Teaching English tenses in an informal cooperative study group using smart multimedia and gamification

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Abstract. English is an international language that dominates in almost every sector of human activity. Despite learning English as a foreign language from elementary school, Indonesian students still face difficulties in speaking and writing correct English even during their higher levels of education. Researchers claim that traditional English teaching methods have failed to motivate students to keep constant attention. As a result of less engagement in the learning process at an early stage, students end up facing understanding issues. This study aims to introduce a mixed method of teaching tenses in English grammar. This combined teaching approach focuses on increasing motivation, performance, and developing a competitive mentality among students. The method applied is using smart multimedia along with gamification in an informal cooperative learning group. The findings indicated that using gamification and smart multimedia in an informal cooperative learning group increases student performance, motivation, and gives satisfaction to students in the learning process.

1. Introduction
Indonesian students learn English as a second language from early school. However, they still face many challenges to master it even during their higher levels of education. There are many problems encountered by teachers in teaching English as a foreign language in school [1]. The current class management and teaching methods are inadequate for students to understand better. In most cases, the teaching methods tend to be monotonous to students in the learning process. Students mostly face linguistic problems such as vocabulary, pronunciation, and grammar [2]. Among them, English grammar continues to appear as more challenging due to its confusing patterns [3]. In this case, new exciting, and innovative teaching methods must be introduced in the classrooms. Recently, new methods and techniques such as gamification in education, cooperative learning, and using multimedia technology in the classroom have emerged. Researches have shown that applying these methods may increase student motivation, competitiveness, and engagement in learning activities [4–8].

Cooperative learning is an educational approach where students work together in the classroom for better performance. In cooperative learning, students work in a group to reach a mutual academic goal [9]. There are different types of cooperative learning [7,10]. They are—Formal, Informal, and base groups. The informal collaborative learning group can be formed for a few minutes to one class period [9,10]. Informal cooperative learning can be useful during a lecture or demonstration to keep students focused on the learning materials.
The classroom environment has started to change after the technological revolution for the last two decades. One of the popular ways to make the classroom environment attractive is using multimedia technology in the classroom, i.e. text, sound, image video, and animation. Multimedia combines these essential media elements to create more innovative creations [11]. The system uses different multimedia technologies in a classroom such as digital storytelling [12], virtual reality [13], augmented reality [14], interactive website [15], mobile applications [16], computer games [5], and QR codes [17].

Gamification can be simply defined as the use of game mechanics such as leaderboards, points, badges, action, challenge, and risk in various non-gaming contexts to increase engagement in tasks [18]. Gamification is the most recent and fast emerging trend in modern education. Using gamification increases student engagement and motivation [19], improves performance [5], promotes social interaction between teachers and students [20], and also makes optimal use of human resources [20]. Recent studies are trying to identify the usefulness of gamification in early [21], secondary [22], and higher education [23,24]. In different ways, the current education system is trying to introduce game mechanics like points, leaderboards, badges, challenges, and time limitations in the teaching process. In this manner, students must accomplish specific tasks in a limited duration such as in-game challenges. The students get grade points or numbers, which is like game points. The merit list, according to the scores can be considered as leaderboard in a game. Various gamification platforms like Kahoot [22], ClassDojo [4], and Edpuzzle [24], allow teachers and students to engage in the learning process through digital media in a more interactive way. Kahoot is one of the most popular gamified learning environments. Kahoot has gained much popularity among teachers to use it as an assessment tool for their students. It allows academic instructors to create various types of gamified questionnaires, provides both mobile applications and web interfaces which enable students to take part in Kahoot games prepared by the teachers using smartphones [25]. Related studies have found several positive outcomes while using Kahoot as a gamified learning tool in the classroom [22,25].

There is a relatively small body of literature on whether and how multimedia technology is utilized and accepted in the learning process. One well-known early study that is often cited in research on multimedia and learning environment analyzed that using multimedia in a classroom can improve student attention, motivation, and concentration, where there are some drawbacks such as cognitive overload and lack of cognitive engagement with multimedia resources [26]. Park et al. showed that multimedia technology has positive effects on learner’s perception of adapting multimedia technology in the learning process [27]. From a multimedia and media richness perspective, Chang et al. demonstrated that game-based learning can create more flow experience, increase interest and concentration than non-game-based learning [28]. A study done by Guan et al. stated that multimedia-aided English teaching has several advantages such as improvement of students’ listening and speaking ability, improves students’ enthusiasm for learning English, and develops their ideas [29].

This study aims to find out students’ perceptions while using multimedia and gamification in an informal cooperative study group in the classroom environment. The purpose of the study is to make the teaching process more exciting and enjoyable that will motivate the students to be active in the learning environment. The method of the teaching process can be applied in a large setting like a multimedia-enabled classroom with multiple informal cooperative groups. The researchers believe that the proper application of such kind of methods can benefit both teachers and students.

