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A Grammar-learning Innovation for Malaysian Indigenous learners in an EFL Context: The TurTense Mobile Game App

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Abstract

Past studies reported positive findings when Information and Communication Technology is integrated into English grammar lessons, including the teaching of tenses for struggling children. As the English language is noted in past literature as a third or foreign language for Malaysian indigenous learners as compared to their mainstream peers, this study aimed to investigate the effects of a self-build mobile game application; the TurTense App on their learning performance and motivation in learning the continuous tenses. Twenty indigenous Temuan sub-ethnic participants from a school in the rural district of Jelebu, Malaysia were selected. Results from the pre-post intervention tests showed statistically significant differences in scores. Majority of these participants showed positive physical reactions while more than half of them showed better learning performances. These findings accentuated that the TurTense application can be incorporated in ESL and EFL classrooms to aid students in mastering continuous tenses.

Keywords: Mobile Game Application, 21st Century Learning, ICT, EFL, Grammar, Continuous Tenses, Indigenous Learners, Indigenous Malaysians.

Introduction

Grammar is among the many essential elements of communicating using the English Language as the universal language, which influences clarity in communication and the relevance in the globalisation of education. It can be defined as the structure of language or syntax which expressed through a set of specific linguistic rules (Abdullah & Shah, 2015). Past literature also exuded how these rules or fundamental linguistic concepts in addition to contextual approaches play a compelling role in better acquisition of the English Language (Tuan & Doan, 2010; Azar, 2007; Larsen-Freeman, 2001) making it a fundamental set of rules that cannot be ignored.

Moreover, these specific linguistic rules also affect writing abilities in a target language. Yunus and Chien (2016) stated that an adept writer needs extensive knowledge of grammar, in-depth choices of words or phrases, mastering the mechanism and flexibility of writing.

Knowledge of these grammatical structure helps learners to construct English sentences well (Fitria, et al., 2013), making it pertinent for pupils to acquire a good grasp on the concepts of tenses in order to express themselves using the English Language with adequate clarity.

Even so, learning English language has always been a dilemma among Malaysian learners as the language was never their first language (L1) as such predicament was explicated by Darus and Ching (2009) to be derived from the grammatical structure of the English language that contradicts with the L1 of the Malay learners and Chinese-Malaysian communities. Similarly, the indigenous Malaysian learners also have their L1 that belong to their communities. Even so, the Malaysian indigenous learners' linguistic disposition imposes even further deviations in their linguistic capacity as they have to learn the Malay language as their second language and the English language as their third or foreign language (Adnan & Saad 2010). Such linguistic interference would be much more penalising as compared to the Malay and Chinese Malaysians as explicated by Darus and Ching (2009). As the Malay language and English language were ubiquitous in the Malaysian curriculum, none of these languages was the L1 of the indigenous Malaysian learners. Even though their familiarity with these languages was the most distant, these indigenous learners were still enrolled in mainstream learning curricula with mainstream language expectations (Renganathan & Kral, 2018; Renganathan 2016).

Hence, it is not a surprise when Abdullah and Peter (2015) further affirmed that Malaysian children are still not up to the international par of language acquisition based on the results in PISA 2012. The multilingual disposition of the Malaysian learners, especially the indigenous Malaysian learners, required more supplementary mediums to aid the language learning predicament of these disadvantaged learners. In tandem with the needs of these supplementary mediums in grammatical structures among struggling Malaysian ESL and EFL learners, the action research was implemented via a personally-developed mobile game application called TurTense.

The TurTense Mobile Game Application

A mobile game application named TurTense is designed, developed, and launched independently on all mobile platforms by the researchers as a vital component of this study. It was intended to be a teaching aid and tool to supplement pupils' grasp in the concept of continuous tenses. Gaming experience from the mobile gaming application TurTense could convey a similar notion of the non-threatening learning environment as games were found to lower anxiety levels among children, resulting in a much more relaxing and comfortable setting when learning (Mahmoud & Tanni, 2012).

