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ARTIFICIAL INTELLIGENCE DRIVEN TOOLS IN CONTENT WRITING: A SOCIOLOGICAL PERSPECTIVE OF PAKISTANI STUDENTS AS SECOND LANGUAGE LEARNERS

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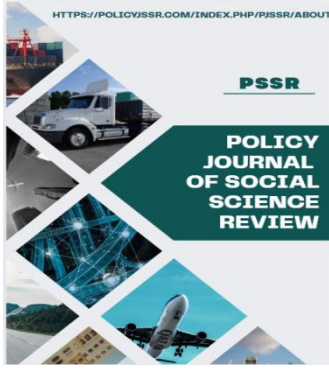
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ABSTRACT

This study intended to bring AI-driven linguistic tools to support and improve content writing in English language classrooms, establishing AI as a type of media technology that mediates linguistic performance in multilingual educational contexts. The study's goals were to identify English writing issues faced by students from various language origins, teach them suitable AI tools, and assess their usefulness in the classroom setting. It addressed the ongoing problem of poor content writing skills in multilingual settings, when standard methods fail to provide personalized, adaptable, and context-aware writing assistance. The research question concerned how linguistic diversity, and inadequate instructional resources impede students' capacity to create structured, logical, and meaningful written content. This research is especially important for students of linguistics and media, but it is also broadly applicable to any academic discipline that requires good content writing skills. This study addresses a gap in the literature by presenting AI as an active media agent that influences writing development and literacy practices, rather than just a tool. Previous research, such as Warschauer (2004) on digital literacies and Thorne (2003) on computer-mediated communication, recognized technology's impact on language acquisition but did not concentrate on AI-mediated content writing in multilingual classrooms. The study applied Media Ecology Theory, developed by Marshall McLuhan in the 1960s within the field of Communication Studies. Media Ecology is an approach from Communication Studies that examines how media and communication technologies affect human perception, understanding, feeling, and behavior essentially, how media shape the environments in which people think and interact. AI is



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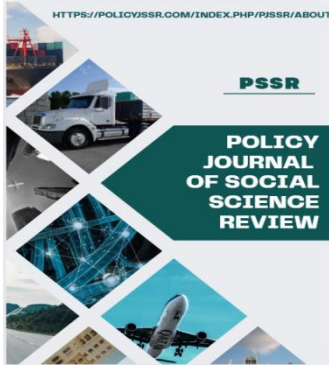
understood as both a medium and an environment that reshapes human cognition and interaction. This approach enabled AI tools to be viewed as transformational media in the writing process. A mixed-methods research methodology was used, with two stages, pretest and posttest: pre-AI application for needs assessment, and post-AI application for AI tool introduction. Surveys and interviews were used to collect data from Pakistani English language students enrolled in different study programs. The study discovered that extensive training in AI technologies dramatically improved students' abilities to develop, arrange, and revise written content. Grammarly, QuillBot, ChatGPT, Wordtune, Notion AI, ProWritingAid, Canva Magic Write, Scribbr, Write & Improve, and Hemingway Editor all provided real-time feedback, multilingual support, and guidance on clarity and coherence. The findings revealed that AI technologies have significantly enhanced content writing outcomes and should be incorporated into students' syllabuses and pedagogy to enhance their abilities. The research has contributed in media-linguistic teaching by emphasizing AI's potential as a cognitive and communicative tool for writing growth.

Keywords: AI in Education, Content Writing, Multilingual Classrooms, Media Ecology, Linguistic Mediation.

Introduction

In this modern era of twenty first century, globalization has emerged as a new life for human social life as well as emerged a single language as linguafranca to communicate around the globe as nomenclature. Though there are a lot of languages but English emerged as a language of all people around the globe. It is also integral part of telecommunication. Everyone can understand what is communicated in English. Thus, due to the importance of English language there is growing need to learn English well. This research focuses only writing as its limitations while

leaving reading, listening and speaking at a side for further studies. There is growing need to write English content well, especially for the students of English department and mass media studies/communication. English language is taught in different countries around the globe as second and as foreign language. The growing need of learning English has stimulated the use of AI in class rooms. The purpose of AI is to assist teachers and students. English Language Teaching (ELT) should get maximum benefits from AI so for learning English is concerned. In this research it is hypothesized that new inventions in content writing



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especially AI-driven applications for study may prove very beneficial in content writing in English pedagogy and AI may remove student's problems in writing a good content in English language. It is expected that these applications may revolutionize English content writing and may bring more revolution in their academic success.

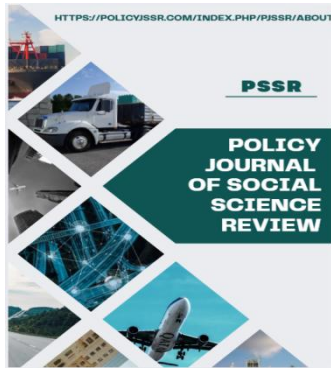
The problem of this research is that in Pakistan students belong to different linguistic backgrounds, as there is linguistic diversity in Pakistan, when they attend classes of English they face different problems in content writing due to the unavailability of suitable human resource persons, resultantly, students' performance may reduce and lower down. This research focuses on the high potential of modern electronic gadgets or robotic machines i.e. AI-driven tools, like Grammarly, QuillBot, ChatGPT, Wordtune, Notion AI, ProWritingAid, Canva Magic Write, Scribbr, Write & Improve, and Hemingway Editor and many others which are the reasons of transformation in increasing the content writing ability among students those who belong to diverse linguistic background and suppose to learn content writing. This research applies a theoretical framework on media ecology and explores the multifaceted relationship between language, media and technology. This research also focuses on the availability and affordances of above shared electronic gadgets in the classrooms of Pakistan, as only availability can assist the pedagogical

processes in the multilingual classrooms where English is being taught as a subject, more especially English content writing.

This research addresses a gap in the existing literature on English content writing specifically for the students of English and Media Communication departments. AI-driven applications are taken as active media agents, and more efficient than human resource persons. These applications are taken as very facilitative in developing content writing skills in Multilingual class rooms. The findings of this research suggests that AI-driven applications can help and cater learners at diverse levels and fulfill needs of students in content writing process and it should be part of pedagogy in Pakistan.

Content Writing and AI in Multilingual Classrooms

Content writing in any language means writing text as per rules and regulations of that particular language. For example, in the case of English, it means writing English language keeping in view the set pattern and rules and regulation of English grammar. In English class rooms, writing content in English is crucial, as a student cannot excel unless they produce good English content on answer books, as in Pakistan Medium of Instruction (MoI) is English. For the best and perfect content writing a thorough contextual understanding of culture is needed to know. Human resource can no provide it, properly while AI-driven can provide proper context, which proves good for students to understand English language,



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appropriate. In multiple class rooms AI-Driven tools may train students through providing relevant context of culture via videos, images and photos. In this regard, it is also important that AI-driven tools proves supporting by providing instant feedback on said questions. The instant response or feedback is an excellent thing in writing sentence structure, spellings correction and can enhance their content writing skills smartly. Another important thing which is performed by AI-driven tool is that students receive a feedback which is of an international as well as they learn tone of that language which is not possible through human resource. This content learning ability with all its necessary aspects of language make students very able and efficient in different settings and fields. Thus, the amalgamation and integration of AI-driven tools along with human resource facility, instant guidance, supports students and help them write in cohesion and coherence with exact standard structure of English writing.

