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Systematic Literature Review of Game-Based and Gamification Grammar Learning from 2016-2021

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Abstract The emergence of the Industrial Revolution 4.0 targeted at challenging the norm and pushing boundaries. Hence, education institutions are expected to embrace a few methods to adopt technology as part of their instructional strategies and Game-based Grammar learning is one of them. However, the trends of using Game-based grammar learning has not been scrutinised in systematic review. Therefore, this study reviewed articles on Game-based grammar learning. The study aimed to summarise the content of reviewed articles in the following categories: (1) research contextual dimension; (2) methodological dimension; (3) game dimension (4) Outcomes. This research adapted the coding framework proposed by Connolly et.al., (2012). This study reviewed 25 articles. The findings were from various dimensions (country, school type, subject, participants, game genre, learning impact). This Systematic review can serve as guide for designing language teaching and learning activities using game-based approach. Based on the findings, the study suggested implication and suggestion for future research and better delivery of knowledge using game-based grammar learning.

Introduction

The importance of English grammar cannot be ignored (Savigon, 2017), as it is an essential language form that learners need to master. It is important for ESL learners to express themselves confidently without being scared and shy of making grammar mistakes. This is because learners often find that grammar rules to be challenging to grasp (Baharudin & Yunus, 2018). Learners become passive, confused, shy, afraid of making mistakes, feel bored and sometimes sleepy when they study English grammar. It can lead the learners to get negative results and they became demotivated to learn and unable to communicate in English (Saraswati, 2015). On the other hand, teaching English grammar effectively as a second language also has always been a challenging task for language teachers. A number of effective teaching techniques are used to stimulate learners' interest in learning grammar. Using game-based or gamification in classroom is one of the recommended techniques. This refers to a pedagogical approach that applies gaming principles into teaching and learning, which is also referred to as gamification (Trybus, 2015). Adeng and Shah (2012) asserted that "grammar teaching that is too dependent on rules and memorisation makes learners lost their interests and motivation" and the researchers added that "games are the most suitable to learn the grammar of a second language" (p.23). Applying different classroom activities and learning strategies is vital in assisting learners with various needs (Chambers & Yunus, 2017) because learners are engaged and participate actively in grammar lessons. Many teachers have employed game-based or gamification in learning grammar and reported positive feedbacks from their experiences. Chambers and Yunus (2017), for instance, found out that the students were unable to construct simple sentences. They employed Wheel of Grammar (WOG) game to examine the effectiveness of this game- based approach in ensuring students' confidence in the use of basic rules of Subject Verb Agreement in sentence construction. Through a mixed- method design, it was reported that students' responses reflect the improvement in sentence construction. The students were able to apply correct basic rules of Subject Verb Agreement, the right usage of tenses and verbs-To-Be. The researchers then concluded that grammar lessons became less stressful when they learned in a fun and creative way. In the same vein, Adeng and Shah (2012), conducted a research on the use of games in teaching grammar and reported that "grammar games encourage, entertain and promote fluency" (p.28). The research also opposed to traditional language learning that focuses on grammar drill. Yaccob and Yunus (2019), stressed that traditional teaching and learning process, which refers to chalk- and- talk, has become outdated in lessons nowadays. Fazil and Said (2020), developed a mobile game application named 'TurTense' which was intended to aid the learners to grasp the concept of continuous tense. The researchers reported that the mobile gaming experience could promote non-threatening learning environment for the learners it lowers anxiety levels among students. As a result., the students were able to perform better in a more relaxing and comfortable setting. This study makes a significant contribution to research in the educational technology field, since no other Systematic Literature Review has been conducted, so far, in the researchers' knowledge, investigating the use of game- based or gamification grammar learning as this current field receives a growing interest. Today's situation for technological developments have continued to transform society where it demands technology-based teaching and learning methods to develop more learners to be technology- literate than any previous generation. It requires the learners to be able to learn in an active and collaborative environment with the integration of technology-based activities. This will enable the learners to face the challenges of educational reformation which moves towards the Industrial Revolution 4. 0, whereby 21st century learning is proposed to achieve the aim of National Philosophy of Malaysian Education (NPME). This study also contributes to a better understanding of patterns of using game- based or gamification in learning English grammar. An in- depth understanding of effective integration of technology- based grammar learning is crucial to know how these technologies impact grammar learning. This study also contributes as an evident of concept as to show how technology-based grammar learning can be adapted and embedded in the language classroom in a potentially capable manner.

