P-ISSN 2355-2794
E-ISSN 2461-0275

STARTeCH for Asynchronous Interactive Grammar Learning: Transforming ESL Mastery in Malaysian Schools

Siti Shuhaida Shukor[1*]
Qiu Chuane[2]
Intan Safinas Mohd Ariff Albakri[1]
Noor Alhusna Madzlan[1]
Revathi Gopal[1]

[1]Department of English Language and Literature, Faculty of Languages and Communication, Universiti Pendidikan Sultan Idris, Tanjung Malim 35900, Perak, MALAYSIA
[2]Department of English Language Literature, Faculty of Foreign Languages, YiBin University, YiBin 644000, CHINA

Abstract

The post-pandemic emphasis on educational experimentation underscores STARTeCH's call for swift school reform and the transformative potential of extracurricular learning. This study investigates the impact of STARTeCH on ESL grammar test scores on ESL grammar scores using online learning modes. Utilizing a quasi-experimental design, 87 Malaysian lower secondary school learners (43 males, 44 females, average age 13), selected via purposive sampling, were divided into asynchronous group (n=29), synchronous group (n=30), and conventional group (n=28). Instruments included pre- and post-tests and CAP (Cognitive, Affective, Psychomotor) questionnaires. ANOVA results indicated significant post-intervention differences among the groups F(2.84)=7.834, p=0.001), with the asynchronous group notably outperforming both synchronous and conventional groups in grammar test scores. The study further uncovered no significant differences in cognitive and affective perceptions between asynchronous and synchronous as well as conventional groups. Furthermore, the study revealed a strong preference for the asynchronous mode, particularly in enhancing psychomotor learning objectives. STARTeCH is found to be efficient in enhancing ESL grammar proficiency through tailored, flexible online learning environments with room to practice, repetition, and hands-on engagement via the asynchronous mode. The study suggests a reconsideration of traditional methods, advocating for

[*] Corresponding author, email: sshuhaida@fbk.upsi.edu.my

Citation in APA style: Shukor, S. S., Chuane, Q., Albakri, I. S. M. A., Madzlan, N. A., & Gopal, R. (2025). STARTeCH for asynchronous interactive grammar learning: Transforming ESL mastery in Malaysian schools. *Studies in English Language and Education, 12*(1), 380-397.

Received March 3, 2024; Revised August 16, 2024; Accepted December 21, 2024; Published Online January 31, 2025

https://doi.org/10.24815/siele.v12i1.37666

flexible, technology-enhanced pedagogies for educators, curriculum developers, and policymakers within ESL education.

Keywords: Asynchronous, ESL, grammar, online learning, synchronous.

1. INTRODUCTION

In Malaysia, English is regarded as a secondary language, and all Malaysians must acquire proficiency in it during their eleven years of schooling (Aziz & Kashinathan, 2021). It is a prerequisite for pursuing higher education at the university level. However, research has shown that many youngsters continue to struggle with grasping English grammar (Idris et al., 2020; Singh et al., 2017), despite being taught it in primary school (Ang et al., 2020; Misbah et al., 2017). The significance of grammar in the English language cannot be disregarded, as it is a fundamentally important linguistic structure (Alijanian, 2012) that learners must acquire to construct coherent sentences. In Malaysia, Language Awareness is a fundamental and necessary ability that must be imparted during English lessons. It is generally achieved using textbooks and grammatical activities in traditional classroom settings. Teachers merely explain the essential grammatical rules that learners need to know in a traditional manner (Yaacob & Md Yunus, 2019), resulting in challenges for English as a Second Language (ESL) learners in comprehending them (Misbah et al., 2017).

The objective of the CEFR integration curriculum was to enhance the English language skills of younger learners (Hashim et al., 2019). Under this premise, efforts have been devoted by ESL educators and scholars to shift from conventional teaching and learning to a modern approach of integrating Information and Communications Technology (ICT) into education to align with the current trends in the Malaysian curriculum (Anak Yunus & Hua, 2021; Azmi, 2017). In addition, the COVID-19 pandemic has had a tremendous impact on the pedagogy including ESL education (Tang et al., 2021). This transition has resulted in a massive shift towards online learning by integrating ICT such as presentation software, learning management systems (LMS), student response systems (SRS), and game-based learning platforms (GBLP) into education (Moorhouse & Beaumont, 2020; Voogt & Knezek, 2021).

Amid a renewed impetus towards experimentation in education in the post-pandemic world, STARTeCH also highlights the need for rapid school reform and the transformative power of extracurricular educational approaches. Traditional face-to-face ESL instruction was found lacking in many aspects when it was disrupted by the pandemic, especially in terms of grammar training. For STARTeCH to enjoy greater success in the future, innovations such as WBL will need to provide increasingly flexible, technologically immersive solutions that can be more easily tailored to diverse learning spaces and circumstances.

Online learning refers to the delivery of educational content through the Internet and the use of ICT for teaching and learning purposes. The advent of it has increased the accessibility of education to individuals. This has led to the emergence of ubiquitous learning, which emphasizes that learning can occur at any place, at any time, and in any manner (Xhaferi & Xhaferi, 2020). Within this scope, the effectiveness of asynchronous/synchronous online learning has been a subject of discussion among educators and researchers, particularly since the emergence of the COVID-19 pandemic (Turnbull et al., 2021). Studies thus far have demonstrated that both asynchronous and synchronous online learning can be as successful as traditional classroom training, provided that it is adequately designed and delivered (Habibi et al., 2020). For example, a study conducted by Karaaslan et al. (2018) demonstrated that the use of both asynchronous and synchronous games and activities in vocabulary learning was effective. Similarly, Riwayatiningsih and Sulistyani (2020) found that implementing a blend of asynchronous and synchronous learning methods in their creative writing class yielded favourable outcomes. The aforementioned research provides evidence that the utilization of asynchronous/synchronous online learning in online ESL education is advantageous. Nevertheless, there are still uncertainties regarding the effectiveness of asynchronous/synchronous online learning compared to traditional

face-to-face instruction in terms of using new ICT techniques and approaches to ESL grammar teaching and learning, specifically during the post-pandemic period in secondary schools in Malaysia. This study fills the gap in the existing literature by examining the effectiveness of the STARTeCH technique in enhancing students' ESL grammar proficiency in the not well-explored post-pandemic Malaysian educational context. To address this inadequacy, this research aims to investigate the effectiveness of integrating the STARTeCH (Specific Objectives, Two-Way Engagement, Assigned Assessment, and Real-life Reflection) technique into asynchronous and synchronous online learning approach to secondary school learners' ESL Grammar Test Scores (GTS) and learners' Cognitive, Affective and Psychomotor (CAP) perceptions. The research questions of this study are as follows:

1. Is there any significant difference between learners' GTS through STARTeCH asynchronous/synchronous online learning and conventional learning?
2. What are the learners' CAP perceptions of using STARTeCH asynchronous/synchronous online learning?
3. Is there any significant difference between learners' CAP perceptions through STARTeCH asynchronous/synchronous online learning?

In theory, this study adds to the literature on post-pandemic ESL instruction by providing direct empirical evidence on the implementation of STARTeCH in online education and its effectiveness for grammar acquisition, which is an essential yet overlooked area of language learning. It is in keeping with the Malaysian Education Blueprint 2013-2025 by prioritising pedagogical innovations based on the CEFR framework and ICT technologies for contemporary educational needs. This study can be applied directly to educate teachers and policymakers on how best to respond to enduring problems of grammar education among Malaysian secondary school students. These results could be used to shape professional development for ESL instructors, which could give them new strategies like STARTeCH for hybrid or fully online learning environments, as well as practical suggestions for curriculum designers for incorporating structured and participatory online learning approaches to address the wide range of learners to make ESL teaching more engaging and effective in the post-pandemic environment.

