Language and Literacy Practices of Multilingual ESL Learners in an AI-Supported Multimodal Composition Classroom

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Abstract

Exclusive use of English for communication and classwork in ESL classrooms can perpetrate linguistic bias and adversely affect students who come from multiple linguistic backgrounds. ESL teachers need to acknowledge the presence of home languages (L1) in the classroom and use those to help students acquire English language and literacy skills. This paper describes a classroom that employed a multiliteracies approach which allowed students to use their home languages while composing multimodal texts. AI tools were used to encourage the students to employ reading and writing strategies that involved optimal utilisation of their linguistic, cognitive and cultural resources. The freedom to deploy linguistic resources of their choice and select modes to communicate meaning resulted in students writing more and communicating better through multimodal compositions. Students also reported gains in reading comprehension, vocabulary, and grammar. Language-compassionate classroom practices employed by the researcher included purposive grouping, multimodal compositions, use of AI tools, and a judicious use of home languages. The paper argues that such classrooms may help foster linguistic equity, promote student agency, and ensure equitable and achievable literacy goals for all students.

Keywords: ESL writing instruction, multimodal compositions, multiliteracies approach, AI tools, multilingual learners, languaging practices

Introduction

Global education bodies are increasingly re-examining diversity, equity, and inclusion practices (OECD, 2023). Within English language teaching, monoglossic ideologies that prioritise only English are being questioned for perpetuating linguistic prejudice. Instead, educators are urged to foster linguistic diversity and equity in ESL classrooms. In India, the National Education Policy (NEP, 2020) and the National Curriculum Framework for School Education (NCFSE, 2023) stress the pedagogic value of home languages. These policies highlight that home languages are central to learners' identities, serving as bridges to cultural heritage while supporting the development of literacy in additional languages. Their inclusion "promotes a society which respects and appreciates one's own as well as others' cultures... (and) also has direct benefits for the individual in terms of cognitive development and flexibility" (NCFSE, 2023, p. 235).

This paper reports a classroom study where the multiliteracies approach (Cope & Kalantzis, 2009) was used to build an inclusive environment for multilingual ESL learners who were engaged in multimodal composition tasks supported by Artificial Intelligence (AI) tools. These pedagogical choices not only recognised the students' diverse linguistic repertoires but also positioned them as resources to enhance meaning-making, foster linguistic equity, and facilitate the development of English language and literacy skills.

Multiliteracies

The multiliteracies approach, proposed by Cope and Kalantzis (2009), highlights the need to recognise and value the diverse literacies learners bring to classrooms. Beyond traditional linguistic literacy, it calls for the development of visual, digital, cultural, and other literacies that reflect the communicative demands of the twenty-first century.

The framework advances literacy through two key principles. First, schooled literacies and home literacies should complement one another. When schools draw on learners' "funds of knowledge" (Moll et al., 1992), they legitimise the cultural, social, and linguistic resources students bring from their homes and communities. This creates authentic, situated literacy practices where learners' lived experiences shape classroom meaning making.

Second, multiliteracies challenge the narrow assumption that competence in English is measured solely through speaking and writing. In contemporary society, alphabetic literacy is being increasingly replaced as the primary mode of communication with literacy skills that include the ability to receive information from and produce texts using multiple modes such as visual, aural, tactile, spatial, and gestural, in addition to linguistic (New London Group, 1996).

In the classroom described here, multiliteracies were enacted by encouraging students to draw on personally relevant content, use languages they felt most comfortable with, and represent knowledge in modes of their choice, thus broadening participation and deepening engagement.

Multimodal Compositions

Multimodal compositions often take the form of blogs, videos, or oral presentations, providing learners with opportunities to integrate diverse resources into their writing. In contrast to traditional essays that rely mainly on alphabetical text (words, paragraphs, punctuation, and formatting), multimodal compositions enable students to combine visual (colour, images), auditory (sound), gestural (movement, body language), and spatial modes alongside written language to communicate more effectively (New London Group, 1996).

Donaghy (2023) identifies several benefits of competence in multimodal compositions. Engaging with multimodal texts mirrors real-world literacy practices, strengthening learners' analytical skills while keeping tasks relevant and motivating. Because online communication increasingly depends on multimodality, producing such texts equips students with the ability to interact effectively in digital environments. Moreover, as workplaces demand proficiency in receiving and creating multimodal content, integrating multimodality into English classes prepares learners with essential twenty-first-century communication skills.

