which may be familiar to learners prior to their implementation as tools for CALL. A familiarity with mechanics, game play and game-relevant jargon taken from prior experience with the game in a language in which they are already proficient and familiar will lower the barrier to entry that may otherwise intimidate or overload a beginning learner.

There are also risks associated with playing competitive games with potentially high skill floors. Those who are not skilled at the game being played or are slow to learn the controls, rules or

game play may be easily discouraged. It is common for new players to go multiple rounds with little success before they build the in-game skills needed for success. While this is true in particular of popular shooters and other high-profile competitive action games, there are other alternatives that offer a freer, less stress-inducing and easier-to-learn environment. Games like *Among Us* which focus on collaborative and competitive game play in a mystery/puzzle game setting allow for players with less skill in shooter and action titles to communicate and negotiate with other language learners or native speakers without the time and stress required to play a shooter at a high level, although they still suffer from similar drawbacks regarding language use and jargon.

Despite this potential issue, however, the popularity and ubiquity of these games, even more complex, competitively-oriented games such as *Fortnite*, means that many common second language learners, in particular school- or college-aged learners, are likely to have a degree of familiarity with the game before using it in a language learning context. This prior familiarity, while potentially presenting some opportunity for complications such as fossilization of native language terms, gives the learners not only less issues when starting to use the game as a language learning tool, but also comfort, familiarity and motivation that can help them.

Fortnite and games like it, or even DGBLL, however, is not the only possible approach to CALL. Before assessing an alternative within the realm of DGBLL, it is important to discuss another possible alternative, a bespoke language learning application.

3.1.6 Why not bespoke CALL alternatives?

With some clear disadvantages offered by *Fortnite*, another potential alternative must be ruled out: bespoke language learning applications. As language learning is the ultimate goal of this venture, it stands to reason that a purpose-built language learning application would be useful for this goal. However, when looking at applications that seek to tackle more complex aspects of language, they too fail to confront potential issues that can arise with complex language use or syntax acquisition.

Though there are no clear candidates that can be used as parallels as a CALL-based alternative, useful examples can be pulled from applications targeting complexity elsewhere.

One such example of complexity in language attempting to be targeted by CALL applications are Japanese *kanji*, Chinese characters used in Japanese writing. *Kanji* are by nature complex, and a number of competing methods have been proposed to facilitate this learning. Examples include Heisig's *Remembering the Kanji* (2011), Seeley, Henshall, and Fan's *The Complete Guide to Japanese Kanji* (2016), and Conning's *The Kodansha Kanji Learner's Course* (2014), all of which employ mnemonics or other memorization tools to try to ease the burden of the *kanji* learner. From this legacy, multiple CALL applications have been born to employ CALL methods to facilitate this.

Two such applications are Kanji Study and WaniKani. In studies conducted alongside this work, discussed at length in Hanlin (2023a) and Hanlin (2023b), these applications were demonstrated to have certain advantages, but in order to confront the issue of complexity within *kanji*, responded too with complex systems. In a survey of users of WaniKani discussed in Hanlin (2023b), multiple respondents took issue with the complex systems of mnemonics and spaced repetition used to approach this learning task, expressing frustration with the pacing of the spaced repetition tasks that did not allow them to learn at their own pace, and finding mnemonics to be frustrating, unfamiliar or “quirky”.

On the basis of these assessments of existing bespoke applications with similar goals to this study (using CALL to tackle a complex issue in language acquisition), identifying an application that is malleable enough and presents advantages that can be leveraged for language learning is more practical. This is in addition to the complexity of the applications themselves. For a task with aims that are ostensibly straightforward, i.e., learning the meanings and pronunciations of characters, there is a mountain of development that stands as a barrier to developing these applications. WaniKani required the design of an algorithm and website, alongside the penning of thousands of unique

mnemonics, to be complete. Even Kanji Study, despite being simpler, consisting of a basic flashcard interface and quiz functionalities at its most basic, requires significant investment of coding and time to construct and cannot meet the needs of every learner off-the-shelf, with numerous add-ons also built into the application to cover all potential learning styles.

By these metrics, the task of creating a bespoke application to tackle this issue appears gargantuan compared to developing a curriculum centering around an off-the-shelf game not made for purpose. This gap widens even further when considering how to tackle syntax and complexity, as systems would need to facilitate user speech or provide comprehensible input as required by the Input Hypothesis (Krashen, 1980).

By contrast, as displayed in numerous studies assessing CALL using teams or groups (e.g. York, 2014; Swier, 2014; Peterson, 2006; Wang and Liao, 2017), team or group-based approaches to CALL show great potential for facilitating language learning in a way that is both fun and effective. While collaborative/competitive games may not suit all learners, the advantages gained through both action games such as *Fortnite* or *Apex Legends* and more casual games such as *Among Us* stand out as valuable and show the potential to evade some of the shortcomings other games used for CALL applications have demonstrated. With the increasing popularity of e-sports and the multiplayer competitive games that have grown alongside it, it is likely that this approach will garner support and attention both from language learners and gamers alike.

3.2 Why *Among Us*?

Among Us provides numerous potential advantages over other games or CALL approaches. *Among Us* is structured as a type of social deduction game, in which participants discuss and use their knowledge of the game play and of their fellow players to deduce information. The mystery and deduction focused nature of the game and other similar social deduction games shows potential for encouraging the use and development of complex language, and provides opportunities to introduce

words, phrases and structures to students during lessons that can be used in-game within that same lesson. *Among Us* has also proven popular among students and has been cited as a popular game during the height of the pandemic among children and teens (Lorenz, 2020).

The primary aim of this research is to assess the fit of the social deduction game *Among Us* for the aim of improving syntax and grammar among second language learners of English. This assessment will be based not solely on their grammatical and syntactic outcomes, but also by the learners' enthusiasm, overall level of participation, and motivation to learn in order to provide a broad view of this game's utility and ability to engage students who may not be captured by previously assessed games as noted by Reinhardt (2021).

3.2.1 The Game Play Loop of *Among Us*

Among Us (2018) is an online multiplayer video game in the social deduction game genre. The game involves players assuming roles, either as a neutral party (a crewmate) or a hostile party (an impostor) and seeking to either survive until a game winning scenario has been achieved as the neutral party or eliminate enough neutral players to win as the hostile party.

Figure 2. The role determination screen at the start of a game of Among Us.

At the beginning of each game, each player is assigned a role at the beginning of the game as shown in Figure 2, either “crewmate”, the neutral party, and the “impostor”, the hostile party, with no one player aware of any other player's role, only made aware of the number of impostors. Each crewmate is randomly assigned tasks to complete on the game map, which require them to travel around the map and complete various short mini-games (an example of which is provided in Figure 3) or other related actions. If the crewmates are able to complete all their tasks, the crewmates win. Crewmates will not be made aware of the roles of the other players, but impostors will be made aware of the identity of the other impostors.

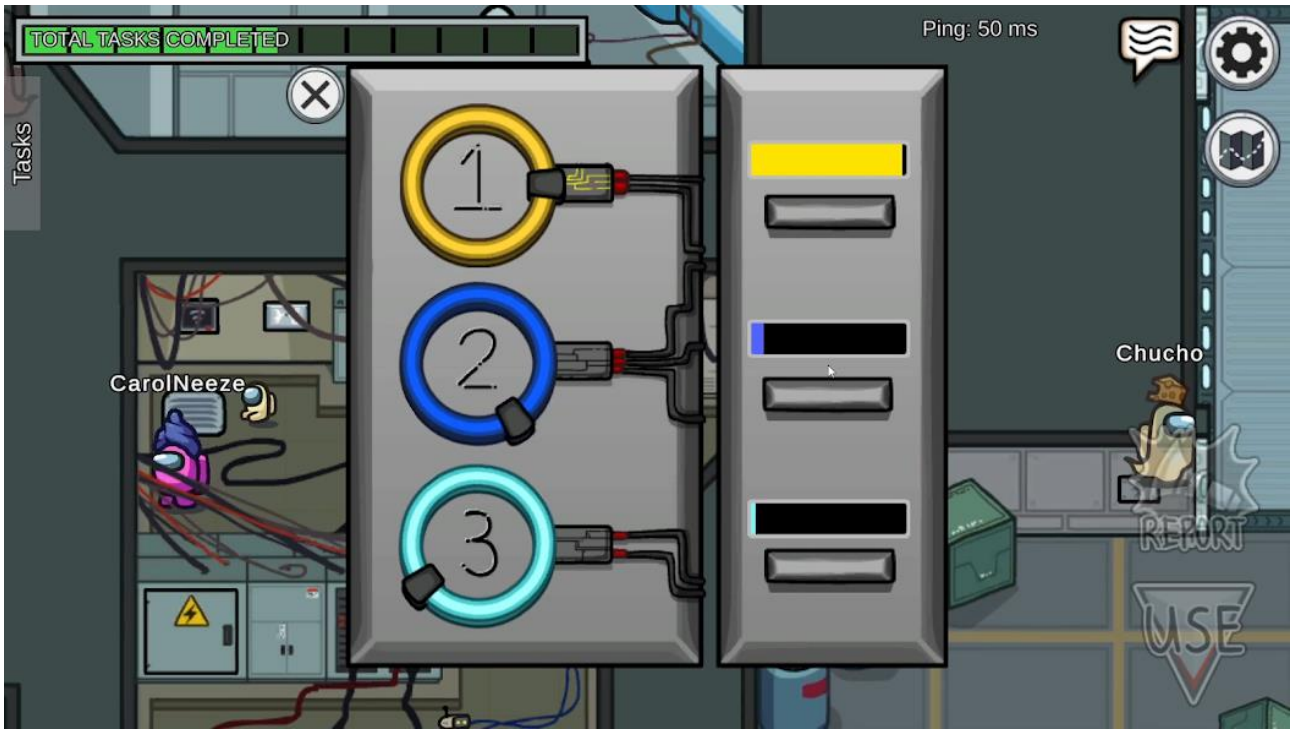

Figure 3. Example of a task mini-game

One of the two main goals of the crewmates is to complete a number of randomly assigned “tasks” around the map. These tasks typically consist of a short mini game, in which a memorization, coordination, timing or similar task must be completed. There are three types of tasks: long, which often require waiting or a more involved activity, short, which are less complicated and time consuming, or common, which are simple tasks that require multiple short steps in various locations

that all crewmates share. All of these tasks are scattered throughout the map randomly, but are often well-distributed, necessitating travel between various portions of the map. When tasks are completed, a bar at the top of the screen will fill, either immediately or during meetings, depending on settings, showing overall progress of the crewmates' goal. Impostors are also assigned "fake tasks", which will be similar to the tasks of the crewmates, allowing them to try to convince other players that they are also a crewmate by traveling to areas where tasks would normally be available.

The impostor's goal is to interfere with their ability to complete tasks by performing a number of sabotage actions to create obstacles or distractions (e.g., sealing doorways, turning off the lights to reduce their field of view, triggering events that require action by the players within a set time frame at a certain location, etc.). The impostor is also able to kill players, with their sole win condition being an equal number of surviving impostors to crewmates. Impostors also typically have additional advantages, such as being able to navigate the map more quickly or hide using vents in various points of the map, and per the default settings, usually have a wider field of view.

During this portion of game play, all players will be free to roam about the map and perform tasks or, in the case of the impostors, sabotage the map and eliminate crewmates. On the map, players can be seen moving around, but no actions by crewmates, such as task progress or completion, are visible.[1] The impostors' unique action of sabotage has no visible trigger, but the elimination action by an impostor will be clearly visible to anyone in their field of view with an animation that changes the eliminated player into a dead body, as shown in Figure 4.

[1] While it is possible to have visual indicators for the completion of or progress on a task or on all tasks, this feature is optional and is generally toggled to off for most games, as it was in during this experiment.

Figure 4. Example of a crewmate (blue) being eliminated by an imposter (white) while being witnessed by another player (pink).

Under normal game rules, no player can communicate directly with any other player during this time. All players can see others in their vicinity and inside of the room or area they are in, even if other rooms are visible on screen, with impostors' viewing range usually higher under default settings. Figure 4 provides a view of this segment of game play, demonstrating the rough field of view of the player, with the pink player just inside the white player's field of view, showing the pink player witnessing the white player eliminating another player.

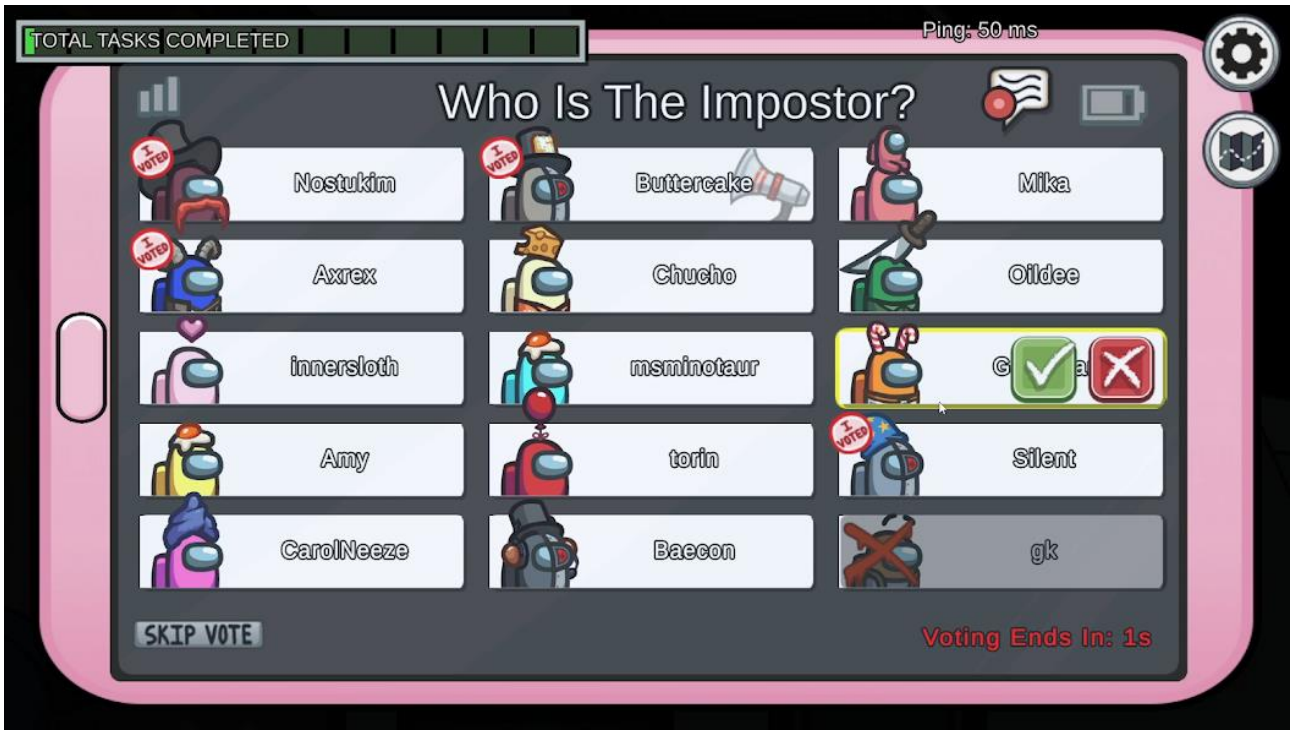

Figure 5. The meeting screen.

In addition to imposters directly killing players, players can also be killed as a result of a vote. When a dead body is discovered by a player reported by a player or an emergency meeting is called by pressing a button on the map, all players are pulled into a “meeting” where they have to vote to eject a player that they suspect to be an imposter, killing them and eliminating them from the game. The screen displayed is shown in Figure 5. This screen provides information on the eliminated players (shown with a red X and grayed out area), the reporting player (indicated with the bullhorn icon) and provides a voting interface (the green check box, indicating a vote, and the red X box, to cancel the selection). If the crewmates manage to eject all imposters, the crewmates win, but crewmates who are falsely accused can also be ejected, reducing their numbers further. These meetings are time limited, with the exact time allotted determined in the settings (the maximum being 120 seconds for discussion and 300 seconds for voting).

3.2.2 Among Us as a Social Deduction Game

Social deduction games are games in which the primary goal is for participants to seek out a particular player in the group of players who is, as described by Eger and Martens (2018), "an 'evil' faction". These "evil" players generally have the ability to eliminate other players from the game, and it is the goal of the players to eliminate these "evil" players from the game before they can do the same. This type of game, of which *Among Us* is one, inherently involves the elements described in Chapter 2, particularly competitive and collaborative elements. For the players to succeed – whether "evil" aligned or not – they must both work together with other players while competing against an unknown villain (or in the case of the "evil" party, against the known opposing players).

Furthermore, this goal necessitates free discussion between the players, an important aspect in the acquisition of language in general. This free discussion allows for and in some ways necessitates information exchange and meaning negotiation between players, as players must ask questions of and synthesize the information from the other participants, providing multiple opportunities for engaging in activities that promote the acquisition of an L2. This style of game has yet to be widely researched, but a recent study by Wrobetz (2019) assessing the usefulness of this style of game on vocabulary acquisition has been conducted. The study used a smartphone-based version of a social deduction game *One Night Werewolf*, a digital adaptation of the communication game "Werewolf". This game involves discussion not dissimilar to the meetings conducted in *Among Us.* However, it lacks the same mini-game elimination phase that *Among Us* features, necessitating that participants rely on other information, interpersonal knowledge or intuition to inform their discussions or accusations. In spite of these comparative shortcomings, *One Night Werewolf* was still shown to be effective in improving outcomes for the participants in English vocabulary tests and was demonstrated to be a viable tool in a classroom setting for improving language outcomes.

3.2.3 Advantages of Among Us

The primary advantage of *Among Us* over games previously studied, particularly against the game assessed in the pilot investigation, *Fortnite*, is the relative ease and complexity of *Among Us*. Due to the game play loop of *Among Us* separating out the high stress and high mental load task segment of game play out from the language and speech focused meeting segment, a significant portion of the cognitive load is relieved, allowing students to focus on their speech during the meeting segment. This stands in contrast to *Fortnite*, where speech is often short and simple to facilitate timely communication, and where threats and distraction present during game play can contribute to the cognitive load, hindering language use.

Familiar and popular	Familiar to modern students, popular among them (Lorenz, 2020)
Opportunity for language introduction	Multiple opportunities to introduce game-related vocabulary or introduce structures (e.g., questions) to complexify language
Simple ruleset	Simple game play loop that is easy to understand
Complex situations	Situations are complex and varied, allowing for rich speech
Low cognitive load	Game play and discussion portions are largely separate, allowing students to focus on speech
Opportunities for meaning negotiation	Discussion elicits opportunities for information sharing and discussion, among other kinds of negotiation

Table 6. Summary of advantages of Among Us *to DGBLL.*

As summarized in Table 6, *Among Us* shows numerous advantages as a candidate for DGBLL. As previously referenced, it is familiar and popular (Lorenz, 2020) and provides a number of opportunities to introduce and use complex language. Its ruleset and game play are simple, consisting of short mini-games and area navigation, though the length and variations of game sessions allow for rich speech. Said speech opportunities are separated out from game play that may negatively influence speech, while still retaining the meaning negotiation necessary to language development through description of events of a round, information gathering and disseminating, and other such acts key to decision making and deduction that is core to the game. This mitigates risk of overload, while also

providing ample opportunity to expand TL output beyond simple sentences, which may in turn increase and promote their use of complex speech.

On the basis of these numerous advantages, *Among Us* was selected as the venue for conducting this experiment. With these advantages in mind, a short curriculum was developed, and an observational methodology was planned to assess the fit of this game in a practical context. In order to leverage the resources of the company to find appropriate students for this type of class, this experiment was conducted in collaboration with Gecipe,

Chapter 4

Main Study: Methodology

In order to assess the fit of *Among Us* as a game for promoting complex language use and improvement of syntactic and grammatical skills, an experiment was designed to assess both the viability of social deduction games as language teaching tools, as well as whether this approach will increase the use of and exposure to complex forms. The experiment consisted of observations of a class of 5 native Japanese speaking students, each roughly intermediate in level, raging in ages from 7 to 12. These classes were conducted through Gecipe, Inc., henceforth Gecipe, a company based in Shibuya, Tokyo, Japan which specializes in "eSports English", using popular video games as tools to facilitate English learning in school aged Japanese students.

4.1 Observational Methodology

As this experiment is assessing a social game between multiple players, a mixed methods approach was selected to maximize the number of possible variables for which can be accounted. By assessing both quantitative data in the form of quantitatively analyzing the specific language output on an individual and overall basis, and qualitative observations through the assessment of enthusiasm via emotional state, attitude, behavioral response, etc., both raw linguistic output and factors outside of their language use (e.g., emotional state, experience with and use of English, individual goals, etc.) can be incorporated into analysis. This approach gives the widest view of what may influence the students and their language use and will improve the explanatory power of this experiment by accounting for as many factors as is possible.