Current Study

Game- based learning or gamification has been used in a number of areas at many different levels of education and are perceived as potentially as an added value in teaching and learning. The aim of this research is to address the following research questions.

Research Question 1: What are the types of game-based learning and gamification used in English language grammar learning contexts?

Research Question 2: What is the impact of game-based learning and gamification research conducted in English language grammar learning context?

There are several Systematic Literature Reviews exist, concerning the impact of game- based and gamification in English language learning. To our knowledge, there has been no attempt to synthesise the research studies conducted focusing on the area of English language grammar learning. As such, this research aims to systematically analyse the existing literature in the area of game- based and gamification English language grammar learning contexts.

Data Collection

Databases searched

The search and selection of articles for this Systematic Literature Review was completed in two phases. The initial selection was done by searching databases from the search engine Google Scholar.

Search Terms

The keywords searched for this Systematic Literature Review was by using a combination of keywords such as "game-based grammar learning", "gamification in grammar teaching", "games to improve grammar", "games and grammar", "grammar games".

Selection of papers based on inclusion and exclusion criteria

The initial collection of the prospective papers via Google Scholar search engine generated a pool of 168 papers. These papers were then classified through pre-formulated inclusion and exclusion criteria. To be included in the current review, the inclusion and exclusion criteria are as below.

Inclusion Criteria

1. Articles published in the English language only. 2. Studies conducted in both local and international settings.

3. Articles reported only on empirical evidence so as to achieve rich data.

4. Articles focused on students use of games.

5. Articles must focus clearly on enhancing English grammar through game-based learning or gamification.

6. The research was published in five years, from 2016 to 2020.

Exclusion Criteria

1. Non- empirical studies or studies that merely describe the design or context of a learning environment. 2. Articles discuss the use of game- based learning and gamification in other subjects or skills. For example, Science, Mathematics, language skills like Listening, Speaking, Reading, Writing, Vocabulary.

3. Articles that cannot be accessed as full text.

4. Articles that do not match the Research Objectives.

5. Book chapters, dissertations, thesis. - difficult to search for and hard to access as full text.

In the end, this process yielded 25 articles for the review. See the appendix for a list of reviewed articles.

Data Analysis

Coding Framework

This research adapted the coding framework proposed by Connolly et. al, (2012). The 25 papers meeting the inclusion criteria were analysed using the coding framework with multiple dimensions, namely 1) the research contextual dimension, 2) the methodological dimension, 3) the game dimension, 4) the outcome dimension. The final coding scheme is presented in Table 1. This research contains detailed descriptions and rationales for the respective coding dimensions and categories.

Table 1: Coding Framework

Dimension Category Value Reference

Research Contextual Dimension Country 1 2 3 4 5 6 7 8 9 10 Indonesia India Iran Malaysia Taiwan Vietnam Egypt Poland Slovenia Morocco

School Type 1 2 3 Tertiary Primary Secondary

Subject (Grammar Component) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 Relative Pronouns Simple Present Tense Singular, Plural Nouns Countable, Uncountable Nouns Adjectives, Conditional Simple Past Tense Past Continuous Tense Parts of Speech Present Progressive Tense Simple Future Tense Modals Passive Voice Irregular Verb Gerund Present Perfect Past Continuous Tense General

Methodological Dimension Study Design 1 2 3 4

Descriptive Mix-Method Qualitative Quantitative

Participants/ Sample 1 2

Students Students & Teachers
Game Dimension Developer 1 Researchers
Game Genre 1 2 3 4 Board Game Puzzle/ adventure Pre-authored courseware Role-playing
Outcomes Learning 1 2 3 4 Cognitive Affective Cognitive + Affective Psychomotor
Impact 1 2 Positive Negative

To begin with, the "research contextual dimension" deals with variables related to where a study where a research study was conducted and language skills. There are three sub categories which are country, school type and subject (grammar component). Country: This study included many countries. This is because the researchers would like to investigate the game-based grammar learning, not only in Malaysian context, but also in other parts of the world. Therefore, the search yielded articles from ten countries, namely Indonesia, India, Iran, Malaysia, Taiwan, Vietnam, Egypt, Poland, Slovenia, Morocco.