2. LITERATURE REVIEW

2.1 Asynchronous/Synchronous Online Learning

Asynchronous online learning allows learners to have the flexibility to access course materials and complete tasks at their own preferred time, location, and convenience (Lin & Gao, 2020). It commonly provides available and accessible resources such as audio/video lectures, handouts, PowerPoint presentations (Perveen, 2016), discussion forums, and self-paced courses at all times and at any location (Riwayatiningsih & Sulistyani, 2020). Learners not only have the chance to interact with these course materials and approaches, but also to take part in discussions, and submit assignments within a designated timeline (Namada, 2022). Due to the flexibility in scheduling, learners are allowed to participate in the course without the need to be online at the same time as their peers or instructors (Martin et al., 2023). In recent years, asynchronous online learning has attracted considerable attention because of its features related to inflexible location and time limitations (Mayadas, 2020).

Synchronous online learning requires learners to engage with instructors at the same time (Fadhilah, 2021). They usually engage in a virtual environment and utilise online platforms, at a predetermined time (Riwayatiningsih & Sulistyani, 2020). Examples of this approach include video conferencing, teleconferencing, live chatting, and live-streaming lectures. The methods involve the use of audio, video, text chat, interactive whiteboard, application sharing, and instant polling (Puspitasari et al., 2021). Synchronous online learning recreates the interactive characteristics of a conventional classroom setting that encourages involvement and facilitates active engagement (Andrew et al., 2021). It is found to be beneficial because of its live

communication, prompt clarification and feedback (Riwayatiningsih & Sulistyani, 2020), real-time participation and discussions, and collaborative work with peers (Lin & Gao, 2020).

Although the benefits of asynchronous/synchronous online learning outlined earlier are evident, the complete execution of it has encountered obstacles as well. This may affect student motivation and engagement. Synchronous online learning faces challenges related to technology, like poor internet connections and the need for proper equipment, as noted by Hermosisima et al. (2023). These issues can hinder real-time teaching and interaction.

To address these problems, several steps have been considered for the effective use of both asynchronous and synchronous online learning. Mairing et al. (2021) emphasize the importance of ease of use, technical support, and the reliability of online platforms, as supported by Zhang et al. (2020). Similarly, Murphy et al. (2011) highlighted the significance of examining the teaching methods and pedagogy in online courses. In this regard, both the platform and instructional methods are considered essential to implement asynchronous/synchronous online learning successfully.

Various examples of utilising platforms such as Facebook groups, WhatsApp, and Google Classroom were deemed helpful to greatly enhance the online learning experience by facilitating both Asynchronous and Synchronous learning (Mairing et al., 2021). Among these, Edpuzzle is a highly popular platform among learners for its key advantages that provide learners with abundant resources and customise imported videos. This boosts learners' confidence, motivation, and curiosity, leading to active participation and engagement (Julinar & Yusuf, 2019).

When it comes to teaching methods, the course design should be organised in a manner that encourages active participation and communication between learners and teachers. According to Uy et al. (2023), a specific objective is essential to guide teachers in developing instructional activities and assessments that are in line with the intended student learning outcomes. Teachers can strategically plan their instruction, evaluate student progress, and guarantee that learners are actively striving to attain the required learning outcomes by precisely delineating specific objectives in online classes (Clark, 1994; Nunan, 1989). Furthermore, according to Tan et al. (2019), the authors argue that fostering two-way engagement in the classroom promotes active participation and interaction among learners and the instructor. Within a two-way engagement model, the instructor facilitates opportunities for learners to interact with the course content, which may include group activities, interactive exchanges of ideas, inquiries, comments, and problem-solving exercises (Almusharraf & Bailey, 2023). Shepard (2019) points out that assigned assessment in a classroom setting refers to the deliberate evaluation or measurement of learners' knowledge, abilities, or performance. Nugraha et al. (2018) stress the significance of conducting assessments when introducing e-learning in a language programme. They note that assessments serve as the basis for making informed decisions regarding the curriculum. Moreover, recent research provides further evidence about the significance of real-life reflection in language acquisition. Engaging in real-life reflection within the language classroom can contribute to the development of ecological literacy and the advancement of sustainable language teaching methods (Nkwetisama, 2011).

Given the plethora of literature on asynchronous and synchronous online learning especially post-pandemic COVID-19 which has exacerbated the push to digital globally, such as those studies conducted by Fabriz et al. (2021) and Moorhouse and Wong (2022) emphasising learning and education quality with regards to their effectiveness in keeping learners involved and in improving educational outcomes, the researcher was motivated to conduct this research to fill in the gap in the literature on their impact and efficacy in grammar acquisition in ESL and its specific application post-lockdown in Malaysia.

2.2 ESL Grammar Teaching and Learning

Murtini (2013) defines grammar as the comprehension of accurate rules of the English language, involving the proper alteration of word forms and their combination into sentences. Effendi et al. (2017) argue that learners must possess adequate proficiency in the grammatical aspects of the target language to excel in the four essential English language skills: speaking,

reading, listening, and writing (Navaz & Sama, 2017). In addition, Rao (2019) asserts that grammar plays a significant role in interpersonal communication, both in spoken and written forms. Nevertheless, the majority of ESL learners still consider learning grammar to be challenging (Hashim et al., 2019). Therefore, ESL instructors teaching grammar should employ a suitable approach to address learners' lack of excitement during lessons (Zuhriyah & Laili, 2022). In this endeavour, an extensively investigated strategy in ESL grammar learning involves integrating technology, specifically focusing on the effectiveness of asynchronous and synchronous online learning settings has been adopted widely (Anjaniputra & Rukmini, 2021).

Numerous investigations have explored the impact of both asynchronous and synchronous online learning on students' acquisition of grammar skills. Specifically, Khalil (2018), Riwayatiningsih and Sulistyani (2020), Cahyani et al. (2021), and Zuhriyah and Laili (2022) have contributed to understanding this area. Zuhriyah and Laili (2022) focused on the benefits of merging asynchronous and synchronous learning techniques for grammar instruction, highlighting the positive effects on student outcomes. Furthermore, Ahmad and Arifin (2021) investigated the achievements and perceptions of students in an online flipped grammar class, noting the positive reception of these online learning strategies in enhancing their educational experience. Nevertheless, there are lingering uncertainties regarding the comparative effectiveness of asynchronous/synchronous online learning specifically when to incorporate innovative ICT technologies and methodologies into ESL grammar teaching and learning in the Malaysian context.

2.3 Cognitive, Affective, Psychomotor domains

The process of acquiring knowledge can be broadly classified into three domains: cognitive, emotional, and psychomotor (Hoover et al., 2012). Micklich (2011) asserts that cognitive domains are operationalized through learning activities. It encompasses processes such as recall, cognition, problem-solving, and creative output. It pertains to how a learner acquires, processes, and applies knowledge. According to Micklich (2011), this domain includes recall, reasoning, problem-solving, and creation or production, which are applied in learning activities which lead to intellectual abilities. The affective domain refers to the integration of learners' attitudes, opinions, emotions, learning behaviour, and evaluation of what has been learned in the learning process (Olatunji, 2013). It focuses on the arising and desires of learning that arise in students.