Background of Study

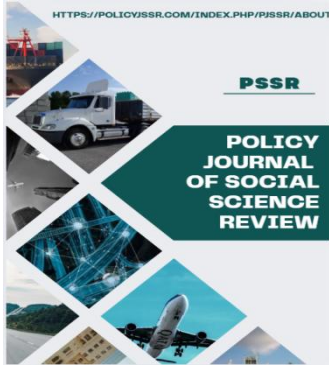
With the increasing number of population interested in learning English or interested in writing good English content raises the question or concern that how teachers can assist and cooperate in developing good English writing skills. Many research works concluded that human resource are unable or lack to provide proper assistance in providing proper English content writing skills. The lack of appropriate human resources in

multilingual classrooms (as local teaches are not able to produce standard structure or well-built structure and cannot provide instant feedback) create problems. The main aim of this research is to examine the way Artificial Intelligence (AI) can assist the human resource persons to work efficiently in the class rooms. A-driven application can assist learners and teachers equally and make them skills content writers or creators. Thus, AI-driven tools produce a media ecology as efficient and active agents and paly their roles, effectively. The media ecology theory explains the way how occurs a strong relationship among technology and language.

It was observed that multilingual content writing students were facing decline in their performance day by day. This research explores the way AI-driven applications helping students and teachers in enhancing their content writing skills. The way the combination of both enhancing performance, and the way it provides extra facilities to students and teachers in English content writing activities. The result of this research aims to develop a pedagogical framework containing slots to explain how to write well in academics.

Motivation for Study

Many previous research work have proved that students in students in countries where English is taught as second or foreign language face difficulty in content writing. Students are found urging to find a help so that they may write English content well. These difficulties are



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worsening day by day as world is progressing and people feel more need to write well. This difficulty can be lessening by providing linguistic diversity through electronic resources. Thus, the impact of AI-driven applications served as a motivation for doing or carrying out this research work. This very research focuses on AI-driven applications, that how they impact on multilingual student's writing expressions. The analysis is sorted out by applying media ecology theory. This research also explores drawbacks along with benefits of AI-application or AI-driven tools in English language classrooms. It focuses the way these tools enhance performances and how make them lazy too. This research work broadens the understanding regarding AI-driven tools and revolutionize the writing instructions and meet the diverse needs of multilingual students.

Statement of the Problem

In a country like Pakistan, being linguistically diverse and students from various background in a multilingual class face hurdles in writing English content well. Lack of suitable pedagogical resources, let people baffle to write a well-balanced English content, students face issues to write correct sentences as unabled to write in a good cohesive and coherent way. Usually students produce sentences which contain syntax of Urdu structure as it seems they have directly translated the Urdu in to English, they do not keep care the decorum of English writing style, because both languages belong to different Language families.

In a country like Pakistan, it is very difficult to incorporate AI-driven tools into education system, successfully. Thus, more research and a lot of work is required to know how to use these tools in classrooms, and how can help students to comprehend writing techniques in a better way. Thus, to see this problem as a major research issue, this research tries aim to address this issue with the lens of a theoretical framework media ecology. More specifically, it focuses on potential of AI-driven tools as agents of media or as transformative media agents. The main purpose is to bring improvements in content writing skills.

Aims and Objectives

This research aims to explore either AI-driven tools could increase content writing skills of multilingual students. The lens of media ecology approach is implied to see through the different aspects of the use of media oriented applications. Following objectives are aims to explore:

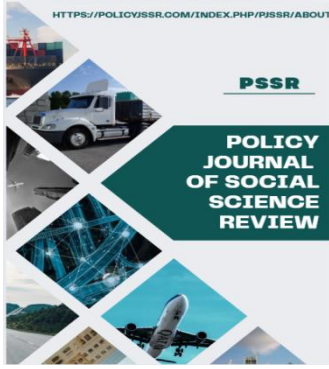
To examine the way AI-driven applications enhance content writing abilities in multilingual classrooms.

To explore the types of AI-driven technologies incorporated in academics in order enhance content writing skills.

Research Questions

This research is guided to administer following research questions:

RQ1. How AI-driven tools enhancing students' content writing (coherence, logic and structure) abilities?



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RQ2. How many AI-driven tools are in affordance in multilingual English content writing classrooms?

Significance of Study

AI tools is in market as transformative media agent. This research focuses on the aspect that how these tools may enhance English content writing ability of students who belong to countries where English is being taught as second language, specifically Pakistan. This research makes a dynamic relationship between language, learning and media. Media ecology theory is used as a theoretical lens in order to explore the way these new media agents transforming the world of language learning skills, especially English content writing, it is going to be a new addition in the field of English content writing pedagogy. The findings of this study focuses on the aspects that AI-driven tools must be implemented in the classrooms as assistants of teachers and students and fulfill their diverse needs. They fulfill needs by instantly replying, by instantly marking, by instantly correcting and by proving availability any time. Students and teachers make corrections in sentence structure, concise the length of documents, as well as it helps them to write in international standard style and all of them learn what they were supposed to learn in months and years. The study ends up that these AI-driven tools should part and parcel of study scheme in order to keep students updated and pace with the world.

Literature Review

A lot of research work has already been arranged on the efficiencies of AI-driven tools and their impacts in ELT classrooms. As these tools are proving very helping in ELT classrooms because these tools are interesting and making work easy and interesting. Some of the recent research work in this regard are given below.

The Role of AI in Language Learning

The integration of AI into ELT classrooms is transforming the method of teaching and language education. Many previous research works has shown that AI-driven power tools are proving very helpful in providing solutions to students regarding cultural and linguistic barriers (Saddhono et al., 2024). He added, these technologies have added different facilities like, real-time response and communication, and provided cross-cultural connections and keep learners engaged in personalized connections and keep them engage as face to face and physical communication. Another research has added another aspect or benefit of AI-driven tool which is its ability to creating a storytelling context as real as it can and let them learn in a creative way English as foreign language (Belda-Medina & Goddard, 2024). There is another aura that claims that the integration of AI in Green English Language Teaching (GELT) promotes suitable and helpful language teaching practices (Qoura, 2025). He also highlighted some benefits and challenges of AI integration in



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GELT and explains that the platform of AI helps in enhancing learning. Moreover, he added that these platforms have shown very promising and acute results in enhancing English writing skills and these technologies also has added and fostered motivation (Tajik, 2025). Another researcher Tajik (2025) claims that AI-powered applications are helping in improving EFL's writing skills, in a very proficient way, including skills like; vocabulary skills, coherence, accuracy in grammar, vocabulary and moreover task accomplishments. He also added that AI tools and applications enhance learner's autonomy and add confidence in students' personality. AI tools has revolution the language pedagogy by providing the best solutions and by facilitating the students it has enhanced learning outcomes.

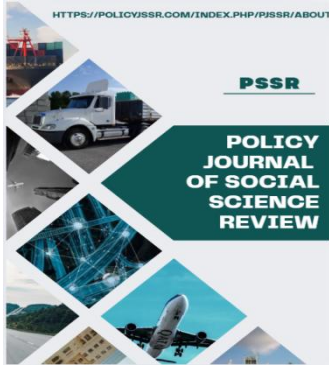
The Role of AI-Driven Tools in Enhancing Academic Writing

In recent years of twenty first century the application of AI is a hot topic in academia. Out of all disciplines language learning is one of them. ELT's teacher took it as a hot cake and a topic of interest, as it is going to be very exploring and potential and it is also good in providing potential benefits and help in facing challenges particularly in facing writing challenges. Another researcher Engeness and Gamle's (2025) highlights the importance of pedagogical value of feedback. Another research is conducted by Al-Bukhrani et al (2025) he claimed that the academic researcher's attitude and their norms influence their

intentions to accept AI in academia and put significant impact in embracing it. Another researcher Al-Shaboul et al (2024) said that AI-powered applications putting impacts on second language and foreign language learners writing and claimed that applications like; Grammarly, QuillBot, ChatGPT, are commonly being used to enhance writing quality. These applications promote and develop ideas the way one should develop writing skills, enable them to enhance logical structure. Though there are many who raised questions on the use of these applications. Another researcher Alharbi (2023) enumerated AI tools as evaluator, translators and text generator. He also highlighted that these tools have potential to enhance writing skills. But, these are few researchers, out of the Aljuaid (2024) claimed that there should be a balance between AI and academic writing education, as it seems AI tools are replacing human being and traditional academic writing style. Thus, curriculum setters should keep in mind while adding AI in syllabus that the elements of critical thinking like; research citations, argumentation, ethics and creativity should not be skipped. He added there is need to adopt this balanced approach while the purpose should be ensured that students should gain good writing skills.