School type: The schooling system is different across countries. The researchers, for the purpose of this study, categorized the school type as primary, secondary for high school, and tertiary for the school type beyond high school. Subject (Grammar component): This category refers to the specific grammar components. The coding scheme by Connolly et al. (2012) has eight subject areas where the domain or curricular area that the game addressed to. Meanwhile, the focus of this study is game- based grammar learning. Therefore, the search focused on the grammar components where gameplay or gamification was mainly integrated. The search yielded 18 grammar components that were taught by the researchers using game- based grammar learning. They were Relative Pronoun, Simple Present Tense, Singular and Plural nouns, Countable and Uncountable nouns, Adjectives and Conditionals, Simple Past Tense, Past Continuous Tense, Parts of Speech, Present Progressive Tense, Simple Future Tense, Models, Passive Voice, Irregular Verb, Gerund, Present Perfect, Past Continuous Tense and general grammar components. The "methodological dimension" includes the types of research design used in the papers. They included qualitative, quantitative and mixed- method. As the initial process, each paper was categorized as qualitative, quantitative or mixed- method. Qualitative research design refers to the use of qualitative data for analysis, such as interview, observation, reflective journals, and expert validation. On the other hand, quantitative research design refers to the use of data such as pre, post-tests, questionnaire. The quantitative research design was further categorized into true experimental, quasi- experimental and descriptive. True experimental in this study refers to the papers that included both experimental and control groups, with the authors employed random assignment of samples. Quasi- experimental in this study refers to the condition where the authors included only the experimental group without the control group. This is also referring to one group pre-test post-test phenomenon. Descriptive study in this research refers to where a particular phenomenon is described in quantitative manner. In general, this descriptive study used surveys with descriptive statistics. Last type of research design is the mixed- method, where it refers to the design that employed both qualitative and quantitative data analysis. This "methodological dimension" includes the participants or samples from students, teachers, and both students and teachers as well. Moreover, the "game dimension" includes the nature of the game, developers and game genre. The explanations are given below. Nature of the game: The papers were categorized according to the nature of the games, whether the focus is on game- based learning or gamification. Game based learning refers to the active learning experience where many times it is designed to make sure the players understand the subject matter. In game-based learning, the game itself is the learning experience. On the contrary, gamification refers to the process of adding game elements or mechanics to an experience, where the goal of this is to increase engagement or enjoyment. In gamification, the game components are added to the traditional instruction method. Developers: The papers were evaluated to determine whether the games were developed for educational purpose by the researchers. This is because there are games available in the market originally developed by professional game designers for commercial purpose. Game genre: There was some overlapping nature of these genres. Whenever it is possible, the researchers focused on the dominant genre of game. The following are the descriptions of the game genre used in this study. Board game: This refers to the movement of pieces on a board according to pre-set rules. Puzzle or adventure: This genre involves challenging tasks and quests. Pre-authored courseware: This refers to available online templates developed by another party or organization, whereas the teachers can use that developed courseware or templates for their classes. Those pre-authored costs were usually offer free. To use services and it is highly accessible for teachers and students. The content of this courseware is categorized, which makes teaching specific content for different age or ability groups easier for teachers. It helps reaching students at many levels. Role-playing: This refers to the simulation of real-life situations in the teaching and learning process in classrooms. This activity is performed by individual students in pairs or even in groups, which can play out a more complex situation. Last but not the least, is the "outcomes dimension". This dimension deals with the overall outcome or effects of the games in the learning of grammar. There are two subcategories under this dimension, namely learning and impact. Learning: Learning outcomes are goals for student learning that the instructors set. Learning outcomes demonstrate what the instructors want the students to know, do or value at the end of the course. For the purpose of this study, Bloom's 3 domains of learning serve to be an excellent framework in analysing the learning outcomes. It comprises of cognitive, affective and psychomotor domains (Blooms, Krathwonl & Masia, 1984). Impact. This deals with the finding of the studies that were identified to be rated as positive, negative or mixed impact of the game-based grammar learning (Seo & Seo, 2018).