According to Olatunji (2014), there are usually four levels of the affective domain namely receiving (desire to listen), responding (desire to express), assessing (desire to be involved), and organizing (desire to be an idea maker). The psychomotor domain, however, is commonly referred to as the skill domain. It encompasses the areas of learning that pertain to acquiring and applying certain abilities or actions following a learning experience. This domain pertains to the aptitude acquired by learners in effectively controlling and executing specific bodily actions by prescribed procedures (Walad et al., 2019). The psychomotor domain has four stages, namely action, coordination, formation, and production. Scholars state that to improve students' learning processes and outcomes, teachers should consider these domains when creating and delivering classes (Viriya, 2022). Learning happens when students can participate, communicate, interact, and carry out the learning process in a way that best suits their interests and skills. Based on Hoque (2016), technology can be utilised to enhance the learning process in the present day as students can share information through the sophisticated internet.

3. METHODS

This study adopted a quasi-experimental design to examine the STARTeCH technique's effectiveness on ESL grammar learning among Malaysian lower secondary school learners by comparing asynchronous and synchronous online learning against conventional instructional methods. Ethical approval was granted by the Malaysian Ministry of Education. Participants

included 87 learners (43 males, 44 females, average age 13), selected via purposive sampling and distributed across two experimental groups (asynchronous n=29, synchronous n=30) and one control group (n=28) using the fishbowl technique. Participants were distributed into groups using a random sampling method. This gives a fair distribution of respondents without corrupting the sampling procedure. The methodology employed pre- and post-tests alongside CAP questionnaires to assess changes in grammar proficiency and learner perceptions across cognitive, affective, and psychomotor domains.

For the first research question, a pre- and post-test design was used. The pre-test, which assessed learners' baseline grammar skills, was 25 questions about grammar tenses. This was a baseline to gauge participants' preintervention proficiency levels. After the eight-week intervention, a post-test of the same structure and difficulty, only with different questions, was conducted to quantify learning.

The intervention consisted of two experimental groups, one with asynchronous STARTeCH online learning, the other with synchronous STARTeCH online learning, and a control group who were taught grammar in the standard way. If differences in Grammar Test Scores (GTS) between the three groups were significant, using an ANOVA or t-test to check, STARTeCH was successful.

Meanwhile, the second research question measured students' Cognitive, Affective, and Psychomotor (CAP) impressions of STARTeCH, CAP questions were given after the intervention to the asynchronous and synchronous experimental groups. Descriptive and thematic analysis (if open-ended responses were available) revealed the learners' attitudes and gave us an idea of how the STARTeCH approach was received generally in online classrooms. Two versions of CAP questionnaires, adapted specifically for this study (Mohd Suhood, 2021), evaluated learners' perceptions towards STARTeCH's asynchronous and synchronous online learning modalities. Responses were rated on a 5-point Likert scale, with the questionnaire's reliability confirmed by a Cronbach's alpha of 0.919, indicating excellent reliability.

Last, the third question was a comparison question of CAP in the synchronous and asynchronous populations. Both groups completed the same CAP survey post-intervention. The data were not considered normal, so the Mann-Whitney U test, a non-parametric analysis of the independent samples t-test, was used to see if the two groups experienced any differences between themselves in terms of the cognitive, affective, and psychomotor aspects of perception.

3.1 Materials and Implementation Phases

Regarding the materials and implementation phases, textbooks, animated videos, the Edpuzzle website, and Padlet were utilised in this study. One of the researchers created all the internet-animated videos using Adobe Animator Character (see Figure 1). As a result, the animated videos about grammar tenses were produced, uploaded to YouTube, and subsequently imported onto EDpuzzle (https://edpuzzle.com/). The topic pertains to domains of secondary school English curriculum as provided by the Ministry of Education in Malaysia. Each video had a duration of around seven to ten minutes and contained clear specific objectives and pre-added questions of various formats (fill-in-the-blank, multiple-choice, and structured questions). The questions were devised by two ESL instructors, taking into account the proficiency levels of the learners, to facilitate their engagement with the questions. The participants in the Asynchronous and Synchronous Groups utilised Padlet to access and view the animated videos via the EDpuzzle platform. To prevent learners from skipping content, the teacher established a watching threshold. This approach aligns with the methodological principles described by Malhotra et al. (2017), where structured frameworks are used to investigate behaviour systematically. This threshold ensures that learners cannot bypass any portion of the movie and must watch it from beginning to end (Kleftodimos & Evangelidis, 2016).

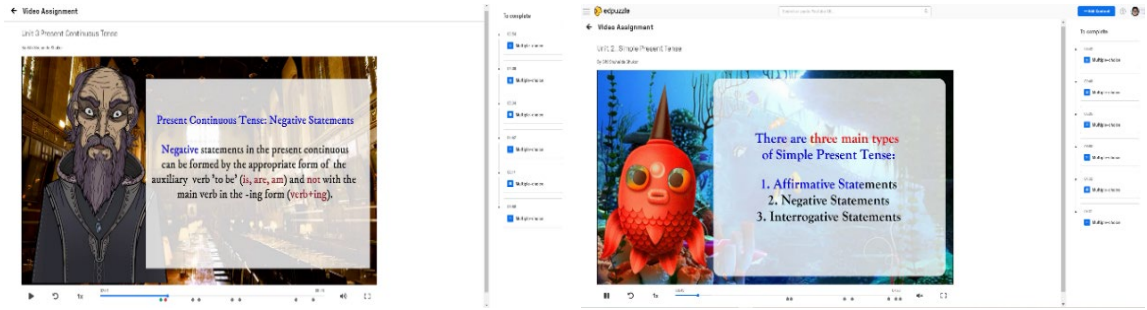

Figure 1. Interfaces of researcher-made animated videos.

To ensure the successful and effective implementation of this study, both the asynchronous and synchronous groups adhered to the four phases of the STARTeCH technique in the following section. In addition, the STARTeCH asynchronous/synchronous online learning model of this study is also presented (see Figure 2).

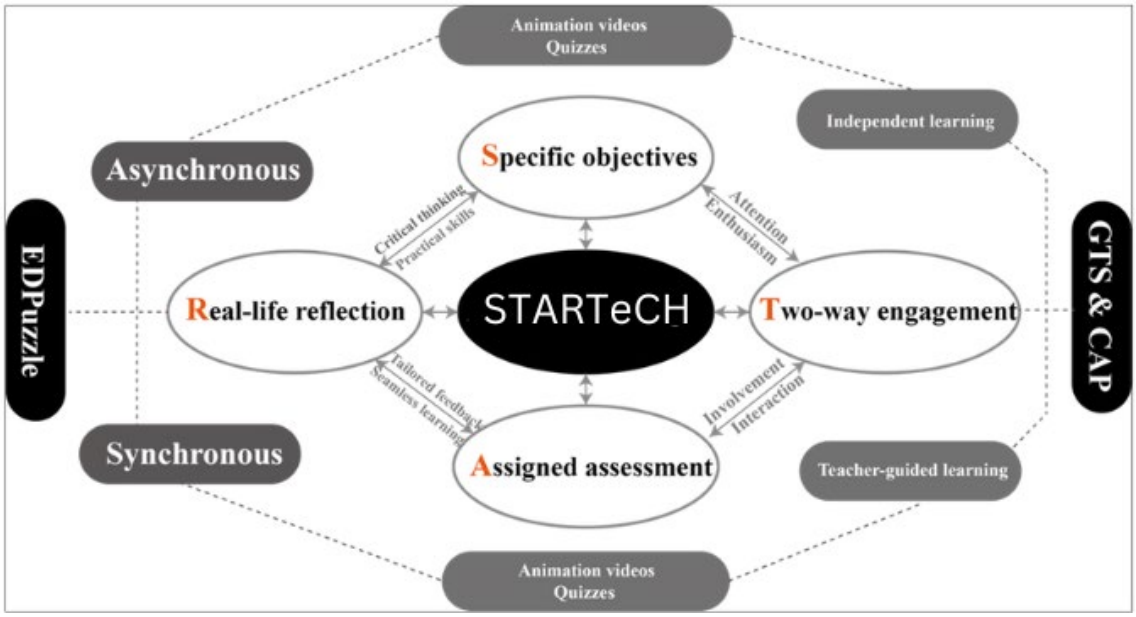

Figure 2. STARTeCH asynchronous/synchronous online learning model.

