

Cognitive Load Theory for ESL Students: Mixed Method to Employ Difficulty in Using Tenses While Writing

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The present study aimed to determine learners' problems in using English tenses. By utilizing the pre-test to have students compose their own paragraphs in 12 different tenses and through LearningApps.org, the researcher distributed the post-test self-created questions. The research employed a mixed research method, and the findings were presented. This study focused on 96 Bachelor of Technology students also learning English as a second language. The results show that past perfect tense, future perfect tense and simple past tenses are the most commonly problematic writing skills by the learners. These issues are linked to the difficulties of employing the appropriate aspect and tense in the appropriate context, interference from second languages, a lack of repetition in practice, and student's level of language proficiency. In addition, it is recommended that teachers employ various methods that are appropriate to teaching tenses to help students develop their writing abilities.

Keywords: ESL learners, mixed method, cognitive load theory, 12 English tenses

INTRODUCTION

Humans conceptualize time in terms of space, as evidenced by the vocabulary we use to discuss temporal relationships: we frequently use expressions like “stretching out” or “compressing” an action, “moving towards the future,” “moving backward,” and “returning to the past”. Language competency relies on several pillars, one of which is correct grammatical usage. It is essential for your comprehension, as well as writing and speaking. Learning proper grammar not only makes you sound and appear more like a native speaker but also allows you to write more quickly and effectively. Your ability to speak clearly and fluently should be the primary focus of your efforts to improve your language abilities. While learning a language, some people prefer to concentrate on other aspects of the language rather than studying grammar altogether. Nonetheless, the meaning of your phrase can be misunderstood because your grammar is incorrect. In every language, the formation of sentences is governed by a set of rules known as grammar. It would be extremely challenging for humans to communicate with one another if grammar did not exist. The ability to communicate more effectively and avoid misconceptions directly correlates to one's command of proper grammar.

The learners must be aware of what they need to study about grammar in order to grasp the languages in English grammar. It is assumed that English is a difficult language to learn because it has many complex

grammatical rules and that mastering grammar is a difficult process that requires the users to be able to decide when and why to use one form in speaking or writing instead of the other; this type of decision requires grammatical proficiency. Tenses are one of the components of grammar. It is well known that tenses are a crucial component that ESL learners must grasp. The learners must be able to articulate sentences in the appropriate tenses since grammar is connected to the formation of accurate sentences. Learners' proper use of the correct tense in a sentence demonstrates their command of the language. If language is tenseless, then according to typology, English is a tense language. As a result, most students find it challenging to comprehend and effectively use English tenses and features. By adding or removing a morpheme, the shape of a verb can change, and this is what is meant by the nuanced substance known as tense. Commonly, "tense" refers to a verb form rather than a sequential gap in time.

Participants in the English Language Education Study Programme must understand English tenses and be able to decide which of those tenses to use in conversation if they are to be successful as ESL learners. One day, some students will teach tenses to their pupils, who will learn English from them. It would be unkind if their pupils experienced the same difficulty in tenses if they presented about tenses incorrectly owing to their lack of expertise. Therefore, have various challenges while attempting to communicate using proper English grammar in both oral and written forms. The pupils may make slips, mistakes, false starts, and a few grammatically incorrect or unclear phrases since learning a new language is a little unusual. As applying the right grammar aids learners in producing "clear, well-structured, unambiguous sentences," teachers should be able to recognize the most prevalent grammatical issues and attempt to modify their instruction.

The use of gestures in second language acquisition (SLA) has drawn more attention in recent decades. Still, actual research on how instructors and students use gestures dialogically in second language (L2) classroom interactions is still needed. Particularly, L2 grammar teaching and learning situations have received less attention than vocabulary up until now. The current study contributes to the relationship between time conceptualization and gestural usage in grammar lessons and offers practical implications for teaching L2 English tense and aspect. Many academics have studied the idea of interactional competency in the field of conversation analysis, notably in the setting of the L2 classroom. The main emphasis is on English tense and aspect since these grammatical constructions are among the most challenging to teach and understand because of potential linguistic and cultural disparities in how people conceptualize time. Nonetheless, there is still a dearth of studies on this component of teaching.