This wide range of diverse data also allows for a range of different analyses, allowing both for broad, holistic analysis of the class, as well as more fine-grained analysis of individual learner outcomes, which can be useful for demonstrating possible responses to by individual learners. The

linguistic data gathered in and of itself can also be useful for the purposes of linguistic analysis, evidencing linguistic phenomenon that can be of use both to pedagogical inquiry and to more theoretical second language acquisition and syntactic study.

4.2 The Experiment

4.2.1 Participants

Student	Age	Reported Years of English
H	12	7
S	12	5
T	7	1
J	12	10
Y	13	3

Table 7. Students participating in the experiment.

As shown in Table 7, five students of Gecipe participated in the study, between the ages of 7 and 13. These students were selected from the intermediate classes in Gecipe for their ability to form complete sentences, in other words, who had passed the setential stage in the Processability Hierarchy (Pienemann, 1995). While each student reported a wide range of formal education in English, between 1 and 10 years, all five students were proficient enough for conversational level English and had successfully participated in other classes playing games such as *Fortnite*, Gecipe's primary game for instruction.

In the interest of maintaining anonymity for each student to protect their identity, each student will henceforth be referred to with a single letter initial (henceforth, H, S, T, J, and Y). See Section 4.3 for further detail on each individual student's background.

4.2.2 Format of the Classes

The class was headed by a teacher employed by Gecipe, also a native in Japanese and fluent in English, referred to as the "coach". This coach lead sixty-minute sessions one day a week, conducted online via Discord (https://www.discord.com), a popular online text and voice chat service,

on a private server previously used by Gecipe to conduct other classes. These classes were modeled after the format used for Gecipe's other classes as discussed in Chapter 2, with the content of the lessons and some considerations for format modified slightly to accommodate *Among Us*.

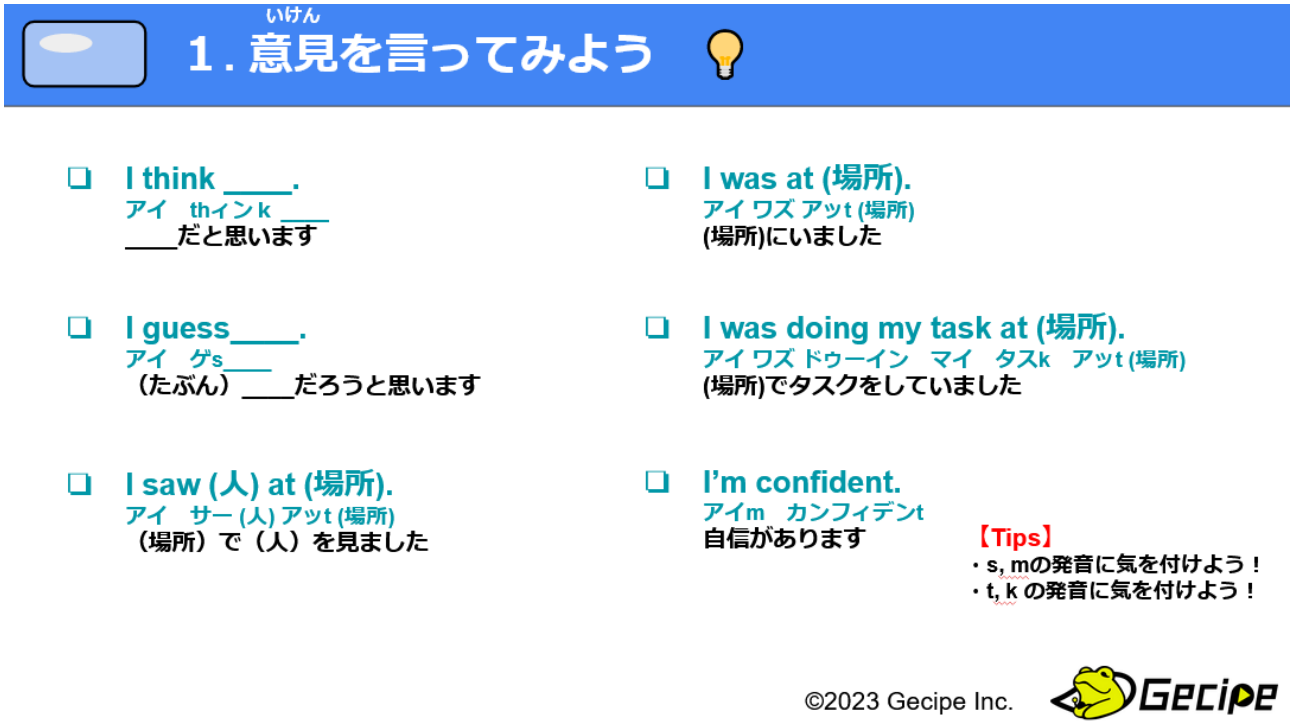

Figure 6. An example of a slide from the pre-game lesson for Lesson 1.

Each 60-minute class consisted of a roughly ten-minute introduction to words and phrases to be studied that week, presenting the class with a simple overview of the terms, including a pronunciation guide and approximate Japanese translation, as shown in Figure 6. The coach would go over each term individually, reading out the phrases and asking the students to repeat to practice pronunciation and troubleshoot any issues, along with a brief explanation of meaning and/or usage. Lessons consisted of roughly six new words or phrases per week, with a few additional phrases added if time allowed.

Figure 7. An image displaying the initial rules established for the students.

While primarily developed internally by Gecipe, these lessons were developed with input from the researcher, providing feedback to ensure that the content of the lessons given both allowed the students to understand and play the game by focusing on important terminology essential to the game as well as phrases, sentences, grammar or constructs that facilitate language use (e.g., questions, expressing position or past actions, etc.).

After the initial section of the lesson, the class played between two and three games of *Among Us*, depending on the length of each game play session. The main task-completing segment of each game necessitates that the players stay muted in the voice chat as to not give away their position, as established in the example of the rules displayed in Figure 7, which were provided to the students

during the first session. However, the meeting segment gave each student an ample opportunity to talk and discuss and was extended to the maximum discussion time to facilitate this further.

To keep these sessions roughly equitable, each student was given at least thirty seconds (extended to thirty-five in later classes to allow for slightly more time for each student to think) to explain what they witnessed or did during the round, during which they can speak freely with support from the coach if they are unable to recall words or communicate their accounts effectively. Also, to ensure that each meeting was productive and gave students ample information with which to discuss, the student that called the meeting ("the reporter") would speak first before others and describe what they witnessed before calling the meeting if they found a body, or to provide their reason for calling a meeting if the meeting was called without a body. With the remaining time, the students are free to discuss their votes or other additional details that may be relevant, with some guidance from the coach to lead discussion or ask those who have not yet spoken their opinion or provided information.

4.2.3 Data Collection

Data was collected from two main sources, a pretest and accompanying posttest, and speech and observational data gathered directly from students over the course of the classes. Observation by the researcher was undertaken for all 10 classes, and notes were taken both on the specific utterances made by students during the class as well as observations of qualitative outcomes, such as emotional states, degree of participation and other factors that may have influenced the students' outcomes. Information was also gathered from the coach who led the class after the classes were conducted and through an interview conducted after the main sessions on his experience and teaching approach.

The pretest and posttest were distributed via Google Forms (see Appendices B and C) to each student, and contained vocabulary, English grammar and sentence ordering tasks. The posttest also added an additional section on English articles based on observations made over the course of the classes. These tests were designed to capture an impression of each students' competencies in relevant

language skills before and after the sessions, both for the purposes of establishing a baseline and for comparison after the experimental term.

The primary source of quantitative data was the utterances produced over the course of the experimental sessions. During the course of each session, the researcher recorded each utterance produced by students during the length of the class, both within and outside of the game play portions, noting the language use as it was used in context, and noting which of the five students uttered it. Though naturalistic, student-produced English was the primary target of this data gathering, the use of Japanese words or the use of corrections or changes made as a result of prompting or questions directed at the coach were also noted where possible. Utterances were recorded with as much regard as is possible for their actual language use, incorporating errors, repeated words, stuttering, pauses and other disfluencies when possible. This data was then collated and categorized for quantitative analysis, as well as used holistically for qualitative and linguistic assessment as discussed in Chapter 5 and Chapter 7. This data was also collated on an individual basis for each student for the purposes of analyzing their individual language use as a case study, discussed in Chapter 6.

In addition to this linguistic data, observations of student behavior, self-reported engagement and emotional state were also made. Data on the particularities of each student's engagement with English outside of class (e.g., study for standardized English test, use with family members, etc.) was also recorded as relevant. Notes were further made on the students' overall attitude towards English and the class, either as stated or on the basis of observation.

All of these factors and observations are discussed in Chapter 6 on an individual and overall basis for the purpose of case studies to give further insight into the specific effect of this experimental approach on individual students. Case studies were chosen to allow for more detailed analysis, examining the factors and circumstances that influence the outcomes of individual students that could be lost in a broader analysis of trends in the data. These more fine-grained, individualized studies

seek to provide a clearer picture of impact on individual students, as well as give exemplars for potential outcomes of this experiment and the possible range of student responses.

Chapter 5

Main Study: Experimental Results and Complexity Analysis

This chapter will discuss in depth the experimental results of the experiment described in Chapter 4 with regards to the pedagogical outcomes. Section 5.1 will discuss the results of the pretest and posttest. Section 5.2 will discuss the results of the quantitative analysis of the complexity of the students' speech. Section 5.3 will discuss the overall results of the data gathered on the basis of both the quantitative data gathered during the pretest and posttest, as well as the complexity and language use data calculated based on the utterances and complexity of utterances made.

5.1 The Pretest and Posttest

5.1.1 Pretest

During the early stages of the experiment, each student was provided with a short assessment on vocabulary, basic English grammar, and sentence ordering tasks. This assessment was provided to each student via a Google Forms form. There were a total of 14 vocabulary tasks divided into 3 groups, game-related words, relevant nouns and relevant verbs. Each vocabulary task was multiple choice with all relevant words and one additional distractor. There were a total of 8 grammar tasks, each testing a different aspect of English grammar, including basic grammatical forms (e.g., verb agreement) and more advanced forms (e.g., questions, pied-piping). The grammar questions were multiple choice, providing one answer that was most natural or canonical and three distractors. There were also a total of 7 sentence ordering tasks, each testing a different aspect of English syntax. The sentence ordering tasks required the students enter the sentence in full into a free response text box.

5.1.2 Vocabulary Tasks

As shown in Figure 8, vocabulary tasks consisted primarily of game-related vocabulary, divided into three sections – nouns related to in-game tasks (e.g., wire, asteroids), general use game words (e.g., vote, suspicious, office), and game-related verbs. Each section presented the students with an image with four to five illustrations meant to evoke the specific term, either using clip art or in-game screenshots, which were individually numbered. They were then presented with a list consisting of all the words in the image with additional distractors to reduce the success of guessing or process of elimination. All six students performed perfectly or near perfectly on this section, with three students (H, J and S) achieving perfect scores, one student (Y) missing 1 of 14, and one student (T) missing 3 of 14.

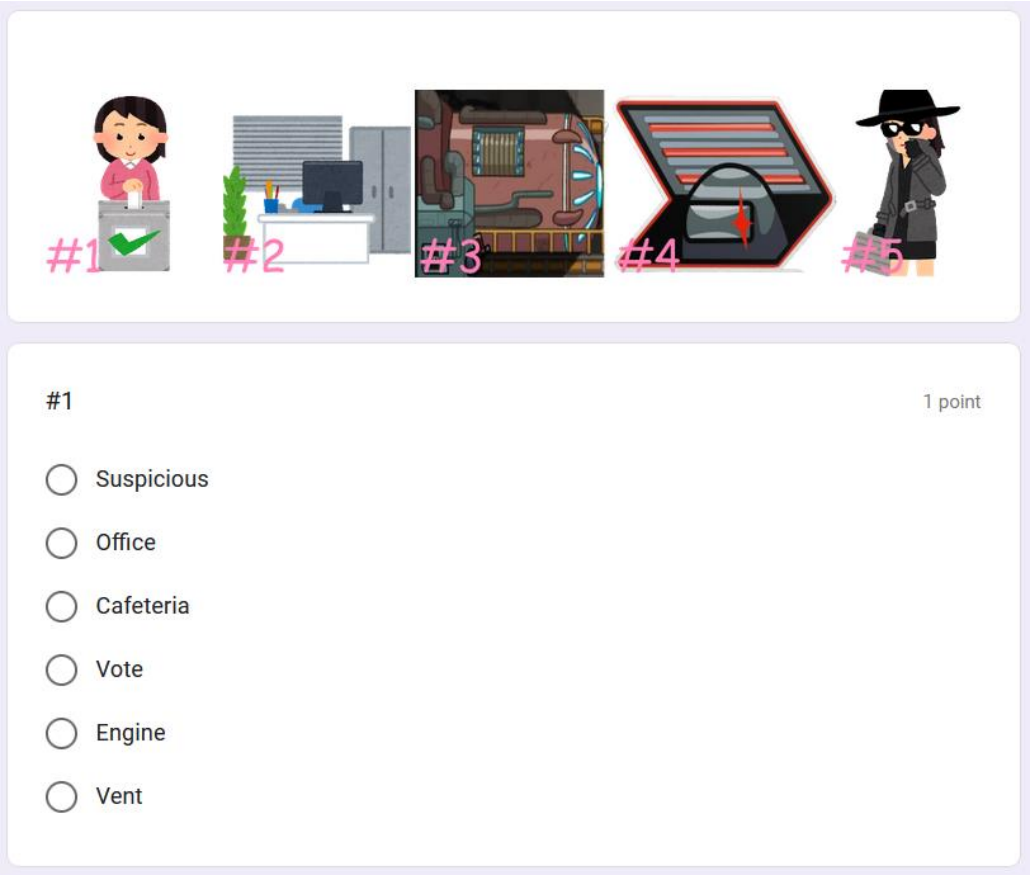

Figure 8. An example of a question from the pre-test assessing vocabulary knowledge.

5.1.3 Grammar Tasks

The grammar tasks section presented the students with sentences with a blank space, as demonstrated in Figure 9.

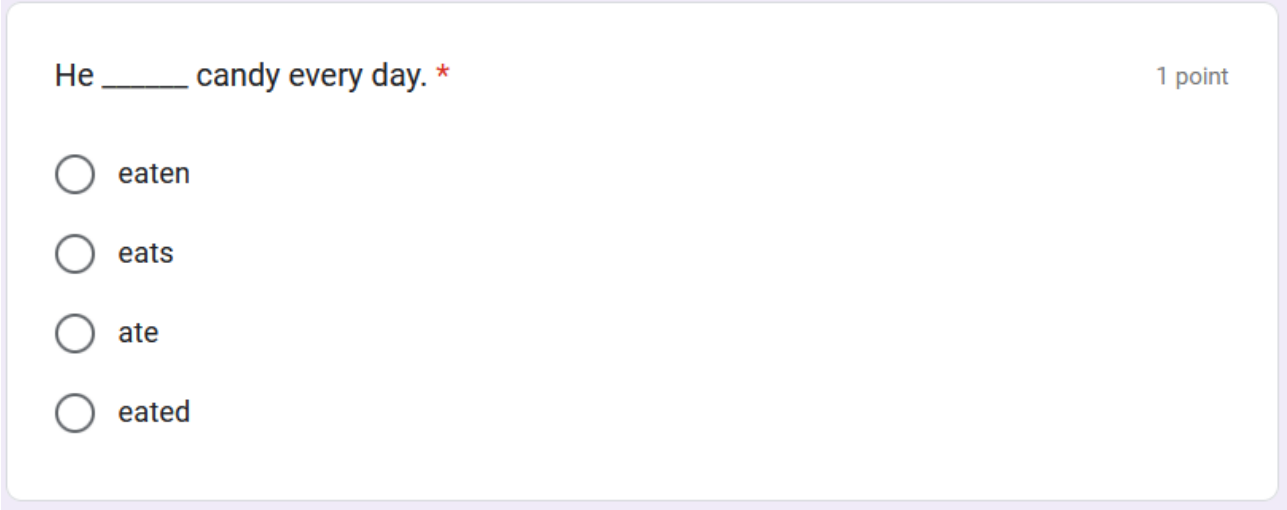

Figure 9. An example of a grammar question.

Each question required the student to choose the correct form or word from a multiple-choice selection of one correct answer and three distractors. The distractors were generally of the same verb or word category (in the case of the question involving pronoun case) using a case or tense that was incompatible or less preferable with the position or context of the sentence. These tasks and their intended targets and results are summarized in Table 8.

Task #	Intended Target	Task Sentence	Non-Canonical Answers
1	Habitual Present	I [eat] candy every day.	A chose less natural “ate”
2	Pronoun Case	The coach told you about [me].	S chose improper case “we”
3	Nonfinites	The crewmate wants you to [do] the task.	Y chose gerund “doing”
4	Auxiliaries and Nonfinites	I'm [fixing] the lights.	Inconsistent choices between 4 and 5, confusion of nonfinites, no clear effect of contractions.
5	Auxiliaries and Nonfinites	We are [playing] on Skeld today.	
6	Future Tense	I [won’t] be the Imposter next week.	S chose present “aren’t”.

Table 8. Overview of grammar multiple choice tasks.

The first task assessed the use of the present for habitual tasks with the sentence “I _____ candy every day”. All students chose the simple present “eat”, except for one student (A), who chose the simple past “ate”. While this option is grammatical, without context, “eat” is likely the more natural option. However, all six students picked options that are clearly grammatical, showing a familiarity with simple tenses.

The second task assessed pronoun case with the sentence “The coach told you about ____”. Four of the five students (H, J, Y and T) chose the accusative form “me”, while one student chose a nominative form, choosing “we” (S). While most students displayed a familiarity with pronoun case, these results suggest there may not be a consistent transfer of case between Japanese and English for all students.

The third task assessed infinitives with “The crewmate wants you to ____ the task”. All students except one (Y) chose “do”. Student Y, however, chose “doing”, a common error made among second language learners of English, where confusion of the gerund and infinitive is common (Kubota, 1994).

The fourth and fifth task assessed auxiliary verbs and corresponding forms. Task four used “I'm _____ the lights.” as its prompt, and task five used “We are _____ on Skeld today”. These tasks, while targeting similar grammatical forms, used slightly different forms (contraction vs uncontracted form) and slightly different distractors (both incorporated past, present and progressive -ing, though task four used future and task five used a deverbalized noun “player”). Despite the target of identical grammar, results were not consistent between the two tasks. Two students (H and J) put both “fixing” and “playing”. One student (S) used “fixed” and “played”, one student (T) chose one past and one present (choosing “fixed” and “play”), and one student (Y) chose “fixed” and “playing”. This mismatch alongside the inconsistency of the answers suggests a significant degree of confusion and consistent appearance of -ed past participles suggests a confusion on the use of the English passive.

A common error of the use of the past participle in task four, a sentence with a clear object that would categorically rule out any use of the passive, suggests this may be the case.

The sixth task assessed sensitivity to the future tense, a tense which is not explicitly present in Japanese, with “I ____ be the Imposter next week.” All students but one chose the correct answer “won't”, with the one student (S) choosing “aren't”.

5.1.4 Sentence Ordering Tasks

The final section involved sentence ordering tasks, summarized in Table 9.

Task #	Target	Intended Sentence	Non-canonical Answers
1	Basic Order	I [do my tasks first].	S placed adverb between verb and object
2	Complex Noun Phrases	I [took Coach’s advice about the game].	S appeared to construct an improperly headed sentence
3	Relative Clauses	The crewmate [that Shota saw in the cafeteria] is dead in O2.	Pragmatically unmotivated sentences, but otherwise grammatical
4	Adverbials	The emergency meeting [now was about {the} blue crewmate yesterday].	Ungrammatical placement of time adverbial “yesterday”.
5	Question Formation	[What did you give] to Jared for his birthday?	None
6	Double *wh*-word Questions	[Where were you when] the meeting was called?	Inconclusive
7	Pied-Piping	[What book about trees] did you read?	J and S failed to pied pipe

Table 9. Overview of sentence ordering tasks.

Students were presented with part of a sentence and four blanks to fill in, alongside a set of four words or phrases to put in the correct order to complete the sentence. Of the five students, all five answered the vocabulary and grammar sections in full, but only four (H, J, S and Y) chose to answer all the sentence ordering tasks.

The first task assessed basic word order, using the problem "I ____ ____ ____ ____ (do, first, tasks, my)". All five students answered with the correct basic SVO order with correct placement of the possessive pronoun "my" ("I do my tasks"), however one student (S) placed "first" in an ungrammatical location between the verb and its object ("I do first my tasks"), though the remaining five placed it correctly ("I do my tasks first"). This kind of ungrammatical placement was later observed as a common error with adverbs, despite most students answering this task correctly.