For systematic and organised use of the STARTeCH technique, the technique is broken down into four stages, Specific Objectives (S), Two-way Engagement (T), Assigned Assessment (A), and Real-life Reflection (R). Each phase works hand-in-hand with the other to produce a whole learning system which keeps the students engaged while they master grammar content. Below is a breakdown of each phase and how all of this correlates to the learning goals.

1. Phase one: S = Specific objectives: At the start of the STARTeCH asynchronous/synchronous session, clearly articulating specific and measurable objectives using Adobe Animator Character-created STARTeCH Asynchronous videos serve multiple purposes. It sets a clear direction for the lesson, providing a roadmap for learners. This approach ensures focus and clarity, aligning the learners' expectations with the learning outcomes. Additionally, using visually engaging content aids in sustaining attention and fostering enthusiasm for the lesson.
2. Phase two: T = Two-way engagement: Utilising the Multiple-Choice Question within the STARTeCH platform promotes active engagement and collaboration. Learners need to respond to several questions while watching the videos simultaneously. It mimics the teacher's asking questions while learning. The main idea is to ensure students pay attention to the video they watch.
3. Phase three: A = Assigned assessment: Assigning assessments through Quizizz or similar platforms offers valuable insights into student comprehension and progress. This method

allows educators to gauge learning outcomes after learners have watched the video on the EDpuzzle platform.

4. Phase four: R = Real-life Reflection: Encouraging learners to share real-life reflections using the Padlet platform or other collaborative applications. This reflective practice enhances the critical thinking and analytical skills of the learners after watching the video. The reinforcement of learning was done at this stage.

4. RESULTS

4.1 Homogeneity of Variances

The result of the homogeneity test as a prerequisite for further testing is shown in Table 1.

Table 1. Test of homogeneity of variances.

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	.704	2	84	.498
	Based on Median	.494	2	84	.612
	Based on the Median and with adjusted df	.494	2	71.774	.613
	Based on trimmed mean	.600	2	84	.551

The outcomes of Levene's Test for Homogeneity of Variances are that the equality of variances requirement is met (see Fig. p=0.498 p=0.498 with the mean), so one-way ANOVA would be further conducted.

4.2 The Differences in Grammar Test Scores Between Asynchronous/Synchronous Online Learning and Conventional Learning

To ensure the homogeneity of the three groups in terms of their GTS prior to the intervention, their pre-test scores were evaluated using a one-way between-groups ANOVA. To determine the statistical significance of the variations among these three groups' mean scores, the p-value in the Sig. column of the ANOVA table was analysed. According to the data in Table 2, there was no significant difference in the pre-test scores between the Asynchronous Group (Mean=17.17, SD=6.006), Synchronous Group (Mean=21.63, SD=8.198), and Conventional Group (Mean=20.61, SD=8.328) with $F(2)=2.775$, $p=0.068$ (two-tailed). This result was reached because the p-value was above the significance level ($p>0.05$). Thus, the learners in the two experimental and one control group demonstrated homogeneity in GTS before the intervention.

Table 2. Results of one-way ANOVA for comparing mean scores of the GTS pre-test.

		Sum of squares	df	Mean square	F	Sig.
Pre-test scores	Between groups	319.274	2	159.637	2.775	0.068
	Within groups	4831.783	84	57.521		
	Total	5151.057	86			

A post-test was conducted to investigate whether there was a significant difference in learners' GTS between the three groups. In order to achieve this, the GTS post-test of the Asynchronous Group, Synchronous Group, and Conventional Group were compared using a one-way between-groups ANOVA.

Table 3. Results of one-way ANOVA for comparing mean scores on the GTS post-test.

		Sum of squares	df	Mean square	F	Sig.
Post-test scores	Between groups	1990.714	2	995.357	7.834	0.001
	Within groups	10672.137	84	127.049		
	Total	12662.851	86			

Table 4 shows that there was a significant difference in the post-test scores among the Asynchronous Group (M=20.87, SD=10.058), Synchronous Group (M=13.48, SD=10.155), and Conventional Group (M=25.14, SD=13.405). This difference was confirmed by the statistical analysis, with an *F*-value of 7.834 and a *p*-value of 0.001 (two-tailed). The *p*-value being less than the specified level of significance ($p<0.05$) indicates that the difference was statistically significant. Consequently, there was a notable significant difference among the three groups regarding GTS after the intervention. Post hoc Tukey HSD tests (Ruxton & Beauchamp, 2008) were used to analyse group differences in post-test scores.

Table 4. Post hoc tests via Tukey HSD (Post-test scores).

Class	N	Subset for alpha=0.05	
		1	2
Asynchronous Group (Exp)	29	13.48	
Synchronous Group (Exp)	30		20.87
Conventional Group (Ctrl)	28		25.14
Sig.		1.000	.323

Table 5. Multiple Comparisons Tukey HSD.

Dependent variable: Post-test scores						
Tukey HSD						
(I) Class	(J) Class	Mean difference (I-J)	Std. error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Synchronous	Asynchronous	7.384*	2.935	.036	.38	14.39
	Control Group	-4.276	2.962	.323	-11.34	2.79
Asynchronous	Synchronous	-7.384*	2.935	.036	-14.39	-.38
	Control Group	-11.660*	2.986	.001	-18.79	-4.53
Control Group	Synchronous	4.276	2.962	.323	-2.79	11.34
	Asynchronous	11.660*	2.986	.001	4.53	18.79
*. The mean difference is significant at the 0.05 level.						

Table 4 and Table 5 illustrate a significant difference between the asynchronous group and the synchronous group with the asynchronous group outperforming the synchronous group by an average of 7.384 (p=0.36). This result indicates that learning via STARTeCH in the asynchronous mode had a statistical advantage over the synchronous format. Conversely, when comparing the asynchronous group to the control group, the asynchronous group's mean scores were significantly higher by an 11.660 mean difference (p=0.001). This result suggests the effectiveness of the asynchronous learning format over the control group. However, the comparison between the synchronous group and the conventional group did not yield a statistically significant difference (p=.323) with a mean difference of 4.276. This result implies that the synchronous learning mode did not significantly outperform the conventional control group in terms of post-test scores. In summary, the Tukey HSD post hoc analysis revealed that the asynchronous group demonstrated the most significant improvement in ESL grammar post-test scores as compared to synchronous and conventional groups. This indicates that asynchronous learning using the STARTeCH approach holds a significant advantage in enhancing ESL learners' grammar performance, thus becoming strong evidence of the effectiveness of STARTeCH-guided asynchronous online learning interventions.