Despite the fact that culture is what gives rise to language, learning will fail if it is not accompanied by engaging media. At elementary and secondary educational facilities, the teaching of English is the first foreign language.

The phrase "mobile learning" refers to learning that uses mobile technology. "Learning in multiple circumstances, including social interaction and material, utilizing personal electronic devices" is the term's entire definition. Because learning occurs across contexts, time, subjects, people, and technology, it cannot be established. This definition sheds light on the laws of education about learning using mobile devices. Using this criterion, laptops were excluded from this study. Cellular gadgets, like mobile phones and tablets, feature rapid on/off buttons and are portable.

The SOS Table app for mobile devices was created to allow students to repeat verb tenses, sentence structures, and frequently used vocabulary in everyday conversation. Students are required to use this program in a timed competition to construct right, incorrect, or positive statements. The student's statement is anticipated to appear in written form after the period, and the pronunciation offers the student the chance to test the sentence and verify and correct the pronunciation.

Also, the learner may speak words into the application rather than typing them, which enables the program's architecture to aid with user pronunciation improvement. While using this program consistently, the student can get to the goal more rapidly since they are working against time, which forces them to repeat the course without worrying about the rules after they have mastered the language learning philosophy. Repeated practice and mechanics instruction have been made available through the program "Present Simple, Past Simple, Future, Present Continuous, Past Continuous, Future Continuous, Present Perfect

Tense, Past Perfect Tense, and Future Perfect Tense. These tenses allowed for the provision of positive and negative questions, subject repetition, and frequently occurring word and pronunciation studies.

To determine students' perceptions of multimedia and gamification in an informal cooperative study group in the classroom. The researcher aims to make the teaching process more exciting and enjoyable to motivate students to be active in the learning environment. The method can be applied in a large multimedia-enabled classroom with multiple informal cooperative groups.

A Mobile Assisted Tense Tool (MATT) because of a focus on English grammar's tense learning. The MATT is made up of numerous learning tools, including as modules, selections, and processes, which work together to share data in order to achieve the learning objectives. The effectiveness of the suggested MATT's ability to facilitate the interchange of learning data as well as its effects on the motivational model, cognitive load management, and adaptive and dynamic learning aspects, are then examined. Research is conducted to show the instructional tool's efficacy. In this situation, new engaging, and creative teaching strategies must be implemented in the classrooms. Cooperative learning, integrating multimedia technology in the classroom, and gamification in education are a few innovative approaches that have recently come to light. Applying these strategies has been demonstrated to boost students' enthusiasm, competitiveness, and participation in class activities.

Research Objectives

The research aims to determine the importance of tenses in the writing process. Thus, the following objectives are proposed:

- To identify the flaws in a paragraph while writing by learners.
- To explore the err committed by the learners.
- To enhance the tense usage of learners using LearningApps.org.
- To assess the enhancement of tense by students using LearningApps.org.

Research Questions (RQ)

The following research questions are developed to guide this study:

***RQ1:** How much does tense play role in writing skills?*

***RQ2:** Does LearningApp.org enhance the tense for learners?*

***RQ3:** Do writing skill gets improved through tenses?*

Theory

CLT's cognitive architecture is built on five key principles and includes Long-Time Memory (LTM) and Working Memory (WM). It is essential to regulate the cognitive load due to the finite capacity of human cognitive architecture. While using multimedia-based learning technologies, it is common for students to experience Extraneous Cognitive Load (ECL), which may be brought on by the inefficient delivery of course information. There are several different types of measuring scales that may be used to quantify cognitive load. The fact that the user may immediately receive feedback on the impact of the instructions makes self-reporting an advantageous practice. There are two different kinds of self-reporting: 1) the amount of stress and 2) the complexity of the materials. Herein, the outcome appears favorable since the student performed well in the post-test. Over the past ten years, the cognitive load theory has emerged as a key educational psychology paradigm and begun to acquire ground in the field of medical education. The hypothesis is based on our present knowledge of human cognitive architecture, which describes how learning occurs when a person's finite working memory interacts with their unlimited long-term memory. Although cognitive load theory was previously referred to be largely a learning theory, similarities between this theory and more extensive facets of clinical practice and medical education are now becoming apparent. Researchers in second language acquisition have focused on memory and language learning. Since many

tasks need learners to focus on and retain new knowledge to improve their language abilities, memory capacity might impact language learning.