The second task assessed complex noun phrases including a genitive noun and a prepositional phrase ("I took ____ ____ ____ ____. (advice, about, Coach's, the game)"). Of the four who responded, three students constructed the correct order "[I took] Coach's advice about the game.", although Student S gave an answer that did not present a clear motivation for their error ("[I took] the game advise [sic] about coach's"). This inversion of both the genitive noun and the object of the preposition does not clearly reflect any grammatically or L1 motivated error, as it generates a sentence that is semantically difficult to parse and does not correspond to the L1 equivalent of this sentence.[2] One possible explanation may be an issue of headedness, with English's dual-headed nature (i.e. "Coach's" to the left of the noun node and the prepositional phrase to the right) not corresponding with Japanese's entirely right-headed syntax (Shibatani & Kageyama, 2017), with all elements

[2] The equivalent Japanese sentence is as follows:
私はコーチのゲームについてのアドバイスを受け取れた。
Watashi-wa kooti-no geemu-ni-tuite-no adobaisu-wo uketore-ta
I-TOP coach-GEN game-about-GEN advice-OBJ take-PAST
'I took the coach's advice about the game.'

appearing to the left of the phrase. However, further inquiry would be needed to assess this data point fully.

The third task assessed relative clauses using “The crewmate ____ ____ ____ ___ is dead in O2. (Shota, saw, in the cafeteria, that).”. Only one student (S) responded with the intended response, “The crewmate that Shota saw in the cafeteria is dead in O2”. Student H also produced a grammatical sentence, “The crewmate saw that Shota in the cafeteria is dead in O2.”, though this sentence presents a contradiction of terms: if Shota is dead in O2, he cannot also be present in the cafeteria. The other possible interpretation of this sentence ungrammatically links “in the cafeteria” with “saw”, though this can also be excluded pragmatically in addition to crossing islands formed by the complimentizer clause. Student Y also constructed a possibly grammatical sentence, “The crewmate saw in the cafeteria that Shota is dead in O2”. However, in the context of the game, this sentence does not bear out pragmatically, as it is generally impossible for a player in the cafeteria to see a character in O2, making this sentence pragmatically inappropriate. It is also worth noting that the ordering of prepositional phrases to a complementizer phrase direct object is only grammatical as the result of a movement, making this sentence questionable in its grammaticality at best. Student J produced a sentence that is possibly grammatical, “The crewmate saw Shota in the cafeteria that is dead in O2.”, but closer analysis shows that it is semantically nonviable as no possible structure incorporating “that is dead in O2" produces a comprehensible sentence.

The fact that the students struggled to produce sentences that were both grammatical and with proper meaning suggests that relative clauses modifying noun phrases are likely a structure that has yet to be fully acquired by most students participating in this experiment. The range of responses and types of errors presented, however, does not suggest a common issue among the students, which likely suggests this is not a consequence of transfer but a general lack of understanding of the complimentizer phrase in English in lower phrase levels.

The fourth task included an error that resulted in the task lacking a proper answer ("The emergency meeting ____ ____ ____ ____. (was about, yesterday, now, blue crewmate).") This was intended to assess adverb placement – while the error prevents this from being a reliable data point, some assessment can still be made with regards to adverb placement. Two students placed "yesterday" in ungrammatical positions following "was about", with one student (J) placing it sentence final, a grammatical position ("was about blue crewmate yesterday"), with the other (S) placing it before the verb clause, the intended position, though interceding it with the remaining words, suggesting this ordering may not be intended as a correct answer. However, this variety in placement suggests that despite the error in the question, there may be reason to believe there is some difficulty with the proper placement and ordering of adverbs relative to the rest of the clause.

The fifth task was intended to assess the syntax of basic questions ("___ ___ ___ ___ to Jared for his birthday? (give, what, you, did)"). All four respondents gave a correct answer, "What did you give to Jared for his birthday?", suggesting some mastery of basic question form.

The sixth task was intended to assess the syntax of questions incorporating embedded questions ("____ ____ ____ ____ when the meeting was called? (when, where, you, were)"). This question did contain a repeated word in the question form, "when" - however, it is worth noting that one student (H) caught this error and provided a grammatical sentence, "Where were you when the meeting was called?". Two students (J and S) confronted this error by moving both question words to the front ("When where"), though Student J also failed to place the auxiliary "were" in the correct location ("When where you were"). Student Y responded with "When were you when", suggesting some confusion as to the nature of the question or perhaps an unforced error. Due to the error in the question, it is difficult to draw any clear conclusions as to the results of this task.

The seventh task assessed pied piping, a phenomenon originally named by John Ross in his dissertation (1967) where movements of higher-level phrases bring adjuncts and compliments along with them. This is a common occurrence in English, as interrogative words affected by *wh*-movement

often pied-pipe associated prepositional phrases or other such modifiers when fronted. The students' knowledge of the phenomenon was assessed with "_____ _____ _____ _____ you read? (book, did, which, about trees)". Two students (H and Y) replied with the correct response "Which book about trees did you read?". Student J and S both failed to pied pipe the NP, with student J also inverting "book" and "about trees" i.e. "Which did about trees book". These mixed results suggest a lack of understanding about pied piping among the students as a whole, likely due to the lack of the phenomenon overtly in Japanese.

5.1.5 Pretest Discussion

Overall, these results bore out a significant amount of variability among the students in terms of their prior abilities regarding both grammar and syntax. While most students demonstrated considerable knowledge of relevant vocabulary, the ability to form native-like sentences with high complexity seems to be out of reach of a majority. One Student, Student H, showed a high level of competency from the beginning, with a near perfect score in the first assessment. Student J also showed a high level of competency in grammar, though struggled with some of the more complex ordering tasks. The remaining student showed similarly high competency.

5.1.6 Posttest

A posttest was also administered, to which Students S, Y and T responded. The posttest was similarly structured to the pretest, with a vocabulary section identical to the pretest omitting the verbs for brevity as well as due to the students previously scoring perfectly on this section. The grammar and sentence ordering tasks were restructured to change the wording of the tasks to not make the answers obvious and replace questions with more ambiguous answers or errors. In addition, a section assessing knowledge of articles was added, as canonical article use was shown to be inconsistent over the course of the sessions, along with a free response section to assess the ability of the students to construct sentences freely given a short prompt.

Students' performance on the posttest revealed some inconsistencies and what appeared to be attrition or perhaps confusion on certain questions. Student Y performed slightly better on vocabulary but regressed in some areas of grammar and improved on others. Student T's results were roughly the same, with some improvements and some regressions. Student S performed the most inconsistently – while vocabulary answers were largely correct, his answers for grammar were often flipped from the pretest, with three questions he answered correctly on the pretest becoming incorrect on the posttest, while only correcting one answer on the pretest, as well as answering the new question on the perfect aspect correctly.

Sentence ordering tasks saw slightly more consistency. Student S performed roughly the same, though seemed to have confused the association of “game” and “rules” in “I followed the Coach's rules about the game”, associating “game” and “rules” directly. While this is an English-like construction, the resulting sentence, “I followed the Coach's about [the] game rules” is ungrammatical. Student Y did not see any particular improvement between the tests, appearing to order his responses largely randomly. Student T did not respond to these tasks on either test.

While these tests were important for establishing a baseline and making specific observations to reinforce data analyzed in following sections, the primary data source was gathered from the utterances produced over the course of the 10 class sessions

5.2 Analysis of Complexity of Participants’ Speech

As the primary goal of this research is to assess *Among Us* as a venue for promoting complex speech and exposure and acquisition, the complexity of the speech of the participants should be analyzed. In order to assess the complexity of the participants' speech, it is necessary to categorize utterances by complexity. However, as a definition of linguistic complexity is not one that lends itself easily to unambiguous categorization, a definition based on clearly identifiable structures that are easily recognizable is ideal. To this end, the utterances of the students were divided into two major categories

– simple sentences (i.e., sentences without any dependent clauses) and complex sentences (i.e., sentences with dependent clauses). This dichotomy, however, does not represent well the full gamut of potential complexity, and further subcategories are needed to more accurately assess complexity.

As such, each category was further broken into four subcategories – compound sentences, which contain more than one independent clause generally linked by a conjunction, modified sentences which contain adjunct phrases, being phrases that are not specified for by the verb or other words (i.e., are optional), typically adjectives, adverbs or certain prepositional phrases,[3] sentences that are both compound and modified, and sentences that are neither compound nor modified. This results in eight categories, with an additional lemma category for utterances that do not qualify as full sentences, which was largely not considered in this analysis. However, there are still sentences that do not sort neatly into this categorization, namely questions. For the purposes of this assessment, however, they have been sorted as modified sentences, as the movement required to form a question in English requires knowledge of grammar not present in the participants' native language (Japanese), namely *wh*-movement.

Lesson #	Simple	Simple Compound	Simple Modified	Simple Compound Modified	Total
1	7	1	2	4	14
2	10	5	8	4	27
3	5	3	2	0	10
4	10	3	1	5	19
5	27	10	3	1	41
6	18	3	2	2	25
7	11	2	1	1	15
8	8	0	4	0	12
9	30	0	8	4	42
10	16	3	6	3	28

Table 10. Categorization of simple utterances.

[3] Note that not all of these parts of speech or phrases qualify as adjuncts – the word 'happy' in the sentence “I am happy” is required for the sentence to be grammatical, and as such is not an optional adjunct and such a sentence would be considered simple for the purposes of this categorization.

Lesson #	Complex	Complex Compound	Complex Modified	Complex Compound Modified	Total
1	0	0	0	1	1
2	3	0	0	4	7
3	1	0	0	4	5
4	1	2	0	3	6
5	3	0	1	12	16
6	6	2	2	6	16
7	2	0	0	4	6
8	2	2	0	3	7
9	4	0	0	3	7
10	6	0	0	6	12

Table 11. Categorization of complex utterances.

Lesson	Total Utterances	# of Participants	Average Simple Utterances per Participant	Average Complex Utterances per Participant	Average Total Utterances per Participant
1	15	5	2.8	0.2	3
2	34	4	6.75	1.75	8.5
3	15	5	2	1	3
4	25	4	4.75	1.5	6.3
5	57	5	8.2	3.2	11.4
6	41	4	6.25	4	10.3
7	21	3	5	2	7.
8	19	4	3	1.75	3.8
9	49	5	8.4	1.4	8.1
10	40	4	7	3	8

Table 12. Average overall usage per lesson.

As is shown in Table 10 and Table 11, complex utterances were notably fewer overall compared to simple sentences. However, within each broad category, there are notable differences in the types of utterances favored. Among simple utterances, the most simple, non-compounded and unmodified sentence was greatly preferred. However, for complex utterances, the maximally complex sentence was preferred, one incorporating at least one modification and a coordination of two or more sentences, alongside a dependent clause in one of the component sentences.

A baseline assessment of the data when partitioned into these categories shows a clear trend – as shown in Table 12, as the lessons continue, participants speak more over time until week 5, after which their overall total speech levels out, staying relatively high compared to the first few sessions.

While the average of both complex and simple utterances levels out in a similar manner, it is worth noting that the average number of complex sentences appears to be less variable than the average number of simple utterances. When there is a significant drop in the average number of simple sentences in weeks 7 and 8 compared to weeks 5 and 6, the relative proportion of complex utterances stays roughly the same. Only when the number of simple utterances bounces back to 8.4 in week 9 does the average number of complex utterances drop significantly, but the average complex utterances is at its highest in week 10 in spite of a comparably high number of simple utterances per participant.

What this trend suggests is an overall increase in the use of complex language as a result of the participants' engagement in the lessons through the game. It is worth noting that this increase in complexity is most clearly biased towards a maximally complex sentence, that is one that is complex in both its clause-internal elements (i.e., is modified) and is complex in its integration of multiple clauses (i.e., is compound and incorporates dependent clauses).

This finding is likely due to the nature of the game itself – as the gameplay loop requires that players provide a recap of the events of the previous round of play within a limited time frame, it significantly benefits each player to compress their report into a long and detailed sequence of events incorporating as much relevant information as can be compressed into one or two sentences. While there are other complex sentences included in the total complex utterances, most complex sentences of this nature were single complex sentences (i.e., not compound) without notable modifiers.

5.3 Discussion

On the basis of the experiment performed, *Among Us* appears to be effective in engaging students and increasing their overall language use. This study has demonstrated the viability of *Among Us* as a useful tool for serving intermediate students and promoting conversation in a classroom-like setting. The specific efficacy of this method for improving the long-term canonical language use of the

students appears to be high, and students' willingness to engage in the game in their target language shows the potential for *Among Us* or games like it to be useful to both students and teachers alike.

As for the usefulness of this game in specifically promoting learning of syntax and grammar, the results of this experiment are somewhat inconclusive. The quantitative assessment examining the overall increase in raw usage of complex forms does show an overall increase from the first five sessions, but plateaus after these sessions to stay relatively stable through the remaining 5 sessions. Although a steady increase over the length of the experiment was not shown, this overall increase and stabilization of complex language does show that this game encourages production of complex speech. The kinds of long, maximally complex sentences being used suggests that this complexity is also encouraging an environment that is conducive to the kind of environment necessary for the acquisition of speech per the theories examined in Chapter 2.

However, the quantitative assessment of the students' tests shows inconsistencies in their level of ability, as well as what may be attrition or even simple confusion from students who took the posttest. The source of these issues is unclear, and further, more targeted study needs to be undertaken to better understand why the students performed so inconsistently.

Qualitatively, despite there appearing to be some degree of increase in use of complex English forms which plateaued later into the sessions, the actual complexity of the forms themselves, and more importantly, their canonicity, is much less clearly conclusive. Many students did not see notable progress on use of canonical forms, and some students seemed to reinforce Japanese-like or non-native usage as time went on. While the results suggest an overall increase in the usage of complex sentences among students, it is worthwhile to assess each student individually to account for complicating factors and get a broader sense of the reality of their use of complex sentences in a more focused, individualized context.

Chapter 6

Main Study: Individual *Among Us* Participant Case Studies

Student motivation is a common locus of analysis when discussing second language acquisition, particularly in the context of CALL. Previous studies have shown two factors to be of notable influence on students' overall degree of enthusiasm and motivation in DGBLL – the level of the student relative to the tasks in the game and the game itself and its game play.

In the study conducted by Rankin, Gold and Gooch (2006), lower-level students were shown to suffer from cognitive overload if a game was too complex or otherwise inaccessible to them, suggesting a relationship between task and/or language complexity, the ability of the student and their motivation to participate. As discussed in Chapter 2, the studies by Cheng et al. (2009) and Vandercruysse et al. (2013) demonstrated a relationship between the nature of the game (in this particular case, their competitive elements) and increased confidence and motivation in students, suggesting that certain kinds of games can increase motivation for learning.

As such, on the basis of the experiment described in Chapter 3, one would expect participants with a high level of proficiency to show greater motivation than those with a lower level of proficiency. In this chapter, to assess this, each student will be assessed individually based on numerous metrics to test this prediction using quantitative analysis of the data sourced from the experiment, as well as qualitative observations of their attitudes and other factors that may influence their ability and level of participation in the class. A representative selection of the data assessed in this chapter is available in Appendix D.

6.1 Assessment Metrics

To gain a fuller picture of the level of motivation of each student relative to their proficiency, multiple metrics will be assessed for each student. Based on the data gathered on each student, the following

will be considered in this analysis: self-reported years of experience with the language, total number of utterances recorded, proportion of simple to complex utterances, number of classes attended and average utterances per class. In addition, the character of their participation and specific feedback provided (when available) will also be assessed qualitatively, along with other personal factors as is relevant (e.g., studying for a standardized English exam).

These observational methods were chosen over other methods such as questionnaires or interviews due to constraints regarding direct contact with the students and the age of the students making the responses to targeted questionnaires or interviews less reliable than with adults or teenagers. This decision was further reinforced by two students failing to complete the post-test despite multiple reminders from Gecipe staff, and Student T's refusal to answer free response questions. However, in an attempt to gain some feedback from students, a short question asking their opinion on the class was included in the posttest, to which all three respondents gave a short answer, which will be discussed here as relevant.

These metrics are chosen as proxies for enthusiasm on the basis of previous research. Studies such as Rankin, Gold and Gooch (2006)'s study on 3D role playing games and Reinders and Wattana (2011)'s similar study on MMORPGs have shown a correlation between motivation and increased output. Following from this, this analysis will assess their raw and relative average output over the course of the experiment. Furthermore, a broad qualitative analysis based on observations made during the course of the experiment will be undertaken to give a more complete view of the participants' motivation, as well as account for factors not captured by the qualitative data, such as language goals, overall history with English and their stated opinions on and behavior regarding the class itself.

6.2 Individual Student Case Studies

6.2.1 Student H

6.2.1.1 Profile of Student H

As displayed in Table 13, Student H is roughly 12 years of age with self-reported experience of roughly 7 years of English, which would approximate his first experiences with English in early elementary school. He attended 9 of the 10 sessions, and had 63 total utterances, for an average of 7 utterances per session, and 46% of his total utterances being complex, the highest percentage of complex utterances.

Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
12	7	9	63	7	46%

Table 13. Statistics on Student H.

6.2.1.2 Student H's Language Level

On the whole, Student H is the most advanced of all the participants. Student H demonstrated the highest level of proficiency in the pretest, providing correct answers on all but one vocabulary question and grammatical options on all grammar questions. The majority of his responses on the sentence ordering tasks were also grammatical.

During the sessions, it was observed that Student H continued to show a high level of proficiency, forming complex sentences and using vocabulary far outside the scope of the lessons. Student H employed a wide variety of complex sentences, favoring a maximally complex sentence overall, though also employing shorter, less complex sentences when suitable. Student H's complex sentences even incorporated canonically structured sentences with embedded questions as early as Session 3. This high level of proficiency was also reflected in Student H's outcomes within Gecipe, Inc.'s structure, as he was asked to join the advanced-level class during the course of the sessions. While it is unclear as to whether or not his participation in this class or his general experience with

Gecipe and English learning overall contributed to this advancement, his high proficiency, particularly when compared to his peers, is clear. As demonstrated in Table 9, he also had a high proportion of complex sentences, being the highest among his peers by this metric as well.

6.2.1.3 Student H's Motivation

Student H participated in all classes baring the final due to a scheduling conflict, and throughout was an active participant in the games. In addition to participating in normal game play, he was also the student that participated the most in activities outside of normal game play, in particular engaging with the coach while dead and awaiting the next round of discussion or a new game, as observed regularly during game play sessions. Student H's participation in and enthusiasm for the classes demonstrates the viability of this approach even for more advanced students, and while further, more targeted assessment is necessary to determine to the degree to which this approach is effective for a higher-level student, this outcome demonstrates the potential to be useful for a wider range of students and ability levels.

6.2.2 Student T

6.2.2.1 Profile of Student T

Student T was significantly younger than the other participants, roughly 7 years of age at the start of the classes. He reported having studied English for approximately a year prior to the beginning of the sessions, though he spoke English outside of class with his mother, whose job required use of English. Per Table 14, he had a total of 69 utterances over 7 of the 10 total sessions he attended, with an average utterance per session rate of 9.8, though his percentage of complex utterances was only 11%.

Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
7	1	7	69	9.8	11%

Table 14. Statistics on Student T.

6.2.2.2 Student T's Language Level

Despite his age and lack of formal English experience, Student T was both one of the more enthusiastic participants and one of the most confident and proficient from the start. This was observed to manifest as a general talkativeness, as he would often respond both when addressed and initiate conversation without guidance. However, this also meant that the majority of his speech was in shorter, simpler sentences, and straightforward observations or chatting. In fact, despite his overall proficiency and eagerness to participate, he used very few complex sentences, with his first such sentence (a complex compound modified sentence) recorded in session 8, and only using two others in session 10.

Despite using these kinds of sentences rarely and only in the final few lessons, Student T demonstrated an ability to form rich, complex sentences such as the following: "I want to say I see coach but coach didn't kill me so maybe coach is not impostor." This sentence demonstrates mastery of multiple aspects of English syntax, not least of which is the use of a deeply embedded sentence with "I want to say", as well as high level compounding, the negative (with and without contractions) and adverbs.

Student T completed both the pretest and posttest. Across both tests, Student T demonstrated knowledge of relevant game-related vocabulary, as well as knowledge of core grammar concepts, such as the gerund, infinitive, pronoun case and tense. However, there was some notable confusion on the usage of the future – in the pretest, he successfully identified the appropriate use of the future in the question "I ____ be imposter[sic] next week." He chose the appropriate answer "won't", but in the post-test, a similar problem, "We _____ play Among Us tomorrow." elicited the response "haven't". This response suggests an incomplete acquisition of *will* and future tense in general.

This observation is particularly insightful as Japanese as a language lacks a true future tense, with tense being broken into past and non-past (Nitta, 2017). A study by Newbery-Payton and

Mochizuki (2020) evidenced a high rate of tense confusion in Japanese-speaking learners of English, often substituting present tense for future, a finding that is reflected in Student T's confusion as well.

Student T also appeared to struggle with the perfect aspect, another feature present in English but absent in Japanese. On the post-test, Student T failed to answer the question testing for knowledge of the perfect aspect, substituting “does” for “has” in “He ____ fixed the lights.” as well as favoring “haven't” over “won't” in the previously discussed future tense test. This suggests confusion over the use of the perfect.

In addition to grammatical category and usage tests, Student T also completed some of the free answer segments and sentence ordering tasks presented in the post-test (though he completed none of the sentence ordering tasks in the pre-test). These answers demonstrate a mastery of core word order in English, producing native-like sentences such as “The imposter[sic] killed his last friends.” and “I'm not the imposters[sic] because I didn't kill everyone.” While these sentences are not perfectly semantically sound, they demonstrate the ability to build a canonical NP and negative sentence.