The effect size analysis was conducted to corroborate the findings and provide a more comprehensive understanding. Effect size indicates the practical significance of the differences between the groups, beyond mere statistical significance. Partial eta-squared measures the proportion of variance in post-test scores explained by the intervention, thereby quantifying the strength of the relationship between the independent and dependent variables. The results of the effect size analysis are presented in Table 6.

Following this, the effect size was measured using partial eta-squared ($\eta^2_{partial}$), which is a common measure for ANOVA effect sizes. According to Valero et al. (2022), the values 0.01, 0.06, and 0.14 are categorized as representing small, medium, and large effects, respectively.

Results from Table 6 show that the computed value of ($\eta^2_{partial}$) was around 0.157, indicating a large effect size. This suggests that the differences in the post-test scores between asynchronous, synchronous, and conventional groups are not trivial or due to random chance. The independent variable has a crucial role in determining the dependent variable on the post-test scores measure.

Table 6. Tests of between-subjects effects.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1990.714a	2	995.357	7.834	.001	.157
Intercept	34186.407	1	34186.407	269.080	.000	.762
Class	1990.714	2	995.357	7.834	.001	.157
Error	10672.137	84	127.049			
Total	46707.000	87				
Corrected Total	12662.851	86				
a. R Squared=.157 (Adjusted R Squared=.137)						

4.3 Learners' CAP Perceptions of STARTeCH Asynchronous and Synchronous Online Learning

The results of the first research question indicate that there is no statistically significant difference between the learners' GTS in the Asynchronous and Synchronous groups. To gain a deeper understanding of learners' perceptions of STARTeCH asynchronous/synchronous online learning, two sets of CAP questionnaires were given to learners in the asynchronous/synchronous online learning groups respectively. The questionnaires utilised in this study were structurally similar to Mohd Suhood (2021) in terms of their design, format, and use of Likert-scale items. However, the main difference was solely in their focus on either asynchronous or synchronous modes of delivery. The Likert scale, which underpins these questionnaires, generates ordinal data by ranking responses. The following table presents the mode and percentage of each item (1=strongly disagree, 2=disagree, 3=not applicable/uncertain, 4=agree, and 5=strongly agree).

Table 7 presents the analysis of learners' perceptions towards STARTeCH asynchronous and synchronous online learning. Three domains i.e. cognitive, affective, and psychomotor are compared based on the mode which indicates learners' agreement or positive perception and its percentage.

Table 7. CAP Perceptions questionnaires.

Domains	Items	Asynchronous		Synchronous	
		Mode	Percentage (%)	Mode	Percentage (%)
Cognitive	I can use correct grammar according to the context is the same across categories of Class.	4	50.0	3	50.0
	I can make sentences using the right tenses that are the same across categories of Class.	4	50.0	4	45.0
	I can differentiate different types of tenses is the same across categories of Class.	3	62.5	4	35.0
	I feel interested in learning more using the STARTeCH Asynchronous/Synchronous video,	4	56.3	4	50%
	Assuming I had access to STARTeCH Asynchronous/Synchronous video, I intend to use it.	3	56.3	3	40.0
	I would find STARTeCH Asynchronous /Synchronous video to be useful in my learning,	4	43.8	4	45.0
Affective	I like learning using the STARTeCH Asynchronous/Synchronous video.	4	43.8	4	50.0
	I engage with the STARTeCH Asynchronous/Synchronous lesson until the end of the session.	4	43.8	4	50.0

Table 7 continued…

	I feel interested in learning more using the STARTeCH Asynchronous/Synchronous video.	4	43.8	3	55.0
	I feel that I can read better using the 'karaoke feature' in the STARTeCH Asynchronous/ Synchronous video.	4	50.0	4	45.0
	Using STARTeCH Asynchronous/ Synchronous video would improve my performance in learning.	3	50.0	3	45.0
	I would find it easy to get STARTeCH Asynchronous/Synchronous video to do what I want it to do.	4	50.0	3	45.0
Psychomotor	I can learn on my own without the help of my teacher using the STARTeCH Asynchronous/ Synchronous video.	3	81.3	4	50.0
	I can control the pace of my learning using the STARTeCH Asynchronous/Synchronous video.	4	56.3	4	40.0
	I engage with the STARTeCH Asynchronous/ Synchronous video until the end of the session.	4	43.8	4	35.0
	My interaction with the STARTeCH Asynchronous/Synchronous video would be clear and understandable.	4	62.5	4	30.0
	Using STARTeCH Asynchronous/Synchronous video in my learning would increase my productivity.	4	37.5	4	40.0
	I find the STARTeCH Asynchronous/ Synchronous video easy to use.	3	43.8	4	40.0

4.3.1 Cognitive Domain

Overall, there were positive perceptions from both asynchronous and synchronous groups regarding the capability to use correct grammar and make sentences using the right tenses. However, there were mixed perceptions in terms of differentiating types of tenses where the asynchronous group had more uncertainty as compared to the synchronous group. These findings suggest that learners are generally confident in their grammatical skills and sentence construction. However, the asynchronous group had reservations about differentiating tenses. Both groups displayed a strong inclination towards interest in learning more, with a slight preference for the asynchronous mode. Nonetheless, the intention to use the platforms was found to be uncertain in both groups. This suggests learners were not fully convinced about incorporating these tools into their learning regimen.

4.3.2 Affective Domain

In general, learners' engagement levels and preferences for using the STARTeCH videos were positive. Despite that, there was an indication of uncertainty regarding the interest in learning more with the Synchronous mode. This suggests a potential area for improvement in making the Synchronous session more engaging or relevant. Although the test performance scores showed improvement in their GTS, learners, however, seem to be on the fence about the effectiveness of the intervention in improving their performance as well as the ease of use.

4.3.3 Psychomotor Domain

Learners had doubts over their ability to learn without their teacher's assistance. However, they agreed that they could control their own learning pace using STARTeCH. Nonetheless, all learners had positive perceptions about their engagement with STARTeCH until the end of their learning sessions (the Synchronous group). These findings indicate that the intervention managed

to keep learners engaged throughout. On the other hand, the Asynchronous group had an uncertainty about whether using the intervention would increase productivity. This illustrates that learners were unsure about the platform's efficiency in enhancing their learning outcomes.

In short, while there is general positivity regarding the platform's potential to aid learning, some uncertainties remain, in particular, the effectiveness of the Synchronous mode as well as the overall impacts of both groups on learning productivity and outcomes. Findings from these questionnaires may suggest improvements in the STARTeCH technique to better meet learners' needs and expectations.

4.4 Differences in Learners' CAP Perceptions Regarding the STARTeCH Asynchronous and Synchronous Online Learning

Following the perceptions from both groups, a deeper analysis of comparing which group yields better perceptions was conducted. The analysis began with a preliminary assessment of the data to determine the appropriate statistical approach (parametric vs. non-parametric) for evaluating the questionnaires. This involved conducting a Shapiro-Wilk test to check for normality in the distribution of the responses to the CAP questionnaire. The test results indicated significant deviations from normality, suggesting that the data did not follow a normal distribution. As a result, this deviation from normality necessitated the adoption of non-parametric methods for the subsequent analysis.

Given the non-normal distribution of the data, a non-parametric approach was deemed suitable. Thus, to compare the perceptions of learners in the Asynchronous and Synchronous groups regarding the CAP, an independent-sample Mann-Whitney U test was employed. This test was chosen to determine if there was a statistically significant difference in the CAP perceptions between the two groups. This test is deemed appropriate for comparing medians between two independent groups when the data do not meet the normality assumption.

Table 8. Independent-samples Mann-Whitney U Test results.

