

Fuelling Grammar Mastery and 21st Century Skills Through Project-Based Learning

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ABSTRACT

Project-based learning (PBL) approach has been adopted in the classroom to engage students actively in the learning process and to allow them to master content knowledge and useful skills. This mixed-method study investigates the perceived benefits and challenges of using the PBL method in developing and enhancing undergraduates' grammar mastery and 21st-century learning skills. Thirty-five ESL undergraduates from an intact grammar class participated in the study. A questionnaire was administered to elicit the participants' views on using the PBL approach to develop grammar, collaboration, and speaking skills. In addition, group discussions on Google Docs and reflective journals were collected to obtain insights into their learning processes. The participants preferred the PBL approach, which was more effective, invigorating, and empowering than traditional lecture-style teaching. Although it was time-consuming, challenging, and rigorous, the participants demonstrated their competencies of 21st-century learning skills at the end of the project. PBL maximised language use, increased higher-order thinking, unleashed creativity, and honed ICT skills. These skills are essential to equip and prepare them to be employable and future-ready for workplace demands.

Keywords: 21st-century learning skills, ESL learners, games, grammar, project-based learning

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INTRODUCTION

Education has transformed from traditional to more contemporary teaching approaches in the present technological era. Conventional teacher-centred approaches were gradually replaced with more learner-centred approaches to develop 21st-

century skills for learning, literacy, and life skills. The 21st-century skills include communication, collaboration, critical thinking, creativity, problem-solving, ICT literacy, and social skills (Ahonen & Kinnunen, 2015). Education policy is embedding 21st-century skills in the curricula, alternative assessment, as well as innovative teaching and learning methods to train learners to function effectively in the knowledge society as seen in countries such as Australia, China, Hong Kong, Republic of Korea, Japan, and Malaysia (Care, 2018).

Even with the exposure and training in 21st-century skills during tertiary education, it has been reported that graduates lack proficiency in higher-order thinking, soft skills, and communication skills, which are important to enhance graduates' employability (Herdlein et al., 2010; Pillai et al., 2012; Ting et al., 2017). In addition, a person with strong communication ability also tends to have stronger interpersonal skills and higher potential to fulfil the job's demands (Azmi et al., 2018; Noah & Abdul Aziz, 2020; Mishra & Mishra, 2020).

Furthermore, employers value those who can speak and write using appropriate grammar and sentence structures. Soft skills, such as communication, teamwork, interpersonal skills, management skills, creativity, thinking skills, leadership, problem-solving, and lifelong learning are attributes that employers seek (Fahimirad et al., 2019; Tang, 2019). However, graduates do not possess sufficient soft skills, making it difficult to recruit and meet the profession's demands (Gruzdev et al., 2018).

Herdlein et al. (2010) state that clear communication is attributed to correct grammar. Learning the grammar of a language is essential to acquire the ability to produce grammatical expressions in the language (Corder, 1988). For many language instructors, the importance of teaching grammar is to help learners internalise the rules or structures of language to communicate better in writing and speaking (Ellis, 2002).

In the past, grammar was taught through explicit or implicit instruction. Al-Kalbany's (2004) survey showed that preparatory and secondary school EFL teachers favoured implicit instruction while the students preferred explicit instruction. Borg and Burns (2008), who investigated the beliefs and practices of 176 English language teachers from Australia, New Zealand, Europe, and Asia, found that the teachers embedded grammar in meaning-oriented activities whereby learners had opportunities to practise and use grammar.

In a study conducted on 44 Turkish pre-service teachers of English at a state university, Kaçar and Zengin (2013) found that the teachers adopted a holistic perspective towards teaching grammar by incorporating explicit and implicit grammar instructions. Fayyaz and Omar (2014) carried out a case study on a non-native English-speaking language teacher in East Malaysia to examine the contextual situatedness of the teacher's beliefs and actual practices on form-focused instruction. The learning culture of memorisation, the teaching of discrete grammar items, institutional goals,

and past training influenced teachers' beliefs about explicit grammar knowledge. Basoz (2014) views that when teaching English, grammar should be included sufficiently and connected with actual language use. Emphasis should be placed on real-life-oriented activities instead of applying superficial practices to teach grammar.

There is no single ideal approach which can be applied to all types of learners across various contexts. The way teachers teach grammar is strongly influenced by their views about language learning, their belief about their student's needs and wants, and other contextual factors such as time (Farrell & Lim, 2005). Widodo (2006) proposes that teachers should redesign and develop materials from grammar course books to teach the rules without separating them from the context of communicative purposes. Creative and innovative methods to teach grammar are necessary.

Project-Based Learning

The Buck Institute of Education (2003) defines Project-Based Learning (PBL) as a “systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks” (p. 4). For Patton (2012), PBL refers to students designing, planning, and carrying out an extended project that produces a publicity-exhibited output such as a product, publication, or presentation.

This study adopted Larmer and Mergendoller's (2015) Gold Standard PBL

model as the theoretical framework, which was based on constructivist theory. The model comprises seven essential project design elements (Figure 1).

The elements include framing a problem or question that directs the project. Sustained inquiry involves learners engaging in a rigorous process of finding resources and applying information. The project involves real-world context, and the learners have a voice and choice over how they work and what they create. In addition, they also reflect on their learning process and gauge the effectiveness of the project. Learners also receive and give feedback to improve their end product. Finally, they make their product public through sharing or presentation.