Other responses, however, demonstrate a lack of mastery of other aspects, particularly articles. Two of Student T's responses lacked proper articles (“I was at office” and “I was in front of minion”) - while this may be explained by the influence of slang, which often omits articles for brevity, Student T's responses to the following questions asking to choose specific articles suggests a lack of understanding of the rules of articles in English. Only one response was unambiguous in being canonically grammatical, with the remaining answers being the less favored answer (e.g. “We love to play Among Us. I'm playing *a* video game now.”, choosing “a” over “the”, which creates something of a non-sequitur despite being grammatical), or entirely ungrammatical (“I am doing *a* tasks in electrical.”, where “a” as a singular indefinite article is entirely incompatible with the plural “tasks”). See the following chapter for further discussion of this phenomenon.

6.2.2.3 Student T's Motivation

In spite of the continued lack of mastery of certain concepts and his young age, Student T demonstrated continued enthusiasm for the project, as well as a high level of proficiency and a degree of development of his confidence and willingness to engage with complex language. As noted previously, he was observed to be very talkative, talking regularly without prompting or guidance, and engaging enthusiastically in discussions and, during in-game meetings, making accusations or providing short accounts or information without being asked.

On at least one occasion, Student T declared his enjoyment of the game, and when asked in his posttest if he enjoyed the class and if he thought he improved his English, he replied "Because it was fun, my English ability improved," suggesting an overall enthusiasm for the game and method as a whole, and a self-perceived improvement. While he may be considered something of an outlier compared to the other students due to his age and relative ability in English, his high level of engagement in the classes demonstrates the viability of this format for multiple levels and age groups.

6.2.3 Student S

6.2.3.1 Profile of Student S

Student S is roughly average compared to the other students. As shown in Table 15, he is 13 years of age with 4 years of self-reported experience with English, suggesting he began English study in late elementary school. He produced a total of 61 utterances across 8 sessions of the 10 possible, with an average of 7.65 utterances per session. Of those utterances, roughly 39% were complex.

Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
13	4	8	61	7.65	39%

Table 15. Statistics on Student S.

6.2.3.2 Student S's Language Level

Student S was observed to be one of the more average students. He showed an appropriately extensive working vocabulary, occasionally asking for support in Japanese to fill in the gaps in his vocabulary as necessary. He also used a wide range of sentences, both complex and simple as necessary, as well as using complex sentences in a majority of sessions he attended.

However, the most notable feature of Student S's English is its inconsistency. Particularly when compared to the other students, Student S showed the most non-linear acquisition of English. While he was fully capable of answering problems with complex syntactic principles at work (e.g., pied-piping and embedded sentences) and demonstrated similar capabilities during the sessions, he also had multiple instances where his grammar was non-canonical in a seemingly basic way. For example, he would frequently use the unmarked (i.e., present) form of a verb when speaking of past events and had at least one instance of starting a sequence of events with a past-conjugated verb, only to drop this conjugation for subsequent verbs in the sequence.

This was also reflected when comparing his pretest and posttest results. On questions he originally answered with a grammatical choice, identical questions with rephrased sentences yielded ungrammatical answers (e.g., a grammatical present-tense answer for "He eats candy every day." versus an ungrammatical answer for "The dog eaten treats every day."). He also chose an ungrammatical answer for the pronoun case question, which was answered correctly by three of four of his peers on the pretest and by both of his peers on the post-test.

This inconsistency and overall incongruity with what would be expected normally by a student of his level suggests he is following a non-linear, atypical pattern of acquisition. It is unclear what exactly would have influenced this pattern; he is slightly older than the other participants at 13, and has reported 4 years of English study, in addition to being in the process of taking a standardized English test, the EIKEN, during the course of the sessions, suggesting a high level interest in English

or at the very least a capability for an acceptable level of performance in an English-language proficiency test.

6.2.3.3 Motivation Level of Student S

Researcher field notes revealed that Student S was an enthusiastic participant, widely participating without much need for prompting. He participated in most sessions, outside of sessions where participation in other English-related activities, specifically those related to preparation for or sitting for the EIKEN, a standardized English proficiency test offered in Japan. Student S's overall enthusiasm and motivation appeared to be roughly average, not quite reaching the levels of enthusiasm of Student Y or the complexity of Student H, though his average utterances being the second highest do suggest some higher level of enthusiasm.

6.2.4 Student J

6.2.4.1 Profile of Student J

As shown in Table 16, Student J was 12 years old with a self-reported experience of 10 years of English study. While possible, this significant proportion of English study may be a false report. He produced 47 utterances over the period of 9 sessions of the 10 possible, averaging 5.2 utterances per session, with 31% of the utterances being complex.

Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
12	10	9	47	5.2	31%

Table 16. Statistics on Student J.

6.2.4.2 Student J's Language Level

Student J is likely the student with the largest gap between their on-paper proficiency and their conversational and production skills. Compared to the other students, Student J performed the best on the pretest, choosing the correct and/or grammatical answers for all multiple-choice sections. In

the sentence ordering tasks, he also showed some proficiency for basic word order, though he failed to properly structure the pied-piping question, leaving “book” *in situ* in “What book about trees did you read?”, producing instead “Which did about trees book”. This suggests a baseline of understanding of English grammar, though perhaps only at a level where unambiguous features that are not as vulnerable to L1 transfer have been fully acquired.

However, over the course of the sessions, Student J demonstrated a relatively complete acquisition of core syntax, particularly word order, embedded sentences and embedded questions, but lacked much of the core morphosyntax that marks tense, plurality, articles or other aspects of English grammar. Although untrue of other students, Student J in particular had a tendency to prefer unmarked, present tense verb forms over the past even in situations where past tense was appropriate, i.e., in a majority of game-related discussions where students were discussing the events of the previous round that had just occurred. Interestingly, however, the tendency for him to favor present tense is isolated primarily to regularly conjugated verbs, while using irregular verbs in the past tense without much issue and in appropriate contexts. This is in line with a prediction made about the hierarchy of morphosyntatic elements made by Krashen (1977). Student J is not the only student to show this tendency but did so most regularly.

It is worth noting this is not a consistent behavior – while there are some irregular verbs where Student J had a tendency to favor the past, some, such as “go”, “don't”, and “see” frequently went unmarked in their base form, requiring correction from the coach or self-correction if the error was realized. Further, he was observed to use the regular past very scarcely, with only one recorded instance in “I finished my tasks”, a phrase that was provided to him by the coach and modeled by other students. This suggests partial acquisition of the irregular past, reinforcing Krashen's order of acquisition.

This partial acquisition explanation, however, does not entirely account for some of the observed behavior. The case of the form “saw” is of particular interest in the speech of Student J;

while he regularly used “saw” for the past tense of “see”, suggesting acquisition of this form, this form occasionally falls away in sequences. The tendency for the past tense to disappear in longer sequences suggests some analysis of the construction of past tense in English that is potentially inherited from the Japanese system – while Student J is not the only student to demonstrate this structure, he uses similar structures with the most regularity. This structure appears to resemble a similar structure in Japanese, the sequential *te*-form structure, suggesting the possibility of transfer. For further discussion of this structure, please refer to Chapter 6.

6.2.4.3 Student J’s Motivation

Student J’s overall motivation was observed to be comparatively low when assessed against his peers. His total number of utterances was the lowest, both in terms of overall speech and average speech per session. Furthermore, compared to his peers, he rarely spoke unless prompted, often speaking only when game play situations, direct questions or teacher prompting elicited it explicitly. He also failed to take the posttest despite repeated prompting and seemed to have a low level of enthusiasm overall.

While comparatively more enthusiastic than Student Y in some regards, Student J’s level of participation was largely perfunctory, rarely extending beyond the minimum asked of him by the coaches or necessitated by his peers’ interactions. However, he was a willing participant when directly prompted, and would occasionally engage in activities started by other students, such as announcing their current avatar’s costume, something which regularly occurred at the beginning of later sessions.

6.2.5 Student Y

6.2.5.1 Profile of Student Y

As shown in Table 17, Student Y was 13 years of age with 3 years of self-reported English study, which would correspond to late elementary school. Student Y attended all 10 sessions, producing a total of 67 utterances in total with an average of 6.7 utterances. His percentage of complex utterances was 7%, the lowest percentage among all five students.

Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
13	3	10	67	6.7	7%

Table 17. Statistics on Student Y.

6.2.5.2 Student Y's Language Level

Compared to the other students, Student Y had the least complex speech overall, favoring short, largely unmodified and simple sentences on the whole. Compared to the other students, Student Y also had vanishingly few complex sentences, failing to include a single maximally complex sentence (complex, compound and modified), though he did employ a few questions over the course of the experiment. As shown in Table 17, he had the lowest percentage of complex sentences at just 7% of his total sentences showing any complexity at all, despite being the only participant who attended all 10 sessions and having the overall highest proportion of utterances, with three more than the next highest, Student H. This relative lack of complexity was consistent throughout, and only in the second half of the experiment did he use non-simple sentences at all (in this case, questions, which are not true complex sentences with dependent clauses). This resulted in the lowest proportion of complex sentences overall, despite having participated in every session and having the second highest number of total utterances among the 5 students.

Student Y perhaps represents one of the least favorable outcomes of this approach. While the other students demonstrated a degree of complexification of their language or at the very least took the opportunity to practice complex forms, Student Y's experience demonstrates that there is no guarantee that being put in a situation where complex language is encouraged or useful will necessarily result in the production of complex language.

6.2.5.3 Student Y's Motivation

Student Y's level of participation, however, was still notable, participating fairly regularly in the sessions he attended, often making 15 or more utterances. However, there were also classes where he

participated almost none at all, producing utterances only five separate times in the final session. This disparity resulted in the second lowest average utterances in spite of attending all 10 sessions. Student Y is also a clear example of the impact of motivation on the student's overall performance. On days where Student Y reported to the coach as being tired, he demonstrated very little participation, showing one of the potential ways in which students can have less than ideal outcomes based on personal and/or external factors.

6.3 Discussion

When the statistics of the students are compared against each other and assessed overall, as shown in Table 18, a pattern correlating motivation and overall language use and level is made clear. When taken as a whole, there is a clear positive correlation between students whose level is higher in terms of proficiency, with the more proficient students being more motivated to either speak (in the case of Student T) or be more motivated to produce complex sentence (in the case of Student H), or both (in the case of Student S).

Student	Age	Experience in Years	Attendance (out of 10 sessions)	Total Utterances	Average Utterances	Percentage of Complex Utterances
H	12	7	9	63	7	46%
T	7	1	7	69	9.8	11%
S	13	4	8	61	7.6	39%
J	12	10	9	47	5.2	31%
Y	13	3	10	67	6.7	7%

Table 18. Comparison of Student Statistics.

However, perhaps the clearest correlation is not the positive effect of motivation on the quality and quantity of the students' output, but perhaps the inverse – the least motivated student, Student Y, showed by far the proportionally least complex speech, alongside the second lowest average utterance per session, despite attending every session. Even the second most motivated student, Student J, whose participation was largely limited to what was asked of him, showed more complexity in his speech despite his overall number of utterances being considerably lower. What this demonstrates

most firmly is perhaps the degree to which a lack of motivation can stymie a students' learning and limit the elements so necessary to language acquisition – participation in L2 speech.

Another striking negative result is a possible though not firm correlation between overall output and sentence complexity. While the case of Student H suggests that a relatively high level of output leads to more complex speech, Student T, with his high degree of output but proportionally low ratio of complexity, and Student Y, with comparably low output and almost no complexity, show that pure output is not enough to promote complexity. In other words, simply encouraging students to speak will not make them complexify their language. Furthermore, Student T, with his high level of enthusiasm, comparable language level to Student H, and general talkativeness, did not outperform or match Student H, despite numerous indicators that would suggest otherwise.

The only clear differentiating factor between the two is age – Student T is considerably younger than his peers, at age 7, while Student H is roughly at the same level as Student T. This effect of age may not be surprising - Mackey and Gass (2005) note that children have "capabilities, perspectives and needs [which] are different." Though this comparison is between adults and children, it may be true as well that this holds for younger children when compared to their older counterparts who straddle the line between childhood and adulthood, and for whom academic achievement and worldly concerns may be a greater factor in their motivation.

6.3.1 Overall Considerations

When assessing this overall data alongside data discussed in the previous chapter, what is of particular note is the students' attitudes towards the game and their engagement in the tasks. While many students' language use was largely non-canonical or somewhat fragmentary or disorganized at times, the increase in complex language use over time demonstrates an overall increase in the use of complex speech, and by extension, some degree of increased confidence in the use of complex syntactic forms. Any specific increase or improvement in the students' ability to produce canonical

syntactic forms, however, is as of yet inconclusive, but their willingness to engage with and use complex speech in the context of the game suggests that social deduction games such as *Among Us* hold meaningful promise as a medium through which intermediate and more advance students can practice the type of speech needed to progress and build on their previous skills.

However, it is worth noting a few of the challenges and limitations this approach entails. For one, much like many previous CALL experiments have demonstrated, a key factor in the success of these approaches is the students themselves. Unmotivated students or those not willing to participate as actively show considerably less progress, and while this experiment and its involved, group nature did keep four out of five students consistently engaged and promoted their use of language, the remaining student, Student Y, showed little engagement or language use in general.

When each student is analyzed individually in separate case studies, a spectrum of enthusiasm, motivation and skill can be observed. This wide range of experiences provides evidence for both the advantages and disadvantages of this approach, showing a possible range of outcomes students and instructors may encounter when employing *Among Us* or a game like it in a DGBLL setting. However, this is not the only metric by which students can be assessed. In addition to this overall assessment of student performance, the particularities of their language use can also provide interesting and useful data that can help instructors and educators to better understand their students' language use. In the following chapter, we will assess the particular language used by the students over the course of the experiment, as well as garner insight into the mechanics of interlanguage as a whole.

Chapter 7

Analysis of Interlanguage in Japanese Native L2 English Learners

Although the primary focus of the experiment is to assess the fit of *Among Us* as a tool for encouraging development of complex language in second language students, the data collected from this experiment can also be used to provide insights into a number of theories regarding second language acquisition, the shape and nature of interlanguage, and the dynamics and structure of language acquisition, particularly in the case of Japanese-speaking students learning English. The utterances of the students in the experiment demonstrated a wide range of structures that reflect both native-like English language structures and non-native-like constructions that may reflect an influence from their native Japanese.

As the students are second language learners producing naturalistic language in a setting encouraging free production, this data can be useful for assessing their interlanguage and for shedding light on the processes that underlie both the English they spoke during the sessions and the possible influence of their first language on how they structure their English. There are four major loci of interest to be discussed on the basis of the data collected: morpheme acquisition, questions, determiners, and L1 syntax transfer.

7.1 Observed Phenomena

7.1.1 Morpheme Acquisition Order

An early prediction posed by Krashen (1977) proposes a model order for acquisition of L2 morphemes and grammatical lexemes, placing the plural *-s* in an initial stage with the copula and *-ing* gerund/progressive morpheme at the first stage, followed by auxiliaries and articles in the second stage, irregular past in the third stage, and regular past, third-person singular and possessive *-s*. However, Luk and Shirai (2009) observed that L1 has a direct influence on the acquisition of

pluralization in L1 Japanese learners of English, demonstrating that, contrasted with Spanish (a language in which plurality is marked much like it is in English), Japanese-native learners, as well as Chinese and Korean natives who share a lack of commonly marked plurals in their grammars, acquire plural *-s* later than is predicted.

This observation is reinforced by the language use by the participants in the study – pluralization, while used occasionally, is commonly omitted even in contexts where other morphemes or lexemes are used in a native-like way. This can be seen even in the context of a single utterance. For example, during a report of the previous round of play, Student S reported the following:

> "I was moving with coach, and I went electronic room, and I finished task, and heading to lower engine, and I found the black dead body between electronic room and lower engine. I didn't kill black because coach was watching me so I'm not suspicious."

Of note is the multiple uses of the irregular past tense (*went* and *found*) as well as the regular past (*finished*), which is followed immediately by a plural noun lacking a marking (*task*). Furthermore, the student demonstrates this lack of pluralization in the subsequent lesson also with *task,* in "I did my task a lot", an unambiguously plural context. This kind of lack of morpheme use is prevalent throughout the data, including the lack of regular past tense usage from Student J, who regularly used irregular forms (e.g., "saw", "went", etc.) but lacked regular past tense endings almost entirely, and did not produce them without guidance. This lack of acquisition of morphemes despite the acquisition of other supposedly later stage morphemes lends support to the findings regarding the plural morpheme *-s* in Luk and Shirai (2009), and suggests overall that Krashen (1977)'s rigid claim about a set order of acquisition is less likely than an ordering sensitive to the speaker's L1.

7.1.2 Questions

Due to the clear difference between Japanese and English in terms of question formation, questions were a primary target for inquiry as a part of this research. In English, a core part of the formation of questions is *wh*-movement – that is, the fronting of the interrogative word to the beginning of a sentence when forming a question. A related movement is the fronting of 'do', 'be' and modals. Neither of these phenomena are present in Japanese, which leaves their *wh* words *in situ* and has no movement of verbs or modals that accompany a question. This distinction is clear and unambiguous, and as such is an easy target for observation, but also interacts with other syntactic rules of English (e.g., pied piping) (Ross, 1967), which can potentially further complicate achieving native-like speech.

However, multiple students – both in the pretest and posttest and during the experimental sessions – showed mastery of various aspects of question formation. All five students demonstrated a command of *wh*-movement, correctly moving *wh*-words into sentence initial position and following them with a form of 'do' (although not always with the appropriate tense). Student S demonstrated knowledge of a non-*wh* question, using modal fronting appropriately in “Can I change map?”. There were also multiple instances of pied piping – Student S fronted “how many tasks” in “How many tasks did you finish?” and Student T fronted “what color” in “What color do you like?”.

Despite *wh*-movement being absent in Japanese grammar, the students were able to acquire the rule and assess it as sensitive not just to the *wh*-word but the entirety of the phrase. However, this was not entirely native-like – Student Y in the post-test provided “Which did with wires task you do?”, showing that while he did understand the basic movements behind questions, there was some confusion as to how modifiers behaved in relation to other parts of the phrase, choosing to interpret the T movement as V2-like rule. It is worth noting that “with wires” was still fronted, but the phrase has been broken by “did”, suggesting that while pied-piping has been acquired to some degree, the full extent and usage of the rule is not entirely understood.

7.1.3 Articles and Determiners

As shown in Snape et al. (2013), Japanese learners of English struggle with the use of determiners when presented with a choice of articles to complete English sentences. On the basis of the data presented from Snape et al.'s study, Japanese native speaking English-learners in their experiment demonstrated significant difficulty with the use of articles, with the incorrect article or no article at all selected in instances where a definitive article was appropriate and performed worse with selecting indefinite articles than their Spanish or Turkish speaking peers according to the data presented. As such, it was anticipated that the participants in this study would show similarly high levels of noncanonical usage (or lack of usage) of articles.

On the basis of the data collected from the sessions and the post-test completed by three students in which they were asked to respond with the canonical article in example sentences, there is evidence that the observation made by Snape et al. (2013) holds true. Of the approximately 142 instances in the data from the session where an article would have been appropriate, 63, approximately 44%, of instances had a canonical usage of an article. This result is slightly above the result of Snape et al. (2013)'s study for Japanese speakers at an Upper Intermediate level (approximately an overall average of 51.5% canonical usage).

Assessing the usage of articles in context also brings up further evidence as to the nature of their usage in the students' interlanguage. Student J during Session 4 uttered the following useful example:

> "First I am [in?] the lower engine and the light were off so I go to electric and electric and strange door was closed I do task electric that's all."

What is most notable is Student J's considerable inconsistency in his usage of *the*. In the first clause, he used it canonically – "the lower engine" and "the light" – but further noun phrases that

would require articles – “electric” (i.e., the electrical room), “strange door” and “task” - lack appropriate articles or other determiners. This inconsistent usage suggests partial acquisition of determiners. This example is particularly illustrative, as each of the examples in which a determiner is not overtly used show different possible reasons for lacking an overt determiner.

“Electric”, in this case, appears to be a possible reinterpretation of a generic noun that names a particular area in the game (the electrical room) as a proper noun, in which case the lack of an overt determiner is appropriate. Based on similar usage from the coach and other students, this analysis seems likely. This analysis is complicated slightly by the use of an article with “the lower engine”, though the need to distinguish the lower engine room from the upper engine room in the map on which the students were playing may have caused this location to resist reinterpretation.

“Strange door”, however, appears more likely to be the result of partial acquisition, as while “a strange door” and “the strange door” would both be canonical in this context, “strange door” with no overt determiner would not be canonical. This usage would be consistent with Japanese, which lacks articles.

The final noncanonical noun phrase, “task”, presents the most complex analysis. In the context of “I do task electric”, the most appropriate canonical phrasing would likely be “I did *my* task in electrical,” using a possessive determiner rather than an article. However, “I did a task” or “I did the task” would also be appropriate. With the possibility of a possessive determiner, which have been otherwise relatively consistent in their canonical usage among the students, including Student J, it is somewhat unexpected to find a phrase which lacks a determiner altogether. This suggests a high level of confusion about the canonical usage and perhaps even purpose of articles from Student J.