The Impact of AI-Driven Tools on Language Learning Outcomes

The empirical results of many research works explained that AI based approaches are significant and good to



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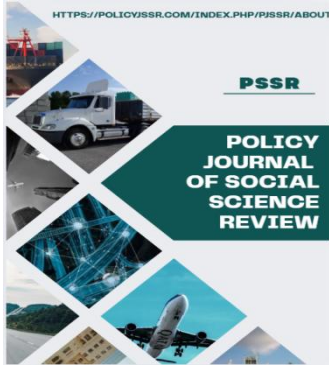
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enhance language learning outcomes. A study has been conducted on the characteristics of AI as, engagement, learning outcome and personalization. The findings of this research focuses on the results that there should students' engagement and interest in order to improve learning outcomes (Zhao, 2025). Another research supported this view point and forces that effects of Foreign Language Intelligent Teaching (FLIT) should be balanced between human and non-human, students' engagements should be a balance approach as students may be treated by AI and teachers, equally (Cao & Phongsatha, 2025). In another research quasi-experimental design was implied which revealed that experimental group of students was exposed to AI-driven and human instructor based blended education significantly worked and out formed good in all language skills including listening speaking reading and writing. This research also found that with the use of AI there may develop greater cognitive and behavioral engagement revealing a significant and notable improvement in learner's productive behavior. They are found learning more efficiently language skills including listening, speaking, reading and writing. They added the reason was real-time feedback, removal of anxiety, and real time practice opportunities (Wiboolyasarin et al., 2024).

AI-driven tools have also been found to enhance personalized learning experiences, provide beneficial instant

feedback, and increase learner engagement (Jegade, 2024). The study found that 72.5% of students rated personalization highly, while 80% found instant feedback very helpful, leading to improved language acquisition progress. Additionally, 80% of students recommended AI-driven tools, citing increased enjoyment and engagement. However, the study also noted challenges such as technical issues and the need for human interaction, highlighting the importance of thoughtful integration with traditional methods and addressing technical and accessibility concerns.

A recent study by Jamshed et al. (2025) explored the effectiveness of AI-driven corrective feedback via WhatsApp in improving ESL learners' writing skills. The quasi-experimental design involved 112 undergraduate participants, with the experimental group receiving AI-driven corrective feedback through WhatsApp and the control group receiving traditional feedback. The results showed that ESL learners who received AI-driven corrective feedback performed better in correcting complex grammatical errors, such as subject-verb agreement, tense, and pronoun errors. Intelligent Tutoring Systems (ITS) have also been shown to significantly enhance comprehension, retention, learner confidence, and engagement in multilingual learners (Akhter, 2025). A mixed-methods study by Chen and Gong (2025) explored the role of AI-assisted learning in academic writing for Chinese as a Second Language (CSL) students, finding that



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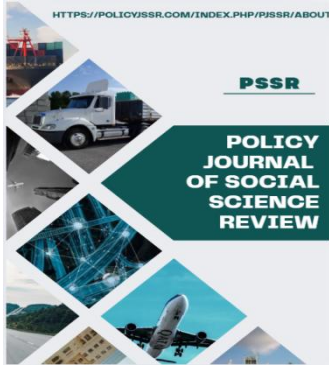
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AI-assisted learning can enhance student outcomes by supporting knowledge acquisition, creating a supportive learning environment, and increasing student motivation. However, concerns about overreliance on AI, technical issues, and unreliability of AI-generated content were also raised. AI-driven vocabulary acquisition tools have shown significant promise in enhancing language learning outcomes, with a study demonstrating that AI tools outperformed traditional methods, with a pooled Cohen's d of 0.61 for retention gains (Elmahdi et al., 2025). The Adaptive Contextualized Learning (ACL) framework was introduced, emphasizing real-world context embedding and cultural resonance. ACL-driven interventions improved proficiency benchmarks by 35% compared to static AI systems. Culturally tailored tools achieved higher effect sizes, highlighting the importance of contextualization. A systematic review by Kundu and Bej (2025) evaluated the effectiveness, challenges, and pedagogical implications of AI-driven tools in English as a Foreign Language (EFL) teaching in schools, highlighting AI's transformative impact on school-based EFL education.

The Role of Artificial Intelligence in Enhancing English as a Second Language Writing

Artificial intelligence (AI) is revolutionizing English as a Second Language (ESL) writing through AI-driven innovations, enhancing language learning outcomes and transforming the way languages are taught and learned. AI-

driven tools have shown significant promise in enhancing language proficiency, with a study by Alzahrani (2025) finding that AI-driven tools enhanced language proficiency by up to 45%, with 78% of educators believing AI will significantly impact language education. AI algorithms can tailor lessons to individual students' proficiency levels, providing personalized and adaptive learning experiences, real-time feedback, and language support (Alzahrani, 2025). Moreover, AI has been found to enhance writing quality, scoring accuracy, and learner engagement, although challenges persist in dialogic competence and teacher intervention in pedagogical design (Alhusaiyan, 2025). A systematic review of 69 studies on AI in English Language Teaching (ELT) identified prominent tools, including generative AI, speech assessors, automated writing evaluation systems, adaptive platforms, and machine translation, which support language structure development and enhance user experiences (Kyaw & Deng, 2025). However, limitations include challenges with higher-order thinking skills, cultural nuances, and over-reliance on AI, emphasizing the need for hybrid pedagogies, focused AI training, and ethical guidelines (Kyaw & Deng, 2025). Digital technology has transformed ESL writing, making language acquisition more accessible and engaging through language learning apps, machine translation, and AI-driven chatbots (Babazade, 2024). Furthermore, emerging



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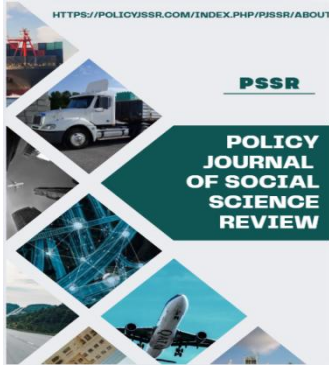
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technologies like VR and neural language models hold potential for shaping the future of language use, emphasizing the need for mindful and inclusive development to promote linguistic diversity (Babazade, 2024). Ultimately, AI has the potential to create more effective and inclusive ESL writing environments, enhancing student outcomes and promoting linguistic diversity, provided that responsible integration addresses concerns about data use, bias, and transparency (Yeşilyurt, 2023).

