



Designing an English learning game based on the “Key Characteristics of a Learning Game” framework: An exploratory study of learner perceptions

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Background: Ever since I became an assistant language teacher in Japan, I've had a deep interest in games and their potential uses in the classroom. In my master's program, I wanted to see how far I could take this concept. I designed a video game, *Adventures in Anglonia*, and implemented it in the university classroom.

Aim: The aim of the study was to test student reception of game design utilizing the Key Characteristics of a Learning Game (KCLG) (Malone & Lepper, 1987)

Methods: By designing *Adventures in Anglonia* to include mechanics that align with the key components of a learning game and examining student perceptions regarding these mechanics, a picture is created of the reception of the KCLG approach – specifically, if it is meeting the intentions of the design.

Results: Students understood and appreciated most of the mechanics associated with the variety of KCLG design decisions. They felt challenged by the game and that they were learning English. Students were also curious about both the exciting graphics and that the game broke their expectations. Students were somewhat engaged in the fantasy experience, though it could have been better explained, though they appreciated the aspect of control they had over decisions in the narrative and in battle.

Conclusion: The design choices incorporated into *Adventures in Anglonia* were generally interpreted by students in ways consistent with the designer's intentions, with most students responding positively to the game's mechanics.

TWEET Synopsis

Adventures in Anglonia was designed for language learners along the four dimensions of KCLG: Challenge, Curiosity, Fantasy, and Control. Did students notice them, and what did they think?



1. Introduction

As the use of digital games in language education has grown over the last 30 years, the design and mechanics incorporated into these games has varied wildly – from narrative experiences where the player's choices shape the experience to simplistic quiz games with multiple choice answers (Lister, 2015; Bacalja et al., 2024). It has become clear, however, that in the case of game based language learning, not all these methods of design are created equal (York et al., 2022). To address the issue of making engaging learning games, researchers have approached the problem from various angles. Whether an in-depth, step-by step design process (e.g. Silva, 2019), or various general tips (e.g. Reinhardt, 2019), the field is somewhat saturated with various recommendations, strategies, and examples of different learning games (deHaan, 2020a; deHaan, 2020b). As the field has advanced, and new approaches are added to the literature, it is easy to become consumed in the details, with teachers and designers missing out on one of the core advantages of the employment of games in the classroom: **to intrinsically motivate students to enthusiastically engage in an activity where the mastering of educationally relevant skills fulfills a narrative fantasy which demonstrates the value of student competence in those skills.**

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This issue is compounded by the novelty effect of games as a new technology in the classroom – simply using a game (or something that looks or sounds like the games students are used to seeing outside of the classroom) is seen by many teachers as already enough, regardless of the actual quality or learning outcomes of that experience (see Thomson & Parsons, 2016 for the admittedly potent effects of novelty). Quizzes with added points, jeopardy-style team competitions, and flash cards with dazzling visual effects may be called “games” and elicit a classroom cheer when they are introduced, but they do not utilize the true playfulness and immersive potential of the medium (Bogost, 2015; deHaan, 2020a; York et al., 2022).

2. Literature review

The Key Characteristics of a Learning Game (KCLG) was proposed by Malone & Lepper (1987) and approaches game design for educational purposes from a more abstract angle, identifying four emotional components that games require to be effective as intrinsic integrators – challenge, curiosity, fantasy, and control. Fulfilling some (optimally, all) of these characteristics leads to intrinsic motivation and true engagement; a state of play where the student is utilizing the targeted skills not because they are instructed to by the teacher or because they fear a poor grade (extrinsic motivation), but because the experience of utilizing and improving those skills within the framework of the game is compelling and something that the students genuinely want to do (Noels et al., 2019).

2.1 Challenge

Challenge involves setting clear and relevant goals for students to accomplish in the game. Malone and Lepper (1987) suggest an “optimal level of challenge,” where an activity is neither impossible nor overly easy, and that difficulty comes from the utilization of the targeted educational skill. Echoing this suggestion, Mossmann et al. (2019) examined the difficulty of digital game activities by conducting a study involving seven children aged 6-10, who engaged in a series of progressively challenging minigames. The findings indicated that optimal engagement occurred when the difficulty level closely matched or slightly exceeded the players' abilities. With prolonged gameplay and skill enhancement, participants developed higher expectations of success as difficulty increased. Mossmann et al. (2019) emphasized the importance of games considering players' capacity to overcome challenges not only in terms of gameplay or educational content but also in terms of emotional resilience. Similarly, Hamari et al. (2016) investigated the correlation between game difficulty and engagement in the

serious math game Quantum Spectre. They found that the level of challenge directly influenced the student's enjoyment of the experience.

In addition to the level of difficulty from manipulating game mechanics alone (e.g. difficulty in Mario comes from pressing the jump button to avoid obstacles), Malone & Lepper put forward three ways that the challenge and goals of a learning game can be engaging for students:

- **Instrumentally Relevant:** The challenge of the game comes from the use of the skills the student is being taught. This makes playing/completing the game relevant to the student's desire for higher competencies in these classroom skills. Making the content that a learning game teaches relevant to the classroom that it is intended for (e.g. van der Velden, 2024 a game activity that prepares students for standardized testing). Most gamified activities satisfy only these criteria of relevance to students (see Jia et al., 2024 for activities that utilize only instrumental relevance as a tool of design).
- **Fantastically Relevant:** The learning content of the game is embedded in a context that is familiar to the learner or in a fantasy that the learner finds emotionally appealing and is associated with literacies the students develop outside of school environments (Bacalja et al., 2024). Examples of learning games utilizing fantasy to their fullest are rare, but one example is Lee, et al. (2010) who created *Crystal Island*, where students were trapped on an island, and a teacher or game master controlled the responses of non-playable characters, creating an empathetic connection from students to non-playable characters and the world that they inhabited.
- **Socially Relevant:** The material could be presented in a social context that elicits interpersonal motivations, such as cooperation, completion, or recognition, making performance goals meaningful. An effective example of a socially relevant game can be seen in Dickey's (2011) *Murder on Grim Isle*, where students spontaneously shared their responses and theories about the titular murder to see what other students thought.

2.2 Curiosity

Curiosity is a combination of interesting visuals/environments and uncertainty in the outcomes of students' actions, and Malone & Lepper identify two major types:

- **Sensory Curiosity:** the engagement of student's curiosity by stimulating their senses through exciting visual effects, sound, and music. Habgood & Ainsworth's (2011) *Zombie Division* is a good example of engaging sensory curiosity in digital game-based language learning, as students shoot down advancing zombies by using math. While not exceptionally gory by today's standards, *Zombie Division* still contains flashy effects that punctuate student competencies with an immediate stimulus which serves as a reward. Gamified apps such as Duolingo do the same thing – get a question right, and an appealing sound effect plays.
- **Cognitive Curiosity:** the eliciting of curiosity via incomplete puzzles. It can also include the breaking of expectations and the reorganization of mental schema. There is some overlap with instrumental relevance, as seen in Araujo-Junior & Bodzin's (2021) *Watershed Explorers*, where students attempt to solve a mystery of what is polluting their local watershed. Chen & Hsu (2019) scratch the surface of breaking student expectations with the content of a game through their usage of Serious Games Interactive's *Slave Trade*, where college students played a historical role-play game to learn vocabulary. However, the role of surprising, unexpected, or mature content is not focused on in the analysis.

2.3 Fantasy

Fantasy is the evocation of a context that would otherwise not exist. Malone & Lepper divide it into two types: endogenous and exogenous fantasy. Exogenous fantasy is where the fantasy depends on the skill being learned, but not vice versa. Most educational game activities are exogenous – there is no reason in the "context" (such as it is) of these games that groups are getting points for correct answers (e.g. Jia et al., 2024). An excellent, if morbid, example of exogenous fantasy is the classic game of hangman: there is no logical link between the guessing of a word and an execution. Contrast this to endogenous fantasy, where the skill being learned directly depends on the fantasy, and the fantasy similarly depends on the skill. For example, in a detective game, the ability to correctly select evidence and deduce culprits within the mechanics of the game logically leads to positive contextual outcomes – the player who has these abilities is, in the narrative of the game, a good detective. In a language learning game, this means that skill in the target language logically equates to competence

in the narrative of the game itself. More recently, this relationship has become known as intrinsic integration (Habgood & Ainsworth, 2011; Naul & Liu, 2019). Intrinsic integration enables students to understand the connection between the game's world and the educational content that they are completing, increasing engagement, as engagement with the game's world would equal engagement with the language learning content, and vice versa.

Intrinsic integration enables students to understand the connection between the game's world and the educational content that they are completing, learning content, increasing engagement, as engagement with the game's world would equal engagement with the language learning content, and vice versa.