The name 'TurTense' is a portmanteau of the word "Turtle" and "Tenses" that focused on a fun experience of introducing the concept of continuous tenses based on a nesting simulation of the leatherback turtle, an iconic endangered animal in Malaysia. As elements in tenses like nouns, pronouns, base verbs and many more are compartmentalised into the visually fun concept, players would have to choose and match these elements and finally build these sequences into sentences in order to gain marks and to progress to the next level.

This mobile game application accentuates "playing while learning" experience in three types of continuous tenses; past continuous tense, present continuous tense and future continuous. The process of acquiring grammatical items could be stimulated into faster and

better pace as Schwarz and Braff (2012) stipulated that playing while learning concept exudes positive emotions.

TurTense provides a step-by-step gaming experience of how a sentence in those tenses are constructed in which players would be able to construct a complete sentence based on those continuous tenses at the end of the game. As pupils progress through each step, any incorrect answers would be rectified in each step, and all the microcompartments of the continuous tenses that they have stumbled upon in each step would merge into one complete sentence. Hence, this study intended to discover the effectiveness of TurTense mobile game application to improve the pupils' understanding and motivation in learning continuous tenses.

Literature Review

Issues of Learning Grammar in Asian Classrooms

Writing grammatically correct phrases or sentences has always been one of the learning problems among ESL learners. Previous studies had stated that ESL learners in Asian schools have difficulties in writing or constructing grammar correctly, especially in tenses (Ien, et al., 2017). Tuan and Doan (2010) have found that this issue is derived from the influence of pupils' mother tongue or first language (L1) in acquiring the English Language as their second language (L2). Citizens from countries in which English is not their native language could face the same predicament when learning the English Language.

A multicultural and multiracial country like Malaysia would definitely be one of them as their first language (L1) could either be Bahasa Melayu, Mandarin or Tamil. Darus and Ching (2009) eluded that the English notion of tenses indicates the time with the present, past and future but local Malaysian languages like Mandarin and Malay verbs are not able to indicate time whereby such predicament confuses L2 learners. In the Malay language, which is the mother tongue or L1 of the Malay citizens of Malaysia, does not require any conversion of syntaxes into time-frame rules compared to the concept of tenses in the English Language. The English language structured the conversion of verbs into present participle like in Present Continuous Tense indicates the continuation of actions that complete the time context of the sentence. The same contradiction in the linguistic application was also apparent among Mandarin-speaking Malaysian Chinese learners.

Similar to the aforementioned ethnic groups in Malaysia, the Malaysian indigenous learners also have their own first language (L1). However, the medium of instruction in this school is the Malay language which is the national language of Malaysia. As all of the staffs and teachers are Malays, the Malay language has become the learners' second language as all of the staffs were not able to converse in the learners' mother tongue. Such predicament was similar to any schools with indigenous learners whereby these indigenous learners are learning the Malay language as their second language, and the English language automatically became their third and tentatively a foreign language due to minimal exposure towards the language as it was only taught and used in schools (Adnan & Saad 2010; Mihat, 2015; Renganathan & Kral, 2018).

ICT in Language Teaching

The dawn of the new Millennium has led the world with sublime technological advancements which evolved the ubiquitous possibilities of delivering education to the masses. Lamb et al.

(2017) annotated that current education systems should equip learners holistically with technological learning tools in order to mould them into critical and creative thinkers as well as enterprising learners rather than focusing on the traditional academic tests and test scores. ICT is seen as a useful and meaningful way for the pupils to learn and acquire knowledge as it led to independent and motivating learning. ICT also warrants the necessity in ameliorating the education of English among ESL pupils with the inclusion of writing skills (Yunus, 2007). Policies in scholastic ICT integration were apparent globally nearly twenty years ago with respect to the plethora of primary studies on ICT technology in educational provisions (Hamzah et al., 2010). In tandem to these technological trends, the Malaysian Ministry of Education has consequently levied ICT to be integrated widely in the process of teaching and learning.