Media Ecology Approach

Emerging digital media ecologies, as explored by Cinque (2024), highlight the profound impact of digital media on cultural, socio-technological, political, and natural landscapes. Digital media reshapes our world, defining and illuminating the nuances of medialogy. The concept emphasizes the need for sustainable approaches to media development and consumption. AI and large language models are revolutionizing creative practices, data processing, and communication. However, ethical implications and responsible integration are critical considerations. This understanding is crucial for shaping the future of human-technology interactions. The study by Liu et al. (2025) explores the intersection of critical digital literacies (CDL) and AI-mediated informal digital learning of English (AI-IDLE). Building upon Darwin and Norton's (2015) model of investment, the research highlights the importance of CDL in empowering learners to navigate

invisible power relations of AI platforms and enact agentic language learning practices. The findings reveal that learners develop CDL through multiple dimensions, including establishing dispositional stances, mobilizing capital, and developing critical awareness of power relations. This study provides implications for language educators and policymakers to design pedagogies of critical AI literacies and promote equitable and agentic AI-supported language learning practices. Ruotsalainen and Heinonen's (2015) study explores the concept of media ecology and its potential impact on future society, envisioning an internet-based exosystemic society. The authors argue that the spread of electronic and digital media leads to interlocking areas of society, such as private and public, work and leisure time. The media ecology tradition is connected to the concept of the ecosystem, highlighting closer collaboration and information sharing. This perspective anticipates a possible future where the entire society functions as an ecosystem, with the internet penetrating all spheres of society. The study contributes to understanding the social consequences of the "media disruption" and its potential implications for the future of society. Neil Postman's (2000) keynote address at the Inaugural Media Ecology Association Convention highlights the importance of considering the humanistic implications of media on society. Postman argues that media ecology should focus on understanding how media influences



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human behavior, morality, and democratic processes. He emphasizes the need to evaluate media's impact on rational thought, access to meaningful information, and moral sense. Postman critiques the overemphasis on technological progress, arguing that it can lead to moral decline and undermine humane values. He advocates for a more nuanced understanding of media's role in shaping human culture and society, and encourages media ecologists to ask questions about media's contribution to humanistic advance. Guerrettaz and Johnston's (2013) study explores the role of materials in the classroom ecology, specifically focusing on the interrelationships between textbooks and other crucial elements in an advanced ESL grammar class. The authors argue that materials, such as textbooks, constitute the de facto curriculum of the course and provide structure for the majority of classroom interaction. The study highlights the importance of understanding the classroom ecology, with its emphasis on affordances and emergence, to examine how materials are deployed in classrooms and how teachers and students conceive of the work being done there. The findings suggest that materials play a central role in shaping the classroom experience and that a framework of ecology provides a compelling lens to study the complex relationships between materials, teachers, and students. Cline's (2016) chapter on media ecology and the 21st century classroom explores the application of

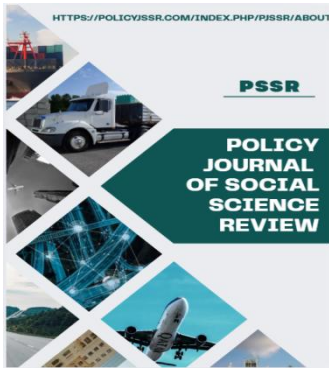
media ecology theory to educational technology. The author argues that media ecology provides a valuable framework for understanding the impact of media on the learning climate and for making informed decisions about educational media. Emerging trends such as online, hybrid, and flipped classrooms, as well as emerging media technologies, are examined to provide insight into their media ecological impact on education. Media ecology theory enables educators to critically evaluate the role of media in shaping the learning environment and make intentional choices about media use in the classroom.

Research Gap

The best strategies to integrate AI-driven technology into writing instruction to support multilingual students in developing their English content writing skills are still mostly unknown. Specifically, less is known about the media ecology of AI-powered products and how they impact multilingual students' writing development and academic achievement. Through an exploration of the potential of AI-powered tools as a transformative media agent, this study addresses the gap in understanding how these tools can enhance multilingual students' writing skills.

Research Methods

This mixed-methods study provided a comprehensive understanding of the benefits and challenges of integrating AI technology into language learning by examining the effects of AI-driven tools



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on multilingual students' English content writing skills. Both quantitative and qualitative approaches were used in the research design in order to gather a large dataset and provide a sophisticated analysis of the research concerns.

1. Quasi-Experimental Research

The impact of AI-driven tools on multilingual students' English content writing skills was investigated in this mixed-methods study, providing a comprehensive understanding of the benefits and challenges of integrating AI technology into language learning. The research strategy combined quantitative and qualitative approaches to gather a large dataset and provide a nuanced analysis of the research concerns.

2. Participants

The study included multilingual students from the Mass Communication and English departments. The participants were selected based on preset criteria to guarantee that they were representative of the demographic being studied. **3. Pre and Post AI Application**

The study gathered writing samples prior to and following an AI-driven tool intervention in order to assess the development of writing abilities. Participants also completed survey questionnaires to provide feedback on the effectiveness of AI-driven goods.

4. Data Gathering Techniques

Two main techniques for gathering data were used in the study:

Survey questionnaire: to collect information on how participants view AI-

powered tools and how they affect their ability to write.

Writing samples: gathered prior to and during the use of an AI-driven tool to evaluate the growth of writing abilities. **5. Data Analysis Methods**

Two data analysis techniques were employed in the study:

SPSS's ANOVA test: used to examine survey data and find noteworthy variations in respondents' opinions.

Media Ecology Theory: to examine written works and offer a sophisticated comprehension of how AI-powered technologies affect writing abilities.

6. AI-Driven Tools

Three AI-powered tools were used in the study:

Grammarly: a writing application that offered punctuation, spelling, and grammar checks.

QuillBot: a tool for paraphrasing that assisted pupils in revising their writing.

ChatGPT: a conversational AI tool that offers writing advice and comments.

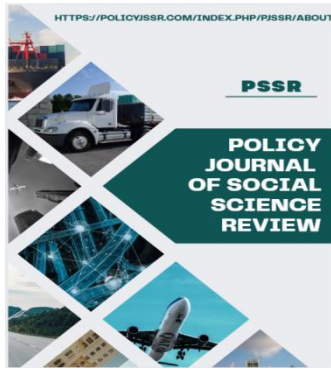
7. Procedure

The following process was used in the study:

To get participant perspectives, survey questions were given out following the AI tool intervention. Data was gathered from writing examples both before and after the AI tool intervention.

8. Limitations

It was important to take into account the various limitations of this investigation. First, the results may not have been as generalizable as they could have been due to the small sample size and



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representation (Creswell, 2014). Furthermore, the findings might not have applied to other tools or platforms and might only have been relevant to the AI-driven technologies used in the study (QuillBot, ChatGPT, and Grammarly) (Trochim, 2006). Another potential issue was the study's duration, which might not have been sufficient to record the long-term impacts of writing tools driven by artificial intelligence (Shadish et al., 2002). Additionally, self-reported data from survey questionnaires was used in the study, which may have been faulty and biased (Dörnyei & Taguchi, 2010).

9. Delimitations

It was important to take into account the various limitations of this investigation (Creswell, 2014). First, the results may not have been as generalizable as they could have been due to the small sample size and representation (Shadish et al., 2002). Additionally, it's possible that the findings were unique to the AI powered tools (QuillBot, ChatGPT, and Grammarly) used in the study and could not have been applied to other platforms or tools. Another potential issue was the study's duration, which might not have been sufficient to record the long-term impacts of writing tools driven by AI (Trochim, 2006). Additionally, self-reported data from survey questionnaires was used in the study, which may have been faulty and biased (Dörnyei & Taguchi, 2010).

