

Game-Based Learning in Improving English Vocabulary and Detecting Metacognitive Awareness Among English for Specific Purposes Undergraduates

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ABSTRACT

The happening of the Covid-19 pandemic has shifted learning from physical lessons to online lessons. In higher education institutions, while English for Specific Purposes is a subject offered to teach English language relevant to the undergraduate's future profession, many undergraduates possess poor proficiency in terms of English vocabulary. Further, metacognitive awareness among undergraduates is seemingly worrying as they lack the competency to think critically. Addressing the problems, this research aims at determining if game-based learning specifically The Sims 4 has an effect on undergraduates' acquisition of English vocabulary and metacognitive awareness. Recruiting 65 undergraduates from a private higher education institution in Sungai Long in the state of Selangor, Malaysia, a quantitative experimental research design comprising of The Sims 4, vocabulary test, and the Metacognitive Awareness Inventory is used. Findings show that the experimental group has shown significant improvement in English vocabulary and greater metacognitive awareness from the instruments administered. As English for Specific Purposes is an important subject to develop undergraduates' communicative competency, various stakeholders with the results of this research are recommended to introduce game-based learning as a way to learn vocabulary and sharpen undergraduates' metacognitive awareness to be competent graduates capable of serving the workforce in the future.

Keywords: *Game-Based Learning, English Vocabulary, English Language, English for Specific Purpose.*

1. INTRODUCTION

The outbreak of the Covid-19 has subsequently led to a pandemic. Across the globe and specifically to the context of education, all educational institutions are instructed to shut down to minimize further avoid spreading of the coronavirus. It is also a precautionary act to protect the students from contracting the coronavirus [1]. In Malaysia, following the announcement from the Ministry of Health Malaysia (MOH) and in compliance to the Movement Control Order (MCO) by the Malaysian government, teaching and learning processes shifted from physical, face-to-face lessons to online learning [3,1]. Prominent

educational platforms such as Zoom, Microsoft Teams, and Google Classroom are introduced in today's classrooms. Learning today in short, has shifted towards a new norm where all students are receiving education in online learning platforms.

1.1 English for Specific Purpose in Malaysian Higher Education Institutions

In many Malaysian higher education institutions (HEIs), one of the compulsory subjects taught to undergraduates is English for Specific Purpose (ESP). This subject mainly aims at developing communicative competence among undergraduates that are specific to the profession they will be

undertaking in the future or upon completing their studies [4, 5]. Today, ESP is taught to undergraduates not only to meet communicative competence but also to shape undergraduates into capable, future workforce who is able to communicate with others at the international level [2, 4, 6]. Generally, in most HEIs this subject can be divided to seven different areas and are adjusted according to the needs of the profession. Belcher [7] has stated the seven areas of ESP are English for Academic Purposes (EAP), English for Business Purposes (EBP), English for Occupational Purposes (EOP), English for Legal Purpose (ELP), English for Vocational Purposes (EVP), English for Sociocultural Purposes (ESCP), and English for Medical Purposes (EMP).

On the other hand, Hutchinson and Waters [4] see ESP as having two main categories and each category continues to expand for different purposes in the professions available. They stated that ESP can be divided into English for Academic Purpose (EAP) and English for Occupational Purpose (EOP) respectively. From these two categories, they are further branched out to address different English language learning for various professions. In EAP, the branches are English for Science and Technology, English for Legal Purposes, English for Medical Purposes, and English for Management, Finance, and Economics; EOP on the other hand, has its branches which are English for Professional Purposes, English for Medical Purposes, English for Business Purposes, Pre-vocational Purposes, and Vocational Purposes.

Regardless, the ultimate goal of attending ESP has never shifted as it aims at teaching undergraduates with the necessary language and linguistic skills suitable to their corresponding future profession [2, 6]. Hence, it is crucial for educators to design the ESP syllabus, contents, and materials according to the language needs of the undergraduates so as to enable them to be competent in using the English language in their future professions.

1.2 Language Proficiency among Malaysian Undergraduates

The English language has its stance as a second language in Malaysia, and most subjects in HEIs are delivered to undergraduates using the English language [2,8]. Despite its status as the second language in the country, many research on English language learning in HEIs have found undergraduates' proficiency of the English language is not satisfactory [9, 10, 11, 12].

Specifically in Malaysian HEIs, to be successful in higher education undergraduates must possess a

language repertoire that consists of at least 9,000 word-families [13, 14] It is a disheartening fact that many Malaysian undergraduates only possess less than 5,000 word-families [15,12]. In a recent findings by Harji et al. [10], they found that the average extent of possessing word-families among undergraduates is only at 2,000. This is certainly alarming as the mean is nowhere close to 9,000 neither indicating Malaysian undergraduates as English language users who are proficient in the language itself. Without sufficient vocabulary, learning in HEIs may be extremely challenging to the undergraduates as they not only incapable at understanding the contents delivered, they are also unable to produce good pieces of writing, to which all of these will severely affect their results [16, 12].