An excellent example of the theory of intrinsic integration is Reinhardt's (2019) Function-Oriented Design, where he encourages actions that are the natural function of language as core gameplay mechanics. Examples include asserting, defending, providing, describing, etc. This intrinsic integration can be seen in action in Schneider's (2023) utilization of the tabletop role-playing game *Dungeons and Dragons*, especially during situations where players are interacting with non-playable characters, as utilizing language to play the game reflects how, in the world, the language used would be used to achieve the same goals.

2.4 Control

Control has to do with a sense of self-determination or choice given to the player (Kim & Lee, 2012; Malone & Lepper, 1987). Unlike books, movies, and other mediums of entertainment, games are interactive – meaning that players can take actions that affect the outcome of the events in the game (Dickey, 2005; Lister, 2015; Naul & Liu, 2019; van der Velden, 2026). This is known as player agency, and it is critical to the way that players understand, interpret, and react to the context that the game provides (Stang, 2019). Malone & Lepper (1987) identified two component aspects of control, the first of which is **contingency**. Players of a game need to understand that the outcomes that they receive are directly linked to the actions they have taken and the choices that they have made. A good example is the story decisions and reactions in *Crystal Island* (Lee et al., 2010). When a player made a choice, the game master “behind the curtain” would choose from several options to have the game react to the player's choice. This was highly reactive, and students could see the story progressing and changing based on their own choices (see also van der Velden, 2026). The other aspect is **power** – essentially, that players feel that their decisions have a large and sizable impact on the game's world.

3. Research Question

Do students perceive the author's design intentions based on the Key Components of a Learning Game as intended?

4. Methodology

4.1 Participants

Participants for this study consist of 16 first-year students at a university in Eastern Japan in the Global Studies major. All students were enrolled in the “Reading 1” Class, which, according to university requirements, separated students into various classes based on their Test of English for Intercultural Communication (TOEIC) test scores. The class selected for use in the study had TOEIC scores within the range of 490-550, giving them an English level of B1, or lower-intermediate on the Common European Framework of Reference for Languages (CEFR). The opportunities presented by having a class with this very specific range of scores (and thus, English level) are advantageous for this study, as the English content in the game itself could be carefully created to be challenging, but not impossible, for students at this specific TOEIC level.

Students were randomly sorted into 4 groups of 4 students each. Students would progress through the game in these groups for the rest of the intervention. Each student was assigned a two-digit

number, the first denoting their group and the second their place in the group. Numbers had no meaning other than designation. (e.g. Student 4.1, group 4, student 1). However, the data that was collected in discussions was of poor audio quality and thus unable to be assigned to a group. When presented, students in discussion will be labeled as A, B, C, and D, respective to their order of speaking.

4.2 Intervention and Learning Content Design

4.2.1 Challenge

During the design of *Adventures in Anglonia*, all aspects of KCLG were considered. For example, the game's combat system was designed with the goal of helping students to prepare for the TOEIC test's vocabulary requirements. This mechanic was designed to harness KCLG's aspects of challenge and control. Due to the relatively similar English proficiency levels of participants in *Adventures in Anglonia* the difficulty of the game was able to be fine tuned to be slightly above the English level of the students. Association questions were employed, considering the significance of the TOEIC as a metric for students in Japan. However, these questions were designed to be directly related to the context of the game, aiming to contribute not only to instrumental relevance but fantastic relevance as well. Malone & Lepper's three aspects of *challenge* were examined and incorporated into *Adventures in Anglonia*.

- **Instrumental Relevance:** *Adventures in Anglonia* aimed to fulfill this need with the TOEIC vocabulary questions, the learning objective of the game. (see Figure 1).
- **Fantastic Relevance:** *Adventures in Anglonia's* setting was designed so that students would at least be somewhat familiar with the tropes of the game's settings, and the learning content would be integrated into that fantasy setting (see section 4.2.2)
- **Social Relevance:** *Adventures in Anglonia* sought to improve on Dickey's (2011) model by assigning students to groups that would cooperate on solving the issues of the game, instead of relying on student volition to engage socially.



Figure 1: An example of the TOEIC association questions in the battle system. Here, the player controlling Yuki is attempting to use "Meditate"

4.2.2 Fantasy

Another example of a mechanic in Adventures in Anglonia which incorporated KCLG was the game's intention to immerse players within a narrative. Adventures in Anglonia's story sought to engage students via the other two aspects of KCLG, fantasy and curiosity – though it also incorporated aspects of control as well, specifically, that the students would be able to alter the established context of the world through their decisions (see section 4.2.4).

Because of the importance of endogenous fantasy/intrinsic integration in the Fantasy aspect of KCLG, the design of the game's story was a vital step in the design process. A typical high-fantasy world was created. High fantasy takes common elements from a medieval and early renaissance era world (kings, knights, queens, empires, etc.), as well as incorporating popular tropes such as magic, dragons, heroes, etc. This setting was chosen as even if students are not a particular fan of the genre, it was assumed that they will most likely have had exposure to these tropes in the past. Familiarity with the tropes and setting employed in the game would allow for a lighter cognitive load on students, where they would understand the base themes of the world, allowing for more focus on the language learning aspects in reading comprehension and battle.

This philosophy was extended through a simple plot premise: "the search for an artifact" plotline. The group of players is searching for a rare and powerful wish-granting artifact that, if found, would drastically change the context of the game world. This scenario makes the heroes searching for it capable of drastically altering the game's world in a predictable and understandable manner – by granting them a particular wish. This would serve as the ultimate goal for the game, giving the students (and their characters) a reason to progress through the story.

To effectively integrate the learning content into the game's story, a specific magic system was designed around using the spoken word to influence the game world. Combat was created to be carried out by an exchange of sentences and questions interspersed with the more typical RPG fare of attacks and spells – which in the context of the game world also utilize spoken commands.

4.2.3. Curiosity

Curiosity played a significant role in the story by situating the artifact and adventure in a new and unknown land, mirroring the experience of both players and characters. This alignment allowed players to relate to their characters as they ventured into unfamiliar territory. To stimulate sensory curiosity, the game was packed with thrilling battle animations, visual effects, and music. Fostering cognitive curiosity was more challenging. Adventures in Anglonia aimed to provoke students' cognitive curiosity by gradually revealing information about the game's fantasy world throughout gameplay. One notable example was the revelation that a character who initially aided the students would later commit a shocking act, challenging players to re-evaluate their perceptions and understand the character's motivations (Figure 2). This character ultimately became the game's final antagonist, leading to a climactic battle that compelled students to grapple with the inconsistency, fostering engagement through cognitive curiosity as they sought to comprehend the character's actions.



Figure 2: The players encounter a grisly scene committed by someone they thought was their ally.

4.2.4 Control

A key aspect of the game's fantasy was its malleability – specifically, that it would change based on decisions that the players would make over the course of the game, aiming to engage through KCLG's control. Over the course of the narrative, students would be presented with choices where they could have an impact on the way that the narrative played out (Figure 3).