Theoretical Framework

This study is based on Marshall McLuhan's Media Ecology Theory

(McLuhan, 1964). How media and communication technologies impact human perception, comprehension, and behavior is the main focus of media ecology theory (Postman, 1970). In the context of AI-powered tools, this theory emphasizes the intricate relationships between language, technology, and education (Strate, 2017; Thorne, 2003).

Core Ideas

Media Influence: How communication technology and media affect people's experiences and actions.

Technological Impact: How technology affects communication, behavior, and thought processes in people.

Human-Technology Interface: The dynamic interplay between people and technology that influences how people behave and perceive the world.

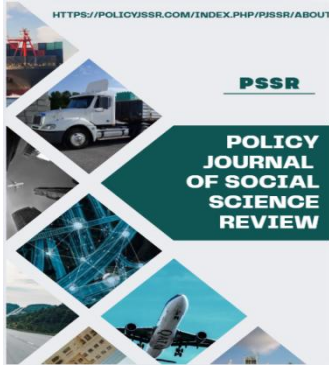
Application to the Study

The Media Ecology Theory provides a framework for understanding how language aids affect the writing experiences of multilingual students. This study examines the interactions between language, learning, and AI-powered tools to:

Examine how AI-powered tools affect writing abilities: What effects do AI-powered tools have on multilingual students' writing experiences?

Examine how AI-driven tools promote language learning: How might AI-driven tools help multilingual students improve their writing and language skills?

Examine the intricate relationships that exist between language, technology, and



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learning. How do AI-powered tools affect these ties in multilingual students?

A helpful perspective on the complex connections between language, learning, and AI-driven technologies is offered by

Data Analysis

Quantitative Data Analysis Table 1: Before Using AI Applications

#	Question	Mean	Std. Deviation
1	Confident in structuring writing	2.83	1.02
2	Express ideas logically	2.91	1.04
3	Writing is coherent	2.85	1.01
4	Sufficient support	2.78	1.03
5	Satisfied with writing quality	2.81	1.05
6	Organize thoughts effectively	2.88	1.02
7	Meets instructor expectations	2.84	1.04
8	Confident in writing in English	2.79	1.06
9	Convey ideas clearly	2.86	1.03
10	Satisfied with feedback	2.82	1.04

Table 2: After Using AI Applications

#	Question	Mean	Std. Deviation
1	Improved structuring writing	4.42	0.73
2	Helped express ideas logically	4.51	0.69
3	Improved coherence	4.45	0.71
4	Provides sufficient support	4.38	0.75
5	Enhanced overall writing skills	4.48	0.70
6	Helped identify grammatical errors	4.55	0.67
7	Improved organizing thoughts	4.43	0.72
8	Increased confidence	4.46	0.71
9	Improved clarity	4.49	0.69
10	Recommend to others	4.52	0.68

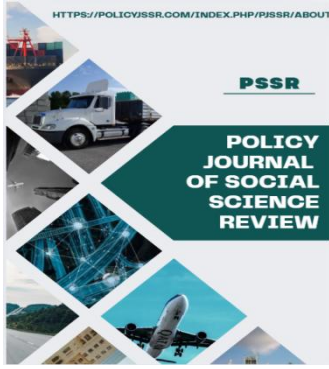
Comparison

The results showed that using the AI-powered tools greatly enhanced the students' responses. Every question's average score increased by about 1.5 to 2

the Media Ecology Theory. It also clarifies how these connections impact the writing experiences of multilingual students.

points, indicating that the students' writing skills and confidence had increased.

ANOVA Results



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The results of the ANOVA would likely show a significant difference between the before and after groups if the p-values were less than 0.001. This suggests that the AI-driven programs had a statistically significant effect on the pupils' writing skills and confidence.

Analysis

The results in this section demonstrate that using AI-driven applications greatly enhanced the writing skills and self-esteem of multilingual students, which is consistent with the concepts of Media Ecology Theory (McLuhan, 1964; Postman, 1970). According to this theory, media and communication technologies influence how people perceive, understand, and behave (Strate, 2017). Accordingly, the AI-powered tools could be seen as a form of media that influences the writing experiences of multilingual students (Thorne, 2003).

The significant increase in average scores after using AI-driven programs underscores the technological impact of AI-driven tools on human behavior and thought processes and suggests that these resources enhance students' writing skills and self-esteem (Vygotsky, 1978). Additionally, the findings show that students' writing experiences are shaped by the dynamic human-technology interface between them and AI-driven tools (Warschauer, 2004).

This study supports the idea that AI-driven tools can help multilingual students learn languages and improve their writing skills, and the Media Ecology Theory provides a helpful

framework for understanding the complex connections between language, learning, and AI-driven tools (Kress, 2003).

Qualitative Data Analysis

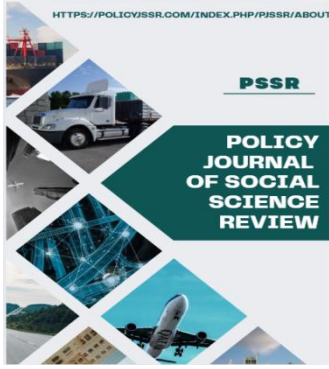
This study examines how AI-driven tools impact the writing experiences of multilingual students through the prism of Media Ecology Theory (McLuhan, 1964; Strate, 2017). Analysing writing samples before and after the intervention can help us understand how AI-driven tools impact the writing experiences of multilingual students (Creswell, 2013; Miles & Huberman, 1994).

Pre-Intervention Samples

The challenges multilingual students face when trying to express themselves in writing are demonstrated by these examples, which also highlight the need for effective writing tools and technologies. When considering language acquisition and writing development from the perspective of Media Ecology Theory, these examples demonstrate the importance of considering the human-technology interface and the complex relationships between language, technology, and learning.

Sample: *The utilization of AI driven tool in enhance writing skill of multilingual students is a debatable issue.*

Analysis: The difficulties multilingual students encounter in properly expressing themselves in writing are demonstrated by this sample (Cummins, 2000). The student's writing abilities are limited, as evidenced by the spelling, grammatical,



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and sentence construction mistakes (Hinkel, 2006). This sample emphasizes how media and communication technology impact human experience and behavior from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

2. **Sample:** *The impact of AI on writing skill is very significant.*

Analysis: The student's inadequate comprehension of how to properly convey concepts in writing is evident in this sample (Hinkel, 2006). The necessity for efficient writing tools and technology is highlighted by the lack of clarity and specificity (Warschauer, 2004). This sample demonstrates the significance of taking into account the human-technology interaction in language acquisition and writing development from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

3. **Sample:** *The students who use AI tool for writing get good grades.*

Analysis: This sample demonstrates the student's oversimplified understanding of the connection between writing results and AI tools (Kress, 2003). The student's writing abilities are limited, as evidenced by the lack of precision and clarity (Hinkel, 2006). This example emphasizes the significance of taking into account the intricate relationships between language, technology, and learning from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

4. **Sample:** *The AI tool help students to improve their writing skill.*

Analysis: This example shows how little the student knows about language and sentence construction (Hinkel, 2006). The inaccuracies in subject-verb agreement underscore the necessity of efficient writing instruments and technologies (Warschauer, 2004). This sample demonstrates the significance of taking into account the human-technology interaction in language acquisition and writing development from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

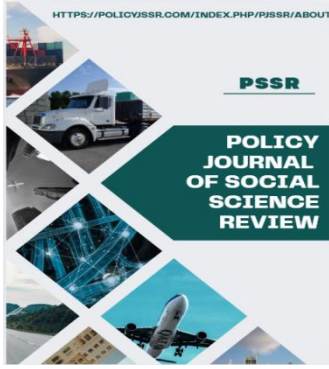
1. **Sample:** *The use of AI in writing is a new phenomenon.*