Results and Discussion

Research Contextual Dimension

Table 2: Research Contextual Dimension

Country	Frequency	Percentage (%)
Indonesia	8	32
India	1	4
Iran	1	4
Malaysia	9	36
Taiwan	1	4
Vietnam	1	4
Egypt	1	4
Poland	1	4
Slovenia	1	4
Morocco	1	4

Table 2 depicts the results of the "research context dimension". The final set of 25 articles were from various countries around the globe. The highest number of papers were produced from Malaysia (9) constitutes 36%. This could be directly attributed by the education policy in Malaysia which emphasizes on the usage of ICT in teaching and learning. Such a vast improvement in the education system of Malaysia has occurred to achieve the goals of Malaysian Educational Blueprint that covers expected educational perspectives between 2013 and 2025 (Ebrahimi & Jiar, 2018). The use of ICT in teaching and learning is increasing in Malaysia due to the need to create new aspects of education that suits the 21st century pedagogy. Therefore, more educators are willing to use technology-based lessons in classrooms and the research in that area is increasing simultaneously. Next in line is Indonesia, with 32% of articles produced from there. When the researchers read the reasons for the increasing number of publications in Indonesia, it was stated that learners of English as a Foreign Language (EFL) in Indonesia take the maximum advantages. From the rapidly growing access to the internet for their learning agenda. Digital applications and resources are now even more accessible with more affordable digital technology devices (Hidayat, Lee, Mason & Khaerudin, 2022). Therefore, many Indonesian English teachers and learners have already familiar with using different forms of digital technologies for their English language teaching and learning, and it contributes to the higher number of researches from the country.

Table 3: School Type

School Type	Frequency	Percentage (%)
Tertiary	7	28
Primary	8	32
Secondary	10	40

With respect to school type, the highest number of publications were on studies conducted in secondary school, ten articles out of 25, (40%). Next, is primary school with eight articles, (32%). The lowest number of articles published on studies conducted at tertiary level settings. This is an evident that there is a lack of research conducted on game- based and gamification grammar learning. Due to the nature of the games which provide enjoyment and fun, many researchers tend to focus on the primary and secondary settings as the students would be more engaging, but in reality, even at the tertiary level, education, young adults and adult learners also show great enthusiasm towards learning through technology.

Table 4: Subject (Grammar Component)

Subject (Grammar Component) Relative Pronouns Simple Present Tense Singular, Plural Nouns Countable, Uncountable Nouns Adjectives, Conditional Simple Past Tense Past Continuous Tense Parts of Speech Present Progressive Tense Simple Future Tense Modals Passive Voice Irregular Verb Gerund Present Perfect Past Continuous Tense General

There are 18 grammar components that were the focus of the studies that the researchers reviewed. Each paper did not focus on only one grammar component. There were combinations of target grammar components to be taught to the students via games. For example, the study by Fadhilawati (2021) focused on enhancing students' grammar achievement in learning, particularly Relative Pronouns. Idris, Said and Tan (2020) examined the effects of Kahoot in reinforcing Simple Present Tense among primary students. These are some of the papers that focused solely on only one grammar component. Vijayarajoo and Jani (2019), on the other hand, used games in enhancing Parts of Speech and El-Magd(2017), used games in improving students' grammar achievement (Adverb, Simple, Past Tense and Past Continuous Tense). Therefore, even though the researchers found 25 articles for this Systematic Literature Review, but it was not the case that each article focuses on one grammar component. There were also cases, (some mentioned above), where the studies focused on combination of a few grammar components, which resulted in 18 grammar components at the end of this Systematic Literature Review.

Methodological Dimension

Table 5: Methodological Dimension

Study design	Frequency	Percentage (%)
Descriptive	2	8.34
Mix-Method	5	20.84
Qualitative	4	16.67
Quantitative	13	54.17

Table 5 represents the result of the "methodological dimension". The review indicated that majority (13 articles, 54.17%) of the studies employed quantitative design in their articles. This is because researchers employed pre-post- tests, experimental methods for their study in order to examine the efficacy of the educational games. Quantitative designs that were employed by the articles were pre-post- tests through experimental design and quasi experimental pre-post- tests. Moving on, the next type of study design was mixed- method, (20.84%), qualitative (16.67%) and lastly descriptive (8.34%). Qualitative data were generally in the form of reflective journals, observations, and interview with students and teachers. According to table three, only 24 articles out of 25 were reported here. It is because one particular article did not include any statistical data in the paper. The discussion was focusing on explaining the benefits of Kahoot, how teachers could use Kahoot in teaching Irregular Verbs, and how the students will be benefited from it. The article was merely on description without any proven results or data. Therefore, the paper was excluded from the study design section only.