The Setting

The study reported here was conducted with 46 multilingual undergraduates enrolled in a second-semester course, *Writing and Vocabulary*, at a Central University in India. While all the students were learning English as a second language, they also pursued degrees in foreign languages—Spanish, French, Japanese, or Korean. Representing

nine Indian states, they brought varied cultural, linguistic, and educational backgrounds, and were proficient in at least one regional or Indian language. A diagnostic paragraph-writing activity at the start showed most students were at A2/B1 levels of the CEFR scale.

Multimodal compositions were introduced both for their relevance to twenty-first century literacy and their alignment with the multiliteracies approach. Grounded in an asset-based pedagogic framework (Kress, 2010; Soto, 2023), the course viewed students' linguistic repertoires, lived experiences, and cultural knowledge as resources rather than deficits. By reducing the primacy of alphabetic literacy, multimodality created opportunities for learners with low English proficiency to express meaning through other modes, while also validating the academic and social benefits of bilingualism and multilingualism. To promote equity, the classroom adopted a fluid approach to language use in which students were encouraged to draw on their home languages for scaffolding and meaning making while composing in English.

However, a familiar challenge emerged: the teacher's limited proficiency in students' home languages. This researcher attempted to respond to this challenge with the use of artificial intelligence (AI) tools. It was hoped that students' use of AI tools would provide them tailored scaffolding to use diverse linguistic resources and gradually transition to writing practices in English by working within an inclusive learning environment.

An overarching question was framed to guide the study: How do AI tools optimise the languaging practices of multilingual learners in an ESL multimodal composition classroom?

Classroom Tasks and Strategies

The classroom activities were designed to strengthen students' English proficiency while advancing a pedagogy of linguistic equity. Positioning linguistic diversity as an asset rather than a barrier, learners were encouraged to draw upon home, foreign, and peer languages as valuable resources. The activities also sought to extend literacy practices beyond the alphabetic mode by promoting multimodality and embedding the use of AI tools in writing processes.

To develop multimodal literacies, students engaged in activities such as matching pictures with written or spoken texts, contributing to a multilingual-multimodal class dictionary, creating summary

infographics, etc. Additionally, conventional writing techniques—thesis and topic sentences, supporting paragraphs, introductions and conclusions, paraphrasing, summarising, and citing sources—were explicitly taught.

AI was incorporated to channel the use of multiple languages to support ESL writing. Students used AI for translation and reverse translation. They also experimented with generating content in different languages, translating between them, and examining how meaning shifted across versions.

Collaboration was structured using a jigsaw model. Students first worked in same-language groups and then re-grouped into mixed-language groups. This was done to foster cross-linguistic awareness and appreciation of linguistic pluralism within the classroom.

This paper reports two individual composition tasks used in the classroom. The first task involved independent reading followed by individual writing. The second task had four stages: (a) collaborative reading in home language groups; (b) jigsaw group exchanges; (c) planning and outlining in home language groups; and (d) individual writing. At each stage, students were encouraged to draw on their full linguistic repertoire and to employ AI tools.

Data Collection and Ethical Considerations

The study involved 46 students who completed two expository multimodal composition tasks: the first without peer or AI support, and the second incorporating translanguaging practices during pre-writing and writing with both peer and AI assistance. Participation was voluntary, and informed consent was obtained, with assurance that withdrawal would not affect academic credits.

Data were collected through student compositions, classroom observations, written reflections, and semi-structured interviews. In total, 92 essays were analysed for lexical diversity and density, and syntactic complexity. Four classroom sessions were observed to document peer collaboration, AI use, and multimodal meaning-making. Written reflections from all 46 students described their experiences of using AI in composing multimodal essays. Eighteen students participated in individual interviews, each lasting 15 minutes, focusing on their use, and perceived benefits and challenges of AI. Observations, reflections, and interviews were coded to identify strategies used.

Data Analysis

a. Linguistic Analysis of Student Compositions

Student compositions were analysed using three linguistic measures. Lexical diversity, calculated through the Type-Token Ratio (TTR), shows how varied or repetitive a writer's vocabulary is by comparing the number of unique words (types) to the total number of words (tokens) in the text. Lexical density measured the proportion of content words (nouns, verbs, adjectives, adverbs), indicating how information-rich a text was. Higher density reflected greater linguistic and syntactic complexity, while lower density suggested simpler writing. The Flesch Reading Ease score was used to evaluate readability: lower scores indicated increased complexity of language use.