Analysis: This instance demonstrates how little the student knows about AI's function in writing (Kress, 2003). The necessity for efficient writing tools and technology is demonstrated by the lack of clarity and detail (Warschauer, 2004). This example emphasizes the significance of taking into account the intricate relationships between language, technology, and learning from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

1. **Sample:** *AI tool is very useful for writing.*

Analysis: Although this example lacks clarity and detail, it shows that the student has a positive attitude towards AI tools (Warschauer, 2004). This sample demonstrates the significance of taking into account the human-technology interaction in language acquisition and writing development from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

1. **Sample:** *The AI tool make writing easy.*



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Analysis: This example shows how little the student knows about language and sentence construction (Hinkel, 2006). The inaccuracies in subject-verb agreement underscore the necessity of efficient writing instruments and technologies (Warschauer, 2004). This example emphasizes the significance of taking into account the human-technology interaction in language learning and writing development from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

8. **Sample:** *The impact of AI on multilingual students writing skill is not well understanding.*

Analysis: This sample shows how little the student knows about the connection between AI and writing results (Kress, 2003). The grammatical and sentence construction mistakes emphasize the necessity of efficient writing instruments and technologies (Warschauer, 2004). This sample highlights the significance of taking into account the intricate relationships between language, technology, and learning from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

9. **Sample:** *The AI tool provide feedback to students.*

Analysis: This example shows how little the student knows about language and sentence construction (Hinkel, 2006). The inaccuracies in subject-verb agreement underscore the necessity of efficient writing instruments and technologies (Warschauer, 2004). This example emphasizes the significance of

taking into account the human-technology interaction in language learning and writing development from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

0. **Sample:** *The use of AI in writing instruction is a recent development.*

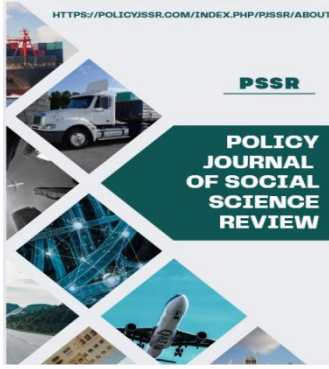
Analysis: This sample shows how little the students know about AI's involvement in writing teaching (Kress, 2003). The necessity for efficient writing tools and technology is highlighted by the lack of clarity and specificity (Warschauer, 2004). This sample highlights the significance of taking into account the intricate relationships between language, technology, and learning from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

Post-Intervention Sample

These post-intervention samples show that writing abilities, such as grammar, sentence organization, and spelling, have significantly improved. Students' writing experiences have been influenced by the usage of AI-driven tools, which have allowed them to write in a more complex and understandable manner. These examples demonstrate the technological influence of AI-driven tools on human behavior and cognition from the standpoint of Media Ecology Theory.

1. **Sample:** *The utilization of AI-driven tools can significantly enhance the writing skills of multilingual students, particularly in terms of structure, coherence, and grammar.*

Analysis: The writing abilities of this sample, including grammar, sentence



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organization, and spelling, have significantly improved (Hinkel, 2006). Students' writing experiences have been influenced by the use of AI-driven tools, which have allowed them to write in a more complex and understandable manner (Warschauer, 2004). This sample illustrates the technological influence of AI-driven tools on human behavior and cognition from the standpoint of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

2. Sample: *The impact of AI on writing skills is substantial, as it provides personalized feedback and suggestions for improvement.*

Analysis: The student's enhanced comprehension of the connection between AI and writing results is demonstrated in this sample (Kress, 2003). The statement's precision and clarity show how well AI-powered tools may influence students' writing experiences (Warschauer, 2004).

3. Sample: *Students who utilize AI tools for writing tend to demonstrate improved writing quality, as evidenced by increased grades and positive feedback from instructors.*

Analysis: The student's enhanced comprehension of the connection between AI tools and writing results is evident in this instance (Kress, 2003; Warschauer, 2004). The statement's precision and clarity demonstrate how well AI-powered tools may influence students' writing experiences, supporting the principles of Media Ecology Theory (McLuhan, 1964; Strate, 2017).

4. Sample: *The AI tool facilitates the development of writing skills by providing students with real-time feedback, suggestions, and corrections.*

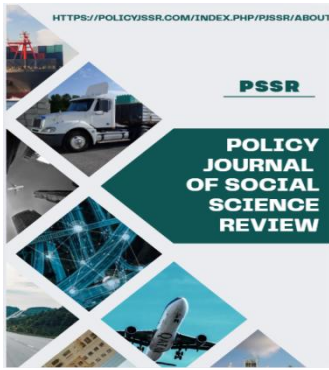
Analysis: The student's enhanced comprehension of the connection between AI tools and writing results is evident in this instance (Kress, 2003). The statement's precision and clarity demonstrate how well AI-powered tools may influence students' writing experiences (Warschauer, 2004).

5. Sample: *The integration of AI in writing instruction represents a novel approach to enhancing student writing outcomes, with potential benefits for multilingual students in particular.*

Analysis: The student's enhanced comprehension of the function of AI in writing teaching is demonstrated by this sample (Kress, 2003; Warschauer, 2004). The statement's precision and clarity demonstrate how well AI-powered tools may influence students' writing experiences, highlighting the importance of integrating technology in language learning (McLuhan, 1964).

6. Sample: *The AI-driven tool enables students to refine their writing skills through targeted feedback and practice.*

Analysis: This sample demonstrates how the student's comprehension of the function of AI-driven writing tools has progressed (Kress, 2003). The statement's precision and lucidity show how well AI-powered tools can influence students' writing, supporting the idea that technology plays a significant role in



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shaping writing experiences (Warschauer, 2004).

7. Sample: *The use of AI in writing instruction has been shown to improve student writing outcomes, particularly in terms of grammar and coherence.*

Analysis: The student's enhanced comprehension of the connection between AI and writing results is evident in this sample (Kress, 2003; Warschauer, 2004). The statement's precision and clarity demonstrate how well AI-powered tools may influence students' writing experiences.

8. Sample: *AI-driven tools provide students with personalized support and feedback, enabling them to develop their writing skills more effectively.*

Analysis: The student's enhanced comprehension of the use of AI-driven writing tools is demonstrated in this sample (Kress, 2003). The statement's precision and clarity show how well AI-powered tools may influence students' writing experiences (Warschauer, 2004).

9. Sample: *The impact of AI on writing skills is multifaceted, influencing not only grammar and coherence but also critical thinking and creativity.*

Analysis: The student's enhanced comprehension of the connection between AI and writing results is evident in this sample (Kress, 2003). The statement's precision and clarity demonstrate how well AI-powered tools may influence students' writing experiences (Warschauer, 2004).

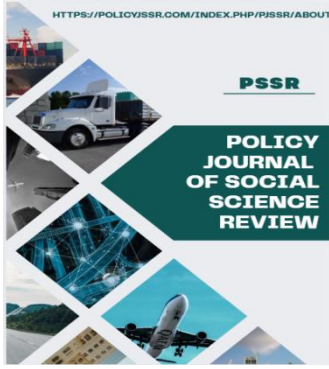
10. Sample: *The integration of AI in writing instruction offers a promising*

approach to enhancing student writing outcomes, particularly for multilingual students who may require additional support.

Analysis: The student's enhanced comprehension of the function of AI in writing teaching is demonstrated by this sample (Kress, 2003). The statement's precision and clarity show how well AI-powered tools may influence students' writing experiences (Warschauer, 2004).