This partial acquisition and confusion are further reinforced by the results of the posttest (see Appendix C for the full text of the posttest). The posttest presented students with five questions designed to assess their ability to select canonical English articles in appropriate contexts. Each question provided a sentence with a missing word, and gave the students three options – *the*, *a/an* and

“nashi” ‘none’ in Japanese. Out of the five questions presented, no one question had more than a single student provide the most appropriate answer.

The first question assessed definite singular of a named location, looking to assess their usage of locations as proper nouns, in the form of “I did my tasks in ____ electrical room”. One student chose “the”, while one chose “a” and one chose ‘none’. The intended answer was “the” as this named location “the electrical room” is generally not referred to as a reanalyzed proper noun.

Question two was intended to assess the use of articles where a previous context was provided to establish the topic of discussion in the conversation space, in the form of “There is one imposter. I saw ____ imposter vent.” Two students selected “an” and one selected ‘none’. While in isolation “I saw an imposter vent” is a grammatical sentence, in context, it is not the most pragmatically optimal choice, as the choice of the indefinite article suggests the imposter that was seen was not the one established to exist by the previous sentence. This suggests their choice of article is not context sensitive.

Question three was intended to assess context sensitivity in a broader context where the association between the establishment of the item in the conversation space is not as clear by changing its form in the subsequent sentence, in the form of “We love to play Among Us. I’m playing _____ video game now.” Two students chose “a” and one student chose “the”. Similar to question two, the choice of “a” forms a grammatical sentence “I’m playing a video game now,” but the choice of “a” by two students suggests a lack of context sensitivity.

Question four was intended to assess the use of a definitive by using a modifier to single out a particular item that is presumed to be established in the conversation space in the form of “I’m doing ____ last task. After that, I will be done with tasks.” This question resulted in the widest range of answers, with one answer of “the”, one answer of “a” and one answer of ‘none’. This presumed context appears to have caused the most confusion, though unlike question two, one student was able to choose the correct answer.

The final question was intended to assess the plural, in the form of "I'm doing ____ tasks in electrical." One student answered "the", while the other two students answered "a". This question shows a degree of confusion about the plural – while "I'm doing the tasks in electrical" is a grammatical sentence, without context, it is slightly less natural than "I am doing tasks in electrical". However, "I am doing a tasks in electrical" is entirely ungrammatical, and demonstrates some confusion about the use of the indefinite article with the plural. These results, taken alongside the observations discussed previously, suggest that the observations of Snape et al. (2013) hold true broadly even for these speakers.

7.2 Japanese-Like Structure in English Interlanguage

One student, Student J, repeatedly demonstrated a structure that shows evidence of the interaction of L1 transfer on multiple levels as a result of both underanalysis of English structures and analogizing Japanese structures to English structures, resulting in an ungrammatical utterance. When reporting his activities from previous rounds of play, Student J would regularly make his report with sequential independent clauses (e.g., "I did X, I did Y, I did Z."). However, in a large number of instances when he would make these reports or otherwise recount a series of events, he often would conjugate the verb in the first independent clause as past tense, but fail to conjugate any subsequent verb, leaving them in the base, unmarked reference form, until a break in his speech or correction from the teacher prompted him to restart his utterance and then conjugate the verb in the past once gain. This is exemplified by an utterance from Class 6, where he is reporting his discovery of a body, informing the group of what he saw in the room immediately before making his report: "I found in office, I see in reactor, I see blue, [corrected to: I saw] blue, and somebody, one more."

While this may possibly be explainable through partial acquisition of the past (in this case the past of *saw*), there are some complications that make this explanation incomplete. Firstly, Student J demonstrated on multiple prior occasions that he is capable of using *saw* canonically without issue.

In Class 4, he used *saw* in “I saw yellow, and then I go straight, and I see pink and yellow, I go admin, and I see yellow.” If *saw* was partially acquired, why would he be capable of using it prior to the instance above, and use it initially while following the remaining instances of *see* with the present or unmarked structure? This suggests something deeper at play.

Secondly, analysis revealed that this phenomenon, though most easily notable in Student J's speech, was not isolated to just him. Student S demonstrated this in Class 5, introducing a report on his previous actions with “I was doing a task clockwise,” following immediately with “and I don't meet people”, suggesting a similar phenomenon at work. Even Student H, who is demonstrably more advanced than the other students, demonstrates a similar pattern – introducing a sequence of events, he begins “I was watching the camera,” followed by “and I can't see anything but yellow is dancing in the hall”. While he soon after reverts to a more canonical use of past, with each verb reflecting a past tense conjugation, he also demonstrates this structure of closely associated sequences carrying only one overt realization of tense.

7.2.1 Comparison to Sequential Sentences in Japanese

This particular structure appears to resemble an analogous structure in Japanese, which is also used to narrate sequences of events that occur one after another, which I will call a “sequential sentence”. In this structure, all verbs prior to the final verb in the sequence are marked by the suffix *-te*, allowing for multiple verbs to be strung together in a sequence but also causing each verb prior to the final verb to lack explicit tense marking, being explicitly marked as past only in the final verb. This can be seen in sentences like (1):

(1) 花子はスーパーに行って、リンゴを買って、帰った。

Hanako-wa suupa-ni itte, ringo-wo katte, kaetta

Hanako-TOP supermarket-IO go-GER apple-OBJ buy-GER go-home-PAST.

“Hanako went to the supermarket, bought an apple, and went home.”

In this example in (1), the verbs *iku* 'go' and *kau* 'buy' are conjugated in their *-te* form with the suffix *-te*, and as such lack an explicitly marked T.

If we compare this construction to the utterance produced by Student J, we notice a similar formation – a single verb conjugated in the past, with the English example selecting the verb closer to the normal C head in English, which, as a largely left-headed language, is at the beginning of the utterance, with every verb after that lacking tense information. As there is no direct equivalent to *-te* in English in terms of usage, Student J instead interprets this using the least marked form of the verb, the reference form, which also doubles as the present.

While this can be viewed as a simple case of attempting to analogize a structure in Japanese onto the grammatical system of English, this construction actually demonstrates multiple levels of analogizing that cause negative L1 transfer from Japanese. This can be demonstrated suitably by this utterance from Class 4, where Student J is once again reporting his activities during the prior round: "I saw yellow, and then I go straight, and I see pink and yellow."

As before, Student J begins his sentence with the past tense verb *saw*, but subsequent verbs are in an unmarked form as *go* and *see*. In this instance, he links all three clauses with *and*, demonstrating the intent to link these clauses in sequence, instead of presenting them as distinct, unsequenced events. One possible reason for this outcome is not simply a one-to-one analogy with Japanese and English, but two sequential analyses that result in the form seen produced by Student J.

7.2.2 How Do We Analyze This Sentence?

The first possible analysis is one looking to represent *-te.* English allows verbs to be linked either at the verb level (e.g., "I wrote and read my book."), at the level of the entire verb phrase (e.g., "I wrote my book and baked a pie."), or at the clausal level (e.g., "I wrote my book, and my professor reviewed it."), with each verb being marked for tense. The suffix *-te*, however, allows for Japanese sentences to join at the clausal level only, causing the tense information to be brought to the final verb in the

sequence. This, however, is not true verbal coordination, and it is argued that Japanese is lacking in verbal coordination broadly (Nishiyama, 2012). In Student J's utterance, there is no equivalent to *-te* that maps directly, and as such, coordination is performed by *and* or, in other instances, by providing no coordination at all, with no consistent usage or pattern dictating this choice, suggesting that this mapping does not seem to correspond to *-te* in any overt or obvious manner.

In effect, *-te* cannot be suitably analyzed, and the first analysis fails, leaving the bare verb which is assessed in the second possible analysis. Since the verb is now left without an explicit marking that corresponds with the L1, as *and* is not a bound morpheme and cannot be attached to the verb, it is not immediately obvious how to approach the verb. Conjugating it as past or any other form would add additional marked tense information to the verb, which would not be analogous to the Japanese construction, and while there exists a tenseless verb form in English in the infinitive, there is no equivalent in Japanese that would be accessible to Student J. As such, Student J opts for the most unmarked form, i.e., the bare verb in its reference form. This allows Student J's utterance in English to approximate its Japanese equivalent, having a sequence of verbs headed by a verb marked for tense, with a sequence of untensed verbs further from the head, joined by conjunctions.

The forms chosen in the students' interlanguage do not reflect any usage that corresponds to native-like, grammatical English usage, but the resulting form also fails to correspond to any clear surface level Japanese output either, lacking key elements in the interlanguage such as the verbal *-te* ending. With this intermediary form present in the data, the question becomes: how is this verb being interpreted by the students in the interlanguage?

7.2.3 The -te Form in Japanese

It is worth assessing the nature of the L1 and the form being analogized, the so-called *-te* form. Shibatani and Kageyama (2017) characterize the *-te* form as a gerund, which fits multiple use cases, particularly in its role as a partner to auxiliary verbs such as in (2).

(2) 太郎がリンゴを食べている。

Tarou-ga ringo-wo tabe-te-i-ru

Tarou-NOM apple-OBJ eat-GER-PROG-NONPST

'Tarou is eating an apple.'

Much like English, the *-te* in (2) acts like *-ing* would in the equivalent English sentence, allowing it to link to its auxiliary verb while not expressing tense and staying a nonfinite gerund. This, however, is where the comparisons end – verbs with *-te* cannot be nominalized like English[4], and on the whole lacks the typical gerunditive function outside of this, which is assumed by other forms in Japanese. In fact, in this particular context, it is doing something remarkably non-gerunditive. As noted by Chierchia (1988) in his dissertation, gerunds have a "verbal and nominative nature", where they can act as the object of predicates. However, in the original Japanese sequential construction and the subsequent interlanguage English equivalent, there is no ostensibly nominal behavior at play, and only in the auxiliary-adjacent usage is there some clear nominal-like behavior.

Our interlanguage example provides even further evidence against a gerunditive interpretation, particularly in the form chosen by the students to replace *-te* in their interlanguage attempt at a sequential sentence. Consistently, the alternative chosen to the past for the verbs following the first is the unmarked base form of the verb. This form seems like a natural choice, as it is the least marked form as a base, but there is an empirical complication. Kubota (1994) found that when choosing

[4] It is worth noting that in Japanese, while perhaps not universally productive, it does appear that the infinitive form can be used for nominalization. For example, the verb *kagayaku* 'to shine, to sparkle' has an ostensibly deverbalized noun form in *kagayaki* 'brilliance, shining'. However, this cannot be done with all verbs: *taberu* 'to eat' cannot be deverbalized into **tabe* '*eating', although lexicalized items that appear to use this form do exist – *tabemono* 'food', literally "eating thing". The *-te* form, however, is entirely unable to perform this kind of deverbalization, and the particle *no* or the pronoun *koto* after a finite verb perform this function instead.

among nonfinite forms, Japanese speaking learners of English found bare infinitives to be the most difficult to acquire, being acquired after both to-infinitives and gerunds in English. On the basis of this evidence, it would seem more likely that the students would choose to use one of the other established nonfinites than a bare verb as their nonfinite of choice in this situation.

One possible interpretation of this choice is it being a generic nonfinite – not a gerund or infinitive, but an otherwise unmarked nonfinite that is of neither category. If previous categorizations are true, this would be an innovation in the interlanguage, which seems unlikely, or alternatively, a form brought about as a consequence of one of the central processes introduced by Selinker (1977), such as L1 transfer. On the basis of this alone, however, it is not so simple to conclude that this is the motivation behind the choice. The choice of an unmarked form can simply be attributed to accessibility - an application of Occam's Razor to simplify the complex task of sentence formation.

This markedness explanation does not account for every part of the interlanguage, however. If the student is building a sequential sentence off the model of their Japanese knowledge, we return to the first failed analysis and the one ostensible element that is missing – the *-te* morpheme. The question then becomes: what is the function of the *-te* morpheme? This as a question is difficult to answer if we are looking at it in isolation due to numerous factors, the least of which being its status as a bound verbal morpheme, making it difficult to isolate and analyze separately.

Another potential complication are nonfinite verbs in Japanese generally. While it may be useful to contrast the *-te* form and its usage against other nonfinites, there is only one other against which a contrast can be clearly made – the infinitive. As noted by Oshima (2012), the *-te* form gerund in Japanese appears to have almost no difference in usage or meaning from its fellow nonfinite. The two clear differences noted by Oshima are slight difference in formality, with the infinite being more formal, and an interpretation unique to the gerund, characterized by Oshima as the "resulting state" interpretation, which is limited to telic verbs. In essence, this additional reading allows for the verb with the *-te* to be interpreted as having taken place outside the topic time (i.e., sometime before or

otherwise not concurrent or directly sequential with the main verb). This particular observed difference, though slight, suggests that the use of *-te* is contributing something to the verb that a bare infinitive does not.[5]

The one possible answer with potential evidence would be *-te* functioning as a conjunction that affixes to the infinitive; as noted before, while not universally present, "and" is used regularly to link the clauses in Student J's interlanguage, suggesting some kind of association between *-te* and "and" at the setential level. However, it is unclear as to what exactly *-te* is linking here. Unlike the English setential "and", *-te* blocks the tense node entirely, disallowing it from being shared with the VP of the prior (or in the interlanguage case, latter) predicates, making "and" a poor candidate for *-te*'s representation in the interlanguage.

This question is even further complicated by Nishiyama (2012), who shows compelling evidence that what *-te* is allowing for is not in fact coordination but adjunction. Nishiyama presents an example where there appears to be two sentences conjoined despite having ostensibly different time frames, and therefore would be predicted to have a different tense, shown in (3).

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[5] Further, albeit speculative, evidence can be derived from the morphological form of the *-te* form itself. The *-te* form is ostensibly const ructed through the same base as the infinitive with *-te* suffixed, though this is obscured in most forms by euphonic changes that obscure the underlying /i/. This suggests that *-te* could possibly be an extension of the base infinitive, though it may not be possible to assess this empirically.

(3) 太郎が昨日は歌い、今日は踊る。

Tarou-ga kinoo-wa uta-i kyou-wa odo-ru[6]

Tarou-NOM yesterday-TOP sing-INF today-TOP dance-NONPST

'Tarou sang yesterday and dances today.'

In (3), *utai* 'sing' is unmarked for tense as a nonfinite but is ostensibly past due to its association with *kinoo* 'yesterday'. In effect, the expected T disappears, leaving no information behind when the verb is made nonfinite in order to connect to the tensed clause. Nishiyama suggests this is analogous to (4) from English.

(4) [$_{TP}$ John sitting in front of me, [$_{TP}$ I could not see the screen]].[7]

In (4), much like (3), the leftmost TP "John sitting in front of me" is nonfinite and is adjoined to the TP with the marked tense in "could". In English, as this is effectively a TP taking another TP as a modifying phrase, no conjunction is needed. By analogy, (3) is doing the same, and as such, no conjunction is needed in Japanese either. Therefore, *-te* need not necessarily be a conjunction, nor does it appear to be functioning as such, as in (3) no clear candidate for a conjunction is present and this analysis still holds.

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[6] Although the example Nishiyama gives uses the infinite, he notes this is analogous to the equivalent *-te* construction, which would be the below:

(3') 太郎が昨日は歌って、今日は踊る。

Tarou-ga kinoo-wa uta-tte kyou-wa odo-ru

Tarou-NOM yesterday-TOP sing-GER today-TOP dance-NONPST

'Tarou sang yesterday and dances today.'

[7] Adapted from Nishiyama (2012).

7.2.4 The Implications of -te *as a Generic Nonfinite*

These observations taken altogether lead to a simple conclusion: a verb marked with *-te* represents a generic nonfinite form for Japanese verbs, and this generic nonfinite is what the students are analogizing into their interlanguage English when constructing sequential sentences. In other terms, the verbal form constructed by *-te* is the broadest nonfinite, performing a wide range of nonfinite functions, and the distinction between gerund or infinitive or other possible nonfinite forms is an artifact of the influence of a formal register with more confined rules, which may be as of yet not fully acquired by the students.

From this follows a somewhat conjectural possibility – in language that is acquired by a Japanese speaking child, *-te* is the model for nonfinites, with the more formal and restricted infinite form acquired later for a smaller range of uses. This is evidenced by a number of facts about Japanese nonfinites as well. The infinitive, though able to appear in a variety of analogous sentences to the *-te* form, cannot for example, stand in for a verb marked with *-te* alongside auxiliaries as shown in (2').

(2') *太郎がリンゴをたべいる。
*Tarou-ga ringo-wo tabe-∅-i-ru[8]
*Tarou-NOM apple-OBJ eat-INF-PROG-NONPST
(intended) 'Tarou is eating an apple.'

In (2), the *-te* form is grammatical alongside auxiliaries, but its supposed equivalent, the infinitive, is not, as shown in (2'). In a wide range of auxiliary constructions, *-te* alone is acceptable, even in a formal register.

Similar usage with particles such as in (5a) and (5b) also demonstrate another role that only *-te* can access.

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[8] Note that Japanese verbs of this category (so-called *ichidan* 'first row' verbs) have no overt infinitive ending. As such, this (lack of) ending is represented by ∅.

(5a) 店で食べてもいいです。

Mise-de tabe-te-mo ii-de-su
Store-LOC eat-NONF-evenif okay-COP-NONPST
'It is okay to eat in the store.'

(5b) *店で食べもいいです。

*Mise-de tabe-Ø-mo ii-de-su
*Store-LOC eat-INF-evenif okay-COP-NONPST
(intended) 'It is okay to eat in the store.'

In (5a), the *-te* form can combine with *mo*, a particle indicating inclusiveness (often translated as 'also'), to mean something analogous to 'even if' or 'it's [state] if'. This is not available to the infinitive as seen in (5b). This evidence taken together presents a further argument that Oshima's (2012) observation of the contrast between the infinitive and the so-called gerund is a robust distinction core to the grammar of Japanese.[9]

7.3 Discussion

On the basis of the observations made in Section 7.1 and the analysis undertaken in Section 7.2 of the interlanguage data gathered over the course of the experiment described in previous chapters, various

[9] There is an additional possible complication in cases where the reverse is true – informal constructions which use what appears to be the infinitive where *-te* is ungrammatical. Take (6) for example.

(6) 私たちは商店街に買いに行った。
Watashi-tachi-wa shotengai-ni kai-ni i-tta
I-plural-TOP shopping-arcade-LAT buy-INF?-IO go-PST
'We went shopping at the shopping arcade.'

(6) ostensibly uses an infinitive in *kai* 'to buy' – however, it can be argued that the *ni* in this construction suggests this is some form of adverbialization, or rather a "converb", i.e., a VP which modifies a higher verb. This may be a distinct form in and of itself and be its own class of nonfinite as characterized by , despite appearing to use the infinitive with a particle, which is not a capability seen elsewhere among nonfinites in Japanese.

conclusions can be drawn about the nature of interlanguage speech, specifically of that between Japanese learners of English and, in some sense of that of children broadly.

One principle this broadly reinforces is a language pair dependent order of acquisition of aspects of syntax. As noted previously, this is somewhat against Krashen (1977), instead in line with Luk and Shirai (2009)'s observations about a natural order of acquisition of morphemes being influenced by the L1 of the learner, favoring more familiar grammatical formations that are more easily analogized against the L1 over those that are not found in the L1 or less easily analogized. The particular case examined of past tense forms and plurals, however, is not the only evidence in favor of Luk and Shirai – the consistency in which the data gathered matches with other observations about Japanese learners of English shows that L1's influence is wide and varied even within individuals and across a group of students. Though more targeted work needs to be undertaken to provide a more complete picture of this reality and observe trends that can be useful cross linguistically, this data reinforces previous observations in favor of L1 transfer as a major influence in the construction of a learner's interlanguage.

Beyond reinforcing previous observations made, this data also provides a prime example of something much less frequently observed in this line of inquiry – what happens when attempts at analogizing on the basis of the L1 fail entirely? The sequential sentence data point in the interlanguage of the students provides key new insight into what this may look like, where a student that is searching for a way to express a linguistic form that has no clear equivalent in their target language constructs something from the opaque base of their L1 to fill in gaps in their L2 knowledge. Though through the analysis of this particular case, an insight into the nature of an aspect of Japanese has been achieved, what is possibly a more important observation is the process by which interlanguage can be formed from L1 resources. In attempting to express this L1 construct in terms of L2, the students regularly sought out a minimally marked form to use when no obvious equivalent existed. This suggests a path

of least resistance, where students are building up their interlanguage on the basis of best guesses and overapplication of simple, accessible forms. This is largely in line with much of the other thinking that exists around L1 transfer and SLA in general, which favors progression from simple to complex (e.g., Pienemann (1995)'s Processability Theory), and of core ideas about interlanguage being the result of strategies to best represent the language input being received against their L1 knowledge, a la Selinker (1972).