Findings by Yunus et al. (2010) asserted that the utilisation of educational ICT tools in ESL classrooms would increase learners' interest in acquiring the language fundamentally. Technology integration has given learners themselves many advantages in which autonomy in learning has been sublime, in which Yunus & Salehi (2012) explicated that the existence of a teacher in facilitating these processes would impose a much more significant learning experiences that deviate from the focus of the learning.

Concurrently, ESL teachers in Malaysia have been practising and incorporating ICT into teaching and learning activities. Abd Rahman et al. (2009) in his study explicated the usage of technology is widely practised as ownership of mobile phones encompasses of a 100% majority in tertiary level students ranging between 18 and 21. These demographics consisted of most new generations teachers who would carry the torch in teaching the young generations ahead. Yunus (2007) stipulated that many teachers in Malaysia, as well as many other countries, levy the potential of ICT to enhance the teaching and learning process in their classrooms. Such exploitation was encouraged by the many institutions in parallel to the waves of the new technological era. According to Bui and Plan (2015), ICT has provided teachers with abundant resources, limitless possibilities for exposure to authentic language and more effective teaching-learning activities.

There are now a plethora of ICT integrations in teaching and learning experience. Yunus (2010) implicated that a learning society has the responsibility of providing its avenues for its people to seek knowledge. Such communal pace towards embracing ICT in learning environments is embedded from a sense of responsibility in teaching the new generation of learners according to the technology that they are born with.

Digitalized Games in Learning

Digitalized gaming experience refers to a game played by electronically manipulating images produced by a computer program on a monitor or other display (Bossom & Dunning, 2016). As digitalized gaming has become part of the global culture (Dini, 2012), utilization of gaming elements in learning seems parallel to making educational provisions more relevant for the younger and technologically savvy generation. Prior to the era of the digital revolution, previous generations of language learners went through a much more traditional learning methods such as chalk-and-talk lessons, which juxtaposed to the current Generation Z, ranging between 13 to 17 years old learners who never experienced a world without digitalized gaming elements (Duran 2017). These elements of gaming in digitalized mediums

were often annotated with potentials of motivation, positive emotions, socialization and cognitive triggers (Granic, Lobel, & Engels, 2014). As gamification is broadly construed as a significant method to intrinsically appeal to users toward preferred behaviors (Bui, Veit & Webster, 2015), such appeals might validate the view of gaming to be a more approachable way for children to acquire better-preferred behaviors when learning.

This direction for preferred behaviors in learning was also enlightened by Meterissian, Liberman, and McLeod (2007) who annotated how gaming enhances learning experience whereby the innovative teaching technique that they have employed induced gaming elements that promoted their learners' interest. Although, their findings also explicated the competitive emphasis in their technique had imposed a behavioral juxtaposition of stress among older students. Even so, the positive findings on these gaming experiences are similar to how Ashraf et al. (2014) culminate the understanding of digitalized gaming as an effective educational aid that elevated learning motivation and performance among learners. Such stance was further justified when Plass, Homer & Kinzer (2015) exuded the elements of cognition, motivational, affective, and sociocultural perspectives that played an integral part in the gaming design of a digitalized gaming experience. The aspect of cognition in a gaming design was annotated by Plass, Homer & Kinzer (2015) to provide meaningful learning opportunities with contextual aid as information is presented on time and with specific precision to gamers' in-game needs. Such an element of precision with time imposed scaffolding element that follows gamers' zone of proximal development in solving in-game tasks. Furthermore, the aesthetical elements of design, narrative or musical score and game mechanics in digitalised gaming are often associated with the generation of positive feelings as Plass & Kaplan (2015) exuded how visual aesthetic elements induce positive emotions and improve comprehension skill among its audience.

