

Effects of Multimedia Inputs on Improving the Grammatical Accuracy of Students' Speaking Skills: An Experimental Study

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Abstract—The study examines the influence of multimedia inputs on the speaking skills of English as a Foreign Language (EFL) students, mainly targeting the minimization of prevalent errors made by Arabic-speaking individuals within the cohort of first-year university learners. A total of 104 undergraduate students participated in the study and were divided equally into two groups: an experimental group (N=52) and a control group (N=52). The experimental group was exposed to multimedia input techniques, and the control group was instructed via traditional methods. Additionally, data was gathered twice through pre-and post-tests. The data was analyzed through the RM-ANOVA test using SPSS. The analysis revealed that Arabic-speaking EFL learners committed common errors related to inflectional morphemes in both groups. The results indicated a considerable enhancement in using inflectional morphemes while speaking proficiency of the experimental group following the treatment was compared to the control group. These findings highlight the effectiveness of multimedia inputs in aiding EFL learners, particularly beginners who struggle with English proficiency.

Index Terms—multimedia inputs, speaking skills, grammatical accuracy, inflectional morphemes

I. INTRODUCTION

Improving grammatical accuracy in English speaking skills is essential for language learning, especially for deriving meaningful sentences. Larsen-Freeman (2003) suggests that a thorough knowledge of English grammar is crucial for developing speaking abilities. It forms the structural basis needed to construct clear and coherent sentences. Thornbury (2006) further asserts the importance of grammar in learning speaking skills, emphasizing that it encompasses the knowledge of rules and their practical application in spoken language. Additionally, grammatical accuracy is significant in various contexts, particularly where clear and precise speaking is required, such as in professional and academic settings (Derwing & Munro, 2005). Therefore, mastering English grammar is indispensable as a linguistic achievement and a key component in effectively using speaking skills in a globally interconnected environment.

This study investigates how multimedia inputs can help decrease linguistic errors among university-level EFL learners. The research focuses on inflectional morphemes (the third person singular present “-s,” past tense “-ed,” progressive “-ing,” past participle “-en,” plural “-s,” possessive “-s,” comparative “-er,” and superlative “-est”) to improve English grammar mastery among EFL learners by identifying common errors and enhancing communication accuracy. These morphemes are commonly misused by spoken EFL learners (Honrado & Biray, 2022; Yang & Jianguo, 2021). The primary objective is to evaluate multimedia input’s role in developing English-speaking proficiency of first-year university students, with a focus on diminishing error occurrences.

Furthermore, the study explores the influence of multimedia inputs on the student's capability to articulate English with fewer errors. The current study is motivated by the findings from various studies (Hwang et al., 2014; Mahdi, 2022; Muslem & Abbas, 2017; Nguyen & Pham, 2022) and underscores the significant impact of multimedia tools and technology in enhancing English speaking skills. Nguyen and Pham (2022) showed that various multimedia resources, including PowerPoint presentations, YouTube videos, speech recognition applications, and movies, greatly enhance spoken language skills in EFL students. Based on a study involving 46 Arabic-speaking undergraduates, Mahdi (2022) found that interactive multimedia environments notably improve speaking and presentation skills, focusing on a phonological aspect of non-native English speakers. Moreover, Muslem and Abbas (2017) revealed that immersive multimedia learning, increased by peer support, leads to considerable improvements in English speaking skills among first-year university EFL students, where high achievers showed enhanced speaking performance while low achievers made significant progress in speaking proficiency.

Furthermore, Hwang et al. (2014) illustrated that a web-based multimedia storytelling system markedly enhanced English-speaking skills, outperforming conventional learning methods. The system fostered active engagement and was well received by students for enhancing language skills and creative storytelling. Similarly, Cabrera-Solano (2020), exploring higher education contexts, demonstrated that digital portfolios significantly improve fluency in undergraduate EFL students. This study utilized tools like smartphones and Google Drive, indicating the effectiveness of portfolios in fostering oral skill practice and learner motivation.

The current study aims to evaluate the effectiveness of multimedia inputs in achieving oral proficiency in terms of grammatical accuracy of students learning English programs at the university level in Saudi Arabia. In particular, the research concentrates on examining the degree to which multimedia resources can assist in reducing errors associated with inflectional morphemes in the spoken English of these learners. By concentrating on this particular linguistic feature, the investigation aims to address the existing void in research and contribute to a more refined comprehension of how multimedia instruments can be employed to enhance not only overall language competence but also the intricate facets of linguistic structure (such as inflectional morphemes within EFL environments).

The aforementioned studies have assessed the efficacy of multimedia devices in enhancing English speaking skills in different contexts. However, there is a need for more comprehensive studies to evaluate the efficacy of multimedia inputs foregrounding English speaking skills to minimize errors related to inflectional morphemes. This gap leads to the hypothesis that EFL learners, when using multimedia inputs, may demonstrate a more significant enhancement in the productive skills of language, particularly in the accurate use of inflectional morphemes. This study aims to investigate two key aspects. First, it examines whether there is a notable difference in the frequency of inflectional morpheme errors between two groups of EFL learners in their spoken language. Second, it explores how multimedia inputs influence the occurrence of these errors by comparing the learners' performance in pre- and post-tests.