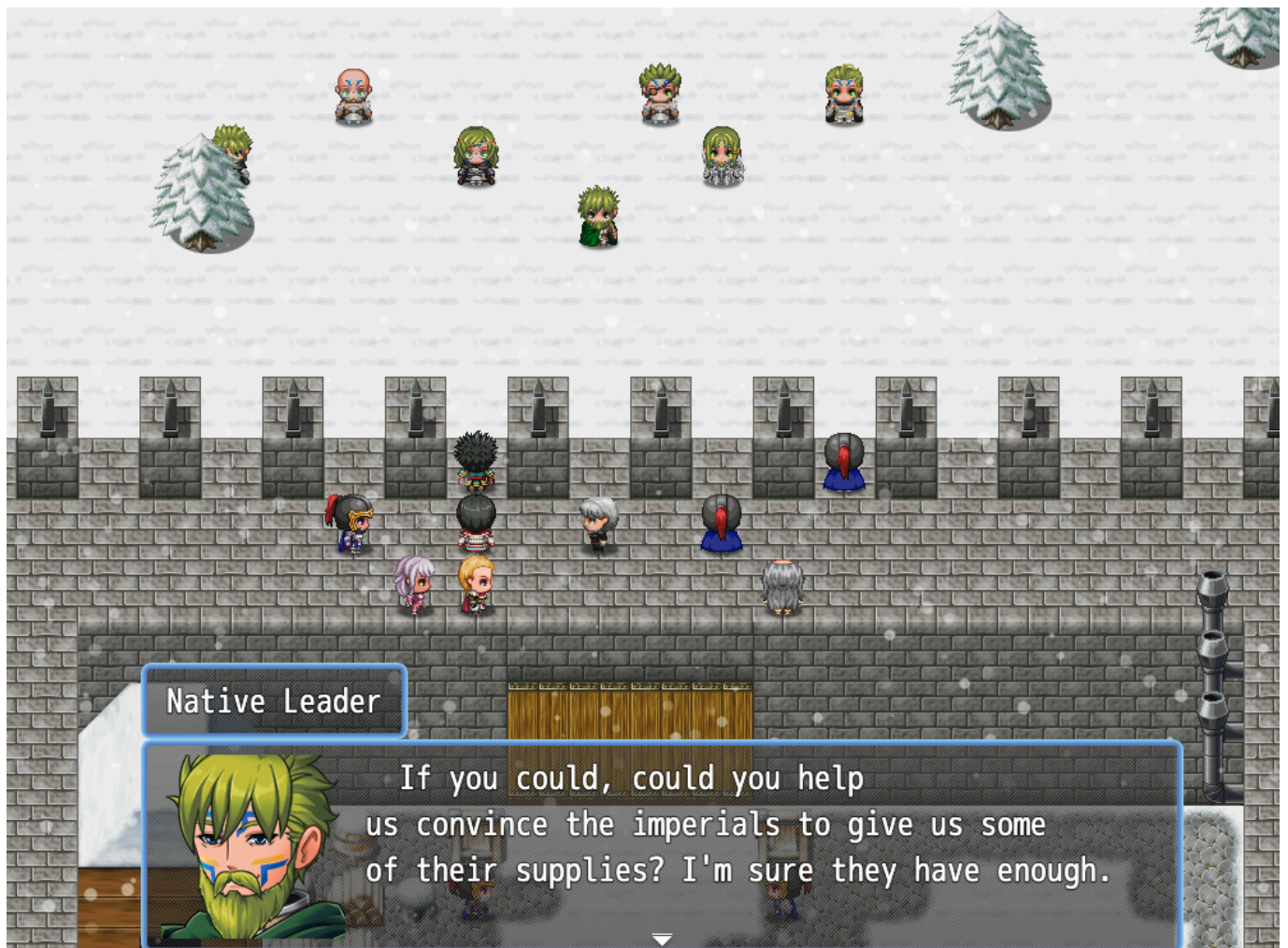


Figure 3: Students are put in an awkward spot between two competing parties. Their choices will decide if the outcome is peaceful or not.

The narrative choices in *Adventures in Anglonia* were crafted to clearly demonstrate the consequences of student actions. For instance, in the second week, students must decide whether to return stolen gold or allow the thief to keep it to support their family and friends. Returning the money grants an immediate reward, but the following week, players encounter the thief and their family, resulting in a necessary battle to progress. The thief references the stolen gold and the player's decision, highlighting that if they had allowed the thief to keep the money, they would have received a different reward.

Another significant element is the power given to players, such as the final choice to destroy the world. This decision forces players to navigate the burning world they created, vividly showing the impact of their actions. This immersive, choice-filled experience is unique to games, offering a depth of engagement not possible in non-game settings.

The battle system also aimed to give students control. In *Adventures in Anglonia*, students could choose from a wide range of skills and attacks, determining their strategy for defeating enemies (Figure 4). The combat system design also assigned specific roles to each playable character, making individual choices significant in the overall battle strategy.



Figure 4: A character and the skills that they can select in battle.

4.3. Implementation and Data Collection

The study spanned six weeks during the spring semester of the students' first year at the university. Each class session commenced with a brief introduction by the teacher and the resolution of any technical issues, after which students commenced playing the game. Throughout the game sessions, students were directed to communicate exclusively in English with their peers, except for a collaborative writing area in the center of the table where a blend of Japanese and English was permitted. Teacher involvement was minimal, with intervention from both the class teacher and the researcher limited to assisting students when they encountered difficulties or technical issues arose.

After each weekly game session, student-led discussions in Japanese took place within each group. Three discussion questions were provided to the groups, aimed at directing student attention towards three distinct aspects of the overall experience. Though open-ended, these questions were designed to prompt reflection on various facets of the game.

1. the game itself,
2. the cooperation and collaboration within teams,
3. and the English learning experience.

These discussions were highly organized, with each question allocated a specific 5-minute time slot for discussion. Ensuring equitable participation, each student had the opportunity to share their individual thoughts on every question.

After each class session, students were tasked with completing a narrative frame (Barkhuizen, 2014; Hiratsuka, 2014) before the following week's session. Narrative frames serve as a data collection method wherein participants are presented with incomplete sentences, which they are then prompted to finish and elaborate on based on their personal experiences (Barkhuizen, 2014). In this context, narrative frames were selected to encourage students to delve deeper into why they held specific sentiments towards a particular method of English learning, rather than merely expressing likes or dislikes during discussions (See Appendix A). The inclusion of the word "because" in the narrative frames compelled students to provide reasoning for their responses. Moreover, any disparities between the outcomes of the student-led discussions and the narrative frames shed light on individual player experiences, distinct from the collective group experience. Similar to the questions posed in the

student-led discussions, the narrative frames aimed to explore student experiences across the same three areas.

Finally, based on analysis of the narrative frames, four students were selected for semi-structured follow-up interviews after the completion of the game. These four students were interviewed online. Interviews were conducted in Japanese with the help of a Japanese-speaking research assistant and lasted for 45 minutes to an hour. Questions were created based on student responses in their individual narrative frames, specifically to have them clarify, expand, and iterate upon the responses that they provided there.

Since all data from the group discussions and interviews was in Japanese, translation software was used to convert it to English. A Japanese speaker was available to clarify any ambiguities. Audio quality issues and challenges in submitting the audio files for the group discussions made it impossible to identify individual speakers. Nevertheless, the content of the discussions was valuable and insightful, making its inclusion crucial for this project. In the discussions, students were labeled A, B, C, and D, based on their order of speaking in the recordings.

Once the data had been completely transcribed and translated it was added to notes in Obsidian, mind mapping software that allows for the creation of interlinked notes. Visualizing the connections between codes can aid in understanding the data and making it more tangible. A link was generated each time a piece of data corresponds to a theme. Each code had a page in Obsidian, interconnected with other codes and data through links – the times that theme appears in the data or in other codes. The number of links is an interesting way of demonstrating the amount of data because it also takes into account the code's connection to other significant codes within the dataset. An example follows (See Appendix B for more examples).

Student 2.3, Narrative Frames, Week One:
I felt the strongest sense of achievement for my English language learning during the game when I read ([[Reading Comprehension]]) the story ([[Reading the Story]]). I was excited ([[Directly Expressed Enthusiasm]]) to read it because it is a story ([[Novelty]], [[Interested in Story]]).

The words in [[Double Brackets]] are codes, and in Obsidian, link to specific code pages. Each code page has several “links” connecting to it, reflecting the number of times that [[code]] appeared in the dataset.

The qualitative data were analyzed using a deductive coding approach based on the four Key Characteristics of a Learning Game: Challenge, Curiosity, Fantasy, and Control. Student comments were treated as the primary coding units, and comments were assigned to a characteristic when their content reflected a perception or response relevant to that characteristic. Where appropriate, a single comment could be associated with more than one characteristic, as student responses did not necessarily correspond to only one aspect of the game design. Within each characteristic, more specific codes were developed to capture recurring features of students’ responses. The frequency of these codes was then examined to identify which aspects of the game design were most commonly represented in the students’ comments. These frequencies are used descriptively to indicate the relative prominence of particular themes within the collected responses rather than as measures of the number of students who held a particular view.

5. Results

Table 1: Codes and their frequency of occurrence

Key Component	Contributing Codes – number of occurrences	Total codes
Challenge	Game Difficulty – 62 Vocabulary Acquisition – 32 Is Vocabulary Learning Present – 28 Sense of Accomplishment – 24	231

Key Component	Contributing Codes – number of occurrences	Total codes
Curiosity	From Difficulty to Enjoyment – 21	185
	Cognitive Load – 13	
	Defeating Enemies – 10	
	Recognition of Progression – 10	
	Difficulty in Listening – 9	
	In-Game Progress - 8	
	Extent of Challenges – 7	
	Pride in English Ability – 7	
	It's a Game – 30	
	Wanting to Understand the Story – 30	
	Novelty – 29	
	Compared to Normal Classes – 24	
	What is Exciting – 15	
	Students Enjoying Battles – 14	
Fantasy	Attack Effects - 14	203
	Super Ultra Mega Hyper Beam – 7	
	Graphics – 7	
	Combat Reactivity – 7	
	Surprise at Mature Content – 5	
	Exciting Game Visuals – 3	
	Reading the Story – 37	
	Presence of Story – 27	
	Interested in Story - 24	
	Communicating with Non-Playable Characters – 24	
Control	Mechanically Effective in Combat – 24	193
	Identifying with Characters – 22	
	Game as a Motivation to Study – 21	
	Confusion about Story – 17	
	Interesting Characters – 7	
	Skill Activation Questions - 49	
	Cooperation in Battles - 35	
	Healing - 27	
	Sentence Assembly Questions for Ultimate Skill Activation – 23	
	Assisting Non-Playable Characters - 19	
	Cooperation in Decisions - 15	
	Assumption of a Role in Story - 14	
	Autonomy in Making Decisions – 9	
	Anticipating the Game's Story - 2	

5.1 Challenge

Game Difficulty emerged as the most prevalent code and represented 27% (n = 62) of the Challenge key component. This indicates a general agreement among students that the game was challenging. They frequently mentioned the intense difficulty and associated challenges. When asked whether the game's difficulty was increasing gradually, student 3.4 said:

Yes. 少し。後半の週でやっぱストーリーが若干難しくなってきたと思います。なぜなら英語の難易度が上がったのもあるし、若干リスニングの量が増えたから

Yes, a little bit... I think the story became a little more difficult in the latter weeks, partly because the difficulty level of English increased, partly because the amount of listening increased a little.