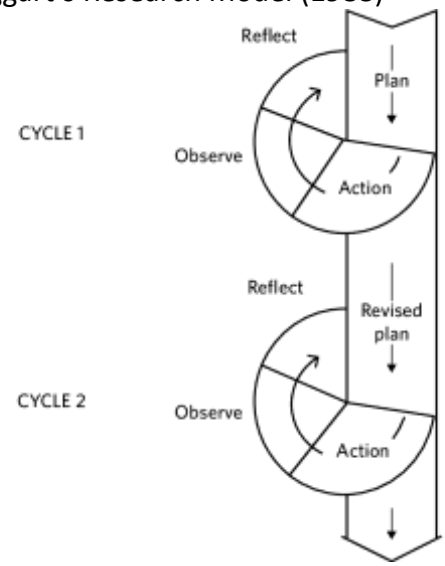
More studies also explored show digitalised gaming affects positively towards the ac-quisition of language skills. Rudis & Postic (2018), Musa (2015) and Thorne et al. (2012) indicated how the gaming culture in this digital era is able to catalyse language skills such as vocabulary and communicative skills among its users while playing the game. Moreover, the elements of rapid feedback and interactivity in digital gaming were often annotated to contribute to boosting indirect language learning while playing (Vaisanen, 2018; Ebrahimzadeh, 2017; Chen & Yang, 2013). As language learning necessitates the acquisition of multifaceted language skills, the skills of language structure could also be utilised in the notion of integrating digitalised gaming in education as found by Mahmoud & Tanni (2012) that highlighted how grammar-learning via the integration of games are bound to elevate students' motivation and direct them to a more effective language acquisition.

Methodology

A mixed-method of investigation is employed for this study, following the second research cycle from the Kemmix and Mctaggart's Action Research Model (see Figure 1). The first cycle was the pilot study whereby an improvement in conducting tasks with the continuous tense was noted after usage of the TurTense mobile game application (Fazil et al. 2018).

This study is the second cycle of the model in which a further study was employed where it specifies to a larger number of participants from the indigenous demographics, involving only indigenous Malaysian learners from a site in the Jelebu district, Malaysia.

Figure 1. Kemmis and McTaggart's Research Model (1988)



In the planning stage, past literature was studied in addition to the past classroom situation. These elements had driven the objectives made for this study. The participants of this study were identified to fit the specific target group by employing the criterion and convenience sampling method as described in 2.1 along with designing the instruments employed to find the outcome of the intervention as explicated in 2.2. A pre-test was conducted prior to the introduction of the intervention.

Next, in the Action stage, the mobile application was introduced to the participants and simultaneously, the instruments of the study were employed. Data from each particpant was recorded in individual sessions for more accurate documentation with lesser external factors that would affect the data.
After that, post-tests and observation checklists were utilised in the Observation stage in order to collect the data for this study. This post-intervention has the same module of sections from word level to sentence level just like in Pre-test, but the questions were not identical to those in the Pre-test. After the results were found out and ana-lysed, suggestions for further research were drawn in the Reflection stage.

Participants

The action research was conducted in a national school within the vicinity of in a rural outpost in Jelebu, Negeri Sembilan. The majority enrollment in this school comprises of indigenous Temuan sub-ethnic learners from the Proto-Malay group, along with a minor enrolment from the mainstream Malay race. Even so, these indigenous learners' enrollment in mainstream schooling in Malaysia was affected by mainstream learning expectations (Renganathan & Kral, 2018; Renganathan, 2016).

Thus, a criterion and convenience sampling method are employed to target these indigenous Malaysian learners in tandem with the objectives of this study. A school with a majority of indigenousenrollment is selected due to its convenient accessibility and proximity to the researcher. This type of nonprobability sampling is where a target population is practically sampled according to the ease of access, geographical proximity, time availability, or the willingness to participate in a study (Dörnyei, 2007). A total of 20 pupils were selected through

criterion sampling method. Palinkas et al. (2015) annotated that participants in a study are identified and selected by researchers according to predetermined and important criteria, in which the pupils identified in this study were selected based on their ethnographic backgrounds in which indigenous Malaysian learners were chosen along with their disadvantageous performance in writing tense-based sentences in the latest exam.