II. LITERATURE REVIEW

A. *Multimedia Inputs*

Multimedia inputs profoundly influence pedagogical implications by integrating dynamic, diverse, and interactive elements that cater to various learning styles (Arifin et al., 2024). This approach aligns with Mayer's (2009) multimedia learning principles, suggesting combining visual and auditory materials enhances understanding and retention. Interactive Multimedia Elements (IME) tools incorporate audio-visual aids, interactive activities, and immediate feedback, providing a rich context for language exposure and practical application of language skills, which is crucial for developing proficiency (Ahmad & Alam, 2024). For instance, incorporating videos, podcasts, and interactive games offers a realistic context for practicing listening and speaking skills, fostering a more natural language acquisition process (Mago et al., 2023).

The adaptability of multimedia inputs to individual learning needs and proficiency levels allows learners to progress at their own pace, resonating with Krashen's Input Hypothesis, which emphasizes comprehensible input's importance in language learning (Krashen, 1982). Adaptive learning platforms, like Duolingo, for example, utilize algorithms to customize learning experiences, significantly enhancing language learning retention (Vesselinov & Grego, 2012). Moreover, multimedia's immediate feedback mechanisms aid in error correction and learning reinforcement, enhancing language accuracy and fluency (Nunan, 1999). Furthermore, the collaborative nature of multimedia inputs, through online forums and virtual classrooms, promotes interactive learning and cultural exchange, a vital element in language mastery (Lamy & Hampel, 2007; Kramersch, 1993). For educators, multimedia inputs provide tools to create more engaging lessons, utilizing multimedia resources to present language concepts in more accessible and appealing ways (Chapelle, 2001; Usama et al., 2024a). These resources enable a more individualized and learner-focused methodology, catering to diverse learning styles and inclinations, thus enhancing motivation and participation in language learning. Moreover, incorporating IME in language instruction promotes a transition from conventional instructor-centered techniques to a more learner-oriented paradigm, fostering active engagement and autonomous study, which are crucial for successful language learning (Usama et al., 2024b; Beg et al., 2025).

B. *Advantages of Multimedia Inputs in EFL Classrooms*

Multimedia inputs, which encompass a blend of textual, auditory, still imagery, animation, video, and interactive techniques, have emerged as a significant approach within the EFL learning context, providing a variety of advantages. The incorporation of multimedia in EFL pedagogy significantly boosts student involvement and enthusiasm, which are critical components in the acquisition of language, as evidenced by Mayer's (2009) findings that highlight the role of multimedia in fostering stimulating educational environments. This is pertinent to Prensky's (2001) concept of digital natives, which exhibits a greater affinity for digital learning modalities. Multimedia facilitates a multisensory learning experience, which, according to the theory of dual coding by Paivio (1990), enhances memory and understanding by processing information through both verbal and visual means. This multimodal approach is crucial for language learners as it caters to different learning styles, a concept supported by Fleming's (2001) VARK model, which identifies visual, auditory, reading/writing, and kinesthetic learning preferences.

Furthermore, multimedia provides authentic language exposure essential for developing fluency and comprehension skills in a foreign language. Using real-life videos, podcasts, and interactive games introduces learners to varied linguistic contexts and cultural nuances, highlighting the importance of cultural understanding in language education (Kramersch, 1993). This exposure not only aids in developing listening and speaking skills but also enhances learners' cultural awareness, a critical component of communicative competence (Canale & Swain, 1980). Additionally, multimedia tools allow for individualized learning paths. Adaptive learning systems cater to individual learner needs, aligning with Vygotsky's (1978) Zone of Proximal Development (ZPD) theory, emphasizing the necessity of tailored scaffolding that aligns with the learner's current abilities.

C. *Effects of Multimedia Inputs in the EFL Learning Environment*

The findings from various studies foreground significant contributions made by multimedia incorporations in classroom language-learning skills, particularly in listening, across diverse linguistic contexts. Sukjairungwattana (2023) focused on improving Chinese listening abilities among Thai university students through a novel workload-based learning model augmented with multimedia, employing a mixed-methods approach involving both students and experts. The study demonstrated significant enhancements in listening skills, emphasizing the importance of multimedia in conjunction with workload-based learning management. Similarly, İnceçay and Koçoğlu (2016) investigated how various multimedia input methods affect listening abilities in classroom teaching and learning. Their research combined quantitative and qualitative approaches and found that the audiovisual with subtitles mode adversely affects listening comprehension.

In contrast, the audio-combining mode with PowerPoint presentations proved to be the most effective, and students predominantly favored the audio-only mode. Al-Athwary and Lasloum (2021) conducted a quasi-experimental study on Saudi female EFL learners, comparing the efficacy of listening comprehension using aural versus audio-visual materials. The results indicated a significant improvement in the group exposed to audio-visual materials, highlighting the importance of these authentic realia in listening and comprehension skills. Lastly, Rahmawati and Sianturi (2021) examined the use of audio podcast-based learning media to enhance listening comprehension and pronunciation skills among English Literature students. Their study found that podcasts effectively improved students' pronunciation and listening skills, with a notable reduction in pronunciation errors and a positive student response to the learning medium. Together, these studies provide comprehensive insights into the beneficial impact of multimedia and various input modalities on language proficiency, especially in listening and speaking skills, in different educational and linguistic settings.

Furthermore, the studies by Alobaid (2020), Sun and Asmawi (2023), and Ai and Lu (2013) collectively provide perceptions of multimedia and innovative teaching models for enhancing English language writing skills. Alobaid's (2020) study investigated the impact of using the BBC Six-Minute English YouTube channel on the writing fluency of English language learners aged between 12 and 15. Incorporating IELTS-based writing tasks and various analyses over five months, the study demonstrated significant improvements in error-free T-units and idea organization in writing. However, it noted no substantial change in lexical density. This underscores the potential of platforms like YouTube in certain aspects of language learning.