Project-based learning empowers learners to understand a topic better and increases motivation (Bell, 2010). It also helps them gain knowledge and skills when involved in various activities in different

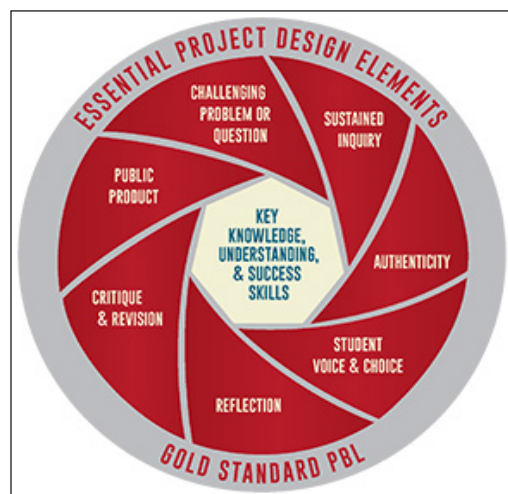


Figure 1. Essential project design elements (Larmer & Mergendoller, 2015)

domains (Tamim & Grant, 2013). Well-designed projects incorporate technology as part of the process (Richard, 2005). Thus, PBL is well-suited for teaching digital literacy and 21st-century skills (Binkley et al., 2012; Larmer & Mergendoller, 2010; Sumarni, 2015). Furthermore, PBL includes group process skills. Learners are engaged in teams and develop proficiency in the following skills: comprehension, research and writing, questioning, collaborative learning, resourcing, presentation tools, analysis, communication, problem-solving and critical thinking, and task and self-management skills (Klein et al., 2009). Project-based learning can be characterised as student-centred, involving collaborative learning, which leads to authentic integration of language skills and processing of information (Poonpon, 2011). Learners' engagement in social interactions with group members and co-construct knowledge together makes learning more effective (Vygotsky, 1978).

The effectiveness of research on PBL has been investigated in various English language contexts. Poonpon (2011) conducted a study with 47 Information Science undergraduates to identify how interdisciplinary project-based learning enhanced language skills. The participants' writing skills were incredibly enhanced throughout the project-based learning, and their speaking skills were also developed. Authentic integration of reading, writing, speaking skills, and information processing from various sources improved their English in real-life contexts. Subsequent studies

also reported similar findings concerning improvement in speaking and writing skills when project-based learning was used (see Dewi, 2016; Ekawati, 2018; Nurhayati, 2018; Yang & Puakpong, 2016).

Mali (2016a) designed classroom projects in Creative Writing (CW) and Second Language Acquisition (SLA) classes. He found a high level of student participation and opportunities to collaborate, articulate thoughts, negotiate and value different perspectives. Mali's (2016b) phenomenology study also revealed that constructive communication in sharing resources and direction to take, seeking lecturers' feedback, helping members, and having a sense of responsibility were important to complete the project.

Sukerti and Susana (2019) investigated the effect of PBL on the speaking achievement of 19 electrical engineering undergraduates in a higher vocational institution. There was a significant effect of PBL on their presentation skills in English. The participants improved their communication, soft skills, creativity, grammar, vocabulary, and specialised knowledge when designing and presenting their infographic project.

To examine the use of PBL as a teaching strategy to improve oral communicative competence, Abu Bakar et al. (2019) conducted a quasi-experimental study with 44 low-proficiency students in a technical college. The experimental group outperformed the control group in speaking and listening post-tests. There were improvements in language skills, soft skills, motivation, and attitudes.

In the Thai context, Nanni and Pusey (2020) explored the effectiveness of PBL in developing digital literacy skills with 33 intermediate-level undergraduates. The media project required the undergraduates to write and record an informative news video, interview an expert, and compile all the materials into 6-minute news. The participants improved their technology skills by finding, sharing, and creating content using collaborative online tools and editing videos.

Even though research on PBL has been conducted on various language skills and in different contexts, few studies have investigated the use of the PBL method in developing grammar. This study aimed to add to the body of knowledge by obtaining insights into ESL learners' grammar mastery and the development of 21st-century learning skills through PBL. -

The following research questions guided the study.

1. What are the perceived benefits and challenges of using PBL in a grammar course?
2. How does PBL enhance students' grammar mastery and 21st-century learning skills?

METHODS

Participants

The participants were first-semester Bachelor of Arts (English) undergraduates who were enrolled in the Grammar for Communicative Purposes course at a public university in Malaysia. They were local first-year participants, consisting of 29 females

and six males in an intact class. Their age ranged from 19 to 21 years old. These ESL participants came from various educational backgrounds (Table 1).

All the participants sat for the Malaysian University English Test (MUET), which measures students' proficiency level as a prerequisite for admission and placement purposes at a local university. Three participants obtained Band 3 (modest level), almost two-thirds of the participants obtained Band 4 (competent level), and eight obtained Band 5 (good user).

The participants were instructed to work in groups of five. They self-selected their group members based on the convenience of meeting. Many were unfamiliar with one another. Each group worked on a project, which entailed creating an authentic grammar game based on one aspect of grammar: parts of speech, present tense, past tense, types of sentences, and active/passive voice. These were covered in the course syllabus of the university. The project's aims were twofold: (1) to introduce an alternative method to learn grammar, and (2) to provide a stimulating, challenging task for the participants to apply their knowledge in game creation. The grammar games targeted for undergraduates should be fun, engaging, and communicative. It could be in the form of a board game, a card game, or an online game. No training was provided for the game development prior to the group project to give the participants opportunities to explore ideas and unleash their creativity. The project was graded at 30% of the course assessment.

Table 1
Participants' profile

Gender	Age	MUET result	Fields of studies (n)
Male = 6	19 = 13	Band 3 = 3	Foundation/Diploma in TESL = 12
Female = 29	20 = 12	Band 4 = 24	Foundation/Diploma in Agricultural Science = 5
	21 = 10	Band 5 = 8	Matriculation = 6
			Foundation in Law = 2
			Form 6 = 10
			(High school)

Data Collection

The participants were informed about the nature of the research and signed a written consent before the research commenced. A mixed-method data collection was used. Qualitative data were obtained from group discussions on Google Docs. The participants were instructed to plan, upload materials, and collaborate using the online tool. It was carried out synchronously or asynchronously after class hours over 12 weeks.

The instructor demonstrated how to create an online account on Google Docs and utilise the tool. During face-to-face class time, grammar input was generally provided and discussed. The instructor also monitored their project by giving feedback and constructive comments throughout the stages of developing game items and game design. The PBL activities entailed the following stages:

1. Researching and resourcing appropriate materials
2. Developing game items
3. Designing game template
4. Evaluating the quality of the game design and items

5. Pilot-testing the game
6. Revising
7. Showcasing

The participants also wrote five reflections fortnightly to record their experiences about the benefits and drawbacks of the project-based learning approach, challenges faced, skills developed, and positive and negative experiences.