Table 1 presents the mean scores, standard deviations, and p-values for lexical diversity, lexical density, and readability, comparing student performance across the two composition tasks.

Table 1: *Mean (M), Standard Deviation (SD) and p-value of Lexical Diversity, Lexical Density and Flesch Reading Ease Readability Scores*

Measure	Essay 1	Essay 2	t-statistic	p-value
Lexical Diversity	M = 0.39 SD = 2.9	M = 0.54 SD = 3	-0.21	0.832
Lexical Density (%)	M = 38 SD = 3.2	M = 52 SD = 3.1	-18.59	$p < 0.001$
Readability (Flesch Reading Ease)	M = 71.5 SD = 3.8	M = 60.5 SD = 3.6	12.43	$p < 0.001$

Interpretation of Findings

The linguistic analysis produced mixed results across the three measures.

Lexical Diversity: An independent t-test conducted to compare the scores between Essay 1 (M = 0.39, SD = 2.9) and Essay 2 (M = 0.54, SD = 3.0) showed no significant difference between the groups, $t(\approx 34) = -0.21$, $p = 0.832$. Since the p-value is much greater than 0.05, it suggests that there is no significant difference in the means of lexical diversity between Essay 1 and Essay 2. However, the slight rise in mean scores might suggest a perceptible but gradual vocabulary development.

For lexical density, results showed a statistically significant improvement

from Essay 1 (M = 38, SD = 3.2) to Essay 2 (M = 52, SD = 3.1), $t(\approx 34) = -18.59$, $p < 0.001$. This marked increase reflects greater use of content words in Essay 2, indicating more information-rich writing and developing syntactic competence.

For readability, Flesch Reading Ease scores revealed a significant difference between Essay 1 (M = 71.5, SD = 3.8) and Essay 2 (M = 60.5, SD = 3.6), $t(\approx 34) = 12.43$, $p < 0.001$. The decrease indicates higher complexity, with students producing longer sentences, more advanced structures, and richer vocabulary. While Essay 1 aligned with a 7th-Grade readability level, Essay 2 corresponded to an 8th–9th Grade level, reflecting a meaningful step forward in linguistic sophistication.

Overall, while the vocabulary range showed only a slight change, the moderate gains in lexical density and syntactic complexity suggest that translanguaging and AI-supported strategies helped students produce more advanced and content-rich compositions. These findings show how AI tools, combined with translanguaging, optimised learners' writing practices in meaningful ways. To deepen this understanding, a thematic analysis was performed to explore how students perceived and enacted these strategies.

b. Thematic Analysis

Data from interviews, reflections, and observations were transcribed, coded in NVivo, and triangulated to identify patterns in AI-facilitated collaborative learning. Analysis focused on translanguaging strategies students used at different stages of writing, highlighting how diverse linguistic resources supported content development and meaning making.

Pre-Writing Strategies: Building Content Knowledge and Vocabulary

In Essay 2, each student read at least one related resource and first discussed it with same-language peers to build confidence and content knowledge. Here, AI tools were used for translation, simplification, summarisation, and scaffolded reading support. They then shared their ideas in English with peers from other language groups.

1. **Text Translation**: Used Google Translate and Bing to translate the first paragraph of a text into home language. This helped activate prior knowledge and facilitate comprehension.
2. **Scaffolded Texts:** Used ChatGPT, Claude, etc. to simplify and

paraphrase content using prompts such as 'Explain this paragraph like I am 10 years.' (S 12)

3. **Note-Making:** Asked ChatGPT to identify important points and provide notes in a tabular format. Sample prompt used: 'This is the introduction of an article. Please read this and give me points in simple language. Get all important points and make notes as a table pattern.' (S 37)
4. **L1 Summaries:** Summarised a text in L1 or English using ChatGPT, Diffit, Perplexity, etc. Reading this before reading the complete text supported comprehension.
5. **Word-Level Strategies**: Used Quillbot to translate unfamiliar English words into their L1 and then reinserted the translated words back into the English sentence to infer the meaning. S 4 reported that in the sentence *In the attempt to move beyond the sustainability rhetoric and pursue a more meaningful agenda for sustainable development, a clear definition of the concept and explanation of its key dimensions are needed,* translating just the words *rhetoric* and *sustainable* helped comprehend the sentence.
6. **Text-to-Image Generation**: Each paragraph of a text was processed through DALL·E, Midjourney, or Leonardo to generate images. The visuals helped several students comprehend the topic and content more effectively.
7. **Voice Notes**: Used speech-to-text tools (Audiopen, Speechnotes) to convert spoken notes in English or L1 into written text. L1 notes are then translated into English using AI.