Sun and Asmawi's (2023) study examined the Presentation-Assimilation-Discussion (PAD) Class Model with Chinese undergraduates and found notable improvements in their Business English writing abilities, specifically in content, language use, grammar, and structural organization. The mixed-methods approach highlighted the model's acceptance and effectiveness in improving writing performance. Ai and Lu's (2013) corpus-based study compared syntactic complexity between non-native and native speakers' university student writings, revealing marked differences in syntactic complexity across various dimensions. This finding indicates the necessity for targeted pedagogical approaches to improve syntactic development in non-native speakers. Together, these studies illustrate the efficacy of multimedia tools and innovative teaching methodologies in advancing different aspects of English language writing proficiency.

Refat et al. (2020), Cadio and Tan (2020), and Mahmoudi (2020) collectively examined the efficacy of technology-enhanced approaches in improving English grammar acquisition, with Refat et al. (2020) employing a sequential mixed-method design involving 115 undergraduates to assess the role of a mobile-assisted grammar-learning application on learner motivation. Utilizing the Instructional Material Motivation Survey (IMMS), paper-based tests, and interviews, the study found notable increases in student motivation across attention, relevance, confidence, and satisfaction, alongside significant improvements in tense learning performance. Cadio and Tan's (2020) research examined multimedia's efficacy among Grade 9 students. The pretest-posttest study with forty participants showed marked improvement in English grammar proficiency. The multimedia model was found to ease grammar learning, enhance interest in multimedia technology, promote independent learning, and foster collaborative opportunities.

Mahmoudi's (2020) study assessed the impact of grammatical accuracy among upper-intermediate EFL learners using online classes. Involving 20 students from the Pishtazan English Institute in Iran, the study demonstrated significant improvements in grammatical accuracy and learning motivation across the groups, that is, online and traditional methods. These studies collectively underscore the potential of technology-assisted learning tools and innovative teaching models in improving English grammar proficiency and learner motivation in various educational settings.

In their respective studies, Akkara et al. (2020) and Rahmawati and Sianturi (2021) explored technology-assisted methods in classroom pedagogy, mainly focusing on pronunciation skills. Akkara et al. (2020) implemented a mixed-methods approach with 25 first-year engineering students, using the Bring Your Own Device (BYOD) model in Mobile Assisted Language Learning (MALL). Their study, including pre- and post-tests and interviews, demonstrated significant improvements in pronunciation, highlighting the efficacy of smartphones and the BYOD model. Rahmawati and Sianturi's (2021) study on pronunciation improvement through audio podcasts also employed a mixed-methods design. Their research showed notable advancements in pronunciation skills, evidenced by decreased errors, attributed to the structured practice facilitated by the podcasts.

Li and Tong (2018) examined the efficacy of digital tools in vocabulary teaching and learning across various educational contexts. They employed a quasi-experimental design with fourth and fifth graders, comparing E-flashcards and paper flashcards in Chinese vocabulary learning. Their findings showed that E-flashcards improved performance in

immediate and delayed tests and fostered more positive learning attitudes. Immanuel and Sahul's (2023) study explored integrating the Cognitive Theory of Multimedia Learning (CTML) with code-switching, revealing significant improvements in English vocabulary among undergraduates, thereby underscoring the effectiveness of combining CTML and code-switching in language acquisition. The systematic review provides data from various studies on computer-based vocabulary learning in English language education (Regina & Devi, 2022). It has been identified that digital methodologies, particularly multimedia and gamified learning, significantly improve vocabulary retention and acquisition. The study by Hasram et al. (2021) is in line with highlighting vocabulary development among young students. Their quantitative analysis indicated notable improvements in vocabulary scores post-intervention, along with moderate satisfaction and engagement levels. Together, these studies affirm the substantial benefits of multimedia and computer-assisted tools in facilitating vocabulary learning and retention in different learning environments.

Nguyen and Pham (2022) underscore the significant role of multimedia tools and technology in advancing English speaking skills among EFL learners in various educational contexts, particularly highlighting the beneficial effects of tools like PowerPoint, YouTube, and speech recognition software. Their research underscored the pivotal role of technology in boosting students' confidence and proficiency in speaking English, thereby advocating for a paradigm shift towards more technology-integrated language learning approaches within educational contexts.

Similarly, Mahdi (2022) investigated multimedia inputs on non-native English speakers' speaking skills. Employing a mixed-method approach using pre-tests, visually recorded presentations, questionnaires, and semi-structured, audio-recorded interviews, Mahdi's (2022) study included 46 undergraduate students studying English. The results clearly demonstrated that students engaged in the multimedia environment significantly outperformed their counterparts in verbal presentation performance. The study highlights the efficacy of multimedia resources to nurture speaking skills among non-native English speakers.

Muslem and Abbas (2017) also assessed the efficiency of learning through immersive multimedia learning with peer support in improving English speaking skills. Using a quasi-experimental design that included post-tests, the research included 80 participants studying in an English language course. The salient findings revealed that the group exposed to peer support and immersive multimedia learning exhibited substantial improvements in all oral production measures for speaking, surpassing those without such support. It was observed from the findings that students with low and high achievements demonstrated enhanced speaking performance using multimedia. This research showed that the immense potential of immersive multimedia techniques increased with peer support in enhancing oral English production skills, offering promising prospects for enhancing language proficiency, especially among students facing academic challenges.