Student 3.4 was not alone in the belief that the game's difficulty was increasing, both in terms of game mechanics (health and attack of enemies, puzzles asked of students, (n = 17, 7%) and linguistically with the level of English and vocabulary (n = 23, 9%) though, some overlap with the previous category due to intrinsic integration). Importantly, however, this difficulty did not come from learning to manipulate the various mechanics of the game, as Student 1.2 attested:

そのそもそのゲームのシステムが戦う、敵と戦うっていうシステムがすごい単純で分かりやすいというか、ゲームとしてすごいよく普通に自分が今まで小さい頃にやってきた。

The system of [Adventures in Anglonia], fighting enemies, is very simple and easy to understand, just like the games I used to play when I was a child, so it is easy to understand.

Students believed that the difficulty came from the content, mechanical and linguistic. One group, in their discussion, thought the current difficulty of the game was a good thing, and this was a fairly common sentiment with 22% of the total responses dealing with the advantages and positives of higher difficulty (n = 51). Students believed it was motivating them to continue playing because of the linguistic challenge and thus, the opportunity to learn.

B: リーディングとリスニングと両方ともわからない単語がでて、仲間と協力してリカしたことがいいと思いました。

C: 読み解けると読み解けへん間のレベルやったから、単語がちょっとわからんくて読めへんみたいな感じやったから、ちょうど強化されやすそうなレベルの文章やったから読む気にもなった気がする。

A: 理解しやすすぎてもやってる感ないから

B: *I thought the level of vocabulary was high, and I thought it was good because it was high. Because I can know the ones I don't know.*

C: *I was at a level between decipherable and unreadable, so I couldn't read because I didn't understand a few words.*

A: *If it's too easy to understand, I don't feel like I'm doing it.*

When the game presented students with mechanics beyond direct combat, some groups quickly became stuck. Figuring out the correct direction and goal was challenging for some, occasionally leading to frustration. This issue was reflected in the Cognitive Load code, accounting for 5% of the overall theme (n = 13). However, even during these tough moments, students remained motivated due to the sense of accomplishment from overcoming challenges in previous weeks. This motivation was evident in various data points: In-Game Progress with 3% (n = 8), Recognition of Progression with 4% (n = 10), Sense of Accomplishment with 10% (n = 24), and Pride in English Ability with 3% (n = 7). Together, these factors made up 20% (n = 49) of the data, indicating that students believed they could overcome the game's challenges, and this confidence kept them going. As Student 4.3 noted in their narrative frame:

I felt most appreciative of my group members when we can solve the listening question because the last time we tried to solve it, we can't do [it]. But this time, we can! I thought this week was great fun because we can solve more questions than ever.

In their interview, student 4.3 reinforced this idea of confidence, saying:

うーん。良かったのはそう単語もそうですが、個人的にそのリスニングが結構早かったけど聞き取れた時があって、その時は結構自信につながったかなっていう風に思いました。

The good part was, yes, the vocabulary, but personally, there were times when I was able to catch the words even though I was listening quite fast, and I thought I gained a lot of confidence in that time.

In this student's particular case, the confidence that they gained from succeeding in the game was something that they commented on a significant amount. Student 2.1 puts it rather more succinctly in their narrative frame:

I felt the strongest sense of achievement for my English language learning during the game when once [I have] learned to use grammar. Because I'm smarter.

Students were also engaged by the fact that the game's challenge was preparing them for the TOEIC test by teaching them vocabulary (n = 60, 25%), as one group demonstrated in this discussion:

A: TOEICの勉強もできましたしね。

B: はい。これで今週も大丈夫そうやしね。

A: (笑)そう思います。

D: みんなで調べて、「これじゃない」みたいな、「これとこれが似とるんじゃない？」っていう。それが勉強になりました。

B: いいね。これとこれは3択あって、1と2は似たような意味やから3なんじゃないんとかって考えるのも楽しかったし、TOEICでも使えそうな技かなと思いました。消去法？

All: (全員賛成)使える技ですよ。確かに。

A: *You were also able to study for the TOEIC.*

B: *Yes, I did. So it looks like you'll be okay for the rest of the week. (laughs) I think so.*

A: *(Laughs) I think so.*

B: *That's good. It was fun to think, "There are three choices for this and this, and 1 and 2 have similar meanings, so maybe it's 3," and I thought it was a technique that could be used in TOEIC. Elimination?*

All: *(All agree) It is a technique that can be used. It's true.*

The game seemed to be socially relevant, with that same group continuing:

C: いい感じに上がっていくのが、やってる感あって、

D: みんなで協力しながら、一緒に勉強できるのがいいと思いました。

C: *It was good that the game went up in a good way because it made me feel like I was doing something,*

D: *I thought it was good that we could study together, and cooperate.*

Another group discusses similar cooperation in the battle system leading to confidence.

A: リスニングが一番大変このゲーム。

C: 確かにね。

A: 文字、単語調べるのは一瞬、まあそれもみんなでするけど。リスニングも自分聞き取られへんかったけど周り聞き取れてるみたいなどころあるから、リスニング大事やな一って。

A: *Listening is the hardest part of the game.*

C: *Indeed.*

A: *Looking up letters and words takes a moment, but we can do that together. I couldn't understand what I was listening to, but everyone else could, so I thought listening was very important.*

5.2 Curiosity

The first wave of narrative frames reflecting on Week 1 was full of students excited that a game could be played in class. Shown with the "It's a Game" and "Novelty" codes, 32% of the curiosity category (n = 59). In the discussion following the first week, one group of students aptly sums up their experience, saying:

B: あのスーパーウルトラ、、、

A: スーパーウルトラなんちゃらハイパービームみたいな、激アツな演出でした。

C: 攻撃するときの種類が豊富やったから、面白かったです。

D: 必殺技の演出がカッコよかったです。

B: なんか小学生おる笑(Dさんのコメントが小学生らしかったみたい)

B: *That super ultra...(referencing a move)*

A: *It was an intense performance, like a super ultra nancha [sic] hyper beam.*

C: *It was interesting because there were many kinds of attacks.*

D: *The special moves were cool.*

B: *There are some elementary school kids here.*

Student B's comment that "there are some elementary school kids here" is especially telling, as they are commenting on the ease through which their group mates were excited by the content of the game. The appealing nature of the graphics and flashy visuals of the game were often commented on by the students. Sensory curiosity also accounted for a large aspect of the curiosity category, with 17% (n = 31) In particular, the move that this discussion group is referencing, Super Ultra Mega Hyper Beam (n = 7, 3%), was a favorite, because of its unusual name, dazzling visuals, and mechanical effectiveness. Throughout the game, unlocking new moves continued to be a source of excitement. In a discussion in a later week, students discussed a powerful new move they had unlocked:

A: ファイアーストームで一気に相手のHPがぼーんって下がった時に興奮しました。

B: 同じく。

A: ファイアーストームいいね。...

D: ファイアーストームがめっちゃカッコいい。あとファイアーのさ「ぼーん！」って書いてあったやつよかった。...

A: *Firestorm. I was excited when the opponent's HP went down with Firestorm all at once.*

B: *The same.*

A: *Firestorm is good. ...*

D: *The design of Firestorm is so cool. Also, I liked Firestorm's "BOOM! I liked the one that said "Boom!....*

Students were also interested in the progress of the narrative, at least initially. As student 2.4 said in one of their narrative frames:

During the game, I found the learning of English Interesting compared to other English lessons because I can learn with interesting character[s] and there was a story that is very good. [sic]

One particularly interesting inconsistency that occurred was the inclusion of more mature content (e.g. blood) that was present in the game. Though only referenced 5 times (2%), those references were mostly in discussions and provided interesting student reactions to these moments. Given that all the students were all in college, the researcher decided that some graphic content was acceptable. A group says in discussion:

A: 殺人現場みたいなとことか容赦なくて、グロいの容赦なくて面白かったです。

B: 顔だけとれてました。

A: *I enjoyed the grotesque and grotesque parts like the murder scene.*

B: *Only the face was removed.*

Another group was disturbed by this:

C: 教会って一番殺らなそうやしな。

A: 血の描写がグロすぎる。ちょっとリアルすぎた。

C: *Church people don't seem to be the most murderous.*

A: *The blood was too gory. It was a little too realistic.*

Finally, there is a clear example of the game breaking student expectations with another group's discussion:

A: キャラが死んで、「そういうこともあるんですねー」みたいな。
 B: 「何時から何時まで、なになにをしてをしていました」っていう時間、タイムマネジメントがすごく難しかったですね。
 C: 一番殺りそうな人が殺ってへんかったのが面白かったですね。

A: *The character was dead, and I was like, 'I didn't know that was possible'.*
 B: *It was very difficult to manage the time, to say, "From what time to what time I was doing what I was doing."*
 C: *It was interesting that the people who were most likely to be killed were not.*

The students were also interested in understanding the story as it was going forward, demonstrated by the "wanting to understand the story" code (n = 30, 16%). This desire was something that positively affected their interactions with both the language learning and the game, as they felt they needed to improve their English in order to understand more. As student 1.2 said in their interview,

...ストーリー的にはちょっと難しくて最後の方は「あ、何だろう？」っていう感じになったんですけど、うん、それはやっぱり自分の英語力もっとあげたいなっていう風に、そのゲームを終えてもうちょっと勉強してこのゲームもちょっと理解したいなっていう風に思いました。それが自分の英語勉強しようっていうモチベーションにもつながったかなっていうふうに思います。

... but it was a little difficult in terms of the storyline, and at the end, I was like, "Oh, what is it? But I wanted to improve my English, and after I finished the game, I wanted to study more and understand this game a little better. That motivated me to want to study English more.