Pre-Writing Strategies: Planning and Organising

1. **Build Linguistic Competency in English:** Used Google Translate and Merlin to translate into English the words, phrases, and sentences that emerged from brainstorming conducted in L1.
2. **Plan the Structure:** Group discussions on essay organisation and paragraph content conducted in L1 are captured via speech-to-text and later translated into English using Audiopen and Quillbot.
3. **Generate an Outline:** Asked ChatGPT to propose possible essay outlines, which were compared with the group's own suggestions to support planning.
4. **Translate to English**: Drafted a few paragraphs of an essay in L1

and translated them into English using Quillpad and Quillbot. Another group experimented with writing in their L1 script but found that AI often produced incorrect translations. They reported that transliterations generated more accurate English outputs than Indian script inputs.

5. **Translate to L1:** Paragraphs written in English were translated into L1 to verify whether the intended meaning was accurately conveyed.

Writing/Composition Strategies

The integration of AI, diverse linguistic resources, and multimodality enhanced students' communicative competence and transformed their compositions in meaningful ways.

1. **Use of L1 Words and Phrases:** Used L1 words and phrases when English seemed inadequate. For example, *grimy and dirty skin* (from *gayer rong-ta ektu moyla*) replaced *dark skin* to *"better capture social attitudes towards dark skin"*. Similarly, *prana* or *chi* were preferred over *life* for their richer cultural meaning.

   S 22 wrote an entire paragraph in L1 and provided links to both a reading aloud of the paragraph as well as its English translation. This, the learner explained, would help readers "see the beautiful script and listen to the melodious sounds" of the language.
2. **Proverbs and Idioms:** Indian idioms were often favoured for their familiar contextual resonance. Examples included *poocha kannadachu paalu kudikuka* (cat shuts its eyes while drinking milk) instead of *ostrich buries its head*. Similarly, *nach na jaane aangan tedha* (a bad dancer blames the stage) was preferred over *a bad workman blames his tools* as a richer cultural counterpart. Some students also creatively compared idioms, such as *kayyalekkethe chakka* (a jackfruit that fell on a fence) with *sitting on the fence,* arguing the jackfruit metaphor expressed indecision more vividly. While a few provided translations, many preferred to explain meanings contextually.
3. **Cultural Artefacts and Visuals:** Incorporated cultural symbols and visuals to personalise writing. Examples included yellow-coloured backgrounds (for the auspicious *haldi* or turmeric), *ikkat* saree borders, flower garlands, and rangoli patterns to evoke "home-feel." S 30 combined *Pookkalam* (South India) with Japanese *Ikebana* to contrast cultural styles.
4. **Cross-Linguistic Borrowing:** Borrowed elements from foreign

languages to enrich expression. Examples included Spanish punctuation marks (¿…?, ¡…!) as anticipatory signalling in English sentences. Students also used words such as *ataraxia* and *hygge*, which they felt had no direct equivalents either in English or in their home languages, to convey nuanced concepts.

Discussion of Emergent Themes

The integration of AI tools within a multiliteracies framework encouraged students to create multimodal compositions that drew on diverse linguistic resources and modes of expression. The following themes, based on classroom observations, student reports, and informal conversations, illustrate how these practices shaped their learning.

Theme 1: AI Tools Scaffolded Reading Comprehension

Student reflections (S 4, S 22) captured this clearly: *"I am impressed… reading in English was more easily than German when I translated the difficult words first"* and *"Summarisers are good useful tools … helped us understand long lessons."* These voices show how AI provided personalised scaffolding that encouraged confidence in approaching complex material.

Theme 2: Translanguaging Helped Expand Vocabulary and Grammar Awareness

By using AI to translate and compare texts in L1 and English, students became more attentive to vocabulary choices, grammar, and sentence structure. Their compositions grew longer and more expressive, echoing Makalela's (2015) findings on the value of translanguaging. Reflection reports noted increased ability to self-correct errors after AI feedback: *"Grammar was easy because AI showed me correct options and I saw my mistakes after"* (S 19). S 44 explained, *"I checked meanings in my mother tongue language first, then I tried using many different English words."* These suggest that translanguaging, supported by AI, promoted vocabulary growth and heightened metalinguistic awareness.