1.3 Metacognitive Awareness

In HEIs, undergraduates are expected to demonstrate critical thinking in understanding the subjects delivered, specifically critical thinking is part of metacognitive awareness [8, 17, 18]. To define, metacognitive awareness can be understood as an individual's ability to show control, understand, and reflect on the contents delivered to them [19, 20]. Within metacognitive awareness, it also involves a person to be capable of solving problems, making inferences, and conducting scientific reasoning [21,17].

To measure metacognitive awareness, one such instrument that can be used to achieve it is the Metacognitive Awareness Inventory (MAI) which is developed by Schraw and Dennison [20]. To describe Schraw and Dennison's [20] MAI, within this instrument, two types of components which are the Knowledge of Cognition and Regulation of Cognition. In terms of Knowledge of Cognition, it concerns about measuring the knowledge regarding cognitive beings, competence, and limitations of an individual; Regulation of Cognition concerns about measuring the activities an individual acts in managing their learning.

Each component of Schraw and Dennison's [20] MAI is comprised of several subcomponents. In Knowledge of Cognition, the three subcomponents are: (1) Declarative Knowledge, which informs an individual's ability in processing the information based on an assigned task, (2) Procedural Knowledge, which informs an individual's ability in applying knowledge into the process of solving the task assigned, and (3) Conditional Knowledge, which informs the conditions such as time and condition an individual best learns using certain strategies. As for Regulation of Cognition, it is comprised of five subcomponents which are: (1) Planning, which

informs the goals established by an individual before engaging into learning, (2) Information Management Strategies, which informs the skills utilized to effectively process any incoming information, (3) Comprehension Monitoring, which informs an individual evaluating the strategies employed in learning, (4) Debugging Strategies, which informs an individual's ability to correct any errors based on the performance made, and (5) Evaluation, which informs an individual's ability to analyse the strategies used and learning processes.

1.4 Game-Based Learning

In the context of education, game-based learning (GBL) involves the integration of video games into the learning process where it strengthens the learning acquisition process among students [22, 23, 17]. When an instructor decides to incorporate GBL into the learning process, selection of games must be handled with care as it must be tailored to the learning objectives and suitable as a pedagogical tool to learn the contents delivered [22,17]. In terms of language learning, GBL is a part of Computer Assisted Language Learning (CALL) where it involves users to learn through playing games on computer or any related devices [24]. GBL itself is also capable in enhancing an individual's metacognitive awareness. Plass et al [25] and Prensky [26] have mentioned that individuals who engage in GBL would be trained in making sound decisions, solving problems, and synthesising information from games. Supian et al [17] have also mentioned that when an individual engages learning through GBL, it also teaches the individual to be reflective in their learning by evaluate the experience obtained.

The Sims 4: Get to Work is one such game that is capable of providing authentic learning process to students [27, 11, 28] As a part of The Sims franchise, The Sims 4 offers a unique gameplay experience where players create their own avatars and find ways to survive in an in-game open world that is a replication of the real world people live in [27, 11, 28]. Across the literature available [27, 11, 28], The Sims is one such game that is frequently utilized for language learning purposes. However, to date, there is yet a study who has utilize the game in the context of ESP, further a lack of research of using this game in the context of metacognitive awareness. Given the more modernistic, realistic, and enhanced features in The Sims 4: Get to Work, it is perceived and hypothesized that this game is capable of helping HEIs' undergraduates to acquire vocabulary and sharpen metacognitive awareness.

Therefore, in light to the problems identified following the review of literature conducted, the research has aimed at achieving the following objectives:

1. To determine if The Sims 4 has an effect on ESP undergraduates' acquisition of English vocabulary.
2. To determine if The Sims 4 has an effect on ESP undergraduates' metacognitive awareness.

2. METHODOLOGY

To achieve the established research objectives, a quantitative experimental research is conducted. The rationale of conducting an experimental research is to determine if a certain intervention or treatment is effective in aiding a particular sample of population to improve or enhance on a certain aspect [29, 30].

2.1 Samples and Sampling Method

Using the purposive sampling method, a group of ESP undergraduates comprising of 65 people from a private HEI in the Sungai Long district located in the state of Selangor, Malaysia are recruited. Using the purposive sampling method comes with the rationale of intentionally seeking the required samples that meet the condition and nature of the research [29, 30]. Specifically, the selected ESP undergraduates are majoring business and seeking for a business bachelor's degree in the aforementioned private HEI. Further, these undergraduates are taking ESP within the duration of the research.

2.2 Research Instruments and Procedures to Collect and Analyse Data

A total of three research instruments is used to gather the necessary data. This involves the game itself, The Sims 4: Get to Work, a vocabulary test, and the Metacognitive Awareness Inventory. Specifically, MAI has been pilot tested. Pilot testing aims to validate and determine if the research instrument is reliable [29, 30]. From the 65 ESP undergraduates recruited, 33 undergraduates are categorised as the control group while the remaining 32 undergraduates are categorised as the experimental group.