Various data collection methods were used at multiple points in time, as described earlier, to ensure the study's validity in terms of trustworthiness. In addition, participation validation was also conducted to elicit further information about their fortnightly reflections. Finally, individuals were also consulted to confirm the interpretation of their reflections.

For quantitative data, a 6-point Likert scale questionnaire was administered at the end of the study to elicit the participants' views on the project-based learning approach to develop grammar, collaboration, and speaking ability. The questionnaire was adapted from two studies. Section A elicited personal information about the participant's gender and age. Section B on project-based learning and Section C on collaboration

was adapted from Musa et al.'s (2011) study. Section D on speaking ability was adapted from Yang and Puakpong's (2016) study. A 6-point Likert scale ranged from 1 = strongly disagree to 6 = strongly agree.

Descriptive statistics for the questionnaire were calculated. The Cronbach's alpha reliability coefficient was calculated as .926, considered to have a very good internal consistency (George & Malley, 2003).

RESULTS AND DISCUSSION

The results derived from the questionnaire answered the research question regarding the benefits and challenges of using project-based learning. Table 2 shows the

mean scores of the participants' responses regarding the project-based learning method.

The results revealed several major benefits. One obvious benefit was the opportunity to actively search for information and apply the knowledge in various situations. Items 3, 4 and 5 "Project work creates opportunities for me to make active research to enable me to learn (M=5.26), apply information (M= 5.23) and represent knowledge in a variety of ways (M=5.34)" show very high mean scores. Besides the opportunity for active research, the participants also responded that the project-based learning was fun (Item 7) and motivating (Item 8). The mean scores are also high (M= 5.11) and (M=4.94). These findings correspond with Abu Bakar

Table 2
Project-based learning

Item	Mean	SD
1. Doing project work in a group is better than working alone.	4.94	0.84
2. I benefited from the input of other group members.	5.06	0.80
3. Project work does not take too much of my time.	3.23	1.06
4. Project work creates opportunities for me to make active research that enable me to learn grammar in a variety of ways.	5.26	0.66
5. Project work creates opportunities for me to make active research that enable me to apply information in a variety of ways.	5.23	0.60
6. Project work creates opportunities for me to make active research that enable me to represent my knowledge in a variety of ways.	5.34	0.54
7. I find project work fun because I could play an active role during the entire process.	5.11	0.63
8. I find project work motivating because I could play an active role during the entire process.	4.89	0.58
9. I find project work challenging because I have to play an active role during the entire process.	4.57	1.20
10. Project work helps me improve my English.	5.49	0.61
11. I like project-based learning.	4.89	0.83
12. The amount of work in doing the project can be handled.	4.63	0.84
13. I obtained a lot of new knowledge while doing the project.	5.37	0.65
14. Project work helps me to find new solutions to problems.	5.06	0.84

et al.'s study (2019), where students found the project-based activities enjoyable and motivating. The students were eager to participate and had positive attitudes towards the tasks.

Other benefits included improving their language proficiency, obtaining new knowledge, and developing problem-solving skills. The results display very high means for Item 10 (M=5.49), Item 13 (M=5.37) and Item 14 (M=5.06). In addition, the participants responded in strong agreement for Item 1 that doing project work is better than working alone (M=4.94), and in Item 11, "I like project-based learning" (M=4.89).

Despite the benefits, there were two drawbacks to project-based learning. First, the participants felt that the project work was time-consuming and challenging. These responses are shown in Item 3 (M=3.23) and Item 9 (M=4.57). Although the mean for item 3 is considerably average on a 6-point Likert scale, the participants' reflections showed otherwise. More than half of the participants mentioned that the project was time-consuming as they had to arrange a suitable meeting time. Moreover, it was quite demanding to be actively engaged and involved in the project for 12 weeks. Nonetheless, the participants responded that they could handle the amount of work doing the project (Item 12, M=4.63). Other challenges included difficulties in coordinating synchronous meetings, lack of expertise in designing an online game, and flaws in the grammar game, among others. The challenges were revealed in the reflections below:

The drawback I think, is Google Docs. It is quite hard to use because we have to be online at the same time. There is a time when someone is busy, and not all can be online and it takes time to wait for others.
(Yaya)

To make a grammar game is quite challenging since you want players to gain some input and knowledge from your game. The first thing that I have to do is to widen my knowledge, and understanding of the topics given. (Mia)

We were actually really frustrated that we couldn't do an online game because we really wanted to make one because all of us had never done it before. For the players to create sentences in an online game is kind of impossible because it is impossible to create all possible sentences as answers in the answer sheet. So, when we knew that it just couldn't work, it was really frustrating to come up with a new concept, new game plan, new rules and so on. But everyone cooperated, and we didn't give up. Perseverance was the key during this process.
(Clara)

The drawback is that not every game will be perfect. Sometimes glitches can occur when it is being played. Everyone in the team must give a solid commitment to creating

the game, or else PBL will not succeed. (Travis)

In Nanni and Pusey’s (2020) study, their students invested much time finding, sharing, and creating content using technology to develop a news piece. The project duration was long and tedious, but it positively influenced the acquisition of technology, study, and language skills. Similarly, in this study, the participants spent time creating the game and overcame challenges by giving full commitment, changing their original plan, and coming up with alternative solutions. As a result, they completed the project with a satisfying end product while acquiring essential soft skills during the process (Fahimirad et al., 2019).

Table 3 shows the results regarding collaboration. The participants responded that they learned how to brainstorm ideas (Item 11, M=5.31), gain confidence in giving suggestions freely (Item 12, M=5.17), ask appropriate questions (Item 9, M=5.20) and

respond appropriately to group members (Item 10, M=5.23). The result in Item 1 shows that participants learn to make decisions based on the discussion with the group members (M=5.37).

In addition, the participants also developed teamwork by sharing responsibilities and working amicably with peers from different ethnicities. It is evident in the high mean scores in Item 4 (M= 5.06), Item 5 (M=5.17), and Item 7 (M=5.49). In terms of group dynamics, the results were positive. The participants responded that they become more aware of the needs of others during group work (Item 2, M=5.26), more sensitive to the needs of others (Item 3, M=5.06) and listen actively to group members (Item 8, M=5.34). They also learned to manage conflicts within the group (Item 6, M=5.03). This indicates that project-based learning benefits the participants by providing an avenue to learn to collaborate with others (Musa et al., 2012).