Though this analysis in and of itself and in combination with the analyses previously presented can be useful both to linguists and to educators alike, one element of this analysis that has as of yet to be discussed is the role of the instructor. In order to fully flesh out the factors at play during this experiment and provide another avenue for insight into the pedagogical potential of this approach, it is valuable to discuss the role of the teacher and the scaffolding and similar techniques employed. The following chapter will discuss the teacher, both the specific instructor during the 10-week class period, and observations made during the initial pilot study.

Chapter 8

Pedagogical Technique and Scaffolding

This chapter will discuss the pedagogical approach of the coach participating in the experiment, along with the advantages and disadvantages of direct participation of the instructor in the game, as well as analysis of how this participation, alongside the game itself, promotes ample use of multiple scaffolding approaches to support students directly. The analysis in this chapter is based on both observations made during the pilot study on Gecipe and *Fortnite* discussed in Chapter 3, observations made during the study on *Among Us* described in Chapter 4, and an interview conducted with the instructor who participated in the study.

8.1 Direct Instructor Participation

In the context of CALL and DGBLL studies, direct participation of the instructor as a player in a game being played by students for the purpose of language learning is relatively rare. Numerous studies discussed previously (e.g., York, 2014; Swier, 2014; Peterson, 2006; DuQuette and Hahn, 2010) involve multiplayer experiences or platforms that allow for multiple users to interact in the same digital space but exclude the instructor from the game itself. A meta-analysis of 26 DGBLL studies conducted since 2008 revealed seven of the 26 total studies involved any type of teacher mediation at all, which according to the analysis presented showed evidence of indirect intervention in the form of supplementary materials as having a positive effect (Dixon et al., 2022). As such, the effect of the instructor's direct participation in the game alongside the students is not often discussed in a CALL or DGBLL context. Due to the structure of the classes both in the pilot discussed in Chapter 3 and the experiment discussed in Chapter 4, an opportunity is presented to examine the effects of an instructor's direct participation in the game itself.

8.1.1 Advantages of Direct Instructor Participation

Over the course of the studies discussed in this work, numerous advantages were observed with regards to the instructor's direct participation in the game being played as part of the lesson. The clearest advantage to be gained from direct participation is the ability for the instructor to interact more directly and frequently with students.

In both games assessed, *Fortnite* and *Among Us*, the instructor had multiple opportunities to prompt students directly, encouraging them to speak and engage in their target language. In addition to encouraging output generally, this also appeared to have somewhat of an effect on motivation overall, preventing students who were otherwise unmotivated from failing to participate altogether. Even students, such as Student Y, who displayed a consistent lack of enthusiasm and motivation, were encouraged to speak and were able to keep up with their peers to some degree when the instructor interacted with them directly, motivated at least partly by their instructor's input.

Another advantage of this approach observed largely in the context of the *Among Us* study was the ability for the instructor to support the speech of the students in real time with timely use of scaffolding. The instructor repeatedly used scaffolding of various types, encouraging students who were struggling to produce the utterance they were looking to produce through various means. The most frequently utilized approach was various forms of modeling (Walqui, 2006), in the form of either providing phrases or words that the student was unfamiliar with. Students would regularly stop and ask the instructor for guidance on words with which they were unfamiliar, and the teacher would also correct noncanonical grammar when appropriate, giving students a model on which to base their speech. This also occurred passively as the instructor participated directly in the game and would himself give an account of his own actions, which could be used by students as a model to form their own sentences.

This approach also heavily utilized schema building and contextualizing (Walqui, 2006), as lessons were often constructed around short phrases that would be useful for the game, with the game itself providing context in which students can more easily use the phrases provided. These schemata were then reinforced in game by the instructor. One clear example of this is during the lesson from the *Among Us* study on questions. At the start of the lesson, six short questions were introduced, including one that provided a basic building block that allowed the students to customize the schema to the situation: "Where were you when _____?". One student, Student H, was able to internalize this schema, and utilized it in the following lesson, asking "Where were you when you found the dead body?". As this was a specific schema that was useful in the context of a meeting within the game, it both provided schemata for students to employ and contexts in which to employ them.

Another novel advantageous element to this approach compared to previous research is the instructor's use of the students' L1 during game play or during the lesson itself. Previous studies discussed above focused largely or almost entirely on the L2, particularly during game play sessions, using the L2 almost or entirely exclusively during the relevant experimental portions. However, the instructor during the *Among Us* study incorporated both Japanese and English into the lesson, both during the pre-game instruction portion and during the game play itself. The focus was largely on the L2, however, occasionally the instructor would use Japanese as a scaffolding tool, particularly when students appeared to struggle with understanding or being able to find the appropriate word. The instructor also noted in his interview that this scaffolding strategy was useful for regulating motivation – when a student was tired or not in the mood to play, using Japanese would help engage them in the task.

This bilingual scaffolding also took on characteristics which would not necessarily be intuitive. A common feature of the instructor's speech during the course of the *Among Us* study was the use of Japanese tag questions and ending particles (e.g., だね *da ne* 'isn't it? Is that right?', だよ *da yo*

'[affirmative, emphatic particle]'). These tag questions or ending particles are largely dissimilar to anything that can be found in English, and do not have true equivalencies in English. However, the instructor in the *Among Us* study regularly used these tags alongside English sentences, often as the only recognizably Japanese word in an otherwise entirely native-like canonically English sentence. When asked about this usage, the instructor noted that it helped facilitate attention and keep students engaged and feeling like they may have some level of understanding. He went on to note that this kind of bilingual code switching can help mitigate some cognitive load that lower-level students may experience by giving them familiar Japanese words that draw their attention.

This kind of scaffolding also points to another advantage of this approach, flexibility. As noted in multiple contexts by the instructor during his interview, engaging directly with the students allows for various levels of customization. Undermotivated students can be given more attention to encourage their participation. The kind of input that the instructor provides can also be altered to suit various skill levels. For example, the instructor would adjust the type of question they would ask to a more advanced student, requesting more detail from a more advanced student while only asking basic, accessible questions to students of a lower level or with less confidence. This flexibility was regularly demonstrated – with Student H, who was relatively more advanced, the instructor would ask him more complex questions outside of the scope of the game (e.g., "What video games are you playing?", "Did you go to school today?"), to which he was able to respond and which kept his attention and kept him speaking English during lulls in the game play. However, when approaching a less enthusiastic student such as Student Y during a game play lull, he limited his questions to simpler topics (e.g., "How are you feeling?"). When he responded with "I'm tired", he asked why, and was able to provide a new vocabulary word "stomachache" when Student Y was unsure of how to express this in English.

The ability to adjust to each student's level served both students on their level, keeping them engaged during parts of the game where they would not otherwise be able to speak or play, helping to mitigate some of the uneven outcomes caused by the nature of *Among Us*. This consideration for level also was able to engage with both higher level and lower level students, giving them equal opportunity to speak. By being directly engaged in the game and with the students themselves, time that may have otherwise been dead was filled with contentful speech, and students that risked falling by the wayside against their more proficient peers were given support that kept them engaged.

8.1.2 Disadvantages of Direct Participation

Though there are numerous clear advantages to the direct participation of the instructor in the game in a DGBLL setting, there are some disadvantages worth noting as well. Many of the disadvantages to direct participation come from an over-reliance of the students on the instructor as a source of their L2, reducing their potential to interact with students. While a great degree of scaffolding was facilitated directly by the instructor, it is worth noting that students rarely sought out each other's support in terms of language use. This is potentially detrimental to the kind of naturalistic meaning negotiation which a game with free discussion as a core element features as a useful aspect.

This approach also does not facilitate much metacognition. With the direct availability of the instructor to support any issues they might have in real time, students are not encouraged to construct their language independently. This does not preclude all independence, however, as despite the presence of the instructor during the *Among Us* classes, many students acted largely independently. However, it is worth noting among lower-level students in particular that formulaic language and language that stuck closely to that presented in class was frequent, while higher level students, such as Student H, often produced novel utterances that did not follow the instructor's lead. This suggests an effect of skill on the degree to which metacognition is accessible, and a risk of the instructor's mere presence contributing to a skill gap between students.

Participating in the game also may directly interfere with the job of the instructor. As the instructor is fully engaged in the game, they must both navigate game play and function as an instructor at the same time, making it difficult for them to devote full attention to instruction, and certain elements of game play may lessen their ability to instruct altogether. While this did not regularly manifest during the course of this study, there were some instances where the game play did detract somewhat from the instructor's role. This was most apparent in instances when the instructor eliminated from the game. While the instructor would still act as the facilitator, directing the students to follow the established rules and procedure for the meeting, he would be unable to contribute his own speech outside of instruction, limiting the amount he could contribute during these games to giving direction, not allowing him to model speech directly.

8.2 The Game as a Scaffold

While scaffolding is often discussed in terms of ways that instructors can enhance or facilitate the learning of students, scaffolding can also be performed through the game itself. DGBLL in and of itself can provide scaffolding for students through the games played during a lesson. This section seeks to outline the way in which *Among Us* provided scaffolding for students based on observations made during the game play sessions.

8.2.1 Bridging

A game such as *Among Us*, with simple, familiar rules whose popularity has extended its reach to many students outside of the classroom, provides an inherent method of what Walqui (2006) calls bridging. Bridging is the act of incorporating previous experience or knowledge of the students to link the language use to their life. Games, particularly those that are already familiar, are excellent tools for doing so, and students are provided with context that is already immediately accessible to them.

This is best demonstrated through the vocabulary questions as presented on the pretest and posttest. Game-relevant vocabulary was already familiar to a majority of students, with the students scoring perfect or near perfect on the vocabulary section of the pretest, and those who took the posttest scoring similarly well on the vocabulary presented. This suggests an existing familiarity with the game environment, which helps overcome some potential obstacles to learning that other, less familiar learning contexts may hold.

8.2.2 Contextualizing

Games in and of themselves present a context for learning as a "goal-driven problem space" (Gee, 2008). As a form of media in which the learner engages directly, they are ripe as a source for contextualization, as students will be using their language within the context of the game. A wealth of examples can be presented for how *Among Us* achieves that contextualization, but put simply, students regularly and consistently used language in a way that reflected their present context, giving them a goal to focus on to promote their language use and ease their burden of speech.

Nearly all speech recorded over the course of the 10 weeks was relevant to or related to the game. Even non-directed speech prior to the game play sessions at the beginning of the lesson was often game related, with students announcing their choice of in-game costume or discussing other aspects of the game, such as asking who was what color avatar.

In fact, contextualization appeared to have such a significant impact on the facilitation of language production, that once the immediate context of the game was removed, students struggled to speak as freely. This is best exemplified through Student H. On multiple occasions, when Student H was eliminated early, the coach would attempt to hold a conversation with him about things happening in his daily life outside of the game and the session. However, Student H, who regularly showed a high level of proficiency and used long, complex sentences regularly, seemed to revert to a

lower stage, giving short, one-word answers or using simple sentences, suggesting that this removal of context caused enough of a mental burden to negatively affect his speech.

8.2.3 Schema Building and Re-presenting Text

In a game like *Among Us* where very little text is presented by the game, opportunities for schema building by the game itself are relatively limited. However, the nature of the game play does lend itself towards schemata to be built by instructors, as demonstrated by the wealth of schemata presented in the lessons prior to game play. Schemata presented included questions ("Where were you when _____?"), complex sentences regarding opinions ("I think…", "I guess…", "In my opinion…"), speech reports ("I was with [person]", "The imposter saw me at [place]."), descriptions and events ("Your character looks like…", "My skin is ____.", "I saw [person] at [place]."), among others.

However, where the game truly presents an advantage is the potential to re-present text. Although these schemata are useful starting points, the true strength is the ability for instructors and even other students to take the schemata provided and represent it to make it more accessible. Within the game, students were given multiple opportunities to re-present the text introduced, and the instructor would often re-present text by asking questions, prompting students for information or give answers himself to provide new input on the basis of what has been presented before.

8.3 Discussion

As discussed in the previous two sections, the incorporation of an instructor as part of the game itself presents an opportunity to double up on the advantages provided by the game to enhance students' learning via a wide range of scaffolding techniques. The evidence provided by the data gathered from the present study demonstrates that these techniques have a number of opportunities to interact and not only help facilitate progress in students, but also help mitigate negative effects brought about by a lack of motivation.

The presence of the instructor as a partner in the game play has potential to enhance the learning of students by providing real time feedback and support, allowing the instructor to adapt the lesson to fit students' needs better and change their approach as circumstances shift both within the individual lesson itself and over time. While there are potential pitfalls and disadvantages to involving the instructor directly, mitigating strategies can be used to outstrip these issues, and the analysis suggests that the benefits of the scaffolds provided by the instructor often outweigh or balance out some of the potential drawbacks that direct participation can provide.

Chapter 9

Discussion

This chapter discusses the overall implications of this research and provides the answers to the research questions posed in Chapter 2. Section 7.1 assesses the pedagogical implications of this experiment. Section 7.2 assesses the implications of the results of this experiment for Second Language Research. Section 7.3 discusses the broader implications of this experiment for linguistics in general.

9.1 Pedagogical Implications

The results of this experiment have numerous implications for pedagogical applications of *Among Us*. The clearest takeaway is their potential for encouraging students to generate a significant amount of their target language and do so incorporating a significant proportion of complex sentences, particularly those that were maximally complex. Most notably, the conversation that is engaged in during the course of the game aligns with many proposed approaches to simulate real life conversation in a meaningful way, resembling the proposals of Taylor and Wolfson (1978) for "directed conversation" in which role play is a core component.

In addition to this, the quantity of output witnessed, both in terms of overall utterances and in terms of the length and complexity of the sentences output, suggests potential for this approach and for social deduction games generally to be a source of language growth. This output alongside the wealth of input from both other players and the teacher, as well as the inherent negotiation that is a core part of the game play of social deduction games, provide the necessary environment for fostering language development. This suggests the answer to Research Question 1 "Do games with competitive and collaborative elements encourage production of complex sentences?" to be yes.

In fact, the type of conversation elicited through game play aligns well with situations characterized by Ellis (1991) as useful or necessary for the acquisition of language. His modified interaction hypothesis outlines three core characteristics: comprehensible input as a useful though not necessary element, input modification (such as through negotiation of meaning) as a necessary element of acquisition, and the key role of interactions in which the speakers must modify their output as core to L2 acquisition. The conversations had during game play, as well as input from the coach, provide a wide range of comprehensible input that can be useful for the students to model their speech.

Furthermore, meaning negotiation is inherent to the game play, and students demonstrated consistent modification of their speech throughout through their synthesis of information. They regularly both used and provided information on the events of a game session, information provided by other students or the teacher, and their own observations and conclusions to understand the motivations and actions of their fellow players in order to play the game. While direct back and forth question-and-answer was rare, students would draw conclusions on the basis of others' speech, such as noting when students were lying or telling the truth, as well as make accusations and state opinions that were modified on the basis of the input from others' claims.

Another important pedagogical implication of these results is the influence of the game on the overall motivation and degree of participation and language use of the students. As noted at an earlier stage of this research, most students engaged freely, widely and regularly in the game play, speaking both with and without prompting, and both during and outside of game play itself. The volume of speech produced also speaks to the enthusiasm of the students, further suggesting a high degree of motivation to participate in the lesson and the task of using their second language generally. The three students who participated in the posttest also stated directly their enthusiasm and continued desire to participate in further classes when asked how they felt about the class itself.

This increased motivation, however, is not universal. As discussed previously in Chapter 5, at least one student, Student Y, demonstrated little enthusiasm for the game, and participated the least

of all of the students. While the accessibility and usefulness of *Among Us* are broad, the core issue of individual motivations still holds true in spite of the many positively contributing factors to its potential for a language learning tool. As such, the answer to Research Question 3: "Do competitive and collaborative games motivate students to participate actively in lessons?" is complex – overall, it shows promise for most students, but uneven outcomes and a baseline lack of motivation make it only appropriate for certain students with careful considerations for structure of the class to avoid uneven outcomes.

The particular format of the game also presents potential issues which should be kept in mind and investigated in future research, particularly with regards to uneven gameplay outcomes and their impact on the ability for students to engage with others. The necessity for players who have been eliminated not to speak for significant portions of the speech-focused portion of game play can result in certain students speaking significantly less, particularly those who may not be adept at the game. This may also have a secondary effect of decreasing motivation, which may further impact issues of motivation already present.

As for the specifics regarding their development of their syntax and complexity overall, the results are inconclusive. It is clear from the students' usage of complex forms and their tendency to favor maximally complex sentences that the game play of *Among Us* encourages students to use more complex forms, but the plateau in usage of complex forms suggests a maximum possible expansion of the degree of complexity achievable. This may be due to a number of factors, however, including the simple fact that shorter, less complex sentences may be all that is necessary to convey information in many situations.

It is similarly unclear if this approach will promote progression as predicted by Processability Theory (Pienemann, 1995). While there was a clear progression in the overall quantity of sentences used, there was no clear progression from any particular student using less complex sentences to more complex sentences, or from phrases to sentences as Processability Theory predicts. However, some

students, particularly the more advanced students, began with some ability to construct complex sentences, and as such the possibility space for progress was somewhat restricted. The increase in overall usage of complex forms, even if a result of some other process other than direct acquisition, suggests that this may still be able to facilitate acquisitional progress. Ultimately, this suggests the answer to Research Question 2 **"**Do competitive and collaborative games result in learning of complex sentence forms?" to be inconclusive, but with evidence suggesting this may be the case. Further longitudinal research is needed to make a more conclusive judgement.

9.2 Second Language Acquisition Implications

In addition to the pedagogical takeaways, this experiment also provides insight into new potential methods for generating second language acquisition data. Furthermore, the data itself sheds some light on the nature of second-language speech in children acquiring language in a classroom setting. Overall, this provides an answer to Research Question 4: "What observations about learner interlanguage can we observe on the basis of the utterances made over the course of the experiment?" The remarkably adult-like usage when compared to other studies of Japanese native adult learners of English implies a similarity in their acquisition that runs contrary to much of the attitude of researchers towards children as being inherently different to their adult peers in terms of acquisition, as well as reinforcing previous observations made.

As the data analyzed in this research show, the nature of social deduction games promotes a significant production of speech. As demonstrated by this experiment, this leads to a wealth of data for use in assessment of particular questions as to the nature of the speech of L2 learners and the kinds of speech and particular grammar they produce. This can be useful as an alternative to targeted experiments, and while it lends itself best to post-hoc assessment of language as opposed to per-determined experiments looking into a specific aspect of grammar, it may provide opportunities to gather data on aspects of grammar that are less easy to test or more opaque, as demonstrated by the

evidence gathered with regards to the *-te* form in Japanese, providing a perhaps limited answer to Research Question 5.

This speech also has the advantage of being largely naturalistic – while not anywhere near as targeted as speech that may be produced in an experimental setting, it provides a situation where speech is closer in character to real-world speech that is less restrained by the artificiality of experimental assessment. As noted by Beebe and Cummings (2009), these natural speech applications provide better and more realistic insight into strategies used, real world interaction, emotion, tone, context, repetition and rates of occurrence, as well as negative or erroneous acts like avoidance. All of these factors are key in performing SLA research that is useful to students who will use their second language in a real-world context, and key for pedagogical considerations as well, particularly in contexts where factors such as motivation is important.

One particularly interesting result of the study is the particular form of interlanguage produced by the students, which seemed to align in multiple aspects with predictions made on the basis of adult-focused studies. While the scope of this study is limited and the number of participants low, there is an expectation in child SLA research that children are inherently different in their acquisitional practice and approach. Mackey and Gass (2005) note that "their capabilities, perspectives and needs are different," which can lead to a different approach, and perhaps order, in acquisition. This kind of similarity in acquisition also seems to run contrary to the Critical Period Hypothesis, first proposed by Lenneberg (1967).

There are possible explanations for this adult-like acquisitional pattern, though the most potential explanatory power can likely be found in the context of the students' language learning. As Japanese speakers living in Japan, they are best characterized as foreign language learners of Japanese, as opposed to a second language learner who may be acquiring a language that is spoken regularly outside the classroom in their everyday life. The degree of exposure of the students to their target language is significantly less than a child who may be naturally exposed to their first or second

language through their circumstances and the wealth of speakers around them, which would provide a great deal of comprehensible input and non-classroom opportunities for meaning negotiation. As such, much like an adult learner, students may need to resort to strategies similar to those that adults employ – effectively resulting in non-native, adult-like speech as a consequence of a transfer-of-training, as per Selinker (1972).

However, to this researcher's knowledge, little research on this particular issue has been performed, and while a wealth of research has been gathered on a number of pedagogical approaches and some more limited research into their specific strategies (Oliver and Azkarai, 2017), there is still room for more research done comparing the child learner to the adult, and the number of child SLA research results pales in comparison to that performed on adult learners. Explaining this similarity in outcomes between children and adults – and whether or not this outcome is truly representative of a similarity at all and not simply a mirage due to the limited explanatory ability of a small-scale study is worth assessing further.