Hwang et al. (2016) meticulously scrutinized the effectiveness of a web-based multimedia storytelling system in ameliorating English speaking skills within the context of elementary school students. Employing a quasi-experimental design, their research illuminated the remarkable progress achieved by students who engaged with the multimedia system, showcasing significant improvements in speaking skills compared to their peers who adhered to conventional learning methods. Notably, the multimedia system engendered active engagement among students, with individual storytelling activities emerging as a potent catalyst for enhancing their speaking abilities. Additionally, students responded enthusiastically and positively towards the system, deeming it an invaluable tool for increasing EFL learners' language skills and enabling them to make constructive stories. This study served as a testament to the advantages of seamlessly integrating technology into language learning, especially through personalized and interactive activities that foster active participation and sustained engagement.

Finally, Cabrera-Solano (2020) concentrated on higher education, aiming to enhance EFL speaking skills through the innovative medium of online portfolios. The methodological framework was framed in a mixed-method approach, encompassing 42 undergraduate English-major students at the A2 level. The research included speaking rubrics, observation sheets, and pre- and post-questionnaires. The crux of the intervention involved students' crafting digital portfolios utilizing readily accessible tools such as smartphones and Google Drive, with the content comprising videos and audio addressing an array of topics. The noticeable outcomes demonstrated that digital portfolios effectively harnessed the potential to elevate students' fluency, marking an observable progression in their oral communication competencies (Alam, 2025). Furthermore, the incorporation of digital portfolios and the seamless integration of free storage services galvanized students' motivation to actively indulge in the practice of target language oral skills. The study highlighted the innovative possibilities inherent in technology-mediated language learning approaches, particularly within higher education settings where English language proficiency was enhanced (Alam et al., 2024). Collectively, incorporating these comprehensive research endeavors clearly underscores the transformative influence of multimedia tools and technology in English-speaking skill development. These studies collectively advocate for the strategic embrace of technology-driven language learning methodologies to nurture greater speaking competencies, promising enhanced language skills and heightened motivation and engagement among learners across diverse educational contexts.

D. Research Gap

Despite extensive research examining the effects of multimedia tools and technologies on various aspects of English language learning, a significant gap is still found. Based on the above-mentioned literature, none of the studies have focused explicitly on enhancing English speaking skills in terms of reducing or eliminating common errors of inflectional morphemes committed by EFL learners in their speaking. While these studies have significantly contributed to understanding how multimedia tools can improve general speaking proficiency, there needs to be more research targeting

the specific area of inflectional morpheme accuracy in spoken English. This gap suggests an opportunity to explore how multimedia and technology-assisted learning can address this aspect of language proficiency, thereby providing an effective approach to language pedagogy.

III. METHODOLOGY

The study was explored based on the following research questions:

1. Is there any significant variation in the occurrence of inflectional morpheme errors across two groups of EFL learners in their spoken?
2. How do multimedia inputs affect the rate of inflectional morpheme errors in the spoken language of EFL learners from the pretest to the posttest?

A. Participants

A sample of a total of 104 students currently studying at a Saudi Arabian university has been chosen using convenience sampling techniques in this study. The rationale for choosing this sampling technique is the accessibility, flexibility, and availability of the participants from the selected place since the target audience belongs to a homogenous group in this study. Therefore, the researcher adopted both convenience and random sampling. The participants are undergraduate students ranging in age from 19 to 23. The two groups were designated as an Experimental Group (N=52) and a Control Group (N=52). The selected groups were given four instruction sessions once a week for four weeks. The EFL instructors gave the participants general explanations of multimedia inputs to make sure everything was clear.

B. Experimental Group

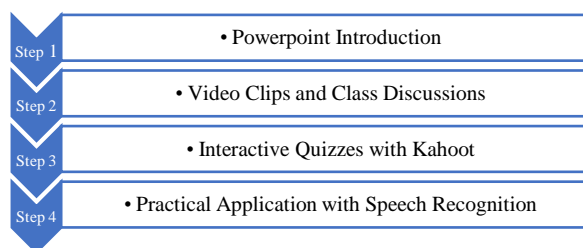


Figure 1. Activities for Experimental Group

Over four weeks, for three days each week, the instructor held one-and-a-half-hour sessions on teaching English inflectional morphemes. The instructor executed a comprehensive instructional plan designed by researchers of the study (see Figure 1) aimed at enhancing students' mastery of English inflectional morphemes. This targeted exploration focused on the eight fundamental morphemes: “-s,” “-ed,” “-ing,” “-en,” “-er,” “-est,” “-’s,” and “-es,” each pivotal to the grammatical structuring and nuance of the English language. The instructional journey began with the deployment of an interactive PowerPoint presentation in each session. These presentations were not merely expository tools but were carefully crafted to provide visual and contextual clarity, making abstract grammatical concepts tangible and accessible to the learners. The presentations served as a foundational platform and set the stage for the learning process's more profound, more interactive phases.

In the second step of the instructional framework, the sessions were enriched with a series of relevant video clips. These clips were carefully selected and sourced from a variety of contexts, such as YouTube and online courses, which showcase the application of the specific morpheme under study in real-world conversational scenarios. This method effectively creates equivalence between theory and praxis of multimedia usage in classroom pedagogy, offering students a glimpse into these inflectional morphemes' real-life relevance and application. The video segments were followed by class discussions, which were instrumental in reinforcing the learning. These discussions provided a platform for students to engage in analytical thinking, articulate their understanding, and seek clarifications, thereby fostering a deeper internalization of the morphemes.