METHOD

This study used a sequential mixed-methods research approach. This research approach is widely used in many disciplines of study to get the best results from both quantitative and qualitative studies. The learners employed 12 tenses in the qualitative approach to writing a paragraph as a pre-test to measure the student's initial abilities, and the quantitative approach and descriptive method were used to assess in the form of multiple-choice questions as a tool for gathering data for the post-test. The appropriate verb tense is supplied in brackets, and the students are expected to fill in the blanks with suitable tense forms.

Sample and Sample Size

96 respondents from Bachelor of Technology (B.Tech) students, who were in their second semester were the study's participants. The primary criterion for choosing these people was that they will be learning English as their second language. Only a few of the participants spoke English fluently, and their work often contained simple grammatical errors. The teaching and assessment techniques used in this study were unfamiliar to the participants. The participants were unfamiliar with the entire procedure. Learners' age ranged from 19–22, with the majority being in the 19-year-old range. In this study, the basic purposive sampling method was employed. A random selection was made among the whole population. To achieve the objective of this study, learners were asked to write a paragraph using all 12 tenses as pre-test to know the place where the err commits. Later LearningApps.org was used as the method for data collection in order to learn the tenses. A self-created question was used by the researcher through LearningApps.org for data collection as a post-test, it had reviewed in order to reliable conclusion for the study.

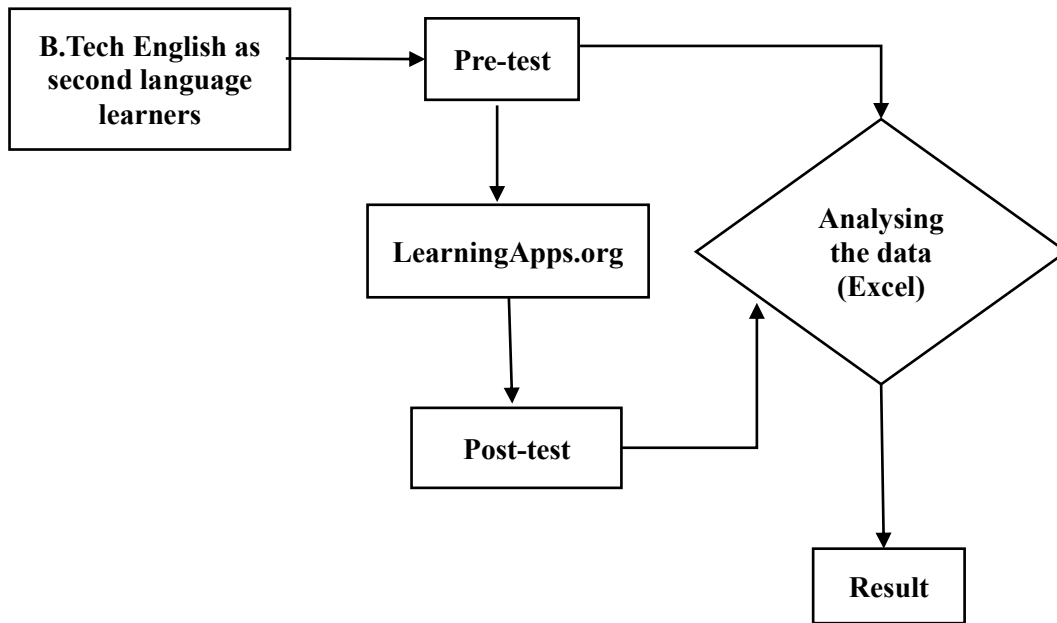
FIGURE 1
SAMPLE SIZE



Research Design and Procedure

The researcher gave participants a brief explanation of the study's goal; then the researcher focused on a task for learners at the initial stage to write a paragraph as a pre-test. From the paragraphs of the learners, the researcher assessed and found the place where the learners lack writing skills. Then the researcher taught tenses to the learners using slides and PowerPoint and provided activities to enhance their usage of tenses in the sentence. The researcher framed a self-made question in LearningApps.org and asked the learners to choose the appropriate tenses to fill the sentence. According to the result from LearningApps.org, students have improved in their tenses.