Table 3
Collaboration

Item	Mean	SD
1. I learn to make decisions based on discussion with my group members.	5.37	0.55
2. I become more aware of the needs of others during group work.	5.26	0.66
3. I become more sensitive to the needs of others during group work.	5.06	0.80
4. I learn to work successfully with students from different cultural groups.	5.06	0.94
5. I learn to delegate responsibilities to my group members.	5.17	0.75
6. I learn to manage conflicts within my groups.	5.03	0.71
7. I learn that good teamwork contributes to a successful outcome of the project.	5.49	0.78
8. I learn how to listen actively to my group members.	5.34	0.59
9. I learn how to ask appropriate questions among group members.	5.20	0.63
10. I learn how to respond appropriately to my group members.	5.23	0.60
11. I learn how to brainstorm ideas with my group members.	5.31	0.80
12. I am confident in giving suggestions freely among group members.	5.17	0.79

Table 4 shows the improvement in the participants' speaking ability. The participants perceived that their pronunciation has improved (Item 2, M=5.03), grammar is better (Item 3, M=5.03), and speaking is clearer (Item 9, M=5.09). They also felt they could speak fluently after PoBL (Item 1, M=4.77). Notably, the confidence level of the participants increases (Item 7, M=5.23). The results show that they want more opportunities to practise speaking (Item 8, M=5.40) and are more willing to speak English after PoBL (Item 6, M=5.20). In terms of sentence structure, the participants also indicated that they use words more appropriately in speaking after PoBL (Item 4, M=5.03).

These results concur with the findings of Dewi (2016), whereby her students' confidence level and motivation increased because of the opportunities to use English and to engage in purposeful interactions with group members in a natural environment.

In the following section, in-depth insights into the participants' learning processes were derived from group discussions in Google Docs to answer the

second research question. Data from two groups were selected to illustrate what transpired during the various stages. Group 1 was chosen because it represented the typical way other groups worked. Like the other groups, they always came prepared for group discussions, committed to fulfilling the weekly tasks, and worked amicably with one another. Group 5 was unique as it was the only group that created an online game and consisted of all male participants. Views from other participants' verbatim reflective journal entries were also included. Pseudonyms were used for the participants.

Table 5 summarises the individual group's game objectives, the grammar topic, and the game design.

The findings on how PBL enhanced students' grammar mastery will be thematically presented first to answer the second research question, followed by the development of 21st-century learning skills.

(a) Agents of Grammar Learning

During research and resourcing, the groups surveyed games available in the market or on the internet. They were instructed to

Table 4
Speaking abilities

Item	Mean	SD
1. I can speak fluently after PoBL.	4.77	0.65
2. My pronunciation has improved.	5.03	0.62
3. My grammar in speaking is better.	5.03	0.66
4. I use words more appropriately in speaking after PoBL.	5.03	0.66
5. I can speak longer sentences than before.	5.11	0.76
6. I am more willing to speak English after PoBL.	5.20	0.80
7. I am more confident to speak in front of the class.	5.23	0.73
8. I want more opportunities to practise my speaking.	5.40	0.65
9. My speaking is clearer after PoBL.	5.09	0.66

Table 5
Gameplay design of groups

Group	Game Objective	Grammar topic	Type of game
1	To test understanding of parts of speech	Nouns, verbs, adjectives, and adverbs	Card and board game
2	To identify and create different sentence types	Sentence types (simple, compound, complex and compound-complex sentences)	Spinning wheel and card game
3	To master nouns and verbs	Noun and verb forms	Card game
4	To create sentences in the present tense based on card pictures	Present tense	Card and board game
5	To test understanding of correct past tense use	Past tense	Online game
6	To identify and construct sentences	Sentence types (simple, compound, and complex)	Card and board game
7	To identify and construct active or passive sentences correctly	Active and passive	Card and board game

search for educational or language games in card, board, or online games. Video game was excluded as it would be beyond the participants' ability to create this game without enlisting a game developer's help. Concurrently, they searched for materials and resources for their grammar game.

Excerpt 1. Excerpt 1 (Figures 2, 3, and 4) illustrates Group 1's planning and execution of their plans. They discussed and agreed that every member should search for information on four parts of speech to deepen their understanding before constructing their grammar items.

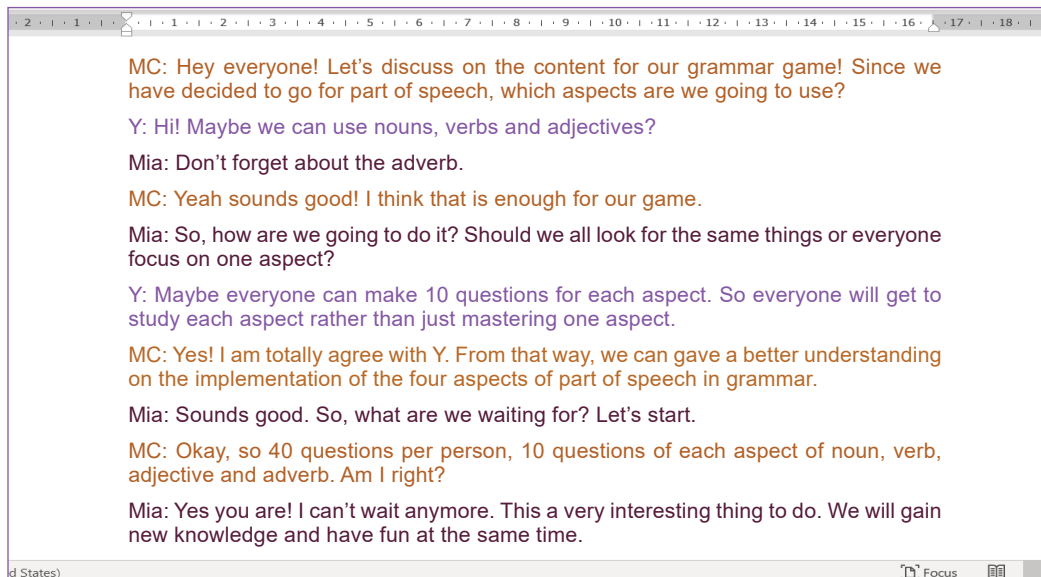


Figure 2. Planning

By allowing the participants to have a voice and to make choices, they became agents of their learning. It created excitement and motivation to embark on the task to gain new knowledge and to have fun, too (Figure 2).