Domain	34	Mean rank	Sum of ranks
Cognitive	Asynchronous	18.20	364.00
	Synchronous	18.88	302.00
Affective	Asynchronous	18.68	373.50
	Synchronous	18.28	292.50
Psychomotor	Asynchronous	21.83	436.50
	Synchronous	14.34	229.50

Table 9. Test statistics of Mann-Whitney U Test.

	Cognitive	Affective	Psychomotor
Mann-Whitney U	154.000	156.500	93.500
Wilcoxon W	364.000	292.500	229.500
Z	-.193	-.113	-2.127
Asymp. Sig. (2-tailed)	.847	.910	.033
Exact Sig. [2*(1-tailed Sig.)]	.863[b]	.912[b]	.033[b]
a. Grouping Variable: Class			
b. Not corrected for ties.			

Table 8 and Table 9 illustrate the Mann-Whitney U test of the learners' perceptions of STARTeCH across three domains: cognitive, affective, and psychomotor, reflecting different aspects of learning effectiveness. It was found that for the cognitive and affective domains, the tests yielded U values of 154.000 and 156.500, respectively, with corresponding asymptotic significances (2-tailed) of .847 and .910. These results indicate no significant differences between the groups. However, for the psychomotor domain, the U value was 93.500, with an asymptotic significance of .033. Hence, it signifies a significant difference in learning outcomes between the asynchronous and synchronous groups.

5. DISCUSSION

The main purpose of this study was to explore the effectiveness of integrating the STARTeCH technique into asynchronous/synchronous online learning for lower secondary school learners' Grammar Test Scores (GTS) in Malaysia. These results suggest that the STARTeCH technique lends itself to significant gains in ESL grammar teaching, especially in the asynchronous mode, compared with synchronous and traditional forms of instruction. Asynchronous learning environments allow students the freedom to engage with course material at their own pace, which is particularly important with complex grammar subjects, as discussed by Ed Sudol from teflpedia.org. It also allows students to repeat material and units multiple times, engaging in practice and reflection.

The noted substantial increase in the psychomotor domain of the asynchronous group is also consistent with findings by Lin and Gao (2020) who determined that learners in asynchronous environments showed greater retention and application of skills due to the autonomy of the learning process which is crucial for internalising language rules for better use. When learners can process information at their own speed, they reduce the pressure and therefore anxiety often experienced in the classroom, making the experience more amenable to learning.

However, its advantages are not an exclusive proposition. Combining asynchronous and synchronous learning, as in the STARTeCH method, balances out their complementary shortcomings. Thus, students gain the flexibility of asynchronous learning and the immediacy of synchronous sessions that allow for interactivity and opportunities for asking and feedback, according to Moorhouse (2020). Deciphering doubts and checking understanding are essential steps to acquiring the Lasting Targeted Knowledge we seek to promote with succeeding challenges as students advance in complex grammatical knowledge. The pandemic has highlighted that educators and policymakers desperately need to rethink how they teach ESL students. As Turnbull et al (2021) point out, the pandemic has shown the limitations of conventional in-person teaching and highlighted the need to rethink face-to-face teaching from the ground up, especially to better provide accessibility and flexibility. Successful implementation of the STARTeCH technique could be a promising model for other contexts, promoting personalisation and flexibility in ESL education that better suits the diverse needs of learners.

The shift toward digital education is a part of a broader trend, as noted by Zhang et al. (2020). The STARTeCH technique, for example, with its focus on technology based on a clear vision of the need for continual learning and adaption underpinning its framework could be used with learning management systems, interactive videos, and online assessment platforms to support enduring technological use for education.

In sum, these results add to the volume of evidence supporting the benefits of asynchronous learning, especially when combined with synchronous elements in a hybrid model such as STARTeCH, to address the immediate effects of the pandemic and also provide a long-term model for future ESL education. After the pandemic, educational institutions can apply insights gained from STARTeCH to inform the development of resilient and adaptive pedagogical practices that can better meet the needs of learners.

The findings of this study indicate the necessity of bringing new methods such as STARTeCH to the teaching of ESL, particularly in an environment that is constantly changing. It goes beyond the immediate classroom and could offer an idea for rethinking grammar teaching in various environments. With the asynchronous-synchronous hybrid, we can better address differences between learners so we can be inclusive and personalized. Additionally, the convenience and independence of asynchronous learning meet 21st-century competencies (self-regulation, lifelong learning) by giving learners abilities that aren't limited to merely getting ahead in school. These findings can be useful to policymakers as a call for investment in digital infrastructure, teacher training, and adaptive learning materials to get the most out of education technology. The STARTeCH framework could be used as a pilot system for curriculum designers to create scalable and sustainable pedagogical practices for the new, digital world.

6. CONCLUSION

The STARTeCH approach was used in this paper to demonstrate the effectiveness of this intervention on the ESL grammar skills of secondary school students in Malaysia. Post-intervention, significant differences emerged between the groups ($F(2.84)=7.834$, $p=0.001$), with the asynchronous group achieving higher grammar test scores than both the synchronous and conventional groups. No significant differences were found in cognitive or affective perceptions between the groups. Learners strongly preferred the asynchronous mode, especially for psychomotor skill development. STARTeCH effectively improved ESL grammar proficiency through personalized, flexible online learning, emphasizing practice, repetition, and hands-on activities within the asynchronous environment. These findings point towards teachers using new technology-driven approaches to meet individual learning styles to deliver a more comprehensive and efficient form of ESL teaching. The study also highlights the way STARTeCH could be used to inform both curriculum and policy toward modern ESL teaching.

Although this study sheds light on the benefits of the STARTeCH technique, it does have some limitations. Since it was carried out in a single geographic area and one specific age group, its generalisability may be limited. Moreover, as its data was captured through self-report using a CAP questionnaire, this too resulted in skewed data. Future research should consider the use of STARTeCH in different educational contexts and how it affects other linguistic domains (speech, listening, reading, writing, etc). This might be enhanced by involving qualitative methods, like detailed interviews and participant observation. Moreover, the combination of AI-powered adaptive learning solutions with STARTeCH offers another avenue for innovation and scale that makes it relevant to the new world of ESL education.

ACKNOWLEDGMENTS

This research was supported by the Universiti Pendidikan Sultan Idris under the Geran Penyelidikan Universiti Berteraskan Pendidikan (GPUBP) with the code [2020-0074-107-01].

REFERENCES

Ahmad, D., & Arifin, M. A. (2021). Exploring student achievement and perceptions in an online flipped grammar course. *Indonesian Journal of Applied Linguistics*, *10*(3), 639-655. https://doi.org/10.17509/ijal.v10i3.31750

Alijanian, E. (2012). An investigation of Iranian EFL teachers' beliefs about grammar. *Journal of Educational and Social Research*, *2*(3), 335-340.