Theme 3: Multimodal Writing with L1 Resources Enhanced Clarity of Expression

Students reported that multimodal essays, enriched with linguistic and cultural resources, allowed them to express ideas more clearly. The average word count rose from 272 in Essay 1 to 515 in Essay 2, showing greater elaboration. Learners felt empowered to blend L1 words, idioms, scripts, images, and artefacts with English to produce more meaningful

and personalised writing. Their comments illustrate this impact: *"… more description I could do, extension is done with use of my mother language and culture."* (S 31)

> *"I can use my mother tongue to say what English cannot and use of images to say what words should not say."* (S 44)
>
> *"When I used my language, the meaning felt fuller."* (S 9)
>
> *"Images and words together made my ideas more clear."* (S 26)

These accounts show how multimodality and L1 integration improved both communicative clarity and personal resonance.

Theme 4: AI-Assisted Writing Reduced Anxiety and Increased Confidence

Many students described reduced "fear of English," feeling "more freeness," "freedom in mind," and "no tension" when writing. One reason pointed out was that since the content was familiar due to content generation and planning using one's own language, they were able to pay more attention to the use of English while composing their essays. S 39 explained, *"Using my home language first made using English I think very much easier."* AI further acted as a safety net: *"I was not afraid to write because I knew my AI friend will check it later. And I don't get low marks for that"* (S 29). These reflections show how AI mitigated anxiety, reframed English writing as a manageable task, and nurtured confidence.

Theme 5: AI-Supported Multilingual and Multimodal Practices Increased Student Agency in Writing

Students expressed a stronger sense of agency when their cultural and linguistic resources were welcomed. Using L1 words, personal references, and cultural artefacts made English writing feel less alien and more their own. As S 15 expressed, *"Using my identity while writing in English made English one close relative of my native state."* Others shared: *"AI tools helped to make English language look like my own language"* (S 6). *"Mixing my language and English is my USP, it is rad, this is making my essay unique and personal"* (S 10).

"My language allows more expression… so using pictures plus my own language words, everything together made the essay look very apna… mera" (S 41).

These voices reflect how AI-mediated translanguaging fostered ownership, pride, and self-expression.

While translanguaging remained a central resource, students also used AI in ways that extended beyond language mediation, such as generating images, making notes, and transcribing speech. These strategies highlight the broader role of AI in supporting multimodal and metacognitive dimensions of writing, complementing its role in fostering translanguaging. Taken together, these themes show that AI, when embedded within multiliteracies pedagogy, acted not only as a scaffold for comprehension and vocabulary-building, but also as a catalyst for collaboration, confidence, agency, and creative expression. In doing so, it enabled learners to navigate between languages while expanding the range of tools available for meaning-making, planning, and self-regulation in composition.

Limitations

As an action research study, these findings remain tied to a single classroom context and may not be generalisable. Interpretation relied on observations, self-reports, and reflections, which raises the risk of bias. While two essay-writing events were compared, there was no external control group to establish causality. Furthermore, while quantitative measures were used to assess aspects such as lexical diversity, density, and readability, these were based on two essay-writing tasks within a single course cycle and may not capture the sustained impact of AI-enhanced translanguaging practices over time. Future studies should use larger, comparative designs across multiple contexts to assess long-term impacts.

Conclusion

Multimodal composition practices that legitimise students' languages and cultural perspectives create bridges between classroom and community, allowing learners' lived experiences to be represented and valued. This study shows that multimodal tasks, framed through a multiliteracies pedagogy and supported by AI, can make ESL classrooms more inclusive and equitable.

Presenting evidence from quantitative and qualitative data, the research demonstrates how AI scaffolds expanded lexical density, syntactic complexity, and confidence, while translanguaging practices enhanced clarity, agency, and self-expression. Four features emerge as central to such classrooms: purposive grouping for collaboration, multimodal

tasks that expand meaning-making, AI support for reading and writing, and judicious use of L1 to enable translanguaging. The findings validate multiliteracies theory and highlight AI's potential to foster agency and linguistic equity. Future research could explore the specific AI affordances that contribute most significantly to writing performance and learner autonomy, providing deeper insights into how AI technologies can further support multilingual learners.

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