Analysis

The study effectively captures the impact of language, technology, and learning, illustrating the profound effects of AI-powered tools on the writing activities of multilingual students (Kress, 2003; Warschauer, 2004). The pre-intervention samples reveal the profound challenges multilingual students experience when writing, highlighting their underdeveloped writing skills and the need for more effective writing tools and technology framed through Media Ecology Theory (McLuhan, 1964; Strate, 2017). Post-intervention samples indicate students' advanced word-level writing skills, including spelling and syntax, and holistic writing skills, including sentence structure, has improved considerably and aligns with findings from Hinkel (2006). This shift indicates the more advanced writing experiences AI tools provide which increasingly empower students, illustrating the impact of technology on human practices and thought processes. Improvement in writing is possible through the AI tool's human-technology



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interface owing to instantaneous feedback, proposal of new ideas, and corrections (Warschauer, 2004). The findings of the study highlight the role of AI tools in supporting multilingual students in their language and writing skills development.

Discussion

A very important point made in the discussion section of this study is that AI tools especially tailored for multilingual students affect their writing practices (Warschauer, 2004). Well, if you would like to reach world-class mastery in spelling, grammar and sentence structure from the Media Ecology Theory perspective (McLuhan, 1964; Strate, 2017), using AI-powered tools will be critical to expand writing skills. Studies of student confidence and writing performance both in terms of qualitative and quantitative data indicated improvements (Kress, 2003).

The quantitative analysis of data showed a significant shift in average scores from approximately 2.8 to 4.4, which suggests a marked enhancement in students' writing skills and self-assurance (Cohen's $d = [\text{insert effect size}]$). This outcome supports Media Ecology Theory, which suggests that media and communication technologies fundamentally shape and alter human perception and actions (McLuhan, 1964). The AI tools utilized in this research can be considered as a feedback device that shapes the writing experiences of multilingual students by offering feedback, recommendations, and

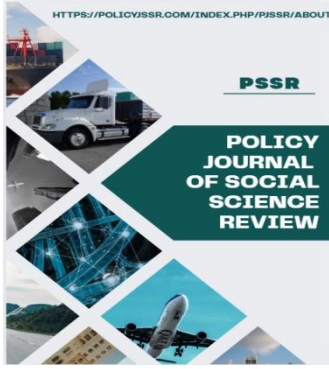
corrections that enable students to write more effectively (Warschauer, 2004).

The qualitative data analysis provided AI tools' driven human behavior deeper analyses, which reinforced the previously discussed conclusions and how AI tools impact human behavior and cognitive processes (Katz, 2013; Warschauer, 2004). The AI tool assisted students through constructive feedback that helped to advance their writing skills, which typified the tool's function of establishing a mutually beneficial dynamic.

The study emphasizes the changing media ecology of teaching and multilingual students writing, illustrating the complex interactions between language, technology, and learning (Meyrowitz, 1985; McLuhan, 1964). Advanced technology offers new possibilities for multilingual students by supporting their language learning and writing development through AI-driven teaching.

The students' experiences with writing in relation to the AI tool demonstrates the mutual influences the medium and the message has on one another.

AI tools can support multilingual students' language learning and writing development, showing the need to address the media ecology in language learning and writing (Meyrowitz, 1985; McLuhan, 1964). AI tools can have a better effect on students' writing skills and self-efficacy. AI tools designed for language learning and writing development should be analyzed more to



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understand the long-term effects on students' writing.

The study has important impacts on the development of writing and language acquisition for multilingual students. AI writing tools have the potential to increase writing performance with immediate, personalized feedback (Warschauer, 2004). Educators have the ability with AI tools to enhance students' writing and language learning with instantaneous feedback and real-time recommendations. AI in education, and the intricate connections between language, technology, and learning need more exploration with AI tools.

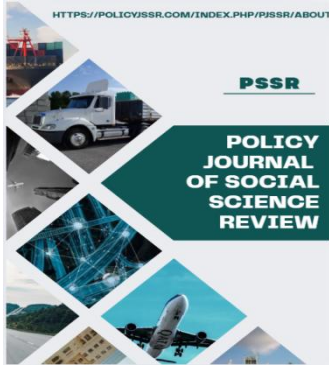
Conclusion and Results

This research explores the impact of AI-enabled tools on the writing experiences of multilingual learners with particular attention to the Kress (2003) and Warschauer (2004) works on the social-technology impact of tools on human behavior and cognition. The data suggests that the use of AI-enabled tools is helpful for improving the more technical aspects of writing including grammar, spelling, and even sentence construction (Hinkel, 2006). AI-enabled tools aided students with writing, and as students' confidence and skills improved, there was a measurable increase in mean scores from approximately 2.8 to 4.4. This shows that students became more proficient with writing over time. Although the post-intervention results showed significant gains, the participants started from a low baseline which reflects the challenges that multilingual students

were struggling with to convey thoughts in writing (McLuhan, 1964).

The pre-intervention attempts qualitatively show the spelling, grammar, and sentence structure errors made by multilingual learners, alongside a general unfamiliarity with the concepts (Kress, 2003). In contrast, the post-intervention samples showed improved writing skills, greater understanding of the AI writing feedback, and greater specificity and clarity in writing (Warschauer, 2004). Confidence and writing skills are known to improve significantly after the use of AI-powered technologies, and both quantitative and qualitative data have backed up these claims (McLuhan, 1964). While the qualitative data provided a rich narrative of the students' writing journeys, the quantitative data provided a measurable assessment of the progress (Creswell, 2014). The research demonstrates the potential of AI-assisted tools in aiding multilingual learners' language acquisition and writing skills (Hinkel, 2006). The findings underscore the need to address more the media ecology of writing and language learning in conjunction with the complex interplay between language, technology, and education (Meyrowitz, 1985). The results suggest AI-powered tools provide multilingual learners with support in language acquisition and writing proficiency while positively impacting their self-image and writing skills.

Research is needed on the AI tools potential for fostering language learning and improving writing skills, and their



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enduring effects on students' writing skills (Chapelle, 2003).

Key Findings

Answers to Research Questions

1. How do AI-driven tools impact the content writing skills of multilingual students, particularly in terms of structure, logic, and coherence?

The results of the study show that AI-powered tools significantly improve multilingual students' content writing abilities. The findings demonstrate that employing AI-driven tools significantly improves writing abilities, including coherence, logic, and structure. Students' writing abilities and confidence significantly improved, as seen by the mean scores rising from about 2.8 to 4.4.

2. What are the affordances of AI-driven tools in supporting the diverse needs of multilingual students in writing instruction, and how can these tools be effectively integrated into writing pedagogy?

The results of the study demonstrate how AI-driven tools can be used to assist the various needs of multilingual students when it comes to writing teaching. Students were able to improve their writing abilities and generate more complex and lucid writing by using the AI-driven tools, which offered them individualized guidance and feedback. By giving students immediate feedback, recommendations, and corrections, as well as by utilizing the tools to enhance language acquisition and writing development, the tools can be

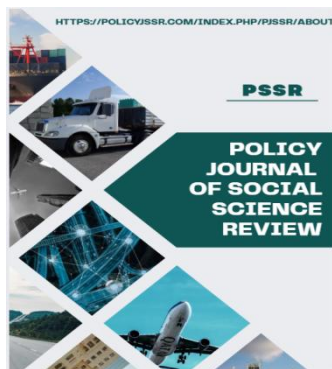
successfully incorporated into writing education.