Instruments

This study employed pre and post-tests to measure the performance of the participants before and after the intervention. Both pre and post-tests comprised of three similar sections, although both tests comprise of question variations to evade from being identical to one another. The first section comprises of five multiple-choice questions followed by ten fill-in-the-blank questions and ten sentence construction questions where all three sections emphasized similar grammatical focus in the mobile application. Each section was arranged accordingly to test pupils' mastery in those continuous tenses from word-level in section A to phrase-level in section B and lastly to sentence-level in section C.

The second instrument was an observation checklist made to record the behavioral differences before and after the intervention. It comprises of two themes, Theme 1 with five items was based on the ability for the pupils to reconstruct full sentences based on those continuous tenses. Theme 2 with two items was based on physical responsiveness of the pupils toward the mobile game application, bodily gestures and facial expressions shown by the pupils were recorded under this theme.

Data Collection

A pre-intervention test was utilized before the intervention is introduced, whereas a post-intervention test was employed after the intervention was made. To increase the "richness of data" as mentioned by Kennedy (2009), the observation checklist was utilized as a descriptive instrument as explicated in 2.2. Each participant was studied via an observation checklist consisted of two themes, as described in 2.2. Each participant underwent the session individually for a better record of each pupil's performance and responsiveness

Data Analysis

In this stage, a normality test was conducted to calculate the normality of the data distribution. The normality test of the data was conducted using Shapiro-Wilk testing. Shapiro-Wilk was utilised when the size of the sample is less than 50, in which the size the sample set was 20. The data were normally distributed as the level of significance was more than 0.05. Therefore, a t-test was utilised for pre and post-tests to calculate the difference of pupils' performance after the intervention. The nominal data from the checklists were also tabulated in which the frequency values were calculated into percentages and displayed in pie graphs.

Findings and Discussion

Prior to the calculation of inferential statistics t-test, a calculation of the normality of the data via the Shapiro-Wilk normality test was carried out. The data were normally distributed as they were more than 0.05, which warrants the use of paired sample t-tests.

Better Performance in Continuous Tenses

The mean of test scores before and after utilising the TurTense mobile game application is obtained from the calculations of the data's central tendency to see the differences between the mean score of pre-test and post-test. Mean scores for both tests were calculated and compared. Table 1 below shows the mean scores for both tests.

Table 1.
Mean scores for pre-test and post-test results.

Pre-test	Post-test
4.45	15.10

Increments of pupils' performances in grasping the concept of continuous tenses were sublimely exuded after using the TurTenses mobile game application in Table 1. The comparison of the mean scores from the central tendency of the data further accentuates the elevation of pupils' comprehension and mastery of the continuous tenses when the external stimulus; the mobile game application TurTense intervened.

Table 2.
Paired Sample T-test.

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pre-test-Post test	-10.65000	1.34849	0.30153	-35.320	19	0.000

A paired sample t-test was conducted to find the difference between the two mean scores of pre and post-test by the participants, as shown in Table 2. Kitchin and Tate (2013) explicated that a calculated level of significantly lesser than 0.05 ($p<0.05$) would imply a high significance in mean differences. The calculation showed a significant difference between means for pre-test and post-test with $t(19)= -35.320$, $p<0.05$.

To construe the data, the results of significance obtained from the mean differences of pre and post-tests was statistically significant. It suggests that the change could be a result of an external stimulus tested onto these pupils; the TurTense mobile game application. Before the intervention was carried out, the pupils' mastery of continuous tenses was at a diminutive level. This indicated that pupils showed a significant advancement in mastering continuous tenses after the utilisation of the intervention. The mobile application might have been an external stimulus to low proficient pupils as they have lesser accessibility of exposure to the fusion of English language and technological gadgets. Henceforth, such exposure could bring a great deal of attraction and interest in the intervention.