While researching, Ems discovered that a word could be used for different parts of speech. She shared the explanations and

examples of the word “that,” which could be used as an adverb, a pronoun, or an adjective (Figure 3).

The members gained deeper grammar knowledge through their sustained inquiry on various websites. As a result, they became more aware of the different forms of nouns, verbs, adjectives, and adverbs, which they did not know before, especially those from

Ems: Take a look at this website. <http://partofspeech.org/>
They provide an explanation of part of speech. The most fun part is at the bottom of the website they provide the role and example of each word in different type of speech. There are a lot of words that could actually appear in different parts of speech
exp:

1. The word can also be used as an **adverb**, especially in verbal communication. It is normally used to show the intensity of a particular adjective. Take for example the sentence below:

“He is *that* old.”

In this sample sentence, the word “**that**” somehow intensifies and shows the degree of the adjective “old.”

2. In some cases, the word “that” also functions as a freestanding **pronoun**. Look at the sample sentence below:

“*That’s* exactly what I thought.”

It can be presumed that the word “**that**” is representing or replacing a specific thought.

Figure 3. Researching

3. The word “that” functions as an **adjective** when it is used to modify a noun. It is also useful in clarifying which noun the speaker is referring to in the sentence. Take for example, the sentence below:

“*That* cat is so adorable.”

The word “**that**” modifies “cat” by emphasizing that it is the particular noun being referred to.

Ems: We can use these in our question to confuse our player as well as test out their deep understanding.

Mia: You guys are great! Thank you for sharing the sources. It really helpful. I have my own source too. You guys can check it out. <https://www.help4teaching.com/questions/Adjectives>. The website has various types of questions at different grades.

MC: Oh my God, I feel blessed with all of these help on reference! Totally making things smooth. Hey, check out <https://learnenglish.britishcouncil.org/grammar> too! Here is a gist of the website.

Figure 4. Resourcing

science backgrounds. Ems suggested using this newfound knowledge in their game items to test the players' understanding (Figure 4). It would raise awareness of parts of speech that were less commonly used or known and allow them to master their usage correctly. The reflections below illustrate the participants' experiences.

It made me more responsible, and I discovered I could actually learn more by researching. Before this, I didn't know there were many types of nouns, like abstract and concrete nouns, but now I know there are many types of nouns, verbs, and even adjectives. I gain more rather than the traditional way of learning. (Kyra)

We worked on adverbs, adjectives, and nouns, so we were exposed to a wide spectrum of adverbs, verbs, and nouns. As a student who is learning English as a second language, it is important for me to know various types of grammar which can be used and maybe can help other people to learn grammar in a very good, creative, and fun way. Firstly, we did research on a book. We tried to list out every single type of noun that exist, not just common or proper nouns. We tried to find out whether people are aware of different types of nouns that are not very common or adverbs, or adjectives. That is how we applied it to the game. (Bubble)

Actually, grammar is not a very easy subject to score, so I believe that not only reading books can help us but creating games can help us to understand better and learn in a fun way. (Belle)

(b) An Alternative Method to Master Grammar

Project-based learning provided an alternative way for the participants to learn and retain their grammar knowledge. Throughout each stage, group members engaged actively with one another as they deliberated over ideas and suggestions given by others. They were using language in real-life contexts. During the discussions, they also corrected grammar mistakes made by their members. The less proficient ones learned how to use grammar appropriately from their more capable peers. PBL provided opportunities for engaging in discussions and joint decision-making.

The following excerpt was taken from Group 5, which comprised all males, during the game construction stage. The group decided on their game design after deliberating on a few options.

Excerpt 2. Excerpt 2 (Figures 5 and 6) shows that doing a spinning wheel or dungeon game was not appealing to Travis. Instead, he wanted to create something different that would excite players by adding a twist to the existing Jeopardy game. After Travis uploaded a PowerPoint template from the Internet and his modified version to explain how the online game would work, it sparked more ideas from the others.

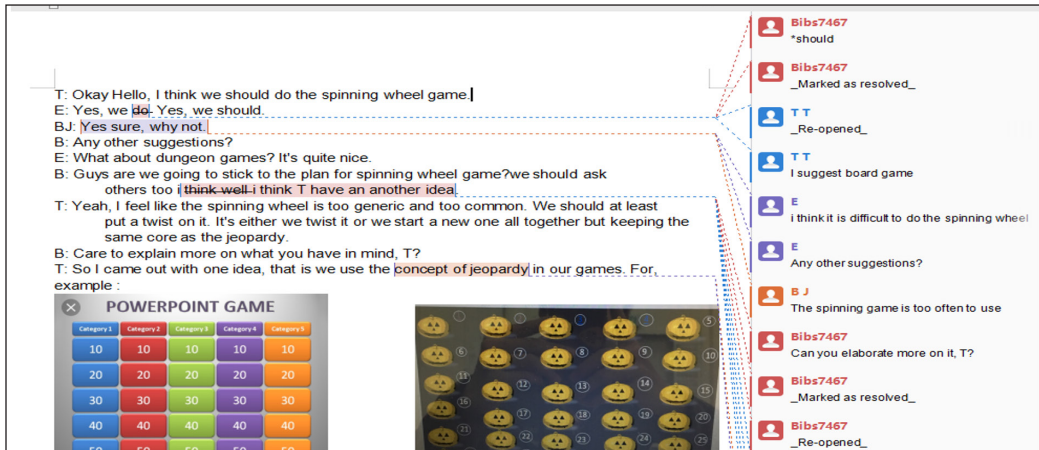


Figure 5. Designing game template



Figure 6. Deciding on game rules and title

Deliberation was also seen in the chat box. BJ liked the template but suggested changing the pumpkin image to a skeleton head. However, Bibs tactfully rejected the idea and politely responded that it might not be appropriate for all ages (Figure 6). He knew the importance of collegiality in group work. They moved from deciding on the type of game to naming it by applying the parts of speech they had learned. Travis suggested “Pumpkin of Luck,” which fitted nicely with the image. The smooth game

design process was attributed to mutual choices and joint decision-making.