**FIGURE 2
RESEARCH DESIGN USING A SCHEMATIC DIAGRAM**



RESULT

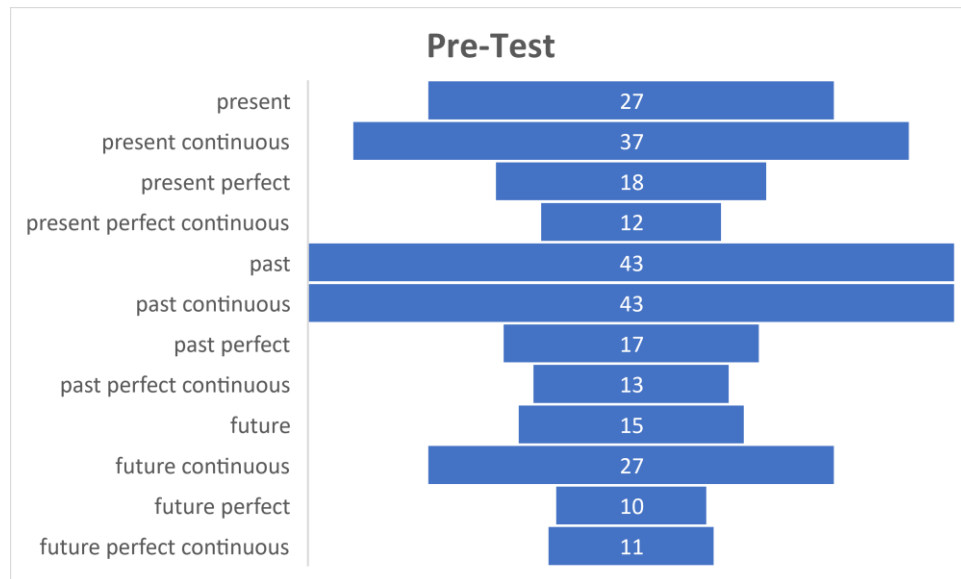
The findings of the study have been summarised below with the statistical data to determine the level of progress that was made. At the same time, the intervention was being carried out. The results of the test showed that the students struggle with using of tenses in their writing skills. According to the overall results shown in the table below, the students had the most trouble with the present continuous tense (28.5), followed by the past continuous tense (27.5) and the future continuous tense (23). Meanwhile, the future simple tense, future perfect tense, and future perfect continuous are the tenses that students have access to that are the easiest to use.

**TABLE 1
COMMON DIFFICULTIES WITH EACH TENSION**

Tenses	Average
Simple present	20
Present continuous	28.5
Present perfect	20
Present perfect continuous	11.5
Past	23
Past continuous	27.5
Past perfect	14.5
Past perfect continuous	13.5
Future	7.5
Future continuous	23
Future perfect	10
Future perfect continuous	10

The researchers instructed the students to compose a paragraph using 12 English tenses following the research methods to collect the data required for the study's objective. The researcher determined the degree of writing skill difficulty as a result. The researcher who analyzed the paragraph writing by the students found that the participants were weak in a few tenses, such as past tense and past continuous tense, where both 43 participants made problems while framing sentences out of these two tenses. Next, 37 students made faults in the present continuous tense.