To further reinforce the learning objectives, the third step of each session involved an interactive and competitive quiz using the digital platform Kahoot. Tailored to the specific morpheme covered in the session, these quizzes transformed the learning experience into a dynamic and engaging process. The gamified nature of these quizzes fostered a sense of excitement among the students and served as an effective tool for consolidating their knowledge. By actively participating in these quizzes, students could apply their understanding in a fun and stimulating environment, enhancing retention and comprehension.

The final step in each session was dedicated to practical application facilitated through speech recognition software. Students were encouraged to actively construct and articulate sentences incorporating the morpheme of focus for the day. This hands-on practice was crucial in bridging the gap between the passive reception of knowledge and active application. The use of speech recognition technology in this phase was particularly impactful as it provided students with immediate feedback on their spoken output, focusing specifically on the accuracy of their morpheme usage and pronunciation. This aided in reinforcing the correct usage of morphemes and heightened students' awareness of their spoken English skills.

C. Control Group

The instructor applied a traditional non-multimedia approach to teach English inflectional morphemes to a control group of English language learners. The lesson began with a lecture-style introduction using a whiteboard, where the instructor listed and explained the eight key inflectional morphemes (“-s,” “-ed,” “-ing,” “-en,” “-er,” “-est,” “-’s,” and “-es,”), providing clear examples for each. This was followed by group reading activities where students were divided into small groups and given texts from English literature, focusing on the usage of the various morphemes that they read and discussed. The instructor then distributed worksheets with exercises for identifying and using the correct morphemes, including fill-in-the-blank and sentence correction exercises. To reinforce the quick application of morphemes, flashcard drills were conducted where students practiced adding the correct morphemes to base words. The lesson also incorporated a listening and repetition exercise using a traditional audio system to play recorded dialogues for students to mimic the correct usage of morphemes. The session concluded with a class discussion to address questions and summarize key points. This comprehensive non-multimedia methodology was employed for teaching English inflectional morphemes, emphasizing direct teacher-student interaction and peer learning.

D. Data Collection and Analysis

In this investigation, the initial tool employed to standardize participant levels was the Interpreting Scores for Oxford Placement Test (OQPT). The proficiencies of the participants were categorized into pre-intermediate and intermediate levels and based on band scores ranging from 33 to 36 out of 60, classifying these as pre-intermediate. Inter-rater reliability was utilized to ascertain the dependability of the initial test, yielding a Pearson correlation coefficient of 0.981. Similarly, the dependability of the concluding test was established using the same statistical method with a coefficient of 0.894. Four English teachers validated both preliminary and concluding tests.

A picture was given to the students to elaborate upon in 5 minutes for the pretest. Similarly, another picture was given to the students to elaborate upon in 5 minutes for the posttest. For both the pretest and the posttest, different pictures were utilized. During the data collection phase, as participants described the image, their verbal responses were recorded using an iPhone by the researcher, who informed them about the recording process. Subsequently, these audio recordings were transcribed. Following the transcription, the Error Analysis (EA) methodology, as outlined by Corder (1981), was applied to categorize and identify the errors within the study. Errors were labelled according to Dulay et al. (1982). Surface Structure Taxonomy, addition, omission, and misinformation were utilized. Then, errors were described and classified according to inflectional morphemes.

The researcher employed SPSS version 22 to analyze the data. The approach included conducting a repeated measures ANOVA to compare results from pretests and posttests for both the control and experimental groups.

IV. RESULTS

ANOVA revealed significant effects across three different variables. For the inflectional morphemes variable, the result of the study revealed the significant effect $F(1, 51) = 176.540, p < .001$, with a partial $\eta^2 p = .786$, indicating substantial differences in the levels of inflectional morphemes (Figure 2). The mean score of errors EFL learners committed in inflectional morphemes ranked from the most to the least common. The past tense (“-ed”) morpheme with the highest mean error value that was close to 6 suggests that learners struggle most frequently with this aspect. It is followed by the progressive (“-ing”) morpheme, with a mean score of error value approaching 4, indicating a slightly lesser degree of difficulty. The past participle (“-en”) and the plural (“-s”) morphemes occupy the mid-range, with a mean score of error values between 2 and 4. Just above the 2 mark is the possessive morpheme (“-’s”), signaling fewer errors than its predecessors. At the lower end, the comparative (“-er”) and superlative (“-est”) morphemes exhibit the least mean score error values, marginally over 1, which suggests that learners are less challenged by these morphological forms.