Results from the questionnaire and analysis of the reflections showed that all the participants strongly preferred project-based learning to learn grammar. It offered an interesting, invigorating way of learning and better retention. Communication was a central part of the project to reach a consensus. The multiple rounds of discussions with members with different proficiency levels were beneficial

in improving their proficiency, accuracy, language expressions, and vocabulary.

PBL also heightened the awareness of what they gained and how they learned best. Bibs, Fatih, Bubble, and Rain highly recommended it.

I believe PBL is very innovative as everyone has different levels of mastery in English. It enables different people to know and realise their strengths and weaknesses. Games based on grammar can help us learn in a fun way, and it is refreshing compared to rote learning. People can have fun and be competitive in the pursuit of a better command of English. Being able to integrate this way of learning is quintessential to keep the students interested and fuelling the desire to learn more. (Bibs)

We tend to learn faster when we are forced to use the information often and in real-world situations. The specific things we have in the games help people to remember what they learn throughout the game. (Fatih)

We grew up in a different background. Two from my team are Indians, and they would talk in English with their parents at home, unlike me. During the discussion, we learned some new words that can describe certain things. I get to learn and widen my vocabulary. (Bubble)

Before this, I never really paid attention to what sentence types were. I only studied what sentence types were whenever there was an upcoming exam. I actually researched the differences between the sentence types and how you can properly differentiate them. For me, my way of learning is to talk with others, so by doing the project, we were able to discuss and learn which answers were correct and which weren't. It was a much better way for me to learn. (Rain)

These findings resonate with Nanni and Pusey's (2020) study, whereby students became more independent as they researched, sought information, and presented information creatively in their projects. They had the opportunity to engage and communicate in authentic real-life contexts. Through constant feedback from group members, the participants' language skills greatly improved. Elements of fun and motivation are similar to Abu Bakar et al.'s (2019) finding because the learners also preferred a less rigid way of learning English through the project. Likewise, the experiential and hands-on creation of a grammar game help to facilitate learning and the participants' mastery of grammar innovatively (Barak & Yuan, 2021).

(c) Development of Higher-Order Thinking Through Peer Learning

The project-based learning also increased the use of higher-order thinking. Collective evaluation of the game items enabled the

participants to check their understanding deeper and reinforce what they had learned.

Excerpt 3. Excerpt 3 (Figures 7 and 8) shows Group 1 scrutinising their game items closely to check if they were well-constructed. They identified several items the members still struggled to comprehend, particularly “adverbs” (Figure 7).

Mia and MC explained the functions of an adverb, adjective, and verb and provided simple examples to help others understand the concept better. Peer learning occurred as they explicated grammar rules and clarified concepts at a level which was easy for their peers to grasp. They simultaneously learned and contributed to the learning of group members without intervention from the instructor (Boud et al., 2001; Keppell et al., 2006; Zher et al., 2016). Learning anxiety was reduced as there was no fear of making mistakes or being monitored. They felt responsible for their own and team members’ learning.

The participants attempted to properly comprehend grammar rules, correct any misconceptions or mistakes, and apply what they learned in their game creation. In addition, evaluating and reasoning out the correct answers for the confusing items reinforced their understanding of the accurate use of a particular grammar form (Figure 8). It is evident in the reflections below:

I am really weak in grammar before this, and I don't know how to really study grammar. Because I need to create the game, so I need to learn grammar properly; otherwise, I will transfer the wrong information. There will be some points that I missed out on and something that I am confused. We really went through them. (Ems)

Throughout my game plan with my group, we will go through every

14. Choose the answer that names the part of speech of the capitalized word in the following sentence: Students had VERY poor grades for this year SPM examination. (6)

A. pronoun
B. adverb (“very” modifies the adjective “poor”)
C. adjective

Is it confusing? If it is, how would you solve the problem of this question?

MC: Hmm yeah quite confusing and this is my question. From my own understanding, “very” is an adverb because it tells more on the adjective which is “poor”. Right?

Mia: Very is considered as an adverb if it is use to describe a verb, an adjective or another adverb. For example, “She worked very quickly” —> very is an adverb because it modifies another adverb (quickly)

MC: Yes, great explanation!

Ems: Marble, perhaps you could explain by giving us some example for our better understanding.

MC: Oh, okay maybe I should provide some examples for you to have a clearer view. The adverb functions to modify any noun, verb, adjective and also another adverb. The word “very” is telling the degree of the poor. For example, the adjective “fast”. Run is just a normal verb, but if we add the adverb “very” in front of “fast”, it shows the degree of the adjective.

Figure 7. Evaluating game items

Y: This question is confusing

59. always, recently, during are the example of adverb of frequency. (5)

Yes
No
answer: no

J: The "during" is not included in the adverb of frequency, I think? It's in the adverb of time.

MC: How would you define the adverb of frequency? Because I am not clear with that topic.

Mia: "During" is a period of time thus it cannot be an adverb of frequency.

Ems: **Adverbs of frequency** always describe how often something occurs, either in definite or indefinite terms. An **adverb** that describes definite **frequency** is one such as weekly, daily, or yearly.

J: Yes. Exactly. That's what I found for the explanation for the adverb of frequency. I agree with that.

MC: Wowwwwwww okay. Crystal clear. Thanks!

Figure 8. Peer learning

question and look for errors or improvements before applying them in the game. I have discussed a lot of concepts, methods, and rules of the games with my group, but then I have to rethink and modify them to be better. (MC)

During the making of the game, the questions need to be varied, so I need to know the correct usage of verbs, adverbs, pronouns, and nouns so that the statements, questions, and answers are grammatically correct. I never heard about the degree of adverb during my high school. (Mia)

We get to test our understanding and our knowledge of the topics that we have learned. I also think that students get to improve their grammar skills only if they communicate more to correct their mistakes. (Yul)

(d) Learning Through Feedback and Revision

Pilot testing of the grammar games was conducted to provide feedback or comments to improve the game. Each group was given approximately 10 to 15 minutes to try their game in front of the class. Different students would volunteer to be the players. The instructor and classmates gave comments to improve the gameplay. Besides, the players also received immediate feedback and explanation for their incorrect answers, thus, reinforcing grammar mastery. Clara said:

As a student, my grammar class was always uninteresting because the teacher mostly did the talking, and students usually didn't even pay attention. With project-based learning, students have fun playing grammar games. They will try to make as few grammatical errors as possible because they will get competitive with other players.