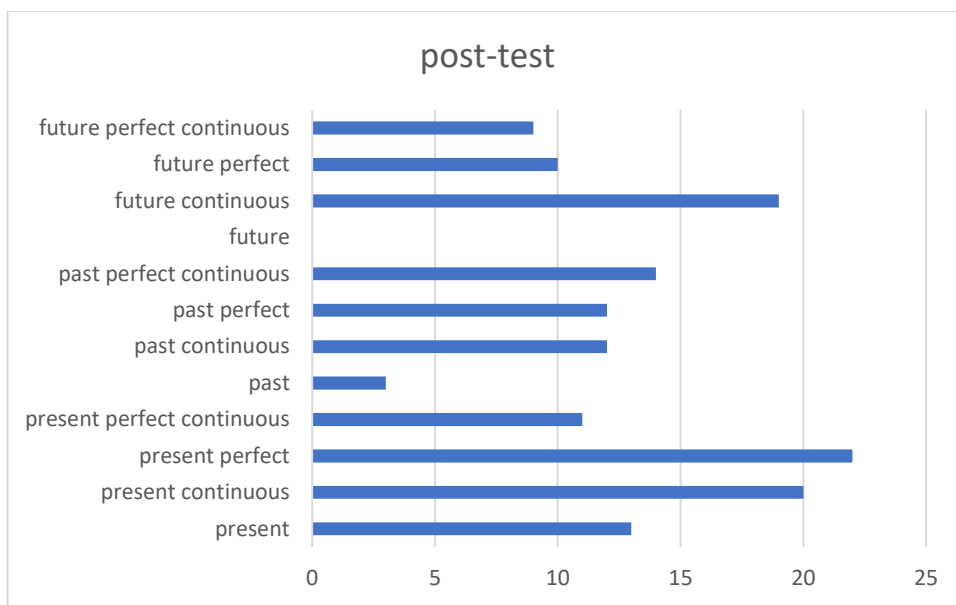
FIGURE 3
PRE-TEST DIFFICULTY LEVEL ON ENGLISH TENSES IN PARAGRAPH WRITING



The future perfect tense, followed by the future perfect continuous tense, proved to be the easiest to frame sentences using the tense from the graph mentioned above. On the other hand, the most confusing tense is the past tense, past continuous tense, present continuous tense, present tense, and future continuous tense. This is the level of difficulty found in the results of the paragraph writing test that students took on the three English tenses in which they frequently experience ambiguity. The worst outcomes were obtained by them frequently while framing sentences.

According to the responses of the students, the reason why it was so difficult to construct sentences using English tenses was that pupils frequently felt confused and interchangeable due to the fact that they all looked the same. In addition, the students admitted that they were unable to detect and remember the appropriate tense to utilize in a paragraph if there was no clear indication of the passage's chronological setting. When deciding whether to use verb 1, verb 2, or verb 3, or if the verb is regular or irregular, the students struggled to choose the appropriate verb forms that were associated to the tenses.