Table 6: Participants/Samples

Participants/ Sample	Frequency	Percentage (%)
Students	20	80
Students & Teachers	5	20

The participants and samples of the articles showed a major proportion on the students, where twenty articles, (80%) out of 25, used students only as their participants. Students are a frequent excessed population in the social and behavioural sciences research. Some students are studied directly in education focused research, and game-based learning or gamification is one of them. When the game is designed for the learners, it is justified that the articles in this review focused more only on the students. The student participation is valid in providing feedbacks and examining the effects of certain personalized educational games. On the other hand, there were five articles. (20%) use both students and teachers in their studies. Not only students, but teachers' perspectives also were being examined here. Teachers also have their own perspectives, which sometimes differ from the students. So, examining both will give a broad understanding of the phenomena being studied.

Game Dimension

Table 7: Game Dimension

Game Dimension Category	Frequency	Percentage (%)
Developers	25	100
Game Genre		
Board Game	Puzzle/ Adventure	Pre-authored courseware	Role Playing		
5 14 4 2		
20 56 16 8		

Table 7 depicts the result of "game dimension". All the 25 articles in this review used the applications or softwares by the researchers for educational purposes and not for commercial purpose. The most popular game genre was puzzle and adventure (14) with 56%. Some examples are Climbing Grammar, Mountain Game, Leaping Frog, Crossword Puzzle, Quizzes. Next genre was Board Game (5) with 20% and the popular Board Game was Snake and Ladder grammar board game. The third genre was pre-authored courseware (4) with 16%. pre-authored coursewares are applications or softwares that are readily available online and the teachers use them according to their lesson objectives. Pre-authored courseware offers free and paid plans designed by other parties or organisation for the use in the classroom. Normally, they are global learning platform companies that provide applications and softwares to be used by everyone for teaching and learning purposes. Some examples are Kahoot, Gamilab, Quizlet, Socrative and many more. In this review, the pre-authored courseware that were used by the articles are Kahoot and Socrative. Lastly, Role-Playing was the least used genre with two articles (8%).

Outcomes Dimension

Table 8: Outcomes Dimension

Outcome Dimension Category	Frequency	Percentage (%)
Learning		
Cognitive	Affective	Cognitive + Affective	Psychomotor		
2 5 17 0		
8.34 20.84 70.84 0		
Impact		
Positive	Negative		
25 0		
100 0		

Table 8 represents the results of the outcomes dimension. Any teaching and learning aim at producing the learning outcomes based on the teaching and learning process. This review addresses the issue by reviewing the learning outcomes of the 24 out of 25 articles. One article has been excluded based on the same reason for rejection in Study Design section. The article did not provide any statistical or evidence, but merely description on the benefits of Kahoot. For the purpose of this study, Bloom's three domains of learning is used as a framework for this section. The three learning domains are Cognitive, Affective, and Psychomotor. Cognitive domain in this review scored 8.34% Cognitive domain focused on intellectual skills. It is typically measured by academic achievements, tests, and scores. Next, is the Affective domain. Affective domain deals with attitudes, values, interests., appreciation of learners, motivation and satisfaction. Five out of 25 papers, (20.84%) focused measuring the Affective domain from the grammar games. Meanwhile, the combination of Cognitive and Affective domains scored the highest as 17 out of 24 papers (70.84%) studied both of the learning outcomes. It is a must that researchers focus and examine both the domains as not only achievement through test scores is important but knowing the participants feelings and perception throughout the journey during the research being conducted is vital. Affective domain serves the purpose of knowing and measuring the participants feelings and experience towards the game- base and gamification, grammar, learning. Knowing the importance of that, the vast majority of the articles focused on both learning outcomes. Lastly, was Psychomotor domain. This domain deals with learners' ability to physically accomplish tasks and perform movement and skills. None examining this domain as it is not relevant for grammar learning. With respect to the impact of grammar games on learning outcomes, all the 25 articles reported all positive findings and comments. No single article reported or negative findings.

Discussion

This study reviewed 25 articles on the use of game-base or gamification grammar learning in English language. The outcome of this review placed much attention to grammar teaching and learning due to the lack of Systematic Literature Review on grammar learning. In the conventional classroom, the instructors will be focusing the grammar using chalk- and- talk, rote learning method. Thus, researchers aim to improve language delivery based on the use of technology to support the acquisition of grammar. With respect to the use of game- based or gamification, grammar learning, this review identified four types of game genre that were commonly applied in the articles. These game genres have been listed with the examples of games or applications and the obtained results. The outcome of this review showed all positive impacts of game- based or gamification grammar learning as most of the learners performed better when using games. This is evident that technology-based learning is effective in supporting the learning of grammar as identified by many researchers earlier (Fithriani, 2018; Scholz,2017; Camilleri & Camilleri, 2017; Khali,2018). Learners' interests and motivation improve by using technology as it provides learners with the input, output and feedback. Teachers favour the use of technology as they can rely on it when organizing course content and communicating with several students at a time. Teachers also have incorporated game- based or gamification in learning grammar to create a more entertaining and engaging environment for learners.