5.3 Fantasy

One of the central elements of Adventures in Angelonia was students' immersion in the fantasy of the game's world and story. Students appreciated the initial presence of the story, anticipating the option to engage in roleplay and immerse themselves in the world, this was shown in the 'presence of story' and 'interesting characters' codes, contributing 25% (n = 51) of the fantasy category. Student 1.1 wrote

During the game, I found the learning of English interesting compared to other English lessons because of story in this [sic] case, it's easy to study English. I can imagine in my head.

This imagining of the story in the student's head is the beginning of immersion within the game's story. This immersion was strengthened through the use of intrinsic integration, which made mastery of the language content an integral aspect of both the story and a required skill to progress in the game. This can be seen in the 'Game as a Motivation to Study' code, contributing 10% (n = 24). In discussions, students laid out the connection between the language content and the game's systems.

C: どの部分で最も興奮しましたか。またその理由は。思ったより派手に攻撃された。
 A: 答えがあつた時。問題を聞き取れていたから。
 B: クリティカルヒットちゃう。理由も何も、ダメージ入ったから。
 A: 答えが当たったときに。

C: *Which part excited you the most? And why? It was a more spectacular attack than I expected.*
 A: *When the answers were right. Because I could hear the question.*
 B: *It was a critical hit ... because the damage was done.*
 A: *[It was] when the answer was right.*

Another aspect of the immersion in the fantasy of the game that many students commented on the interesting characters that they both met and played as, demonstrated in the 'Interesting Characters (n = 7); 'Communicating with NPCs, (n = 24)' and 'Identifying with Characters (n = 22)' codes, contributing 25% (n = 53) of the overall component. Student 2.4, when discussing Week 2, said:

I thought that this week was interesting because the characters had so much personality.

The inclusion of these memorable characters was an important part of the attempt to make Adventures in Anglonia's fantasy stronger and story understandable. When familiar characters showed back up in the game, students commented on their reappearance:

A: 最初に会った人とかが出てきてたのが「懐かしいねー」って。
B: ストーリー性があった。「あの時の人か！」ってなって、そこで興奮しました。
C: (最初にであった懐かしい人が) 死んでて悲しかったです。

A: *The people I met in the beginning came out, and I thought, 'This brings back memories'.*
B: *There was a storyline. I thought, 'Oh, that's him from back then!' I was so excited.*
C: *I was sad to see that the first person I had met had died.*

This attempt extended as far as the player characters themselves, with student 2.2 claiming in their interview:

あー、その戦ってない時は、その「YUKI」っていうのはそのセリフとか見てる感じで、優しい感じのキャラクター性格を持ったキャラクターだと思ったんで、そのだからみんながその戦う以外の時で選択肢を選ぶ時にもこれしようってみんな一つ通じて選んでいくんですけど、そういう場面でもその真ん中に入る役割というかそんな感じの役割なのかなと思って。必要かなと思います。

Oh, when not in battle, the character "YUKI" had a gentle personality based on the lines and how they were portrayed. So, I thought of them as a character with a kind-hearted demeanor. That's why, in moments when everyone had choices to make outside of battles, we all seemed to gravitate towards selecting this character's option. It felt like they played a central role in those situations, or at least that's the impression I got. I think their presence was essential.

Student 2.2's response shows a deep understanding and connection with their character that went so far as to influence the way that they interacted with the choices in the game. These aspects were things that students picked up on and understood well.

However, some issues with understanding the narrative were present, demonstrated in the "Confusion about Story" code, (n = 17, 8%). As Student 1.2 says in their interview,

正直、最初の方は何かあの入り込んでいってる感じですが面白いなっていう風に思ってたんですけど、後になっていくにつれてちょっとだんだん難しくなっていって、最後の、えーと、ストーリー的にはちょっと難しくて最後の方は「あ、何だろう？」っていう感じになったんですけど、うん、それはやっぱ自分の英語力もってあげたいなっていう風に、そのゲームを終えてもうちょっと勉強してこのゲームもちょっと理解したいなっていう風に思いました。それが自分の英語勉強しようっていうモチベーションにもつながったかなっていうふうに思います。

*Honestly, at first, I thought it was really interesting and I was getting into it, but as it went on, it gradually became more difficult, and towards the end, **the story got a bit hard to follow**, and I was like, "Huh, what's going on?" But, yeah, that made me realize that I want to **improve my English skills more**. Finishing that game made me want to study more so I could understand it better. I think it also boosted my motivation to study English.*

A few students discussed this issue, showing that the fantasy was not completely effective, but for a majority of groups, it seemed that the fantasy was a generally positive component of the game.

5.4 Control

The game aimed to deepen the student experience via the incorporation of control. . This aim was reached through the choices about the narrative, which allowed students to select one of several options for how the story would proceed. Represented in data as the 'Autonomy in decisions' (n = 7) and the 'cooperation in making decisions' (n = 15) codes (n = 24, 12%), one example of a choice that students appreciated was the intentional morally ambiguous choice of what to do with the stolen money in week two. Student 2.2 discusses making this decision:

もう最後この街みたいなのをどうするかみたいな選択肢があったんですよ、それをそれはみんな結構意見別れたんですよ。でもそれは、ま、どれが一番面白そうになるかみたいなそんなのを選んで、これが、この展開、結末だったら面白いんじゃないかっていう話してやったのを覚えてますね。

At the very end, there was a choice about what to do with this town-like place, and I remember that there was quite a difference of opinion among everyone. But, in the end, we chose the option that seemed the most interesting, discussing how this choice might lead to an engaging outcome or conclusion. I remember that well.

Another thing that students commented on was the game's reaction to both this choice, and other choices as well. The codes 'Assisting Non Playable Characters' (n = 19), 'Anticipating the Game's Story' (n = 2), and 'Assumption of a Role in Story' (n = 14) all fed into the aspect of reacting to player choice (n = 35, 18%). For instance, If the students allowed the thieves an ambush by them and their dependents in the following week would result in a pleasant conversation and reward instead of battle. In discussion, one student commented

A: 選択肢によってラストの終わり方が違うのはすごい面白いと思いました。

A: I thought it was really interesting how the last [battle] ended differently depending on the choices.

Another group, who kept the money for themselves, discussed the resulting ambush in the following week's discussion.'

A: 金とってなかったら死んでなかったやんな、多分。

C: なんてとったんやろあれ。でも

A: 「返そう」って言ってたよな。...

A: かわいそうに。

B: 全員殺すことになってしまった。

A: 皆殺しやでほんまに。

C: very sadです。

A: If you hadn't taken the money, you wouldn't be dead, right?

C: I wonder why you took it. But...

A: You said, 'Let's give it back.' ...

A: Poor guy.

B: We had to kill them all.

A: We're all going to be killed.

C: Very sad.

The clear establishment and understanding of the cause and effect relating to their decision shows that the students understood that a decision they had made changed the way that the story progressed – in this case, negatively. Group 2 greatly enjoyed the final week and felt deeply satisfied at the ending that they received. Student 2.2 relates in their interview:

やっと倒したみたいな感情にみんなでなったの覚えてるのと、あと最後にその倒した後に一番最後にそのどうするかみたいな選択肢があって、それを「どれにするみたいな」みんなでその余韻に浸りながら選んだみたいなのをやったのを覚えてますね。

... when we finally [beat the game] everyone felt a sense of accomplishment. I remember that.

Additionally, after defeating it, there was one final choice about what to do next. We all made that choice while still immersed in the aftermath, and I remember doing that.