FIGURE 4
POST-TEST LEVEL ON ENGLISH TENSES BASED ON SENTENCE CONSTRUCTION USING
LEARNINGAPPS.ORG

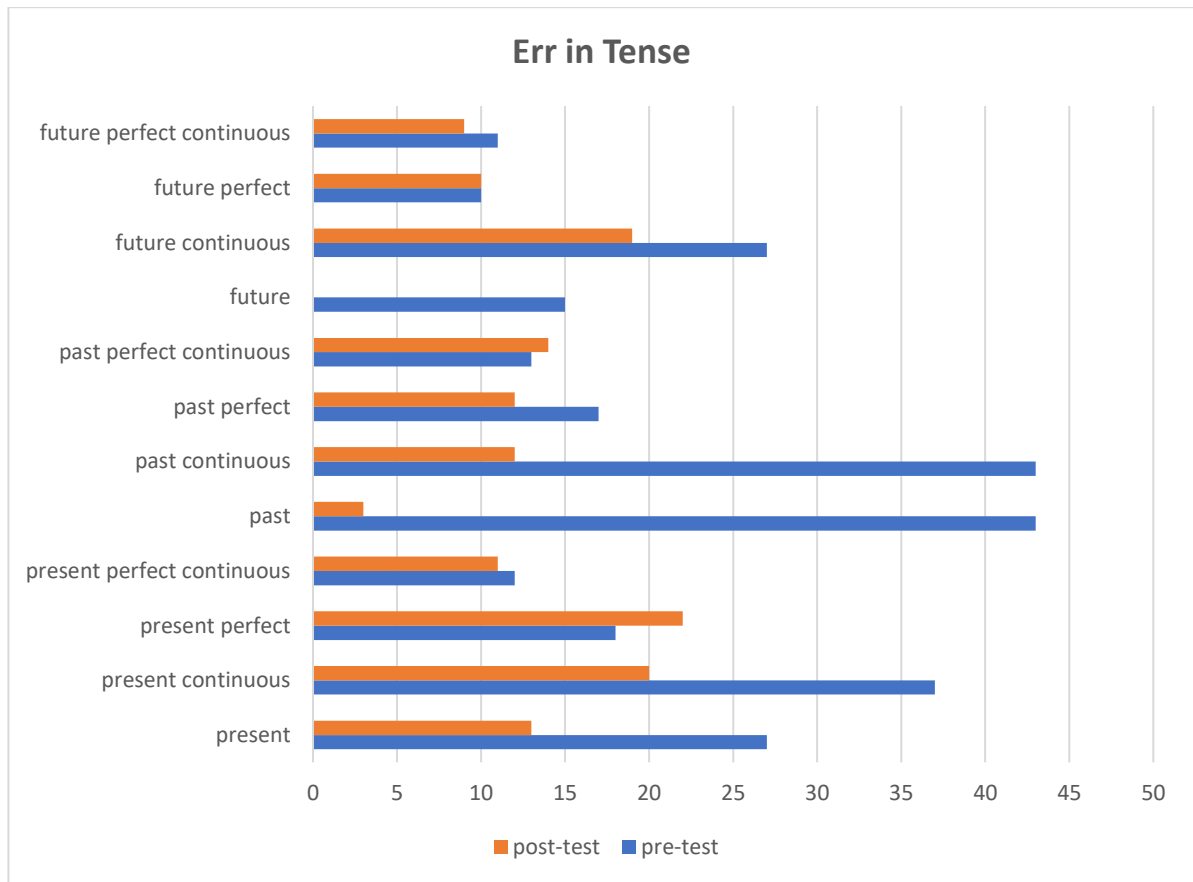


In the meanwhile, the students chose present perfect tense, present continuous tense, and future continuous tense as the most difficult tenses to apply in a sentence through LearningApps.org. This was done to reflect the students' perspective of how the tenses are used in a sentence. Nonetheless, the ones that were the least difficult tense were the simple future tense and simple past tenses. In simple future tense, there was found no mistake while filling up the verb through LearningApps.org; following simple future tense, simple past tense was easily identified by the students except very few students. Future perfect continuous tense was the next feasible tense for the students to apply to the sentence through LearningApps.org, following that future perfect tense. Using cognitive load theory, students' difficulty was less compared to the pre-test.

A comparison between the pre-test and the post-test is shown in Graph 4. The pre-test consisted of the students writing paragraphs using all 12 tenses of the English language, and the researcher looked for errors in which the students failed to create the paragraph in a way that was clear and unambiguous. After that, a post-test was carried out by using learningApps.org, where the researcher created questions that he had personally prepared in order to assess the cognitive load theory of students in terms of their ability to select the appropriate tense to set the context of the sentence. When compared to the errors found in the pre-test, there were fewer mistakes found in the post-test.

At the pre-test, 27 students made errors while constructing paragraphs because of the uncertainty they encountered while utilizing the present tense. These errors occurred in the simple present tense. After being given the exercise to learn tenses by utilizing their structure, just 13 of the learners made errors on the post-test. The cognitive load hypothesis has concentrated on the post-test in this instance. In the Present continuous tense, the cognitive load hypothesis caused 20 of the 96 students to make a mistake during the post-test, whereas only 37 did so on the pre-test. In the present perfect tense, the majority of the students (18) who were composing paragraphs had better clearance during the pre-test. Nevertheless, during the post-test, 22 students made error when structuring sentences as a result of their confusion with the present continuous tense and present perfect tenses. Students said that the Present Perfect Continuous tense was simple to recall, which made it feel real for them to use this tense in both the pre-test and the post-test. Just 12 pupils committed an error during the pre-test, and that number dropped to 11 during the post-test.

FIGURE 5
PRE-TEST AND POST-TEST RESULTS OF DIFFICULTY IN TENSES



As a consequence of the difficulties they had when writing paragraphs in the past tense, 43 students made errors when constructing paragraphs on the pre-test for the simple past tense. This was due to the fact that they were asked to write in the past tense. The post-test demonstrated a significant drop-down in performance, as 3 of the learners had made errors after completing the exercise designed to teach tenses through the utilization of their structure. The post-test is the major focus of attention. Following the cognitive load hypothesis, only 12 of the students who participated in the test made a mistake in the Past continuous tense during the post-test, whereas 43 of them did err during the pre-test while constructing their own paragraph. In comparison to the simple past tense and the past continuous tense, the pre-test performance of 17 of the students who were composing paragraphs was significantly improved when the past perfect tense was used. On the other hand, during the post-test, 12 students framed their sentences incorrectly as a result of their difficulty with the past perfect tense. 13 students found the use of the Past Perfect Continuous tense to be a simple way to structure their paragraphs. Just 14 of the students took the post-test and made a mistake because they found it challenging to fit the right tense into the phrase when it was in the past perfect continuous tense.