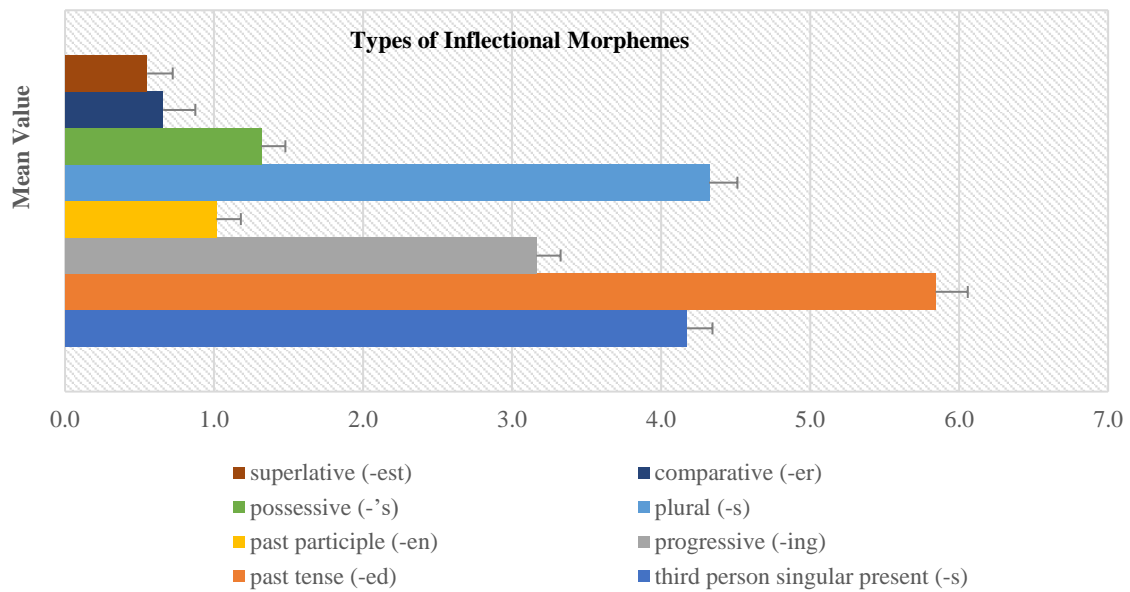


Figure 2. Types of Inflectional Morphemes

Similarly, a main effect was observed that was significant for the group variable, $F(1, 51) = 225.458, p < .001$, partial $\eta^2p = .824$, entailing notable variations across the groups (experimental, control) (Figure 3). It showed that EFL learners had committed more errors in comparison to the experimental group. The results disclose that multimedia inputs minimize inflectional morphemes errors in spoken English rather than other traditional approach.

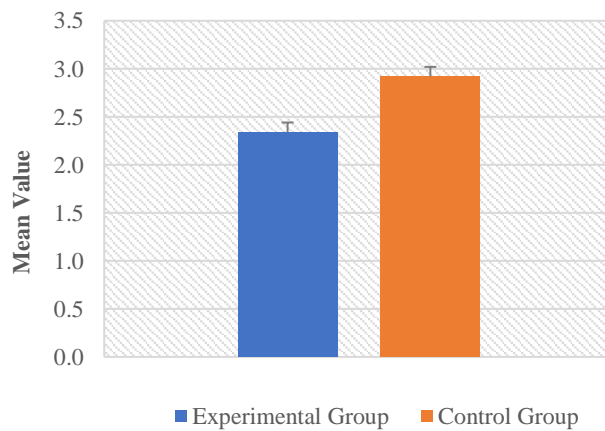


Figure 3. Mean Values for Both the Experimental and Control Groups

Lastly, the assessment variable also demonstrated a significant main effect, $F(1, 51) = 130.689, p < .001$, partial $\eta^2p = .731$, signifying considerable differences in the assessment conditions (pretest, posttest) (Figure 4, below). It demonstrated that the EFL learners had reduced the errors in their speaking for posttest. These results indicate that each variable's inflectional morphemes, groups, and assessments significantly influence the dependent variable.

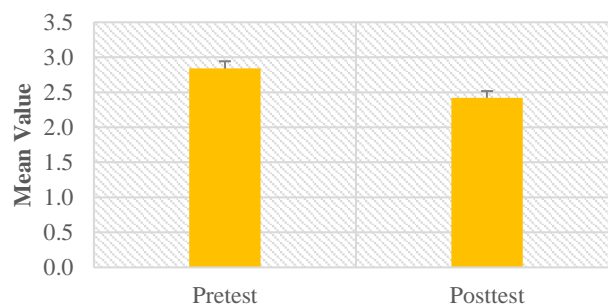


Figure 4. Mean Values for Both the Pretest and Posttest

Significant interactions were observed across multiple variable combinations in the analysis of interaction effects. The interaction between inflectional morphemes and groups (experimental and control) was significant, $F(1, 51) = 19.698, p < .001, \text{partial } \eta^2p = .291$, indicating that the impact of groups varies across different inflectional morphemes levels (Figure 5). Additionally, the results indicates that multimedia inputs impact in reducing errors of spoken English in comparison to traditional method of pedagogy. Similarly, inflectional morphemes and assessments (pre-test and post-test) had significant interaction, $F(1, 51) = 11.807, p < .001, \text{partial } \eta^2p = .197$, suggesting that the effect of assessments changes across various inflectional morphemes (Figure 6). Furthermore, the result shows that multimedia inputs influence on minimizing errors of spoken English across these inflectional morphemes.