9.3 Broader Linguistics Implications

As noted previously, interlanguage and data from naturalistic speech can provide a source of linguistic data that has potential advantages over established methods. As demonstrated in Chapter 6, the nature of interlanguage as a bridge between the speaker's first language and their target language can reveal evidence on otherwise opaque or difficult to evidence phenomenon or features of a language. Interlanguage, as an ad hoc, makeshift system that is the result of the speaker's attempt to marry two potentially conflicting or incompatible systems, can help to reveal underlying realities of a speaker's native language (or perhaps proficient language, in the case of a polyglot learning an additional language). These analogies and other strategies employed are useful for uncovering information about a language, especially when that information is not easily discernible otherwise, such as in the instance of the *-te* form as discussed in Chapter 6.

This use of interlanguage, SLA study and the repurposing of what may appear on the surface to be purely pedagogical, applied linguistics research shows the potential for a connection between the field of applied linguistics and her theoretical sister. Naturalistic interlanguage speech data gathered in an applied context has potential for being a rich source of inquiry that can inform not only teachers of language, but those studying the underlying, fundamental structures of the language by looking obliquely into the language via its leaks and ramshackle temporary structures when a learner of an L2 constructs the interlanguage in their effort to acquire something new. While this is only a first step into this line of inquiry, and one that lies at an extreme end of what may be possible, with the sheer syntactic distance between English and Japanese facilitating such insight, there exists a wealth of possibilities from using data and experiments in applied linguistics to serve and enhance theoretical ends.

This river of inquiry does not flow one way, however. The discovery of this kind of theoretically useful data in an applied context can be used in the context of pedagogy as well. An understanding of the theory that underlies the motivations for students to build their interlanguage the way they do can be of use to teachers and others who are pedagogically focused, as an understanding of what students may be thinking as they build their interlanguage, consciously or unconsciously, can be useful for constructing syllabi or pedagogical approaches that target potential areas for fossilization or other difficulties.

As a possible example using the data gathered and analyzed in this work, knowledge of the nature of nonfinite forms in Japanese can help inform how a teacher approaches introducing nonfinites in English to a Japanese speaker. Knowledge that the underlying concept of a nonfinite as a diverse group of verb forms with varying usage is largely foreign to a Japanese speaker can help teachers to understand the amount of time that is needed to dedicate to this topic, and how to go about introducing these distinct usages to help build a robust system in the mind of the learner.

This approach, however, is not universally applicable, and this method is somewhat scattershot in its approach, as it is by nature largely only analyzable post hoc. However, there may exist methods to elicit particular categories of speech or grammar while maintaining the naturalistic character of the approach. Further research is needed to assess the generalizability of this approach to other contexts, though it seems possible that any language pair with enough distance to require the learners constructing an interlanguage to analogize sufficiently to show evidence of underlying structure.

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Appendix A

Consent Form

The following consent form was provided to the parents or guardians of all students participating in the Among Us *class regarding the use of their child's information. This form was provided via Google Forms (*https://forms.google.com*), and responses were collected electronically through the platform. The parent or guardian of all students provided consent for their data to be used in this publication via this form. As the students and their parents were native speakers of Japanese, this form was provided in Japanese. An approximate English translation of the Japanese text is provided below.*

京都大学院研究レポート使用許可

京都大学院生スペンサー・ハンリンによる、現在参加していただいている Among us レッスンでの生徒情報及び、英語力・レッスンの研究内容を、大学側へ提出するレポートへの使用許可をいただきたいと思います。
以下がレポート内容となります。

研究内容のテーマは、テレビゲームとデジタルメディアを通した言語教育方法と第二言語習得となります。現在は、生徒の性別・年齢・授業内の発言・音声レコーディングの内容・アンケートの結果（英語能力、英語勉強の経験等）を記載しております。
＊生徒様のお名前、音声、所在地等の個人情報は一切公表いたしません。発言等の内容の抜粋または、一部の使用はされます。

尚、収録されたデータ等はすべて研究目的のみに使用されています。
特定の参加者の引用などあれば、情報はお名前のイニシャルを使うことで匿名にさせていただきます。
今後、研究発表と論文については学会誌等へ掲載予定です。

名前（生徒様）

上記内容を理解し、情報の使用についての承認または拒否へのご回答を以下にてお願いいたします。

- 承認
- 拒否（拒否の場合は、収集データの公表は一切いたしません）

＊上記で拒否を選択した方：ご理由をお聞かせいただけませんでしょうか？

Kyoto University Research Report Permission of Use

We wish to seek you permission to use information concerning the students currently participating in the *Among Us* lessons to be used towards a report to be submitted to the University by Spencer Hanlin, a graduate student at Kyoto University.

The content of the report follows.

The topic of this research is language education and second language learning through video games and digital media. Currently, the sex, age, speech used during class, content of voice recording, results of surveys (primarily including English competency and English study experience) will be recorded.

The name, voice, current location and other such personal information will not be presented.

The content of their speech in part or in full may be used.

Furthermore, the data collected will only be used for research aims. If a specific participant is quoted, their information will be anonymized by using the initial of their first name.

After the data is collected, it is planned to be published as part of a research presentation or article in an academic journal or the like.

Name (Student)

Please review the above and if understood, please respond as to whether you agree to or do not agree to the use of information.

- Consent
- Do not consent (If you do not consent, the collected data will not be presented in its totality).

For those who answered “do not consent”: Please let us know why.

Appendix B

Pretest

The following is the text and images in the pretest provided to students. The test was administered in English with instructions solely in Japanese. Japanese-language instructions have an English translation provided alongside or below in italics. Formatting such as underlining has been added for clarity.

Section 1

Among Us English Quiz

問題は全 27 問あります。（所要時間 10〜15 分程度）

There are 27 questions in total. (Time to complete: 10-15 minutes)

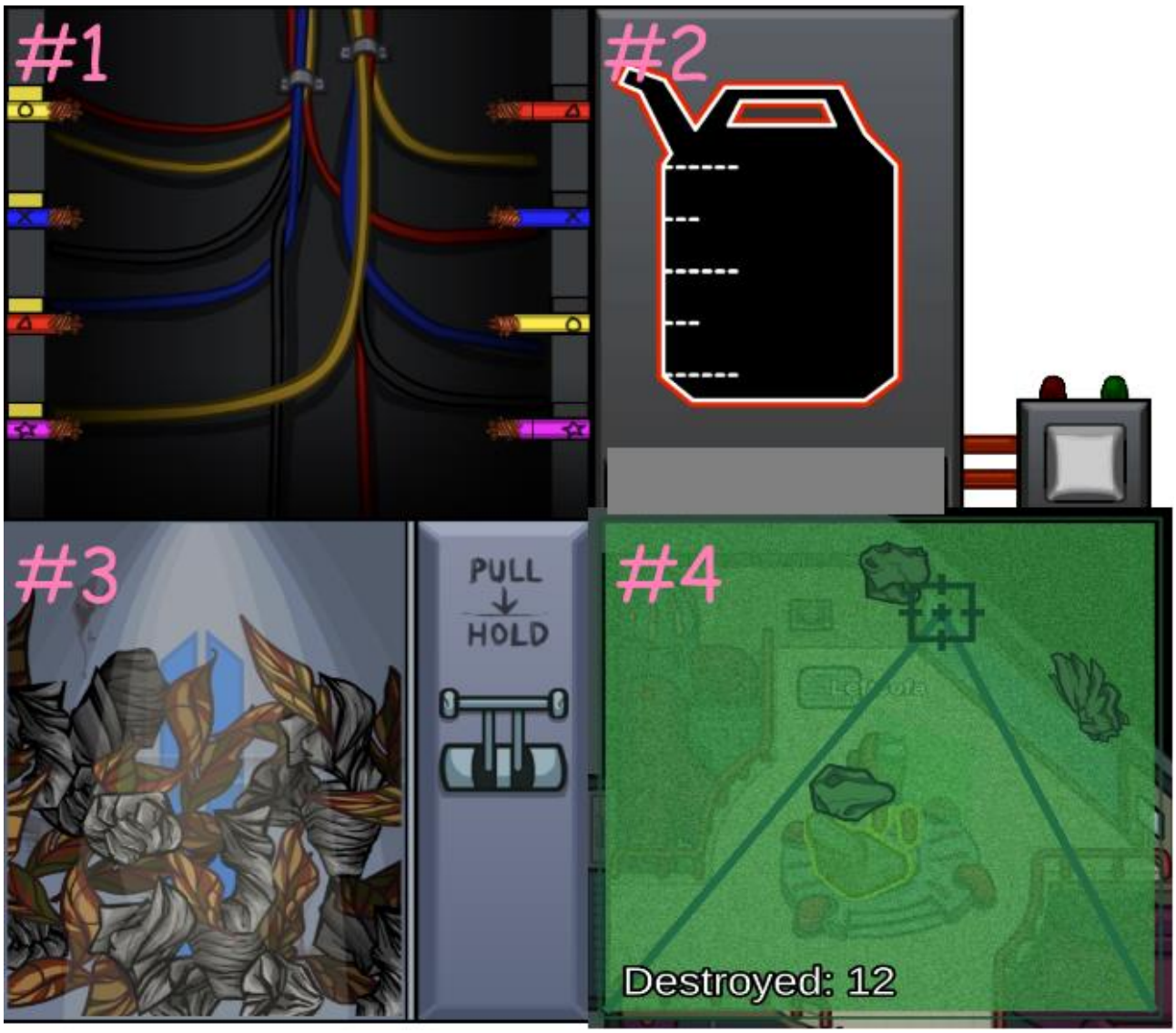
- Email
- 名前 *Name*
- 年齢 *Age*
- どのぐらい英語を勉強していますか？ *How long have you been studying English?*
  - 経験なし/1 年間以内 (Scale of 1-10) 10 年間以上

Section 2

単語 *Vocabulary*

絵の１〜４の適当な英単語を選んでください。

Please select the appropriate English word for 1-5from the image.



#1

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#2

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#3

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#4

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

Section 3

単語（ゲーム内） *Vocabulary (In-Game)*

絵の１～５の適当な英単語を選んでください。

Please select the appropriate English word for 1-4 from the image.

#1

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

#2

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

#3

- Suspicious
- Office
- Cafeteria
- Vote

- Engine
- Vent

#4

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

Section 4

単語（動詞）*Vocabulary (Verbs)*

絵の１～５の適当な英単語を選んでください。

Please select the appropriate English word for 1-5 from the image.

#1

- Hide
- Push
- Run
- Clean
- Scan
- Surprise

#2

- Hide
- Push
- Run
- Clean
- Scan
- Surprise

#3

- Hide

- Push
- Run
- Clean
- Scan
- Surprise

#4

- Hide
- Push
- Run
- Clean
- Scan
- Surprise

#5

- Hide
- Push
- Run
- Clean
- Scan
- Surprise

Section 5

文法　*Grammar*

最も良い答えを選んでください。 *Please select the best answer.*

He _____ candy every day.

- eaten
- eats
- ate
- eated

The coach told you about _____.

- I
- he
- me
- we

The crewmate wants to _____ the task.

- does
- doing
- did
- do

I'm _____ the lights.

- fixing
- fix
- fixed
- will fix

We are _____ on Skeld today.

- played
- play
- player
- playing

I _____ be Imposter next week.

- haven't
- aren’t
- won’t
- hadn’t

Section 6

言葉の順番 *Word Order*

カッコ内の単語を使用し、正しい順番に並び替えてください。
例）She____ ____ ____ _____. (brown, likes, dogs, big .)
答え：She likes big brown dogs.
Using the words in parentheses, please arrange the sentences in the correct order.

Example: She _____ ____ ____ ____ (brown, likes, dogs, big)

Answer: She likes big brown dogs.

(Note: The following questions were free response.)

I ____ _____ ____ _____. (do, first, tasks, my)

I took _____ _____ _____ _____. (advice, about, Coach's, the game)

The crewmate _____ _____ _____ _____ is dead in O2. (Shota, saw, in the cafeteria, that)

The emergency meeting _____ _____ _____ _____. (was about, yesterday, now, blue crewmate)

_____ _____ _____ _____ to Jared for his birthday? (give, what, you, did)

____ ____ ____ ____ when the meeting was called? (when, where, you, were)

_____ _____ _____ _____ you read? (book, did, which, about trees)

Appendix C

Posttest

The following is the text and images in the posttest provided to students. The test was administered in English with instructions solely in Japanese. Japanese-language instructions have an English translation provided alongside or below in italics. Some formatting such as underlining has been added for clarity.

Section 1

Among Us English Quiz

問題は全 34 問あります。（所要時間 10〜15 分程度）

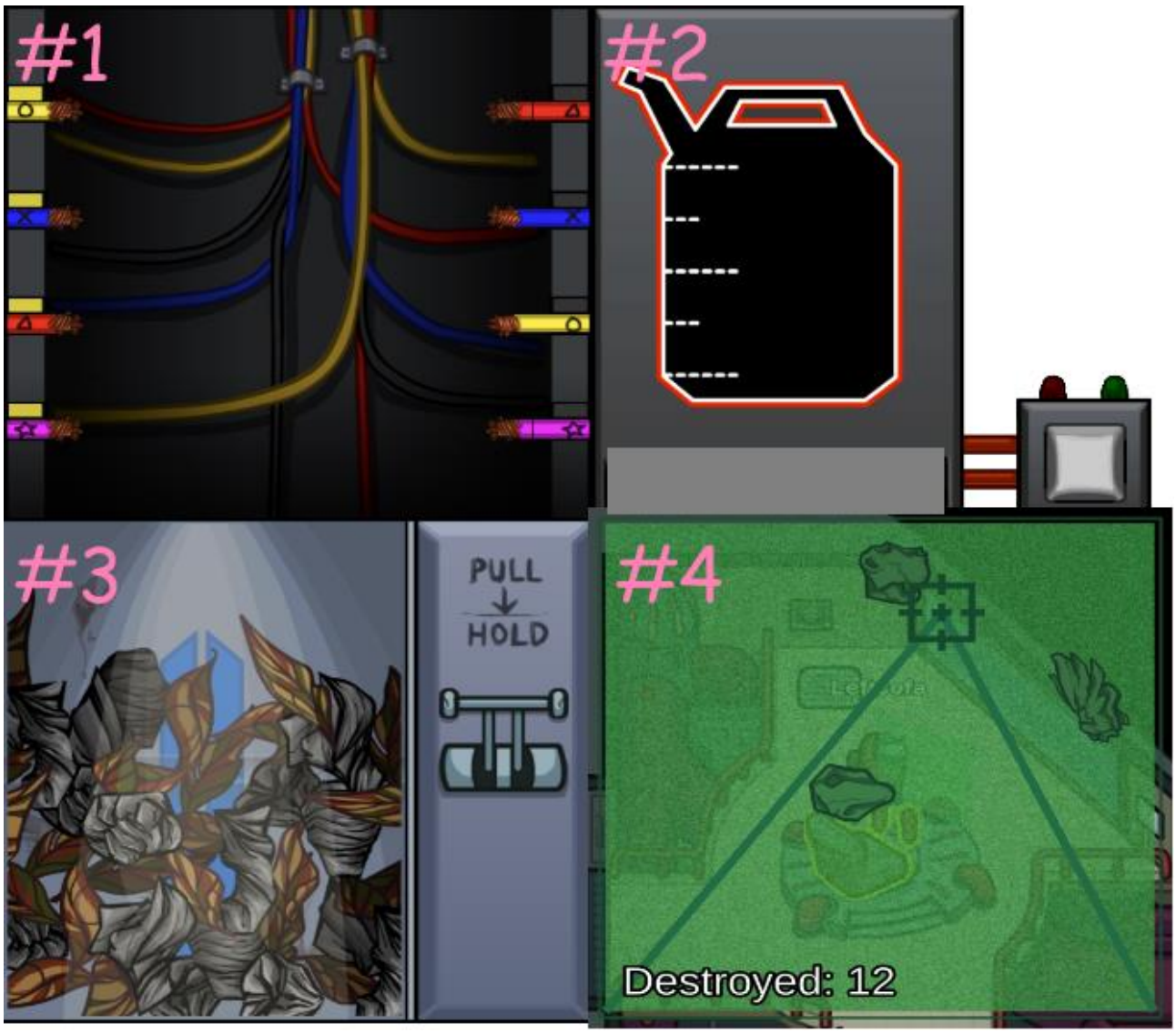
There are 34 questions in total. (Time to complete: 10-15 minutes)

- Email
- 名前 *Name*

単語 *Vocabulary*

絵の１〜４の適当な英単語を選んでください。

Please select the appropriate English word for 1-5from the image.



#1

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#2

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#3

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

#4

- Wire
- Asteroid
- Door
- Electrical
- Asteroid
- Card
- Garbage

Section 3

単語（ゲーム内） *Vocabulary (In-Game)*

絵の１～５の適当な英単語を選んでください。

Please select the appropriate English word for 1-4 from the image.

#1

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

#2

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

#3

- Suspicious
- Office
- Cafeteria
- Vote

- Engine
- Vent

#4

- Suspicious
- Office
- Cafeteria
- Vote
- Engine
- Vent

Section 4

文法 1　*Grammar 1*

最も良い答えを選んでください。 *Please select the best answer.*

My dog _____ treats every day.

- eaten
- eats
- ate
- eated

I told my mom about _____.

- I
- he
- him
- we

The imposter doesn’t want you to _____ your tasks.

- does
- doing
- did
- do

I’m _____ comms.

- fixing
- fix
- fixed
- will fix

He _____ fixed lights.

- has
- is
- will
- does

We are _____ Among Us today.

- played
- play
- player
- playing

I _____ play Among Us tomorrow.

- haven't
- aren’t
- won’t
- hadn’t

Section 5

文法 2　*Grammar 2*

文章のテンプレートを使って、英文を作ってください。
例）I was in _____.
答え：I was in the cafeteria doing my task.

Using the template sentence, please make an English sentence.
Example: I was in _____.
Answer: I was in the cafeteria doing my task.

(Note: The following questions were free response.)

I saw blue at _____, because _____.

I was at _____.

I am not the imposter because _____.

I was in front of _____.

Why were you _____?

Section 6

文法 3　*Grammar 3*

Before the last meeting, I _____ (do) my tasks, I _____ (see) the imposter, and I _____ (dance) with the crewmates.

(Note: The following questions were multiple choice.)

I did my tasks in _____ electrical room.

- the
- a
- (なし) *(none)*

There is one imposter. I saw _____ imposter vent.

- the
- a
- (なし) *(none)*

We love to play Among Us. I'm playing _____ video game right now.

- the
- a
- (なし) *(none)*

I’m doing _____ last task. After that, I will be done with tasks.

- the
- a
- (なし) *(none)*

I’m doing _____ tasks in electrical.

- the
- a
- (なし) *(none)*

Section 6

言葉の順番 *Word Order*

カッコ内の単語を使用し、正しい順番に並び替えてください。
例）She____ ____ ____ _____. (brown, likes, dogs, big .)
答え：She likes big brown dogs.
Using the words in parentheses, please arrange the sentences in the correct order.

Example: She _____ ____ ____ ____ (brown, likes, dogs, big)

Answer: She likes big brown dogs.

(Note: The following questions were free response.)

The imposter _____ _____ _____ _____ (friend, last, killed, his).

I followed _____ _____ _____ _____ (Coach's, the game, about, rules)

The crewmate _____ _____ _____ _____ is dead in electrical. (that, heard, Nori, in the engine room).

The emergency meeting _____ _____ _____ _____. (about, was, yesterday, the blue crewmate)

_____ _____ _____ _____ to Jared for his birthday? (give, what, you, did)

____ ____ ____ _____ the body was found? (was, the green crewmate, where, when)

_____ _____ _____ _____ you do? (task, did, which, with wires)

授業はどうでしたか？英語能力が向上しましたか？楽しかったですか？

What did you think of the classs? Do you think your English ability improved? Was it fun?

Appendix D

Selected Data

The following is a sample of data collected from observations of the main experiment discussed in Chapters 4-8. Two points of data representative of the output of each individual student for each category was selected for inclusion below as was possible.