In Simple future tense, in the pre-test, 15 of the students could not frame their paragraphs independently, which led to confusion. In the post-test the learners thought that the simple future tense was the simplest tense to remember; thus, they did not make a single error when they were given a post-test through learningApps.org to demonstrate their understanding of the structure that had been taught to the class by the researcher. On their pre-test, 27 students failed to frame the paragraph in the future continuous tense because they were unable to recollect the structure that they had learnt in their school. This led to the students' blunders. In an instant, when the researcher offered the instruction regarding tenses and their

structure, 19 students committed errors in their post-test to fill out the appropriate tense to suit the text in learningApps.org. Under the context of the future perfect tense, 10 students made errors on both the pre-test and the post-test. In the section on the future perfect continuous tense, 11 students had some trouble framing the paragraph in their pre-test, but in their post-test, only 9 out of 96 students had trouble fitting the future perfect continuous tense into the phrase in the learningApps.org.

In designing instructional materials for learning, the Cognitive Load Theory was a primary consideration. It contends that the capacity of working memory to keep knowledge while the individual is engaged in the learning process is limited, and as a result, this memory can be overloaded. In this particular investigation, the researcher utilized it in order to get a measure of the Cognitive Load Theory through LearningApps.org.

DISCUSSION

Language is the means through which individuals communicate their ideas, thoughts, feelings, and opinions to one another. Humans can communicate with one another via the use of spoken language as well as written language. There are a great number of languages that people use to communicate their ideas, opinions, thoughts, and feelings. The English language is an example of one of them. When individuals in India speak English as if it were a foreign language, it indicates that they do not utilize English for day-to-day conversation but rather study it through official and informal education settings. The abilities of listening, reading, speaking, and writing are inextricably linked to communication. Pupils that are able to grasp tenses are able to communicate their ideas, opinions, thoughts, and feelings in a way that is effective, clear, and efficient. In light of this, having a conversation on the correct use of tenses in the English language is quite significant.

In a sentence, the time at which an event or activity occurred is the tense of the sentence. The present, the past, and the future are all aspects of time. In general, tense is indicated by the use of certain verbs in sentences. To put it another way, tenses provide information about the instant in time when a sentence is being said. Before utilizing the verb in a phrase or a statement, the person speaking, writing, or otherwise using the language has to give some thought to the time context of the thoughts, opinions, thinking, and feelings they are expressing. Tense in verbs communicates time.

There were differences between the LearningApps.org exam and the learner's knowledge evaluation that involved phrasing paragraphs in 12 different English tenses. LearningApps.org was then used to assess the learners' knowledge after the initial encounter to determine the challenges they confronted in their writing abilities. By comparing the results, the researcher considered that learners felt difficulty in writing on their own using tenses. When the learners were asked to fill the suitable tense in a sentence using LearningApps.org they faced less difficulty than writing paragraphs on their own.

Rahman and Ali have encountered the same issues in their research on secondary-education Bengali English learners. The learners failed to comprehend the necessity of using auxiliary verbs and past participles in place of the past tense. As they frequently employ no auxiliary to indicate whether an activity is in the present or the past, this is evidence that the learners struggle with utilizing verbs to express past time. These issues were seen in the pre-test, which required students to structure paragraphs using 12 different English tenses. Instead of *saying I play football every day in the evening*, they phrased the sentence as *I am playing football every day in the evening*. The time marker for each day shows that the activity is still in progress. This example has demonstrated that students of English as a foreign language have difficulty comprehending and using the tenses and aspects of the English language. This is because there are situations where a certain tense might refer to a particular moment yet indicate a different feature. This is also evidence that they are unable to retain the patterns; this is made clear by the presentation of the many verb forms used to indicate the varied tenses.