2. Methodology

2.1. Sample group
This study was carried out with an informal cooperative group consisting of four university students from a non-English department of Atma Jaya University in Yogyakarta city of Indonesia. The participants were not fluent in English, and they make common grammatical mistakes during their conversations. The participants were not familiar with the teaching and assessment methods applied in this study. The whole process was new to the participants.
2.2. Investigation procedure
This study used five phases in the investigation procedure, that is; knowledge measurement, learning, assessment, and feedback. In the first phase, we took an initial test to measure the current knowledge of the participants on simple tenses (simple present, simple past, and simple future). In the learning and cooperation phase, the participants learned about simple tenses through digital tutorials. We made text and speech-based video tutorial for a clear understanding of simple tenses. To fetch the tutorials quickly, we introduced QR code-based access. The participants could quickly access the tutorials by scanning QR codes from their smartphones. After watching the tutorials, the participants discussed among themselves to cooperate for a clearer understanding of the topic. In the third phase, we used Kahoot as an assessment tool to observe the performance of the participants. We put our assessment questions in Kahoot to introduce the participants with a taste of gamification in the learning process. Participants took part in the assessment and played the Kahoot game. In the fourth phase, we provided some questionnaires to the participants to get feedback from them about their satisfaction. Finally, in the last stage, we analyzed the fundamental knowledge, assessment result, and feedback data.

2.3. Tutorial categorization and design
There are twelve tenses in total. To make the tutorials organized and easy to understand, we categorized the tenses in four main categories (simple, continuous, perfect, perfect continuous) according to the type of the tenses. Each group contained three “time variations” (past, present, and future) of the tenses.

2.4. Information collection and data analysis
We collected participants’ performance information from the initial knowledge and Kahoot evaluation results. After collecting evaluation information, we asked the participants to fill up a survey form on their overall experience of the whole learning process. The survey questionnaire consisted of ten items each with a Likert Scale from 1 to 5 (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree). We analyzed the data in two phases. In the first phase, we made a comparison of performance between the fundamental knowledge and the Kahoot evaluation results. In the second phase, we analyzed participants’ acceptance feedback about the whole learning process.

3. Results and discussion
The difficulty level of our initial knowledge assessment and Kahoot assessment was the same. The initial experience was done by the traditional method, and later knowledge assessment was done by gamification using Kahoot. By comparing the results, we considered group performance based on the percentage of total correct answers in the initial knowledge assessment and Kahoot performance evaluation. We found that in Kahoot's performance evaluation, the rate of complete, correct answers was 71.67% where during initial knowledge assessment, the participants answered 65.83% of questions correctly. Comparing both results, we found that the overall rate of total correct answers improved by 5.84% in Kahoot performance evaluation.
Table 1. Results of overall learning approach acceptability.

| No | Questions                                                                 | Usability Score |
|----|---------------------------------------------------------------------------|-----------------|
| 1  | The learning process was fun.                                             |                 |
| 2  | The learning process was not much exciting.                               |                 |
| 3  | The learning process was challenging.                                     |                 |
| 4  | The traditional learning is better than this approach                    |                 |
| 5  | The teaching process was better than traditional methods of teaching.    | 70 82.5 92.5 40 |
| 6  | My understanding of the topic is unclear.                                 |                 |
| 7  | The tutorials were enough to grab my attention.                          |                 |
| 8  | The tutorials were unclear and not fluently delivered.                   |                 |
| 9  | I prefer this kind of learning process rather than traditional methods.  |                 |
| 10 | The method was unable to motivate the students                            |                 |

To better understand participants’ acceptance and expectation of the combined learning method, we underwent a satisfaction survey that was answered by all participants. The survey result is presented in Table 1. There are ten items in the survey form. The participants (S1, S2, S3, S4) marked each of the items according to the Likert Scale of 1 to 5. We calculated the scores according to usability scale score measurement. Table 1 presents the average usability score of the system. The overall average rating of the review is 71.25 out of 100, which indicates that the participants ‘agreed’ according to the survey items.

Two of the participants who achieved the highest scores in the Kahoot assessment answered the comment section and encouraged studying in a cooperative learning group along with gamification and smart multimedia in the future. One of them suggested improving the tutorial quality to make it more attractive.

4. Conclusion

Teachers are facing a challenging time currently to keep the students motivated and improve their performance in the classroom. The current generation is surrounded by technology, and they are so much into it. Researchers have recognized that the traditional methods of teaching are becoming useless day by day. As a solution, changing the conventional approach to make the learning environment more useful and attractive is suggested. In this study, basic English tenses were taught in an informal cooperative learning group using smart multimedia along with Kahoot as a gamified assessment tool. The outcome of this study showed that students are more committed to learning in a cooperative learning group while using smart multimedia technology along with gamification. The student felt motivated and enjoyed the learning process, especially the gamification part. In the gamified assessment, the overall group performance and understanding of the learning topic has been improved. Finally, the students appreciated and accepted the new learning approach over traditional learning methods. Based on the experience of this research, we believe that using this method in a classroom environment can make the teaching and learning process more interesting and effective. This approach of teaching improves student performance and makes the classroom environment more dynamic.

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