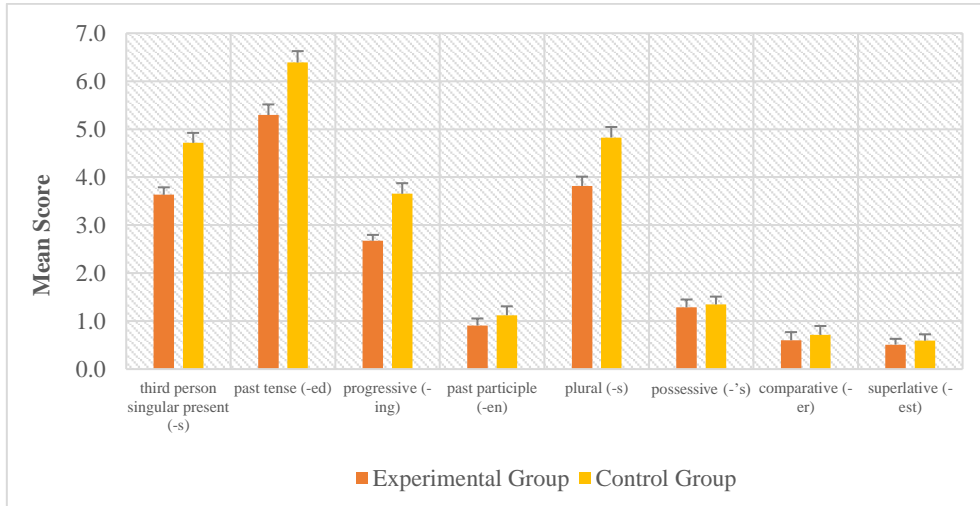


Figure 5. Mean Variations Across Inflectional Morphemes Between Experimental and Control Group

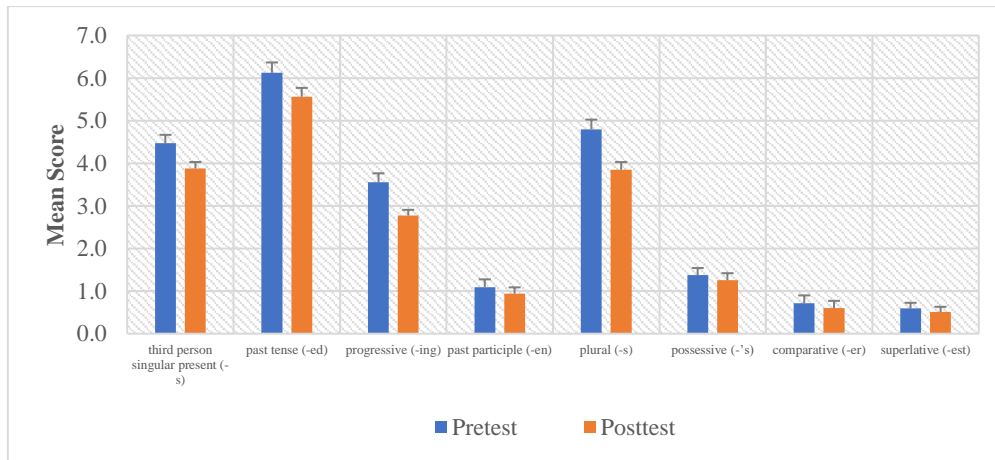


Figure 6. Mean Variations Across Inflectional Morphemes Between Pretest and Posttest

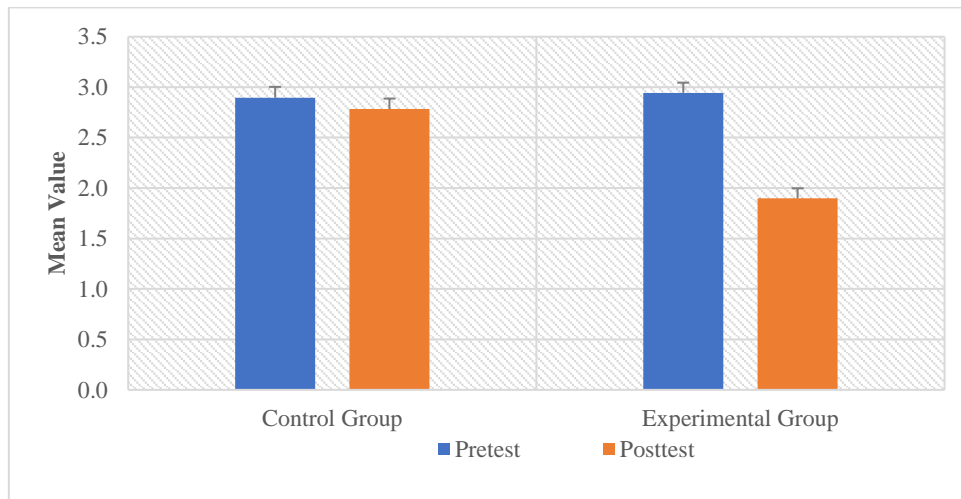


Figure 7. Mean Variations Across Tests Between Control and Experimental Group

In addition, the interaction between groups and assessments was also notable, $F(1, 51) = 232.579$, $p < .001$, partial $\eta^2p = .829$, implying that the influence of groups differs across assessment conditions (Figure 7). Moreover, a significant three-way interaction among inflectional morphemes, groups, and assessments was observed, $F(1, 51) = 19.556$, $p < .001$, partial $\eta^2p = .289$, demonstrating that the interaction effects of inflectional morphemes and groups vary with the levels of assessments. These findings suggest complex interdependencies among the variables: inflectional morphemes, groups, and assessments.

V. DISCUSSION

The study consolidates two crucial findings: first, it highlights a significant difference in the occurrence of inflectional morpheme errors between EFL learners taught through multimedia-based and traditional methods, with the former group showing markedly fewer errors. Second, it demonstrates that multimedia inputs significantly reduce the rate of these errors over time, from pretest to post-test. This dual insight underscores the effectiveness of multimedia tools in enhancing grammatical accuracy and language proficiency in EFL contexts. The results advocate for multimedia integration in language instruction, emphasizing its role as an immediate aid in learning complex grammatical structures and to achieve sustained improvement in linguistic competency over time. The findings suggest a transformative potential of multimedia inputs in EFL pedagogy, particularly in mastering intricate aspects like inflectional morphemes.