While playing the games, students will learn grammar rules through their mistakes because usually, they get an explanation of the grammar rules if they make an error.

Excerpt 4. Excerpt 4 shows the constructive comments and feedback that Group 1 received after piloting their game (Figure 9).

MC was greatly disappointed that their game session did not turn out as planned (Figure 9). However, the setback did not

deter them. On the contrary, they were open to critique and committed to solving the problems.

Excerpt 5. Excerpt 5 shows how they revised their game rules (Figures 10 and 11).

The group scrutinised the game rules to make the instructions clear and precise. Sentence structures were revised for clarity and to avoid confusion. Other aspects were also addressed to ensure the smooth running of the game (Figure 11).

MC: We have finished our pilot test today! But what a bummer because it didn't go well as we expected :(

J: Yes we did it ! But yeah not everything went as planned. We need to improve some things with our board game. It is okay we can do it together.

Mia : Thanks God! Finally, we finished piloting our game :) It's okay MC, fall 7 times, stand up 8. There's always a chance for us to improve.

MC: Thanks Mia, it's so helpful and soothing to my heart.

Ems: OH YES. I am so nervous today. It's ok, we could modify it according to the feedback.

J: Keep the positive vibes guys ~

Y: Yup we must improve our game and make it even better for the final product. We can do this, guys!

Ems: To sum up,

1. We need to shorten the duration for the game.
2. We have too many surprise box.
3. The time taken for each player to answer the question.
4. Nobody is checking the answer.
5. The instruction is too long and not clear enough.

Let's start with the first problem. How would us improve the game?

Figure 9. Pilot-testing game

Ems : Hi guys, this is our Rules and Regulation. Take a look.

MC: Thanks Ems! Let me go through it first.

MIA: Hmm Ems, don't you think we should limit our players? The first rule seems neglecting that. How about we state the maximum players for the game so that there will be no hassle in the future? |

Y: I agree with Mia. The players will get confused with the amount of players and they will just set the players as they like. We don't want that to happen.

Ems: Alright, then I will add the word **maximum** to it.

1. This game is designed for maximum 7 players, 6 players will play the game while one person (the gamemaster) will check the answers on the answer booklet for the players.

What do you guys think now? It this ok?

MC: Yes! Cool! That is more precise.

Ems: I have a concern, guys.

Each player will get 5 pieces of question cards at the beginning.

MC: Ohh! Hmm who will distribute the cards? Should we elect someone for that?

Figure 10. Revising

Ems: Guys, I have a concern. This sentence is quite lengthy and not sharp enough. Help me with that.

4. If the answer is correct, the player can move on the board. The number of steps is stated at the upper right corner, just follow the number. If the answer is wrong, the player will remain at its place.

Y: ~~That's~~ right. It is quite a mouthful.

Mia: The first and second sentence can be combined since it is the instruction for the correct answer. The number of steps is repeated in one sentence.

Ems: Alright. Let me combine the two sentences. Take a look at this.

4. If the answer is correct, the player can move according to the number of steps stated at the upper right corner; if the answer is wrong, the player will remain static.

This looks simpler.

Y: This rule is good, but it seems like lack of something. After the players have taken the cards, what will happen with the card after that? Should they put it back in the stack or just put it aside?

Mia: Good question. I think we should put it aside because we don't want repetition].

Ems: I think we should put it back in the stack since they will be used again. The cards are not that much to be put aside or else we will finish the game by a nick of time.

Figure 11. Revising (continue)

The participants co-constructed meaning together as they revised the rules (Pathinathan & Yong, 2012; Vygotsky, 1978). Input from everyone during the revision process also helped in crafting better sentences. As Bibs mentioned:

The process of creating a game can vastly improve our grammar skills. The members can criticise and correct each other. Different individuals perform better in different tasks, and each of the group members will complement each other. We are to question every aspect of the game, be it semantically or syntactically. It sharpens our minds and broadens our understanding of the English language. Our technical skills improved as well as our ability to construct more advanced sentences or phrases.

Besides improving their grammar, the participants also developed 21st-century learning skills at various stages of the PBL project. The 21st-century skills, such as communication, collaboration, and higher-order thinking, were discussed in the earlier section as they were interrelated. This section will present other soft skills and ICT literacy, which were improved and enhanced.

(a) Developing Teamwork and Group Management Skills. Regardless of their roles, the participants acknowledged the importance of teamwork, group management skills, commitment, and problem-solving skills. In addition, many acquired good listening and communication skills and a sense of responsibility. Shah, Kyra, Deancly, and Clara expressed their feelings as follows:

I discover my capability in managing a creative project

involving teamwork and exploring the need for grammar exposure among students and adults. I don't do all of the progress alone, I work with four other members, and we have to think and come up with materials, design and structure of the game that can be accepted by us. (Shah)

I learned a lot, especially teamwork. I had to do a lot of work with them and have to know what they were thinking and have to listen to what are they saying. I also learned speaking and listening skills. I have to voice my opinions. (Kyra)

I find it fun because we can create our instructions on how to play the game, scoring, penalties and so on. My pronunciation is becoming better and more fluent. Before this, I was shy to speak with others. Now I dare to talk to other people. It helps me communicate better with strangers or international students, so it builds my confidence. (Deancly)

We faced so many problems at first. We had to change our game concept, our questions, and the theme of our game. But all the problems were settled with peace as we know our parts. There's no use blaming each other. We came up with many solutions to solve our problems and finally finished our grammar project. (Clara)

These findings are similar to Mali's (2016b) study, which revealed that communication, feedback, teamwork, and a sense of responsibility were key factors for the successful completion of the project. It also corresponds with Musa et al.'s (2012) study, where the learners exhibited responsibility and team spirit and solved problems together. These soft skills are integral to 21st-century workplace situations (Oliver & Jorre, 2019).