Students also appreciated the aspect of control that they had in battles, especially when they could assist their teammates, and feel valuable. This contributed significantly to the control category through the codes 'Skill Activation Questions' (n = 49), 'Cooperation in Battles' (n = 35), 'Healing' (n = 27), and 'Sentence Assembly Questions for Ultimate Skill Activation' (n = 23), which together, contributed 69% of the control category, showing how noticeable this aspect of control was to the

students. This was seen as positive as students felt that they could learn English through the choice to activate skill moves, helping their teammates at the same time.

C: あと自分でコマンドを選択して、やりたい攻撃方法を選べるところがよかったです。

D: あとHP回復するのもよかった。

B: だから色々できて(よかった。)(=色々なファンクションがあってよかった。)

A:「ゆき」?「ゆき」がめっちゃくちゃヒールみたいな、すごいヒールしてて「エブリ」が生き返ったところがめっちゃ興奮した。

All: (全員賛成) ...

A: すごいチームワークを感じて。

C: 結構協調性が大事やった。

B: わかるわかる。みんなが攻撃したところを誰かがフォローして、で、誰かがヒールしてっていうその一連の流れがすごくこうチームワークがあって、...

A: 結構、信頼関係ができないとできないかなって思いました。...

B: こうコマンドを選択した時に、センテンスを並べい変えてくださいっていう問題ですごい自分のその英語力が試されてるなって感じたし、似てる単語を選んでくださいっていう場面でもみんな協力しながら選択肢のなかから選ぶことができました。

C: Also, I liked the fact that you could select your own commands and choose the way you wanted to attack.

D: I also liked that you could recover HP.

B: I liked that I could do various things. (I liked that there were many different functions.)

A: Yuki? Yuki" was like a heal, a great heal, and I was really excited when "Every[sic, Avery]" came back to life.

All: (All agree) ...

A: I felt a great sense of teamwork.

C: Cooperation was very important.

B: I understand. When everyone attacked, someone would follow up, and then someone would heal.

A: I felt that you have to have a trusting relationship with them to be able to do that...

B: When we selected commands, I felt like my English skills were being tested when we were asked to rearrange sentences, and when we were asked to choose similar words, we were able to choose from among the options while cooperating with others.

6. Discussion

Students' responses suggest that the KCLG-informed design was generally perceived in ways consistent with the designer's intentions, and the experience was seen as positive due in part to the presence of these characteristics.

6.1 Challenge

The first KCLG aspect is **challenge**. Adventures in Anglonia was designed to be difficult. When the students did overcome the challenges presented to them (e.g. see Figure 5), they felt serious accomplishment and gained confidence in their English ability. This confidence is an example of the same phenomenon that Mossman et al., (2019) observed, in this particular case strengthened by the presence of teammates, who felt the same way. This was seen in group two as they reached the end of the game, anticipating the challenges that they would face, and the satisfaction they would get in beating them. In Malone & Lepper's (1987) description of challenge, a significant weight was put on self-esteem, where success over difficult obstacles would increase self-esteem, and failure would lower it. These findings are more in line with Mossman et al. (2019)'s assessment of digital learning game difficulty than Hamari et al.'s (2016) findings regarding difficulty in Quantum Spectre, in that placing the difficulty of the game slightly above the students' levels results in the highest amounts of engagement, instead of matching it perfectly, pushing students into a state of flow, a theory explored by Nakamura and Csikszentmihalyi (2014). This may have been true in this case because as they grow in their language learning, students gain more grit the employment of which leads to enjoyment (Zhao & Wang, 2023), meaning that the older audience of Adventures in Anglonia was more prepared to persist through the challenges that the game presented than younger students with a game of equal difficulty relative to their skill levels. The coexistence and bolstering of engagement (which is generally

considered positive) and grit (persisting through difficult experiences) may initially seem odd, but the uniquely difficult environment of *Adventures in Anglonia* provided a setting where the two might form a symbiotic relationship, where one fed into the other. If students have an adequate amount of grit, allowing them to persist through difficult sections, they may feel a significant sense of accomplishment when they overcome these challenges. This sense of reward may then further motivate students to continue playing and persisting, thus increasing their grit, engagement, and confidence that they could overcome the challenges that the game presented. This confidence, too, would contribute to the students' grit when things get tough.

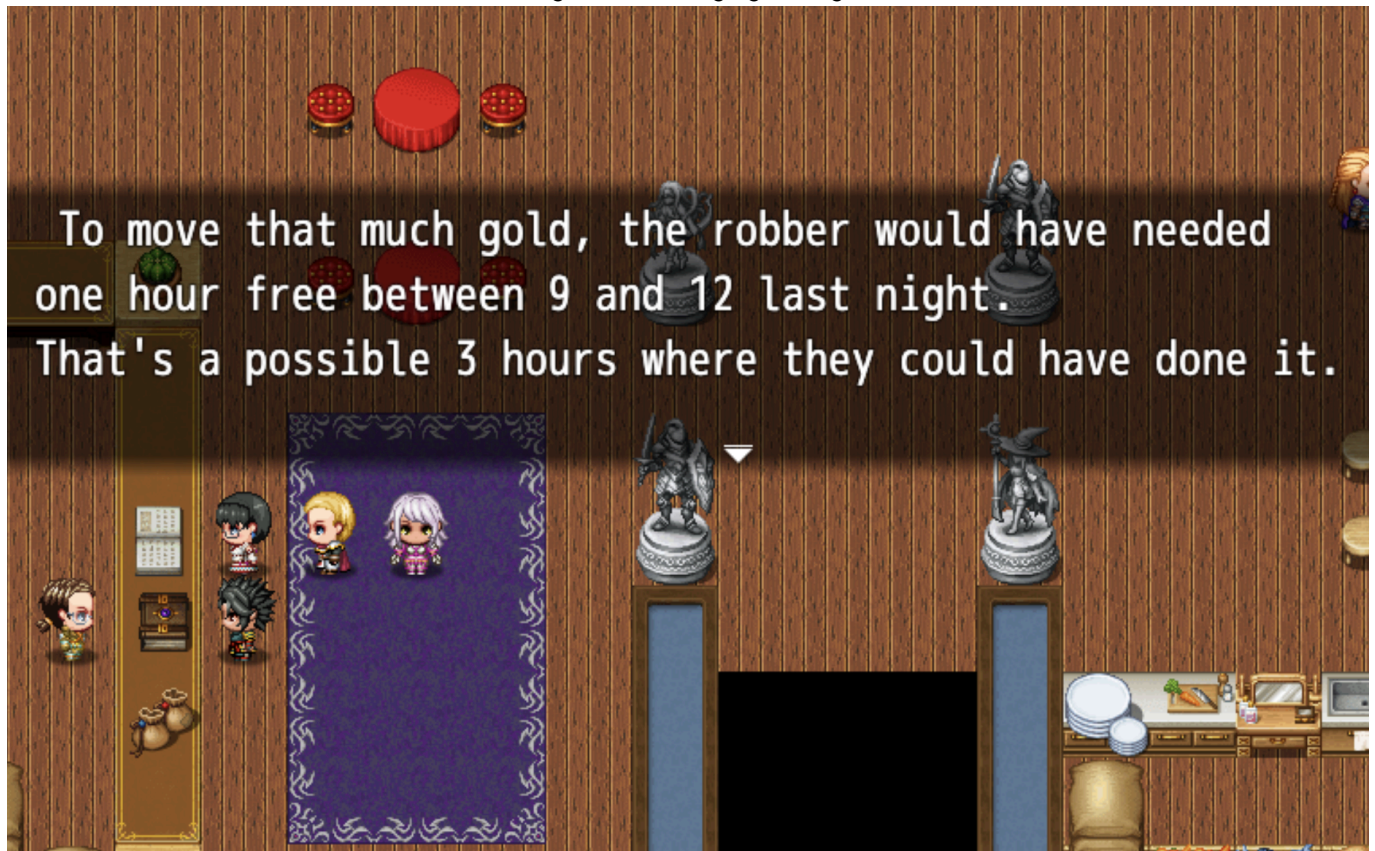


Figure 5: Students are informed of the parameters for a puzzle that they are required to solve.

Adventures in Anglonia was also successful in engaging students through Malone & Lepper's three categories of relevant challenge.

First, students believed that the game was effective in preparing them for the TOEIC test, demonstrating that to the students, the game had **instrumental relevance**, functioning as an effective test preparation tool as intended. They understood that in playing the game, they were studying for this important test in their lives as well, in a similar way to van der Velden's test-preparation games (2024). This understanding may have further immersed them in the context of the game, as the time spent playing was not only entertaining but also valuable. Students believed that *Adventures in Anglonia* succeeded as a learning game. (For relevance in terms of fantasy, Malone & Lepper's 2nd criteria, see section 6.3)

Adventures in Anglonia's **social relevance** was also considered positive. Having students participate in teams made students feel as if they were in the effort together, cooperating on solving the English questions and celebrating their collective achievements. The engagement gained from playing in teams cannot be understated and is something that all learning games, whether digital or not, should consider incorporating. Additionally, the presence of teammates who were gaining the same levels of confidence in their English ability may have increased their teammates' drive to persevere and overcome the challenges that the game presented.