To conduct the research, the researchers have conducted a briefing session with the ESP undergraduates, to which the purpose and procedure of the research have been informed. Upon obtaining the consent, a pre-test involving the vocabulary test is administered to both control and experimental groups. The experiment involving The Sims 4 is then

conducted. This is where the undergraduates from the experimental group have to establish a business and keep the business' survival in the game. Generally, the undergraduates are required to set up a fashion retail store, hire two staff, expand the business, and redesign the store. The undergraduates are allowed to make discussions and formulate plans to achieve the goals. At the end of the experiment, both groups have sat for the post-test of the vocabulary test and MAI is distributed to determine the metacognitive awareness of the ESP undergraduates.

To analyse the data, scores obtained in the vocabulary test are recorded in SPSS version 25. The researchers then performs descriptive statistics and inferential statistics.

3. FINDINGS & DISCUSSION

From the pre-test administered to both control and experimental groups, descriptive statistics particularly through the use of means have revealed that the mean for experimental group is 75.44 while the control group is 82.06. At the end of the post-test, there is an increase in means of both groups, whereby the mean for the experimental group has increased to 85.94 while the control group has increased to 85.13. However, it is found that the increase in means is specifically significant in the experimental group as it has increased by 10.5.

When paired-sample t-test is conducted between the pre-post vocabularies tests administered, the correlation of pre-test is found to be significant at .052 but the post-test is not significant as it is at .20. Further, in the paired-samples test on the post-test of vocabulary test administered to both groups, the *p* value is at .804 which is greater than .05. This indicates that the improvement of scores of both groups is not significant as the control group has not received the intervention (The Sims 4) during the experiment.

Paired-sample t-test for the MAI has shown a difference of results between experimental and control groups. In the control group, none of the eight subcomponents in the MAI is found to be significant; contrary to the control group, the Conditional Knowledge and Comprehension Monitoring are found to be significant, with *p* equals .002 and .003 respectively.

From the results, it can be seen that the experimental group has shown great improvement in the vocabulary test administered after experiencing The Sims 4. Given the findings in the paired-sample t-test conducted, it can thus be inferred that using The

Sims 4 as GBL is effective. Potentially, the contents in the game delivered are authentic [22, 17] to the business context and the language use is relevant [22, 23, 17] to the major that the undergraduates are currently pursuing in the mentioned HEL. To ensure the survival of the business in the game, there is a constant application of knowledge from the undergraduates. This requires understanding the terminologies employed and clearly, the undergraduates from the experimental group have achieved it. Such result is in accordance to the findings of Miller and Hegelheimer [27], Ranalli [11], and Wang [28] where they found that The Sims is an effective platform to acquire the English language.

However, among the many subcomponents introduced in the MAI distributed, only Conditional Knowledge and Comprehension Monitoring are found to be significant. Accordingly, Conditional Knowledge refers to the strategies used in a certain condition while Comprehension Monitoring refers to the evaluating strategies employed in the learning process [20]. Further, only one subcomponent from Knowledge of Cognition and Regulation of Cognition each is found to be significant. This means that among the eight subcomponents identified in Schraw and Dennison's [20] MAI, the instrument itself from an overall point-of-view is not significant in measuring the undergraduates' metacognitive awareness.

Regardless, the significance in Comprehension Monitoring in the experimental group has revealed that the undergraduates who experience GBL do indeed reflect on the strategies employed in ensuring their business' survival in the game as mentioned by Braad et al [19] and Schraw and Dennison [20]. Further, in terms of Conditional Knowledge where the undergraduates have employed strategies to ensure the business' survival, it is arguable that problem solving has occurred during the gameplay as stated by Binkley et al [21] and Supian et al [17].

4. CONCLUSION

Using The Sims 4: Get to Work is found to be effective in improving ESP undergraduates' vocabulary. Following the experiment conducted, the improvement among the undergraduates in the experimental group is found to be significant in the paired-sample t-test conducted. Yet, the MAI administered indicates otherwise as only two subcomponents from the eight subcomponents identified are significant, specifically Conditional Knowledge and Comprehension Monitoring. Evidently, while the intervention of using GBL is

found to be effective, metacognitive awareness among ESP undergraduates seems to lack the significance.

From the findings and discussions made, the researchers would recommend the stakeholders from HEIs, such as curricula, syllabi, and course designers of ESP-related subjects can revise the contents of ESP by incorporating GBL in it. The incorporation of The Sims 4: Get to Work is one such supplementary pedagogical material that is effective in teaching profession-specific contents to ESP undergraduates. Further, game developers with the findings can design the game to be more relatable to the real world and matches the learning objectives of ESP subjects.

The research however, is not without its limitations. As the research is conducted during the Covid-19 pandemic, the experiment is not conducted in a large scale that fully echoes the nature of quantitative research. Further, there is a lack of ESP undergraduates' opinions about the GBL experience. Hence, future research should expand the sample size and incorporate qualitative inquiries in understanding the extent of effectiveness in using GBL to aid learning in ESP.

AUTHORS' CONTRIBUTIONS

All authors have contributed equally to the research.

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