Simple Sentences

Student	Simple	Compound Simple	Modified Simple	Compound Modified Simple
Student H	"I don't have any evidence" "Agree I'll vote black"	"I went to three and I was entering room, repair, I go to switch, dead body!"	"I don't have school next Tuesday" "I was doing salmon run for a long time"	"Last time I was doing the task at communications room and there is, I found there, gray? White? White and red but coach how do I say [a long time ago] so um, I don't know, it's a long time ago so I don't have… I don't have confidence" "I believe yellow I think yellow is not imposter because he can kill me and there's many chance to kill me so I'll vote out."
Student J	"I want comic" "I skip"	"I… purple… he saw the pink, so I run away… and I went to medbay, and I see the yellow." "First I go to elec, and the orange was come out and I go again around and I go… reactor and then I come again to elec the white was kill"	"It's too big"	"I in the admin I go to admin and the yellow was killed so and I see the maybe orange and I go and I in the admin the orange gone and I see the vent, so maybe [Student H] and orange is imposter" "Pink, I found, I found medbay the pink body, the pink dead body, the blue was come to O2 and blue don't kill me so maybe blue is white, And I don't know white and red."
Student T	"My server is Asia" "Skipping is fun"	"I am white and purple and gorilla" "Maybe it was a imposter because [Student Y] is find	"Because you die fast!"	"I see [Coach] and [Student S] and [Student Y] but I don't see [Student H] but [Student H] is maybe not suspicious so I don't know"

		[Coach] so maybe he was imposter"		"Nothing, yeah I don't see people shooting or dying, I don't see, so"
Student S	"I cannot see code" "I'm minion"	"I don't know so I will vote random" "But I mistake so I vote orange sorry orange"	"I did my fake tasks" "Tomorrow I will go school"	"I was so sleepy because I didn't sleepy yesterday." "I have one question, what tasks did you finish? Vs How many?"
Student Y	"I do cafeteria" "Pet is a rose"	"Let's add scientist and engineer and shapeshifter" "I'm not imposter, how can I say, no no no no no no, I'm scientist, I see vital, that's all, I vote coach"	"I was doing task at navigation" "Maybe [Student T] is imposter, so maybe"	"I did not, I do my task in [Science room] I don't not dead body I don't not see dead body"

Complex Sentences

Student	Complex	Compound Complex	Modified Complex	Compound Modified Complex
Student H	"What task did you finish?" "I don't have anything to say"	"Someone killed on lower route I think this game we will end so we have to vote someone but right so I want to vote someone" "I know airship but I don't know how big"	"Where were you when you found the dead body?" "If I stay in cafeteria I die."	"I only saw orange in electronic room, but I only saw him, I only saw him so I don't know who is imposter" "I don't know I was watching the camera and I can't see anything but yellow is dancing in the hall and I came across with I what color, black? At upper engine and I went to cafeteria I met I met yellow at between upper engine and cafeteria and I went to cafeteria and I was doing task that's all so I don't know who is supsicious"
Student J	"I think white is suspicious" "And I don't know who is imposter that's all"	"First I go to elec, and the orange was come out and I go again around and I go reactor and then I come again to elec the white was kill"	N/A	"I think yellow is imposter because maybe everyone work to kill that's all" "I found in office, I see a in reactor I see blue [corrected: I saw] blue and somebody one more so yeah so I think blue is white I

				don't know the other yellow and white that's all"
Student T	"I don't think [Coach]'s imposter" "My task is to clean the vents"	N/A	N/A	"I think green is suspicious because I see [inaudible] and [guest coach] and [Coach] but I don't see blue at all so and [Student H] is [Student J]?" "I want to say I see coach but coach didn't kill me so maybe coach is not imposter"
Student S	"I think imposter is white" "Can I change map?"	N/A	N/A	"I think white is imposter because white killed rose in front of me" "I think blue and red don't imposter because blue has a lot of kill chance but he didn't kill me so I think blue is white and black is same, he has a kill chance but he didn't kill me so I think maybe he isn't imposter"
Student Y	"Where did you play last game?" "Coach what do you vote?"	N/A	"I think [Coach] is imposter because how can I say [chasing whoever] because coach is chasing blue"	N/A

Appendix E

Complete Data

The following is the full collated data from observations of the main experiment discussed in Chapters 4-8, organized by complexity and divided by class where the utterance occurred.

Class	Simple	Compound Simple	Modified Simple	Compound Modified Simple
1	"I wasn't see" ~S "I don't have a question" ~J "I/I'm? Doing the task" ~J "What is your name?" (in-game) ~T "Reporter speaks first" ~H "I do cafeteria" ~Y "I'm in the navigation" ~J	"I do tasks but I see nothing" ~T	"Because you die fast!" ~T "I see purple in Q(?)" ~Y	N/A
2	"My server is Asia!" ~T "I mistake it?" ~T "Me too I'm not school ~T "If I don't have school" ~T "Me too I'm forget mute" ~T "No one died" ~T "No don't play among us" ~Y "No I don't have Splatoon 3" ~Y "I have 100 money" ~Y "I don't have money" ~Y	"I… purple… he saw the pink, so I run away… and I went to medbay, and I see the yellow." ~J "[Student] is following the coach so I am following too" ~T "I don't know so let's… I don't know so pink" ~T "I want to change the map because I don't know the tasks" ~H "I don't have much confidence so I didn't say it" ~H	"I can hear now!" ~T "I saw people at the (reset area?)." ~T "Today no school right?" ~T "And one more time not going" ~T "I do only tasks" ~T "I only know the map spaceship" ~S "I don't have school next Tuesday" ~H "I was doing my task at cockpit." ~Y	"I don't like that map because it's so small, not small but a little bit small" ~T "Nothing, yeah I don't see people shooting or dying, I don't see, so" ~T "I will study and… pig out? At my house" ~H "Last time I was doing the task at communications room and there is, I found there, gray? White? White and red but coach how do I say [a long time ago] so um, I don't know, it's a long time ago so I don't have… I don't have confidence" ~H
3	"White is imposter" ~T "Because everyone is saying white white white white" ~T "I'm imposter nice to meet you" ~T "Don't use vent" ~Y "I don't Imposter" ~Y	"I… purple… he saw the pink, so I run away… and I went to medbay, and I see the yellow." ~J "I did task, and I'm find I'm… there's so many tasks, I'm just do tasks" ~T "My battery is gone so I am not here" ~T	"I was doing task at na-vi-ga-tion" ~Y "I was doing my task at navigation" ~Y	N/A
4	"I was at [pause] storage, that's all" ~Y "I was with pink I was doing how can I say [watching camera] thank you ok "~Y "Waiting for cooldown button (is?) cooldown" ~Si "I didn't do anything" ~H "But brown ran away from yellow and [????]" ~H "I'm sorry brown" ~H "I don't have any evidence" ~H "I was at [pause] storage, that's all" ~Y "I was with pink" ~Y "I was doing how can I say [watching camera] thank you ok" ~Y	"I don't know so I will vote random" ~S "I went to three and I was entering room, repair, I go to switch, dead body!" ~H "I vote brown but he is not imposter" ~H	"I did my fake tasks" ~S	"First I am (in?) the lower engine and the light were off so I go to electric and electric and strange door was closed I do task electric that's all" ~J "I in front in reactor and I got ??? and in reactor I saw yellow and then I go straight and I see pink and yellow I go admin and I see yellow. Maybe yellow is crewmate" ~J "I in the admin I go to admin and the yellow was killed so and I see the maybe orange and I go and I in the admin the orange gone and I see the vent, so maybe [Student

				H] and orange is imposter” ~J “I was doing tasks in O2 and then I went electric room after there(?) [JP: lights turned off] But he was dead” ~S “I don’t have any opinion but I was doing tasks at and I was doing tasks in electrical room and I was in O2 ??? I want to check I want to survival report I come into the cafeteria and wanted to push the button but I can’t because yellow” ~H
5	“I don’t know I didn’t see” ~J “I’ll skip” ~J “I’m minion” ~S “This is survival report” ~S “Sorry I mistake sorry” ~S “I vote me” ~S “You have a chance” ~S “We don’t have time” ~S “I love admin” ~S “I have question” ~S “I have one question” ~S “I think so too” ~T “I’m super cool” ~T “I forgot” ~T “Don’t say [name]” ~T “Say [Student T]!” ~T “It’s me! You very strong” ~T “I have a question” ~T “I gonna skip” ~H “Agree I’ll vote black” ~H “I change my skin” ~H “I’m white” ~Y “I have ring” ~Y “I vote pink” ~Y “I have an idea The scientist and…” ~Y “I don’t know ” ~J “I didn’t see” ~J	“I’m black and I have goggle” ~J “First I go to elec, and the orange was come out and I go again around and I go… reactor and then I come again to elec the white was kill” ~J “But I mistake so I vote orange sorry orange” ~S “This is survival report and my task is finished How can I say [report], survival report and my finished task report” ~S “Go back and look at I’m freechat and I’m code” ~T “I am white and purple and gorilla” ~T “Maybe it was a imposter because [Student Y] is find [coach] so maybe he was imposter” ~T “Skip or I vote someone” ~T “I am orange [and] I wearing uniform of [mumbled]” ~H “I don’t imposter because I do my task I do my task I don’t imposter [I’m not imposter]” ~Y	“I have question for [Student J].” ~S “This is chocolate chocolate on my head” ~S “Maybe [Student T is imposter, so maybe” ~Y	“I don’t see any suspicious I’m doing just task Then maybe I skip.” ~T
6	“I’m black.” ~J “I have a goggle.” ~J “I vote white” ~J “I’m not imposter” ~J “I’m yellow. ” ~S I have a chocolate cone. Ice cream. Ice cream ~S “This is survival report, I finished my tasks” ~S “We don’t have the time, I’m skip” ~S “No no no he’s liar he’s liar, one more time one more time push button please push button” ~S “Yaaay, ok let’s vote the pink, no no no no, last match last match, He’s imposter yeah” ~S “Yeah that’s fair” ~S “I’m using green.” ~H “I'm white” ~Y “I have yellow ring” ~Y “Pet is a rose” ~Y “I don't know” ~Y “I vote pink” ~Y “I vote… [zeninn ayashii dayona] I skip the vote, [I’m not sure who’s the imposter]” ~Y	“He is very very white black is (not?)” ~S “He chase me so let’s vote pink” ~S “I don’t imposter because I do my task I do my task I don’t imposter [I’m not imposter]” ~Y	“Tomorrow I will go school” ~A “I go with coach” ~H	“He chase me the me [when the lights went off] so maybe rose… pink is the imposter. Liar liar” ~A “Pink, I found, I found medbay the pink body, the pink dead body, the blue was come to O2 and blue don’t kill me so maybe blue is white, And I don’t know white and red” ~J
7	“I vote black” ~J “I found it” ~J	“I don’t know I go to O2 and I go to storage and I do my task and	“I did my task a lot” ~H	“I don’t know either, Mostly I was moving

	“I don’t saw” ~J “I buy a new video game” ~H “Survival report, Imposter… I don’t know“ ~Y “Yeah, I’m sad” ~Y “I don't know” ~Y “I vote skip” ~Y “I don't know” ~Y “My job is engineer” ~Y “I vote skip” ~Y	the survival report starts so I don’t know” ~J “I’m not imposter, how can I say, no no no no no no, I’m scientist, I see vital, that’s all, I vote coach” ~Y		around but I met [coach] many times Yeah that’s all” ~J
8	“I want comic” ~ J “I want chainsawman” ~J “I vote orange” ~J “I don’t know the map so.” ~T “I don’t know” ~T “Everyone skipping” ~T “I’m so tired” ~Y “It’s problem” ~Y	N/A	“It's too big” ~J “Blue is next to pink” ~H “I was near blue ” ~Y “From now on I’ll be by the… nothing” ~Y	N/A
9	“I don’t like that map” ~T “Look at the chat” ~T “That’s suspicious” ~T “Skipping is fun” ~T “I’m eating a potato” ~T “See you laterrrr” ~T “We can win.” ~T “Let’s vote orange.” ~T “[I forget to do my task] So I’m walking around the workshop?” ~T “I want Call of Duty or ???” ~H “Yeah I like it” ~H “I WAS IN THE SPACE” ~H “I'm playing with ghost” ~H “It’s not my fault” ~H “Oh I see” ~H “I vote skip” ~H “I'm not imposter” ~Y “I’m I’m did my task I finish my task yes ” ~Y “I vote skip” ~Y “I’m skip vote” ~Y “I did my task” ~Y “I'm not finish” ~Y “I vote skip” ~Y “I saw [vital]” ~Y “I don't know imposter” ~Y “I vote skip” ~Y “I saw [admin] white dead body” ~Y “I'm not imposter” ~Y “I vote coach, no I vote yellow” ~Y “I'm not imposter” ~Y	N/A	“Little bit late” ~T “Yeah but there’s maybe not imposter” ~T “Me too I can’t vote any I can do my skip, I do skip I do skip” ~T “That's very nice” ~T “Maybe orange is the imposter” ~T “There’s only one!” ~H “I was doing salmon run for a long time” ~H “I play video game sometimes [with her]” ~H	“Because maybe the white is maybe do no task but I don’t know I go” ~T “My level was at [JP: master] +1 I lose and now I’m only [JP: master]” ~H “I have evidence I prepare sabotage with me [Student J] and coach and he is repairing and I’m heading to security room but my behind but green is behind me but he died he dead and green and pink was behind green I think” ~H “I did not, I do my task in [Science room] I don’t not(?) dead body I don’t not see dead body” ~Y
10	“I finished my tasks” ~J “I skip” ~J I cannot see code ~S “I’m minion” ~S “Ok uh no no change” ~Y “Let’s try” ~S “Let’s [turn] off the visual tasks” ~S “No I don’t have” ~S “I will vote pink” ~S “I can’t see the code” ~T “I vote minion!” ~T “I don’t know” ~T “I have a suspicious.” ~T “Sorry I skipped” ~T “I forget sorry” ~T “I’m tired” ~Y	“Normal task plus 1, then long task plus 1, then short task plus 1 yeah that’s all” ~S “Let’s add scientist and engineer and shapeshifter, Yes no angels” ~Y “I did look [Student S] dead body is science room I don’t understand imposter That’s all” ~Y	“I have two tasks left that’s all” ~J “We can see setting in left side” ~S “I'm confident my feelings” S “This is Mommy one so ~T “I’m skip vote too” ~Y “I kill minion only minion” ~Y	“I went to survival report so I go office and I look little bit admin I found yellow dead body in admin and I finish my task all that’s all” ~J “Discussion time is [keep it that way] then let’s add voting time Please add 30 second Yeah maybe” ~S “I see coach and [Student S] and [Student Y] but I don’t see [Student J] but [Student J] is maybe not suspicious so I don’t know” ~T

Class	Complex	Compound Complex	Modified Complex	Compound Modified Complex
1	N/A	N/A	N/A	“I only saw orange in electronic room, but I only saw him, I only saw him so I don’t know who is imposter” ~H
2	I don’t think [coach]’s imposter” ~T “I see [Student] is following [coach]” ~T	N/A	N/A	“I in the admin and I did task, and I saw the light yellow push the button in cafeteria so I don’t know who is imposter” ~J “I think yellow is imposter because maybe everyone work to kill that’s all” ~J “I don’t know who is suspicious but I don’t understand this map so I don’t know where I am.” ~H “I don’t know how to do tasks so I am very sad.” ~H
3	“Why didn’t you vote orange?” ~H	N/A	N/A	“I think go to brown, brown didn’t kill me, he has many chance to kill me but I still alive, so I think brown is safe, that’s all” ~H “I was doing the task and went straight I don’t know what happened at all because everyone said white is imposter” ~H “I did my tasks at the… how can I say [electrical], electric room, and I don’t know who’s the imposter. That’s all” ~S “I think white is imposter because white killed rose in front of me” ~S
4	“If you vote orange so ties how can I say… I don’t know why you don’t vote orange.” ~S	“[inaudible] thinks brown is imposter but [inaduble] thinks yellow is imposter.” ~H “Someone killed on lower route I think this game we will end so we have to vote someone but right ??? so I want to vote someone” ~H	“If I stay in cafeteria I die, I… [I didn’t want the team to lose]” ~H	“I was doing the task and went straight I don’t know what happened at all because everyone said white is imposter” ~H “This is survival report, but I have how can I say [data] O2 sabotage I saw, I was in the admin, I watched admin, then pink used storage and orange in the storage too, and black and brown in the 02 room so I think brown is imposter, I don’t have confidence. Suspicious, very very suspicious” ~S “You’re a liar, I know yellow and rose were in cafeteria but I don’t want to die but I wanted to press the button so I couldn’t do anything but I was doing my tasks.” ~H
5	“What… what color do you like?” ~T “Where are you?” ~Y “Where did you play last game?” ~Y If you vote orange tie then tie then [if you voted (for) orange, it would be tied]” ~S	N/A	“What’s different maybe and I think?” ~S	“I think that is not imposter because this turn is I was task with red red have a lot of kill chance but he isn’t kill me so I think red is white” ~S “I do my task and last two and I’m doing my task the pink was come but he didn’t kill me so I think pink is white and somebody moving the turn on the camera so maybe green is white too” ~J “I finish the all task and I see everyone but I didn’t see pink so I don’t know who is imposter” ~J “I don’t know because I will I did, how can I say [clockwise], I was doing a task clockwise and I don’t meet people so I can’t I don’t I can’t think who is imposter” ~S “I think black is imposter because red is very very white so he isn’t imposter and orange orange was watch… look… doing camera [watching camera] he don’t have a kill time so I think black is imposter” ~S “Yeah yeah yeah chocolate on the head, I don’t know who is suspicious and who isn’t suspicious” ~S “I think was light blue light blue is imposter because I was watching admin then two people in the [medbay] in two people so [Student T] no no no so light blue and pink is there so I think light blue is imposter” ~S “I was at the security room and I was watching the camera and I saw I think yellow and

				red is at the storage but… I don't know but red and yellow isn't don't dead aren't dead so I think they are white." ~H "I don't know I was watching the camera and I can't see anything but yellow is dancing in the hall and I came across with I what color, black? At upper engine and I went to cafeteria I met I met yellow at between upper engine and cafeteria and I went to cafeteria and I was doing task that's all so I don't know who is supsicious" ~H "I was doing the task and I was watching camera, yeah but I can't see anything I don't know who is suspicious" ~H "I think [Student T] is imposter too because I at camera and I was watching camera I think [Student T] is moving with pink and they went to some room and I stop watching camera then report is coming, came so I know [Student T] is imposter" ~H "I am beginner so I don't know but I think you should move with three people four people not only you and someone you and someone and someone I think it better" ~H
6	"How many tasks did you finish?" ~J (prompted) "What were you going to do tomorrow?" ~J "How many tasks did you finish?" ~S "Common task and long task plus one then short task plus one, I think that's good" ~S "Where did you die…" ~S "What task did you finish?" ~H	"First I go to elec, and the orange was come out and I go again around and I go… reactor and then I come again to elec the white was kill" ~J "Where are you?" ~Y	"Where were you when you found the dead body?" ~H "Where did you play last game?" ~Y	"I found in office, I see a in reactor I see blue [I saw] blue and somebody one more so yeah so I think blue is white I don't know the other yellow and white that's all" ~J "I think blue and red don't imposter because blue has a lot of kill chance but he didn't kill me so I think blue is white and black is same, he has a kill chance but he didn't kill me so I think maybe he isn't imposter" ~S "I can't think but I think blue is white because yes he's unlock to what how can I say blue unlocked sabotage with me so I think blue is white" ~S "I think blue is imposter because… I saw he was using the vent" ~H "I was moving with coach and I went electronic room and I finished task and heading to lower engine and I found the black dead body between electronic room and lower engine, I didn't kill black because coach was watching me so I'm not suspicious, yes that's all" ~H "I think yellow is white because I how can I say [unlock] I finish the sabotage with yellow in the reactor and that's all I gotta finish my task" ~H
7	"I think white is suspicious" ~J "What was it? Fun?" ~H	N/A	N/A	"[Coach] chase me no pink chase me but pink don't kill me so I think pink is white so I think black is imposter" ~J "I see [saw] pink and blue and I go to I went to electric and I saw blue so I think blue is white and maybe but I don't saw the white that's all" ~J "I play CODMW1, yes I want to buy too bad but I don't have enough money" ~H "I think [coach] is imposter because how can I say [chasing someone] because coach is chasing blue" ~Y
8	"My task is to clean the vents" ~T "I don't have anything to say" ~H	"I know airship but I don't know how big" ~H	N/A	"I see I saw orange use the vent in main hall and the pink dead body in the main hall I can orange is imposter" ~J "I think white is suspicious cuz I see I saw blue chasing me he don't kill me and blue and pink was playing together but I don't see white so it's suspicion" ~J "I think green is suspicious because I see [inaudible] and [guest coach] and coach but I don't see blue at all so and [Student J's username] is [Student J]?" ~T

9	“Yu think the white is suspicious?” ~T “You say orange so orange” ~T “Where am I?” ~H “Coach what do you vote?” Y	N/A	N/A	“I found dead body at electrical and I think coach is suspicious” ~H “When green died/dead [died], there was one more orange I think maybe [JP: mistake] I report So I’m gonna vote coach” ~H “I think somebody is not here except coach me and green” ~H
10	“And I don’t know who is imposter that’s all” ~J “Can I change map?” ~S “I want to see different map!” ~S “But I want to.. no it’s nothing Can I change Can I [Let’s add] a task” ~S “Hey what happened survival report?” ~S “I thought coach can’t talk” ~S	N/A	N/A	I find office, next to the office and I do my task I want to do my task so I went next to office but the white I saw the white dead body ~J Maybe nothing is okay I think so today only five people so we don’t need roles ~S “I think maybe maybe maybe pink is imposter because I was coming at my role is engineer and see you next time” ~S “I want to speak and I finished my tasks then why I think he? Was imposter because I’m engineer i did in the vent I did moving around moving in vent then I saw rose near the office so near the dead body I didn’t see dead body but green said dead body around office so maybe pink is imposter I think” ~S “I want to say I see coach but coach didn’t kill me so maybe coach is not imposter” ~T “I see [Student S] and [Student J] but I don’t see [Student Y] and um coach so and [Student J] didn’t kill me so [Student J] is not imposter who’s [Student J’s username], [Student J]? so I skip the vote” ~T