The presence of teammates who were gaining the same levels of confidence in their English ability may have increased their teammates' drive to persevere and overcome the challenges that the game presented.



Figure 6: Super Ultra Mega Hyper Beam. The reader will just have to imagine the sound.

6.2 Curiosity

The next aspect, **Curiosity**, was effective in some areas and less so in others. The **sensory curiosity** provided by Adventures in Anglonia was distinct from typical classroom activities, as evidenced by the 'Compared to Normal Classes' code (n = 24). The game's array of exciting attacks, sounds, and enemies was novel for the students. While not unique to this game, it was effective, as shown by the large percentage of codes related to sensory curiosity (n = 84, 45% of the total) (See Figure 6).

Cognitive curiosity was stimulated by the game's puzzles, such as discovering who stole the gold in Week 2. A particularly interesting example was the inclusion of blood, which created an unexpected inconsistency in the students' minds. Although unintended, this worked to the game's advantage by further engaging students' curiosity.

The style and graphics of Adventures in Anglonia were typical of a JRPG, a genre usually intended for a younger audience (e.g., Pokémon). Students, such as student 2.1, were familiar with this type of game. This familiarity likely led students to have preconceived notions about the game. Additionally, their expectations for classroom-appropriate content probably did not include elements like blood and character death. Although this code was not the most prevalent in the data (n = 5), its inclusion is noteworthy due to its uniqueness and the fact that, although unintended in the design, it effectively functioned as an aspect of the game's cognitive learning goals.

Breaking these expectations was not a negative phenomenon. Instead, it forced students to reconsider what kind of content could be included in a learning game, increasing their curiosity about what might come next. There is little discussion about the inclusion of unexpected or more mature content in DGBLL, likely because it is a challenging topic and many learning games are designed for younger audiences. However, in games designed for adults or post-secondary students, breaking these expectations could be an effective method of eliciting cognitive curiosity.

It is also notable that student curiosity about the world of the game was stated as an inspiration for further English studying, as a method of coming to understand the game's context. This process of coming to an understanding fits with Malone & Lepper's (1987) definition of cognitive curiosity, the completion of incomplete mental schema. The game was interesting enough to students that they wanted to understand the complexities of the story (see section 6.3), which in turn motivated them to study more.

6.3 Fantasy

The **fantasy** aspect of Adventures in Anglonia yielded mixed experiences. Some elements worked well, while others were less effective. The learning content was connected to the game, serving as the primary method of student interaction. However, the lack of student comments on the learning content's direct connection to the narrative indicates that this integration was only partially effective. In contrast, other intrinsically integrated games, like Habgood & Ainsworth's (2011) "Zombie Division," feature simpler narratives where players logically divide zombies using math, making the educational purpose clear and engaging.

In Adventures in Anglonia, the magic system was part of the battles, but students didn't understand its purpose beyond being magic. This weak explanation, combined with inconsistent narrative depictions of magic, meant that few students connected the magic learning aspect to the story.

Initially, the mere presence of a story was enough to satisfy students, as evidenced by Student 1.1's comments. Early in the game, there were promising signs of student engagement with the fantasy elements, such as Student 2.2's comment about understanding their player characters (see Figure 7). The interesting characters and situations were engaging, but students' familiarity with medieval/fantasy tropes was overestimated. As the game progressed, students became confused about the story ($n = 17, 8\%$), leading to a less positive experience as the benefits of the fantasy elements were lost. However, the aspect of power within the fantasy was effective. Students felt empowered, particularly through the exciting moves in the game, which were enhanced by the sensory curiosity generated by the engaging visuals.



Figure 7: Yuki, one of the player characters, being the voice of reason.

6.4 Control

Ultimately, however, it was the aspect of choice that was commented on considerably as a facet of the game's narrative/world and of combat. The **control** that students had over the way that it played out was something that students found invigorating and engaging, especially when the option to exert control was provided as a reward for overcoming a significant challenge (e.g. Players defeat the final boss, players can choose to make wishes to determine the ending of the game's story). Enhancing the engagement generated via control was the fact that students saw and understood the consequences for their actions (and that these consequences were serious, involving character death) (See Figures 8 and 9).

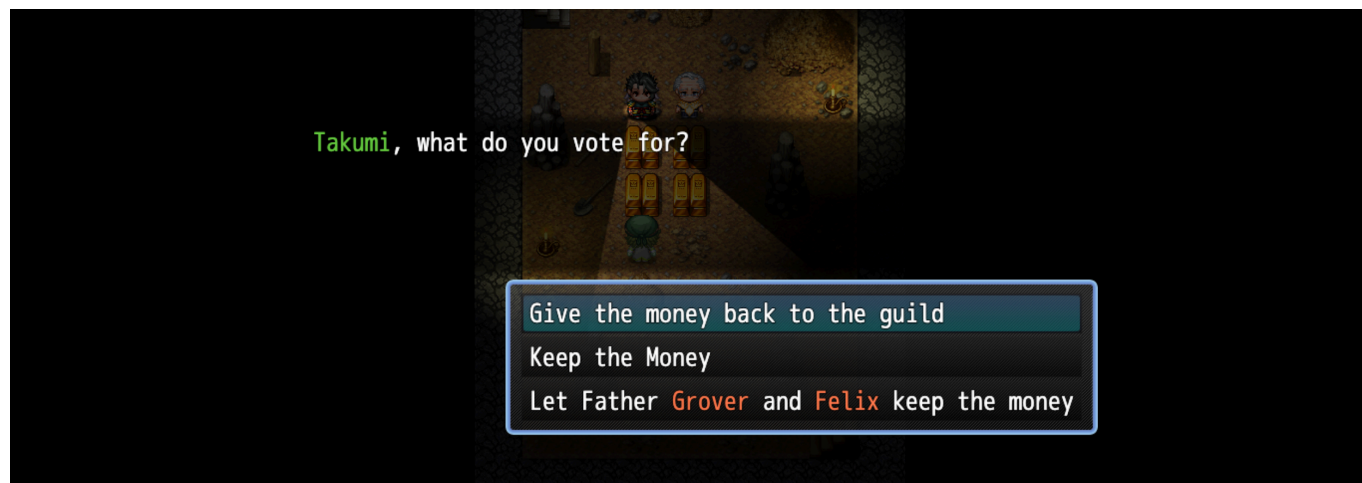


Figure 8: The choice at the end of week 2.

The first decision in the game was the choice of which of the four player characters to play. This was something that influenced how each player would perceive the game, and what their role in battle would be. Student 2.2's discussion about their playable character showcases just how important this choice was.

Choice was also present in a smaller scale, during the battle scenarios, as each player could select the moves that their character would perform. This aspect was more commented on by students contributing to 69% of the total category. Optimal play required students to cooperate, and each character had a speciality, making their choice of move extremely important in succeeding in combat. This was best exemplified through the game's healer, Yuki, whose abilities could save the team from death. The ability to do this made the student's actions feel valuable, and more importantly, unique. There is little research on team-based games, but the cooperative aspect of non-educational games is easily recognized as a positive aspect through effective skill design (e.g. class synergy in multiplayer games, such as raiding in World of Warcraft – though the skills were based off another class-synergistic turn-based RPG, Darkest Dungeon) .



Figure 9: Students encounter the body of an adventurer who died because they did not return the gold to the guild.

7. Limitations and Drawbacks

The issue with student recognition in audio recordings posed a problem in data analysis. As students and their groups could not be recognized, utterances could not be attributed to a single student, therefore removing the possibility of isolating student perspectives and experiences throughout the game.

It is an unfortunate aspect of the program used for this particular design that student-spoken commands could not be included in the game, which would greatly strengthen the intrinsic integration of the experience – for a student to literally speak the spell's name and required words to use it.

The game's design was originally created for use in an activity where the teacher would not be present, but in the actual execution of the game, both the researcher and another teacher were there in the classroom, observing and assisting students when they became stuck or the game broke. The lack of a specific role for the teacher in the experience was a significant missed opportunity to further intrinsically integrate the game and utilize the human presence of Having the teacher take on a "Game Master" role (e.g. Lee et al., 2010; Schneider 2023) or otherwise utilize their teaching expertise to frame the overall game as an "explicit pedagogical intervention" and thus better crystallize its value in the classroom (deHaan, 2020a).

Along those same lines, the intent of the original study was to gauge student engagement with the language learning experience, not the explicit quality of the experience itself. While lots of qualitative data regarding the student experience was gleaned, no quantitative data on student improvement was taken.