Conclusion

This study makes a significant contribution to research in the field of game- based and gamification in learning grammar, since no other Systematic Literature Review has been conducted so far to our knowledge. Today's educational sector demands for technology-based teaching methods. Technological developments continue to transform society and the teaching methods can develop children who are more technology- literate than any previous generation because of the rapid technological advancement. With regards to the selection, this Systematic Literature Review required much careful selection for each paper, formulate the possible research questions, and check for the inclusive and exclusive criteria. The researchers hope the findings of the study can be useful to guide other researchers or policymakers in the field of game- based and gamification in learning grammar. In future studies, researchers can also focus on reviewing papers published in different databases to provide more extensive and detailed information.

Author Bio

Author 1 is a lecturer with the Academy of Language Studies, Centre of Foundation Studies, Universiti Teknologi MARA, Dengkil Campus. As a qualified language instructor who majored in TESL from Universiti Putra Malaysia and with years of teaching experiences, she believes that practical learning strategies can promote a stimulating learning environment with a focus on student learning and engagement. She is currently a postgraduate student in Faculty of Social Sciences and Humanities, School of Language Studies and Linguistics, Universiti Kebangsaan, Malaysia. Her research interest includes Technology-Enhanced Language Learning, Error Analysis and Corpus Studies. She has published several articles related to analysing students' problems in language learning and intervention lesson plans to address those problems. She has also presented in several conferences her findings to create learning environment that promotes shared objectives, independent learning, teamwork and mutual respect. She is also active in Corporate and Social Responsibility (CSR) and conducted several CSR programmes with the students of UiTM and pupils from public schools in enhancing their English language learning motivation and interest. Due to her commitment towards the institution she received Excellent Service Award for the year 2021.

Author 2 is a Professor in Digital Literacy and E-Learning from Faculty of Social Sciences and Humanities, School of Language Studies and Linguistics, Universiti Kebangsaan, Malaysia. The Director of Tun Fatimah Hashim Women Leadership Centre since 1st Sept 2017 - 1st Sept 2020. The Women Leadership Centre undertakes various research on women issues related to national policy on women, women empowerment and leadership to ensure representation of 30% women leaders in the decision-making level. Her passion is in empowering women for digital economy and most of her work to ensure gender inclusivity for example in assisting single mothers and marginalized women upgrade their social economy status, access the ICT added value in education via e-learning and starting business online. Her publications in journals and books are now widely read and as a reference for students and those doing research related to Technology and women empowerment. She presented a paper related to empowering women for 4IR at Commission on the Status of Women, United Nation, New York 2018 and part of the delegates in presenting the country's report at CEDAW, Geneva. She is also leading World Bank research related to Gender and market labour opportunities at present.

Author 3 is an expert in e-learning systems design. He is currently attached to from Faculty of Social Sciences and Humanities, School of Language Studies and Linguistics, Universiti Kebangsaan, Malaysia. He has published in fields related to technology-enhanced language learning as well as social media and e-learning. His expertise is in the area of Arts and Applied Arts - Language and Linguistic (Technology Enhanced Language Learning) (Technology Enhanced Learning). His latest publication in high impact journal entitled "Diabetes In The News: Readability Analysis Of Malaysian Diabetes Corpus. - International Journal Of Environmental Research And Public Health. 1-10." He has published in various Scopus, WOS, ERA journals which has made him to explore various fields of study on top of his field of expertise. Apart from journal publication, he has vast experience in publishing in indexed proceeding, chapters in books. His good academic standing in research and in administration is recognized by the institution. He received several awards "Anugerah Khas Kualiti, Anugerah Perkhidmatan Cemerlang" from the varsity. He is also active n social and public engagement.

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Tan, K. H. (2020). Game-based learning platform and its effects on present tense mastery: Evidence from an ESL classroom. International Journal of Learning, Teaching and Educational Research, 19(5), 13-26.

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