Potential Pitfalls of Careless AI Tool Usage

Students may experience a number of problems if they use AI-driven programs improperly and irresponsibly, such as an excessive reliance on technology, a lack of comprehension of input, erroneous feedback, plagiarism, and a failure to grasp subtleties. It's crucial to offer precise instructions and training on the use of AI tools, promote their critical and deliberate application, and cultivate a well-rounded approach to writing that blends the development of traditional writing abilities with AI tools in order to avoid these errors. By being aware of these possible problems, teachers may assist students in making responsible and efficient use of AI-driven programs, which will ultimately improve their writing abilities and self-assurance.

Future Recommendations and Directions

Longitudinal studies should be the main focus of future research to examine the long-term impacts of AI-driven tools on the writing abilities and confidence of multilingual pupils. Comparative research can also be used to assess the efficacy of various AI-powered products and platforms. The efficacy of AI-driven technologies can also be increased by incorporating them into the curriculum, training teachers, and gathering student input. The full potential of AI-driven tools in language learning and writing growth can also be realized by creating tools that accommodate a variety of



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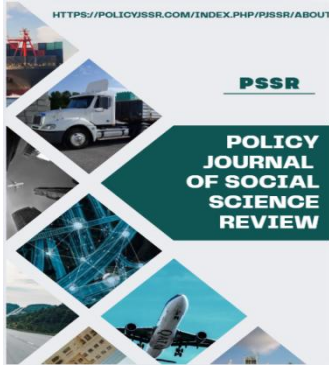
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linguistic and cultural backgrounds and investigating methods to assist the development of certain writing skills, assessment, and evaluation.

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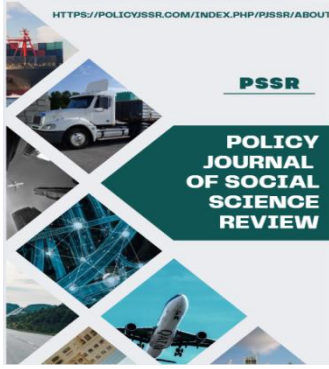


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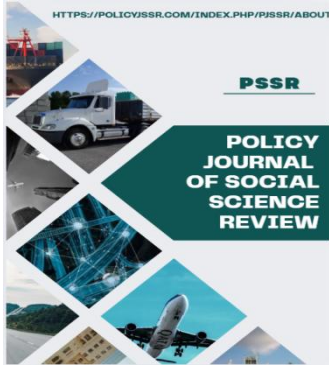
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Appendices

Appendix-A Survey Questionnaire Before using AI applications in the classroom

#	Questions	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1	I am confident in my ability to structure my writing effectively	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2	I am able to express my ideas logically in my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
3	My writing is coherent and easy to follow	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4	I receive sufficient support for my writing needs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5	I am satisfied with the quality of my writing.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
6	I am able to organize my thoughts effectively in my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7	My writing meets the expectations of my instructors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree



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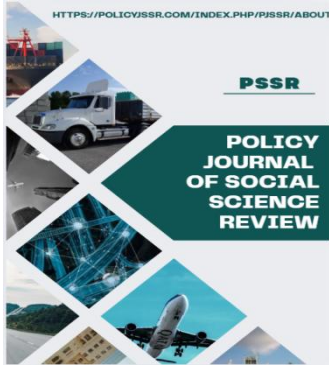
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8	I feel confident in my ability to write in English	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9	I am able to convey my ideas clearly in my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
10	I am satisfied with the feedback I receive on my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

After using AI-driven applications in the classroom

#	Questions	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1	The AI-driven tool has improved my ability to structure my writing effectively	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2	The AI-driven tool has helped me to express my ideas more logically in my writing.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
3	The AI-driven tool has improved the coherence of my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4	The AI-driven tool provides sufficient support for my writing needs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5	The AI-driven tool has enhanced my overall writing skills	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
6	The AI-driven tool has helped me to identify and correct grammatical errors in my writing.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7	The AI-driven tool has improved my ability to organize my thoughts effectively in my writing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
8	The AI-driven tool has increased my confidence in my writing abilities	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9	The AI-driven tool has helped me to improve the clarity of my writing.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
10	I would recommend the AI-driven tool to other students who want to improve their writing skills	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree



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Appendix -B Pre- and Post-Intervention Writing Sample Pre-AI Tool Intervention Writing Samples

1. *"The utilization of AI driven tool in enhancive writing skill of multilingual students is a debatable issue."* **Errors:** Spelling, grammar, and sentence structure.
2. *"The impact of AI on writing skill is very significant."* **Errors:** Spelling, grammar.
3. *"The students who use AI tool for writing get good grades."* **Errors:** Lack of clarity, specificity.
4. *"The AI tool help students to improve their writing skill."* **Errors:** Subject-verb agreement, grammar.
5. *"The use of AI in writing is a new phenomenon."* **Errors:** Spelling, grammar.
6. *"AI tool is very useful for writing."* **Errors:** Spelling, grammar.
7. *"The AI tool make writing easy."* **Errors:** Subject-verb agreement, grammar.
8. *"The impact of AI on multilingual students writing skill is not well understanding."* **Errors:** Grammar, sentence structure.
9. *"The AI tool provide feedback to students."* **Errors:** Subject-verb agreement, grammar.
10. *"The use of AI in writing instruction is a recent development."* **Errors:** Spelling, grammar.

Post-AI Tool Intervention Writing Samples

1. *"The utilization of AI-driven tools can significantly enhance the writing skills of multilingual students, particularly in terms of structure, coherence, and grammar."* **Improved**

sentence structure, grammar, and vocabulary.

2. *"The impact of AI on writing skills is substantial, as it provides personalized feedback and suggestions for improvement."*

Improved sentence structure, grammar, and vocabulary.

3. *"Students who utilize AI tools for writing tend to demonstrate improved writing quality, as evidenced by increased grades and positive feedback from instructors."* **Improved** sentence structure, clarity, and specificity.

4. *"The AI tool facilitates the development of writing skills by providing students with real-time feedback, suggestions, and corrections."*

Improved subject-verb agreement, grammar, and vocabulary.

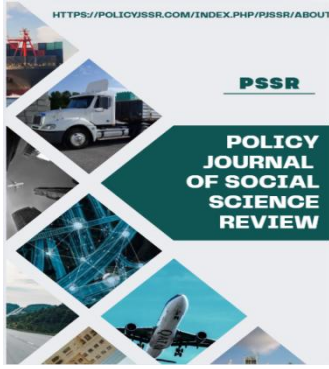
5. *"The integration of AI in writing instruction represents a novel approach to enhancing student writing outcomes, with potential benefits for multilingual students in particular."* **Improved** sentence structure, grammar, and vocabulary.

6. *"The AI-driven tool enables students to refine their writing skills through targeted feedback and practice."*

Improved sentence structure, grammar, and vocabulary.

7. *"The use of AI in writing instruction has been shown to improve student writing outcomes, particularly in terms of grammar and coherence."*

Improved sentence structure, clarity, and specificity.



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8. *"AI-driven tools provide students with personalized support and feedback, enabling them to develop their writing skills more effectively."*

Improved sentence structure, grammar, and vocabulary.

9. *"The impact of AI on writing skills is multifaceted, influencing not only grammar and coherence but also critical thinking and creativity."*

Improved sentence structure, clarity, and specificity.

10. *"The integration of AI in writing instruction offers a promising approach to enhancing student writing outcomes, particularly for multilingual students who may require additional support."*

Improved sentence structure demonstrates a refinement in writing skills, making the sentence more effective in conveying the idea.