Additionally, the feasibility of designing such an experience for an average teacher and implementing it in the classroom is extraordinarily low. The intervention's design took around 400 hours of in-engine building time to have it prepared for implementation, and even then, there were bugs and issues. For a teacher not able to take this amount of time, designing digital game experiences from the ground up in such a manner is extraordinarily difficult (Instead, teachers might want to consider analogue games, tabletop games, or more simple one-week experiences). Indeed, one of the reasons that there has not been a wider exploration of digital game-based pedagogy in the classroom is the technical skill and time requirement that it takes, something that a majority of teachers do not have. Making review games without intrinsic integration is simply easier and less time-consuming.

The researcher overestimated Japanese student's familiarity with the tropes of fantasy, and therefore, the game's story was not as relatable to these students as it could have possibly been. Though the mechanics were still effective, setting the narrative in this genre did not have the intended effect. If repeating the study with a different game, students would be polled on which setting is the most familiar to them, and a game would be designed accordingly.

8. Pedagogical implications

Based on the results of this study, teachers should consider incorporating KCLG into their game-based activities. The students' perceptions of these components generally aligned with the design intentions, making KCLG an effective foundation for mechanical design. Teachers and designers should keep the four components of KCLG in mind, regardless of any additional frameworks used in the game creation process.

Teachers must understand their students' aptitudes when designing a game's difficulty and adjust it to match or slightly exceed students' abilities (see Raza & Asad, 2025). Challenges can be managed in various ways, such as promoting teamwork in *Adventures in Anglonia* or other strategies (see Bellotti et al., 2010; Mott & Lester, 2006). However, the difficulty should not surpass what students believe they can achieve. Effective language games should build students' confidence through gradually increasing challenges, celebrating successes, and reinforcing lessons learned. Teachers and designers should aim to create challenges that both teach and motivate students, serving as learning tools, immersive fantasies, and social experiences.

A digital learning game experience should stimulate both sensory and cognitive curiosity. Digital media easily engages sensory curiosity through flashy graphics, music, and sound, which should be utilized effectively. More importantly, game-based language learning experiences should engage cognitive curiosity by presenting intriguing situations, incomplete information, and breaking expectations. Including surprising or unusual content can break expectations, but it must be appropriate for the classroom level. For example, the mature themes and imagery in *Adventures in Anglonia* engaged students positively. However, such content should be integrated with the game's narrative and aligned with students' decisions, not merely included for shock value.

The fantasy context of a learning game can lead to immersion. If students understand the fantasy and their role in it, they are more likely to become engaged. Teachers should strive for narrative design that immerses students through interesting events, characters, and situations. Familiar and understandable settings lead to positive perceptions and a clearer understanding of contexts and goals. Understanding students' preferred settings and contexts is critical. Additionally, the fantasy should logically incorporate the learning content, grounding students in the narrative and connecting their actions to the game's objectives.

Finally, teachers and designers should leverage the main advantages of digital games: interactivity and player control. It's important to make the results of choices clear, ensuring that players understand their influence on the narrative and fantasy progression. Providing impactful micro-choices, such as selecting moves in battle, reinforces the significance of student control. In cooperative experiences, even simple choices should be valued, highlighting the importance of individual input.

9. Conclusion:

Through the incorporation of KCLG in its design, *Adventures in Anglonia* generally succeeded, as student perceptions of the mechanics largely aligned with the creator's design intentions.

Adventures in Anglonia effectively utilized challenges as a way of providing students with difficult obstacles, leading to a sense of accomplishment and increased confidence in their English abilities. This aligns with research suggesting that slightly surpassing students' skill levels can enhance perseverance, particularly in older audiences who possess more grit in persisting through challenges. Additionally, *Adventures in Anglonia*'s integration of social relevance fostered a cooperative atmosphere among students through teamwork and collective achievements, a valuable aspect for all learning games to consider, especially as direct cooperation in the mechanics of learning games is rarely researched. In terms of curiosity, the game successfully stimulated sensory curiosity through exciting visuals. The use of unexpected content appeared to stimulate cognitive curiosity, with students describing surprise and reconsidering their expectations of the game. The fantasy aspect was a mixed experience, with clear connections between learning content and gameplay but less clarity in narrative integration. While the fantasy elements initially caused much excitement, confusion

arose as the game progressed, highlighting the importance of maintaining a clear narrative context. However, one of the most positively viewed aspects of the game was the element of control, allowing students to shape the narrative through their choices and actions. This sense of agency and the understanding of consequences reinforced the value of their decisions within the game world.

Overall, Adventures in Anglonia's KCLG-shaped design was successful, being interpreted by students generally as intended in the design phase. This was done by incorporating elements of challenge, curiosity, fantasy, and control in conjunction with the integration of meaningful language learning experiences. By understanding and leveraging these engagement factors, educators and designers can create immersive and effective learning game experiences.

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Appendix A

Narrative Frame:

Name: _____ Group Number: _____

Complete this narrative frame within 1 hour!

I got most excited about the game when it _____ during the game because _____

I felt most appreciative of my group members when _____ because _____

I felt the strongest sense of achievement for my English language learning during the game when _____ because _____

During the game, I found the learning of English (interesting/not interesting) compared to other English lessons because

I thought that this week was _____
because _____

One of the examples of this was

Appendix B

Coding with Obsidian:

Picture 1: Data Page

Picture 2: Code Page

Games as a Motivation to Study

#code

#semantic

Because the English of this particular game was rather difficult, some students expressed interest in studying more in order to understand the content of the story and the plot.

Examples in Data:

- I got most excited about the game when it asked us English questions([Games as a Motivation to Study](#)) during the game because it enables us to study English in a funny way. - [Student 1.3](#)
- But it was a little difficult in terms of the storyline ([Confusion about story](#)), and at the end, I was like, "Oh, what is it?([Interested in Story](#)) But I wanted to improve my English, and after I finished the game, I wanted to study more and understand this game a little better. That motivated me to study English more. - [Student 1.1](#)
- The system of the game, fighting enemies, is very simple and easy to understand([Learning to Play the Game](#)), just like the games I used to play when I was a child, so it is easy to understand, I think it is very appealing to be able to play games in English, because they are easy to understand, and you can try to figure out how to play them in English. - [Student 1.1](#)
- It's a common game style, so it's a game where you have to find clues ([Detective Experience in Week 2](#)) to help you win, or in the case of Luigi's Mansion, to defeat the ghosts, or to find the room where the ghosts are, in order to defeat them. In the Garrett's game, the process is similar to the process of answering English quizzes and understanding the story to find out how to attack the ghosts in order to win. So, I think the process is similar to the game in that you are answering English quizzes and understanding the story, so it is easy to get into the game. - [Student 1.1](#)

Week 2 NF Transcript

#results

Student 2.2

1. I got most excited about the game when it kill an enemy([Defeating Enemies](#)) to save someone ([Mechanical Cooperation in Battle](#)) during the game because I finally went to the end of this week([Sense of Accomplishment](#), [Game Completion](#)) after fighting many enemies([Extent of Challenges](#)).
2. I felt most appreciative of my group members when group members teach me a problem([Cooperation in Battles](#)) that I don't understand ([Encountering Unknown Words](#), [Game Difficulty](#)) because I was able to attack the enemy ([Attack Effects](#), [English Ability equals Game Ability](#)) thanks to that.
3. I felt the strongest sense of achievement for my English language learning during the game when I kill an enemy to save someone([Defeating Enemies](#), [Protecting Teammates](#)), just like when I was most excited. Because I was finally able to defeat([Defeating Enemies](#)) it after solving a lot of problem([Extent of Challenges](#)).
4. During the game, I found the learning of English interesting compared to to other English lessons because I was addicted ([Addicted to the Game](#), [What is Enjoyable](#)) to the game.
5. I thought that this week was harder than last time([Increasing Difficulty](#), [Game Difficulty](#)). Because I had to solve a lot of problem([Extent of Challenges](#)).
6. One of the examples of this was the process that go to help the person([Assisting NPCs](#)).

Encountering Unknown Words

#code

#semantic

Students discussed the idea of encountering words that were unknown throughout the game. Some of these were in battle, but others were present as slang in the narrative. This was the main way that words were introduced to the students and thus a large part of the learning process of the entire game.

Examples in Data:

- "I got most excited about the game when it (blank) during the game because when I searched unknown word, I got new vocabulary." - [Student 1.1](#)
- "I felt the strongest sense of achievement for my English language learning during the game when I listen and choose sentences. I find what sounds I can't listen and words which I don't know the meaning." - [Student 1.1](#)
- "I felt most appreciative of my group members when we were answering questions Because we said "taking mistake is no problem!! And, we looked up some word that we don't know together." - [Student 3.3](#)
- During the game, I found the learning of English interesting compared to other English lessons because I think that the game has a lot of difficult word that I don't know. If I remain can't understand, I can't clear the game. So, I often looked up words and I could understand many vocabulary - [Student 3.3](#)
- I felt the strongest sense of achievement for my English language learning during the game when I have the word which we couldn't understand. We research the word and think about the question in English. It may help our English skills. - [Student 3.2](#)