Observation on Pupils' Performance and Responses

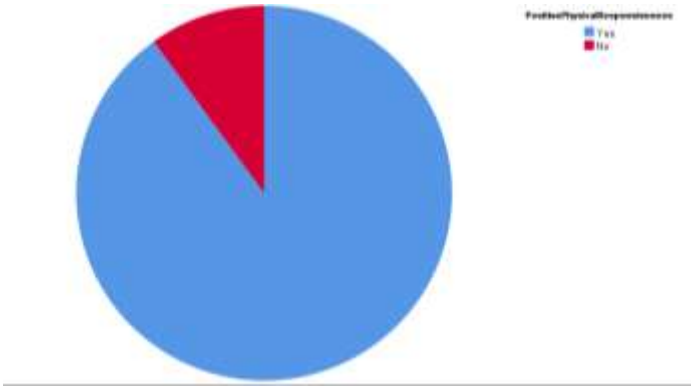
Each pupil was observed by the researcher while gravitating on each item in the checklist by filling up the "yes or no question". For example, in the RP1's observation checklist, the first item required the research participants to be "able to choose the correct 'verb to be' after a given pronoun". A comment or remarks section were provided to supplement additional information to the pupils' process of commencing each item.

Table 2.
frequency and percentage of the answer from the first theme.

Positive Physical Responsiveness		
	Frequency	Percent (%)
Yes	18	90
No	2	10
Total	20	100

The nominal data from the observation checklist was tabulated accordingly, whereby the findings of the observation checklist were categorised into two themes. The first theme was Positive Physical Responsiveness that was tabulated in Table 3.

Pie Chart 1. Frequency and percentage of the answer from the theme of Positive Physical Responsiveness.



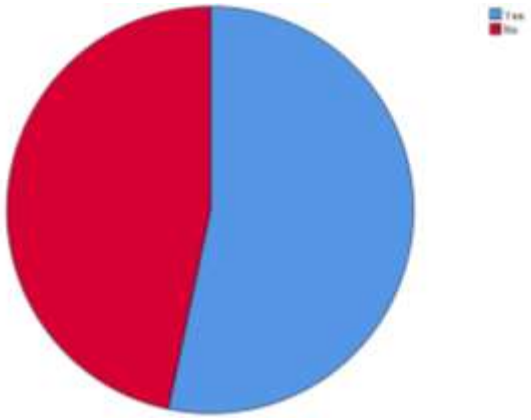
The theme of Positive Physical Responsiveness encompasses elements that indicated a positive response from the participants when using the mobile game application. These elements were proactive bodily gesture, and positive facial expression ignited when the intervention was devised in learning Tenses. Table 3 and Pie Chart 1 shows the graphic representation of the findings from the first theme. Since the variability of the Positive Physical Responsiveness theme was of nominal nature, the mode value from the analysis was emphasised compared to other calculations of the Central Tendency. The value 1.00 in the mode equates to the first answer “Yes”, and value 2.00 equates to the second answer “No” from the “yes or no” checklist. The mode value interpreted as the mode of the overall answer for this theme was “Yes” which consists of 18 participants that equate to a majority 90% of the total participants. This shows that most of the participants being observed displayed positive responses through bodily gestures and facial expression toward playing with the TurTense mobile game application. These are positive indicators of their motivation towards learning continuous tenses.

The second theme was their Ability to Reconstruct Tenses. This theme was from the observation of the capability of the students to apply the experience they got from the intervention by reconstructing sentences based on the Tenses that they have learnt. Table 4 and Pie Chart 2 shows the graphic representation of the findings from the second theme.

Table 4.
Frequency and percentage of the answer from the second theme Able to Reconstruct Continuous Tenses

Able to Reconstruct Continuous Tenses		
	Frequency	Percent (%)
Yes	11	55
No	9	45
Total	60	100

Pie Chart 2. Frequency and percentage of the answer from the theme of Able to Reconstruct sentences.