(b) *Unleashing Talents and Creativity.*

The project provided opportunities for the participants to discover their talents and creativity. The groups fine-tuned their game before showcasing it to the class. The final design was a more attractive and improved version of their initial design. To make the title catchy, Group 5 changed it from "Pumpkin of Luck" to "You decide." They also changed the pumpkin image to a more interesting icon.

All the groups were satisfied that they could unleash their creativity (Figure 12). They discovered their untapped potential and viewed grammar learning from a new perspective. Learning became meaningful because they exhibited the capabilities to plan, manage, and accomplish the project. While taking ownership of their learning, they further developed a creative mindset. The participants' views are illustrated below.

I am not someone who likes creating games as I am not creative, and I rarely play games. That is because games are just a waste of time, even though the game is beneficial.

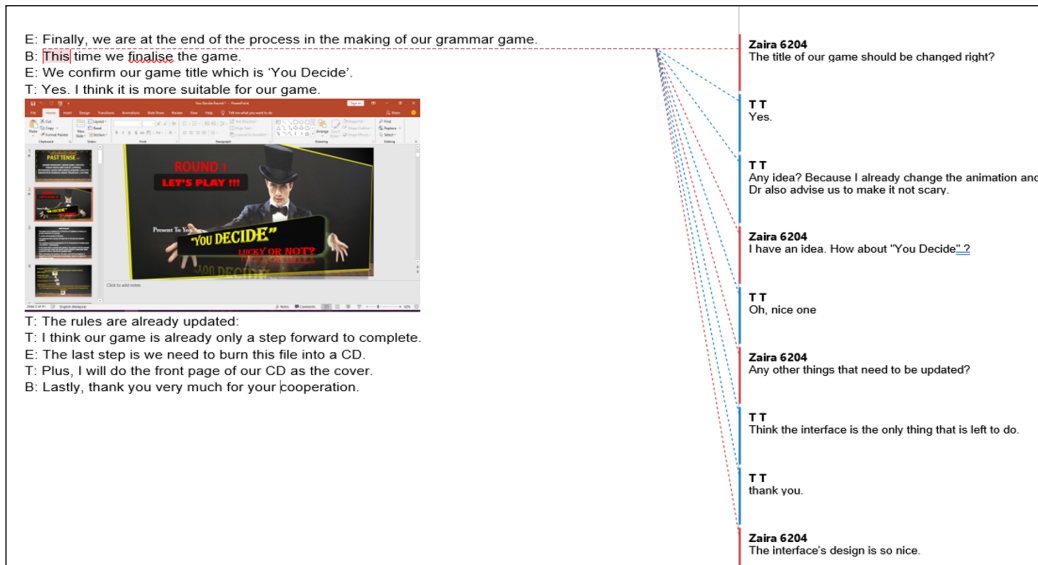


Figure 12. Refining end product

While creating the grammar game, I learned that games are actually interesting. I learned a lot from my members, who taught me and pointed out good ideas. I learn to develop ideas. (Imai)

It allows us to be creative because we have to find ideas that are not there and discuss them to bring out different creativity in us. We see all the groups have their creativity when it is presented in the final stage. Because grammar is a thing that we have to communicate to get better, having discussions and doing research together enhances our grammar. (Bubble)

Project-based learning is still a new element of learning for some people. It is unfamiliar to me. I have no idea what I will do or if I am

capable of doing so. Now, seeing the game comes to life and getting to make something so unfamiliar into a reality is a great achievement I shared with my group members. This grammar game taught me to not just think out of the box but to rip that box open and not be bound by the normality of the world and start seeing the extraordinary in it. (Shah)

(c) Developing ICT Literacy. As first-time users of Google Docs, the participants learned to utilise the collaborative online tool efficiently and independently. Travis was pleased that his ICT literacy increased when creating the online game. In their reflections, Lily, Mary, and Travis wrote:

What I love the most is that we were exposed to google docs. That was

my first time using google docs, and I didn't know that people can help to correct your grammar mistakes. (Lily)

I didn't know much about them, how they did their work, or how good they were in group projects. But once I got to know them, I learned so many things. For example, one of my group members taught me to edit videos and design a few things. It's such a good opportunity for me to learn new things. (Mary)

The skills that I have developed most are improvement and discovering more about computing. There is a lot to discover about the setting in the PowerPoint until I can create a game by using it. I also discovered how to convert MP4 to WAV audio for the game, animation editing, video editing and many more. It is a good experience. (Travis)

In Yang and Puakpong's (2016) study, unexpected positive outcomes were observed, such as developing technical skills in producing PowerPoint and information search. In addition, challenges in designing the project and lack of computer skills were overcome through learning from others or videos. The participants in this study also shared similar experiences. Travis explored and discovered how to use the various functions in PowerPoint, and the self-discovery was a rewarding and satisfying experience.

CONCLUSION

Grammar teaching aims to increase learners' ability to effectively use language in speech and writing, providing linguistic, social, and affective benefits for learners. The PBL teaching approach findings show that learners thrive in a healthy, inclusive, collaborative environment that promotes language and cognitive development. Social benefits, including learning and group construction of knowledge, prove to be meaningful and valuable. Authentic, communicative use of language provides rich social learning experiences afforded within PBL. Affective benefits in motivation, learner autonomy, and positive group relations contribute to learners' satisfaction and sense of achievement. The learners recognised that they were participating in an effective learning process even though it was unfamiliar. PBL encourages learners to give their best effort and strive for in-depth knowledge instead of superficial grammar learning in isolation.

This study has its limitations. Although three groups initially wanted to create an online game, the initial goal was hampered as they lacked the expertise. It was too costly to hire a game designer to design game templates. Time constraints also limited the focus of each game to one aspect of grammar in the game creation.

A few recommendations are suggested for future research. First, inter-disciplinary collaboration with lecturers or students from the computer science department could be initiated to design online educational games. Future studies can expand game

creation to test various language skills, such as listening and speaking, vocabulary and speaking, grammar and writing. Finally, a correlational study can investigate the relationship between PBL and students' aptitudes or learning styles.

In conclusion, practitioners can adopt PBL as an alternative assessment or class project, particularly in the new norm, by utilising more technological tools in constructivist-based online or blended learning environments. PBL affords benefits that outweigh traditional teaching approaches for language learners and other fields of study.

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