Almusharraf, A., & Bailey, D. (2023). Machine translation in language acquisition: A study on EFL students' perceptions and practices in Saudi Arabia and South Korea. *Journal of Computer Assisted Learning, 39*(6), 1988-2003. https://doi.org/10.1111/jcal.12857

Anak Yunus, C. C., & Hua, T. K. (2021). Exploring a gamified learning tool in the ESL classroom: The case of Quizizz. *Journal of Education and e-Learning Research*, *8*(1), 103-108. http://dx.doi.org/10.20448/journal.509.2021.81.103.108

Andrew, L., Wallace, R., & Sambell, R. (2021). A peer-observation initiative to enhance student engagement in the synchronous virtual classroom: A case study of a COVID-19 mandated move to online learning. *Journal of University Teaching and Learning Practice*, *18*(4), Article 14. https://doi.org/10.53761/1.18.4.14

Ang, L. H., Tan, K. H., & Lye, G. Y. (2020). Error types in Malaysian lower secondary school student writing: A corpus-informed analysis of subject-verb agreement and copula be. *3L The Southeast Asian Journal of English Language Studies*, *26*(4), 127-140. http://dx.doi.org/10.17576/3L-2020-2604-10

Anjaniputra, A., & Rukmini, D. (2021). Synchronous and asynchronous learning in grammar classes: Tertiary level EFL students' attitude. In Widhiyanto, S. W. Fitriarti, & P. Astuti

(Eds.), *Proceedings of the 9th UNNES Virtual International Conference on English Language Teaching, Literature, and Translation, ELTLT 2020* (pp. 14-15). EAI. http://dx.doi.org/10.4108/eai.14-11-2020.2310658

Aziz, A. A., & Kashinathan, S. (2021). ESL learners' challenges in speaking English in Malaysian classroom. *International Journal of Academic Research in Progressive Education and Development*, *10*(2), 983-991. http://dx.doi.org/10.6007/IJARPED/v10-i2/10355

Azmi, N. (2017). The benefits of using ICT in the EFL classroom: From perceived utility to potential challenges. *Journal of Educational and Social Research*, *7*(1), 111-120. http://dx.doi.org/10.5901/jesr.2017.v7n1p111

Cahyani, N. M. W. S., Suwastini, N. K. A., Dantes, G. R., Jayantini, I. G. A. S. R., & Susanthi, I. G. A. A. D. (2021). Blended online learning: Combining the strengths of synchronous and asynchronous online learning in EFL context. *Jurnal Pendidikan Teknologi dan Kejuruan*, *18*(2), 174-184. http://dx.doi.org/10.23887/jptk-undiksha.v18i2.34659

Clark, R. A. (1994). Children's and adolescents' gender preferences for conversational partners for specific communicative objectives. *Journal of Social and Personal Relationships*, *11*(2), 313-319. https://doi.org/10.1177/0265407594112009

Effendi, M. S., Rokhyati, U., Rachman, U. A.-M., Rakhmawati, A. D., & Pertiwi, D. (2017). A study on grammar teaching at an English education department in an EFL context. *International Journal on Studies in English Language and Literature*, *5*(1), 42-46. https://dx.doi.org/10.20431/2347-3134.0501005

Fabriz, S., Mendzheritskaya, J., & Stehle, S. (2021). Impact of synchronous and asynchronous settings of online teaching and learning in higher education on students' learning experience during COVID-19. *Frontiers in Psychology*, *12*, 733554. https://doi.org/10.3389/fpsyg.2021.733554

Fadhilah, M. (2021). Pemanfaatan aplikasi e-learning IAIN Madura dalam meningkatkan efisiensi belajar mahasiswa di masa new normal [Utilization of IAIN Madura e-learning applications to improve student learning efficiency in the new normal era]. *Jurnal Basicedu*, *5*(6), 6249-6256. https://doi.org/10.31004/basicedu.v5i6.1775

Habibi, H., Awal, R., Fares, A., & Ghahremannejad, M. (2020). COVID-19 and the improvement of the global air quality: The bright side of a pandemic. *Atmosphere*, *11*(12), Article 1279. https://doi.org/10.3390/atmos11121279

Hashim, H., Rafiq, R. M., & Md Yunus, M. (2019). Improving ESL learners' grammar with gamified-learning. *Arab World English Journal (AWEJ), Special Issue on CALL5*, 41-50. http://dx.doi.org/10.31235/osf.io/xar32

Hermosisima, M. C. R., Mobo, F. D., & Cutillas, A. L. (2023). Enhanced learning continuity framework using online teaching as alternative delivery modality. *International Journal of Multidisciplinary: Applied Business and Education Research*, *4*(5), 1521-1534. https://doi.org/10.11594/ijmaber.04.05.14

Hoover, J. D., Mitchell, R. K., & Wu, D. (2012). Experiential education as a process of changing mental frames by inducing insight learning. *Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL Conference, 39,* 18-23. https://absel-ojs-ttu.tdl.org/absel/article/view/92

Hoque, M. E. (2016). Three domains of learning: Cognitive, affective and psychomotor. *The Journal of EFL Education and Research, 2*(2), 45-52.

Idris, M. I., Said, N. E. M., & 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. https://doi.org/10.26803/ijlter.19.5.2

Julinar, J., & Yusuf, F. (2019). The flipped learning model: An alternative way to enhance students' speaking skills. *Jurnal Penelitian Pendidikan*, *19*(3), 366-373.

Karaaslan, H., Kilic, N., Guven-Yalcin, G., & Gullu, A. (2018). Students' reflections on vocabulary learning through synchronous and asynchronous games and activities. *Turkish Online Journal of Distance Education*, *19*(3), 53-70. http://dx.doi.org/10.17718/tojde.444640

Khalil, Z. M. (2018). EFL students' perceptions towards using Google Docs and Google Classroom as online collaborative tools in learning grammar. *Applied Linguistics Research Journal*, *2*(2), 33-48.

Kleftodimos, A., & Evangelidis, G. (2016). Using open source technologies and open internet resources for building an interactive video based learning environment that supports learning analytics. *Smart Learning Environments*, *3*(1), Article number 9. https://doi.org/10.1186/s40561-016-0032-4

Lin, X., & Gao, L. (2020). Students' sense of community and perspectives of taking synchronous and asynchronous online courses. *Asian Journal of Distance Education*, *15*(1), 169-179.

Mairing, J. P., Sidabutar, R., Lada, E. Y., & Aritonang, H. (2021). Synchronous and asynchronous online learning of advanced statistics during Covid-19 pandemic. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *6*(3), 191-205.

Malhotra, N. K., Nunan, D., & Birks, D. (2017). *Marketing research: An applied approach.* Pearson.

Martin, F., Kumar, S., Ritzhaupt, A. D., & Polly, D. (2023). Bichronous online learning: Award-winning online instructor practices of blending Asynchronous and Synchronous online modalities. *The Internet and Higher Education*, *56*, 100879. https://doi.org/10.1016/j.iheduc.2022.100879

Mayadas, D. T. (2020). Challenges in education management due to the Coronavirus pandemic. *International Journal of Advance Research, Ideas and Innovations in Technology*, *6*(4), 132-134.

Micklich, D. L. (2011). Examining the cognitive, affective, and psychomotor dimensions in management skill development through experiential learning: developing a framework. D*evelopments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL Conference, 38,* 24-30. https://absel-ojs-ttu.tdl.org/absel/article/view/247

Misbah, N. H., Mohamad, M., Yunus, M. M., & Ya'acob, A. (2017). Identifying the factors contributing to students' difficulties in the English language learning. *Creative Education*, *8*(13), 1999-2008. https://doi.org/10.4236/ce.2017.813136

Mohd Suhood, R. A. (2021). *English teachers' readiness in the implementation of online teaching and learning during Covid-19 pandemic* [Unpublished master's thesis]. Universiti Pendidikan Sultan Idris.