The noticeable difference in inflectional morpheme errors between the experimental group receiving multimedia instruction and the control group subjected to traditional teaching methods substantiates the pedagogical advantages of multimedia learning identified in the literature. Research has shown the effectiveness of multimedia inputs in language instruction, emphasizing their ability to engage various sensory modalities, thus facilitating a richer and more effective learning experience (Martinez, 2022). The reduced error rate in the experimental group aligns with the findings by Mutlu-Bayraktar et al. (2019), who observed enhanced cognitive engagement and retention of linguistic concepts through multimedia stimuli.

Moreover, the specific benefits of multimedia in teaching inflectional morphemes are supported by Lin et al. (2021), who noted the effectiveness of such instructional tools in learning complex grammatical structures. The findings from the present study add to this discourse and suggest that the multimedia approach offers a pedagogical advantage in EFL contexts, potentially due to its ability to provide context-rich, interactive learning scenarios that traditional methods may not (Wu et al., 2014). The study's findings on the multimedia-instructed group's progress are particularly significant, given the substantial evidence supporting multimedia learning's transformative effects in EFL education.

The study's results, showing multimedia inputs significantly reduce inflectional morpheme errors in EFL learners' spoken language from pretest to posttest, align with the expanding research available on multimedia's effectiveness in language acquisition. The observed enhancement in the experimental group's command over inflectional morphemes post-multimedia intervention is consistent with the assertions made by Martinez (2022), who highlight multimedia's significant role as a language learning facilitator. Multimedia inputs provide a rich, multimodal educational experience that traditional teaching methods often lack. Engaging through various sensory pathways fosters deeper linguistic comprehension and retention (Liu, 2024). The specific improvement in handling inflectional morphemes can be attributed to the comprehensive and interactive nature of multimedia tools, which creates more engaging and contextually relevant learning environments. The application of visual aids, interactive elements like quizzes, and incorporation of contextualized visuals in multimedia pedagogy, as pointed out by Cairncross and Mannion (2001) and Vu et al. (2021), significantly aids in the practical usage and its application of grammatical concepts. This approach is efficient for teaching inflectional morphemes, which are critical for grammatical precision and require a nuanced understanding that multimedia tools are acceptable for providing the complete usage in EFL learning and teaching context.

These findings were effectively analyzed through the lens of established educational theories, particularly Vygotsky's (1978) Zone of Proximal Development (ZPD) theory. Vygotsky's ZPD theory posits that optimal learning transpires when educational activities are precisely aligned within the learner's ZPD, defined as the gap between a learner's independent proficiency and their potential with guidance (Vygotsky, 1978). In utilizing multimedia inputs in teaching inflectional morphemes, these tools likely act as a scaffolding mechanism situated ideally within the learners' ZPD. Multimedia, by integrating visual and auditory elements, offers a richer and more contextualized learning experience compared to traditional methods, which may lack these layered cues, thus facilitating better understanding and retention of grammatical rules (Mayer, 2002). Additionally, multimedia resources effectively serve as the 'more knowledgeable other,' a concept central to Vygotsky's theory, providing essential guidance that helps learners navigate through their ZPD. This scaffolding process aids students in internalizing the rules associated with inflectional morphemes, enabling them to utilize these grammatical elements more accurately and confidently over time (Vygotsky, 1978; Wood et al., 1976; Ajmal et al., 2025).

The pronounced reduction in error rates from the pretest to the posttest illustrates multimedia's effectiveness in reducing linguistic inaccuracies. It supports Vygotsky's importance of the critical role of structured instructional support in cognitive development (Ormrod, 2014). Furthermore, incorporating multimedia tools in language instruction aligns with Vygotsky's advocacy for interactive and mediated learning environments, which enhance cognitive development by providing learners with opportunities to develop a more profound understanding through active engagement and exploration (Kozulin, 2003). Thus, the study's findings highlight the efficacy of multimedia in enhancing linguistic

accuracy among EFL learners, substantiating the theoretical framework provided by Vygotsky's ZPD, which underscores the importance of mediated learning and scaffolding in educational settings (Scribner & Cole, 1978).

VI. CONCLUSION

The conclusion reiterates the profound impact of multimedia-based instruction on EFL pedagogy and its incorporation of enhanced learning outcomes. It firmly establishes that the use of multimedia tools results in a substantial reduction in inflectional morpheme errors among EFL learners, which has far-reaching implications for language pedagogy. By providing a dynamic, engaging, and interactive learning environment, multimedia inputs facilitate a deeper understanding and retention of complex grammatical structures. The study's findings carry important implications for educational practice, curriculum design, and teacher professional development. By integrating multimedia, instructors can maximize learning outcomes in EFL classrooms and use various multimedia tools to create more effective and engaging EFL lessons that can help students improve their grammatical accuracy. Curriculum designers can incorporate multimedia-based modules to enhance language programs aligning with modern teaching methodologies. Furthermore, teacher training programs can empower instructors to integrate multimedia tools in classroom teaching. Still, it is crucial to recognize the study's constraints (such as sample size and duration), which may impact the general implications of the results. Considering these limitations, future research should focus on exploring the long-term effects of multimedia instruction, examining its applicability across diverse learner demographics, and conducting comparative studies on different types of multimedia tools. The platform may further contribute to the evolution of EFL pedagogy, ensuring that language learners receive the most effective and innovative instructional experiences.

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