Since the variability of Able to Reconstruct Tenses theme was of nominal nature, the Mode value from the analysis was emphasised compared to other calculations of the Central Tendency. The mode value for this theme was "Yes" in which a thin majority of 55% were able to make a full sentence. This shows that a majority of the participants narrowly made it to ace the task to reconstruct sentences in continuous tenses after exposure to the mobile game application. Such a figure might suggest a longer time-frame of exposure is needed to increase the increment trajectory of participants' performance in tasks with continuous tenses.

Conclusion

It is apparent that the statistically significant result from the pre and post test in the study are able give statistically significant indication that the TurTense mobile game application is a prodigious digital medium in aiding the learning of continuous tenses among primary school children, including the linguistically disadvantaged indigenous learners which were the sample of this study. The data on the pre and post-test showed how the intervention statistically improved the participants' grammatical skill on continuous tenses. The qualitative data of observation noted their heightened ability in reconstructing sentences into the targetted tenses as shown in the study. Positive responses from the participants were also elicited by the observation made in the study in which positive physical gestures and facial expressions of excitement and joy were apparent as noted by the findings of this study.

These findings could indicate that the mobile game application could circumvent problems in writing and grammatical construction among Asian schoolchildren (Ien, et al., 2017) in which Asian children' L1 imposed grammatical influence upon acquiring the grammatical systems of

the English language (Tuan & Doan, 2010) especially the indigenous children as the English language is isolated from their daily lives and only exists within classroom-learning (Adnan & Saad 2010; Mihat, 2015; Renganathan & Kral, 2018). The study also provided a significant insight that correlates with potential of better and more effective language learning experiences when integrating ICT in teaching practices (Bui & Plan, 2015; Yunus, 2010; Yunus, 2007).

As the usage of ICT and technological gadjets are now ubiquitous amongst neo-generation of teaching workforce (Yunus & Salehi, 2012; Abd Rahman et al., 2009), the mobile gaming experiences provided by the TurTense mobile game application also exudes pragmatic relevance in current learning atmosphere as digitalised gaming became a global practice (Bossom & Dunning, 2016; Dini, 2012; Alzgool, 2019; Muhammad, Saoula, Issa & Ahmed, 2019), that heighten learning motivation amongst the new generation of learners (Rudis & Postic, 2018; Duran, 2017; Bui, Veit & Webster, 2015; Musa, 2015; Granic, Lobel, & Engels, 2014; Khalid, Islam & Ahmed, 2019).

In conlusion, the mobile game application TurTense which acted as the intervention of this study is quantitatively and qualitatively proven to be generalised as a useful and meaningful teaching and learning tool in helping struggling and marginalised ESL and EFL learners in improving their grammar skills, specifically in continuous tenses. Ultimately, this study also provided a new research gap on the usage of the digital games and ICT in language learning for indigenous Asian learners.

In light of this study, a further study with a controlled group and an extended time-frame are suggested to improve this study's reliability. A bigger sample size is also proposed to be essential for a better generalisation of the targetted population of linguistically disadvantageous Malaysian indigenous learners

Implication

This mobile game application is shown by the findings of this study to be another alternative in teaching grammar with less preparation and time consumption while evading from the traditional chalk and board style of teaching that might dissuade learners' positive physical responsiveness and ultimately their motivation to learn the meticulous systems of grammar. The positive responses towards Turtense and its influence on indigenous learners' performance in a grammatical task as elicited from the findings this intervention are susceptible to indicate the mobile game application to a tool with a plethora of potentials for teaching-learning activities, both in the classroom and at home. Even more, the findings upon the disadvantaged Malaysian indigenous learners in the study indicated a generalization that the mobile game application is suitable for the targeted group; struggling ESL and EFL children.

The TurTense mobile game application also expands teachers' repertoire and resources in preparing suitable learning materials with no financial cost and less preparation time as it is always available to be downloaded through various mobile platforms such as the Google Play and Apple App Stores, giving boundless global accessibility to teachers, parents and children in ESL or EFL countries around the world.

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