Moorhouse, B. L. (2020). Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *Journal of Education for Teaching: International Research and Pedagogy, 46*(4), 609-611. https://doi.org/10.1080/02607476.2020.1755205

Moorhouse, B. L., & Beaumont, A. M. (2020). Utilizing video conferencing software to teach young language learners in Hong Kong during the COVID-19 class suspensions. *TESOL Journal, 11*(3), e00545. https://doi.org/10.1002/tesj.545

Moorhouse, B. L., & Wong, K. M. (2022). Blending asynchronous and synchronous digital technologies and instructional approaches to facilitate remote learning. *Journal of Computers in Education*, *9*(1), 51-70. https://doi.org/10.1007/s40692-021-00195-8

Murphy, E., Rodríguez-Manzanares, M. A., & Barbour, M. (2011). Asynchronous and synchronous online teaching: Perspectives of Canadian high school distance education teachers. *British Journal of Educational Technology*, *42*(4), 583-591. http://dx.doi.org/10.1111/j.1467-8535.2010.01112.x

Murtini, N. (2013). The effect of performance assessment and grammar mastery upon the writing ability of the fourth semester students of the English study programme of FKIP UNMAS Denpasar in the academic year 2012/2013. *Jurnal Pendidikan Bahasa Inggris Indonesia*, *1*(1), 45-58.

Namada, J. M. (2022). Effective methods of teaching asynchronous classes. In A. Perez & Ş. Orakcı (Eds.), *Pedagogy, presence, and motivation in online education* (pp. 123-149). IGI Global Scientific. https://doi.org/10.4018/978-1-7998-8077-6.ch007

Navaz, A. M. M., & Sama, F. R. F. (2017). Teaching grammar in the English language classroom: perceptions and practices of students and teachers in the Ampara district. In *Proceedings*

of the 7th SEUSL International Symposium (pp. 653-667). South Eastern University of Sri Lanka. http://ir.lib.seu.ac.lk/handle/123456789/3051

Nkwetisama, C. M. (2011). EFL/ESL and environmental education: Towards an eco-applied linguistic awareness in Cameroon. *World Journal of Education*, *1*(1), 110-118. https://doi.org/10.5430/wje.v1n1p110

Nugraha, S., Suwandi, S., Nurkamto, J., & Saddhono, K. (2018). The importance of needs assessment for the implementation of e-learning in a language programme. *KnE Social Sciences*, *3*(10), 254-260. https://doi.org/10.18502/kss.v3i9.2686

Nunan, D. (1989). *Designing tasks for the communicative classroom*. Cambridge University Press.

Olatunji, M. O. (2013). Teaching and assessing of affective characteristics: A critical missing link in online education. *International Journal on New Trends in Education and Their Implications*, *4*(1), 96-107.

Olatunji, M. O. (2014). The affective domain of assessment in colleges and universities: Issues and implications. *International Journal of Progressive Education*, *10*(1), 101-116.

Perveen, A. (2016). Synchronous and asynchronous e-language learning: A case study of virtual university of Pakistan. *Open Praxis*, *8*(1), 21-39. https://dx.doi.org/10.5944/openpraxis.8.1.212

Puspitasari, R., Mufit, F., & Asrizal. (2021). Conditions of learning physics and students' understanding of the concept of motion during the covid-19 pandemic. *Journal of Physics: Conference Series, 1876,* 012045. https://doi.org/10.1088/1742-6596/1876/1/012045

Rao, P. S. (2019). The importance of speaking skills in English classrooms. *Alford Council of International English & Literature Journal (ACIELJ)*, *2*(2), 6-18.

Riwayatiningsih, R., & Sulistyani, S. (2020). The implementation of synchronous and asynchronous e-language learning in EFL setting: A case study. *Jurnal Basis*, *7*(2), 309-318. https://doi.org/10.33884/basisupb.v7i2.2484

Ruxton, G. D., & Beauchamp, G. (2008). Time for some a priori thinking about post hoc testing. *Behavioral Ecology, 19*(3), 690-693. https://doi.org/10.1093/beheco/arn020

Shepard, L. A. (2019). Classroom assessment to support teaching and learning. *The ANNALS of the American Academy of Political and Social Science*, *683*(1), 183-200. https://doi.org/10.1177/0002716219843818

Singh, C. K. S., Singh, A. K. J., Razak, N. Q. A., & Ravinthar, T. (2017). Grammar errors made by ESL tertiary students in writing. *English Language Teaching*, *10*(5), 16-27. http://dx.doi.org/10.5539/elt.v10n5p16

Tan, F. D., Whipp, P. R., Gagné, M., & van Quaquebeke, N. (2019). Students' perception of teachers' two-way feedback interactions that impact learning. *Social Psychology of Education*, *22*, 169-187. https://doi.org/10.1007/s11218-018-9473-7

Tang, Y. M., Chen, P. C., Law, K. M., Wu, C.-H., Lau, Y.-y., Guan, J., He, D., & Ho, G. T. (2021). Comparative analysis of Student's live online learning readiness during the coronavirus (COVID-19) pandemic in the higher education sector. *Computers & Education*, *168*, 104211. https://doi.org/10.1016/j.compedu.2021.104211

Turnbull, D., Chugh, R., & Luck, J. (2021). Transitioning to E-Learning during the COVID-19 pandemic: How have higher education institutions responded to the challenge? *Education and Information Technologies*, *26*(5), 6401-6419. https://doi.org/10.1007/s10639-021-10633-w

Uy, F., Kilag, O. K., & Arcilla, A. (2023). Empowering education: A learning-goals-centric approach to curriculum development. *Excellencia: International Multi-disciplinary Journal of Education*, *1*(4), 48-61.

Valero, M., Cebolla, A., & Colomer, C. (2022). Mindfulness training for children with ADHD and their parents: A randomized control trial. *Journal of Attention Disorders, 26*(5), 755-766. https://doi.org/10.1177/10870547211027636

Viriya, C. (2022). Exploring the impact of synchronous, asynchronous, and bichronous online learning modes on EFL students' self-regulated and perceived English language learning. *rEFLections, 29*(1), 88-111. https://doi.org/10.61508/refl.v29i1.260525

Voogt, J., & Knezek, G. (2021). Teaching and learning with technology during the Covid-19 pandemic: Highlighting the need for micro-meso-macro alignments. *Canadian Journal of Learning and Technology*, *47*(4), 1-12. https://doi.org/10.21432/cjlt28150

Walad, A. M., Razak, A., & Putri, D. (2019). Implementing jigsaw type of cooperative learning model to improve students' cognitive, affective and psychomotor domains in learning natural science at Grade IX.1 SMP Negeri 7 Sawahlunto. *International Journal of Progressive Sciences and Technologies*, *14*(2), 329-337.

Xhaferi, B., & Xhaferi, G. (2020). Online learning benefits and challenges during the COVID 19-pandemic: Students' perspective from SEEU. *SEEU Review*, *15*(1), 86-103. http://dx.doi.org/10.2478/seeur-2020-0006

Yaacob, S. N., & Md Yunus, M. (2019). Language games in teaching and learning English grammar: A literature review. *Arab World English Journal (AWEJ)*, *10,* 209-217. http://dx.doi.org/10.2139/ssrn.3367576

Zhang, Y., Ghandour, A., & Shestak, V. (2020). Using learning analytics to predict students' performance in Moodle LMS. I*nternational Journal of Emerging Technologies in Learning (iJET), 15*(20), 102-115. https://doi.org/10.3991/ijet.v15i20.15915

Zuhriyah, M., & Laili, E. N. (2022). Blended synchronous and asynchronous learning: Its effectiveness for teaching grammar. *Lingua Didaktika: Jurnal Bahasa dan Pembelajaran Bahasa*, *16*(2), 108-117. https://doi.org/10.24036/ld.v16i2.116942