As was the case in the research conducted by Wahyuningtyas and Bram, the students confessed that they tend to forget the structures of each tense and that they had trouble using the formula in the appropriate setting. The post-test was conducted on the learners after the researcher's intervention in teaching them about the 12 English tenses and their structure. However, the structure of tenses was taught to the learners

who study English as their second language. When they are assigned to do a task to fill the appropriate tense in the given sentence at LearningApp.org they faced less difficulty than they faced in their pre-test. Only in simple future tense did students not commit any mistakes. In other tenses, especially on perfect tense and continuous, had higher errors. As they faced confusion in the structure to fill out the appropriate tense in the sentence.

According to the RQ1, tenses play a significant part in writing skills. This is because English tenses are the fundamental requirements for constructing sentences and paragraphs. If we do not utilise the proper tense at the appropriate moment, then the meaning of the entire paragraph may be altered, and the structure of the paragraph may become unintelligible. Learners of English as a second language should place a significant emphasis on tenses in order to improve their abilities in both speaking and writing skills in the language. When a student has a solid grasp of tenses, they will have improved writing skills, which will allow them to construct and write paragraphs and essays in a more effective manner. This is because their writing skills will be enhanced, and they will be less likely to make mistakes because of their solid understanding of tenses. This is the response to RQ3. The researcher provided some guidance on tenses and their structure; the learners who framed the paragraph were having trouble structuring it. After that, the researcher offered the students a link to LearningApps.org so that they could fill in the appropriate tense of the sentence. Learners provided their responses to the questions the researcher had formulated independently. This is the solution to the second part of the question, which asks about RQ2, and it explains how the results of the pre-test are improved in the post-test by using LearningApps.org. Therefore LearningApps.org will enhance the writing skills of ESL learners.

In conclusion, many students who are learning English as a Second Language are under the impression that learning and comprehending English grammar is difficult and puzzling, especially the tenses and features of the English language. This happens as a result of a variety of factors, including the challenge of correctly applying the tense and aspect in the proper context and circumstance, the challenge of recognising the alteration in verb forms to relate the time and tense, and the challenge of recognizing the grammatical structures. Hence, mastering grammar, and in particular gaining comprehension of tenses, is absolutely necessary in order to attain grammatically appropriate communication competence. A language is made up of many different components, some of which include its lexicon, its pronunciation, and its spelling. Students' language awareness and writing abilities should develop due to the teaching and learning of tense. Despite the difficulty and sophistication of tense aspects of teaching and mastering tense should aid students in developing both abilities.

CONCLUSION

This study uses 12 different English tenses to try to identify the issue. This study makes an effort to identify the issues that learners with English as a second language are facing. According to data analysis from the pre-test as writing paragraphs in their own and post-test questionnaire given to the students through LearningApps.org, The students' assumption of the future continuous tense and the past tense are generally considered to be the most challenging to master among the 12 English tenses. As they don't often utilize these tenses, they found it difficult to remember the complex structure and use them in a circumstance. The discrepancies between English tense and aspect, as well as the influence of the student's second language, are the next issues that mostly contribute to the challenges of the learners.

Grammar mistakes, particularly those involving tenses, are anticipated for students learning English as a second language since they are a natural part of the learning process. But it is teachers' responsibility as educators to know how to assist students in avoiding repeating the same mistakes and in finding appropriate answers. As a result, this study offers some guidance and future-focused ideas. Initially, instructors should concentrate their grammar instruction on the tenses that cause their pupils the most confusion, such as past tense, past perfect tenses, and future perfect tenses. Finally, teachers should consider which verb tenses are more important and highlight the key distinctions among the 12 verb tenses. Grammar textbooks are essential for both teaching and learning; thus, it is important that they provide content and exercises that are useful in all circumstances. Finally, the learners should train harder, especially in the areas that they find

most challenging. To improve both their oral and written skills, students should do exercises in all tenses in a variety of scenarios.

The results of the current study have demonstrated that ESL students have difficulty with a few tenses with a complicated structure and are infrequently used. The results of this study might not be generalizable due to several restrictions. For the more conclusive study that may be applied to other educational contexts, it is advised that future researchers look at whether comparable issues arise there as well. Then, it's also a good idea to see whether there's a connection between students' competency with English grammar and use and their ability to employ tenses. At last, it is important to explore other fundamental grammar issues like active voice, passive voice, and articles in order to understand more about how ESL learners struggle with grammar and to use additional tools for more accurate outcomes.

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