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Teaching with ChatGPT as a Linguistically Responsive Tool for Multilingual Learners



KEVIN DONLEY 

Georgetown University, USA
Kd847@georgetown.edu

Abstract

This study investigates the instructional applications of ChatGPT and other artificial intelligence (AI) tools in the context of K–12 multilingual learner (ML) education in US public schools. Framed within a translanguaging lens, this research sought to empirically document how these technologies are used by teachers to support language and literacy learning among MLs. Data were collected from two cohorts of in-service teachers enrolled in a professional development course focused on culturally and linguistically responsive pedagogy, with classroom observations and post-observation interviews conducted with 42 teachers across various grade levels and content areas. The findings reveal several key practices, including using ChatGPT to facilitate communication, differentiate content, provide structured support for prompting, and engage in multimodal literacy experimentation. These practices align with the dimensions of translanguaging pedagogy, particularly in terms of affordances, production, and co-labor, although gaps remain in the areas of assessment and reflection. The study highlights the potential of AI tools to enhance MLs' linguistic responsiveness and agency, while also emphasizing the need for critical engagement and explicit instruction to address the challenges and ethical considerations associated with AI's integration in education.

Keywords: artificial intelligence; multilingual learners; translanguaging

Introduction

In today's increasingly diverse classrooms of US public schools, educators face the challenge of responding to the linguistic and cultural identities and needs of multilingual learners (MLs), while fostering their development of literacy and academic achievement. Traditional teaching methods often fall

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short in addressing the unique circumstances of MLs, who bring a multiplicity of linguistic resources and communicative practices into the classroom (Kanno & Kangas, 2023). As such, there is a pressing need for innovative pedagogies that leverage language and literacy in ways that disrupt English, monolingual barriers in the curriculum, instruction, and assessment (García 2009; García & Lin, 2016). To address these challenges, educators are increasingly turning to technologies that offer new possibilities for creating linguistically responsive learning environments (Daniel et al., 2016).

It is not a new phenomenon that teachers of MLs leverage technology to bridge language gaps and to more flexibly navigate monolingual norms in the curriculum and assessment. In turn, this may support a more dynamic, flexible learning environment, and digital technologies have played an important role in supporting the development of students' language and literacy skills (Liu, Reynolds et al., 2024). However, the public arrival of artificial intelligence (AI) technologies, such as ChatGPT and its emerging interactions, represent a new set of possibilities for teachers to engage with and build upon MLs' diverse communicative repertoires.

Despite its potential, there are numerous concerns about the emergence and social pervasiveness of AI technologies. Beyond the classroom, these include concerns about copyright, privacy, and environmental exploitation (Chang et al., 2024). In the context of schooling, there are concerns about bias, inappropriate student uses, and academic integrity. Further, there is a limited understanding of how these tools can be effectively utilized to support the development of literacy by MLs in culturally and linguistically responsive ways. In sum, there is a need to critically examine AI's ability to disrupt normative, standardizing approaches to language and literacy education. This study seeks to address these classroom-level concerns by providing insights into the benefits and limitations of incorporating AI technologies in literacy instruction for MLs.

In this study, I investigated how AI tools, including but not limited to ChatGPT, are currently being leveraged by teachers of MLs to support language and literacy learning. I analyze these practices through a translanguaging lens, which centers the non-standard ways that MLs do language in academic contexts (Otheguy et al., 2019). As a stance of pedagogy (García et al., 2017), translanguaging urges educators to critique and interrogate deficit-based perspectives toward MLs and their communicative practices, particularly raciolinguistic ideologies that devalue communicative practices that do not conform to standardized, often monolingual, academic language norms (García et al., 2021).

Specifically, this study documents the instructional practices of a small subset of two cohorts of in-service teachers enrolled in a professional development (PD) course generally focused on literacy instruction for MLs. Data include classroom observations and post-observation interviews with 42 K–12 teachers across grade levels and content areas. Through content analysis, I identified pedagogical uses of ChatGPT and other AI tools in the context of ML's instruction and assess the extent to which those practices align with linguistically responsive pedagogies through the lens of translanguaging. The research questions guiding this study are as follows. How do teachers of MLs use ChatGPT in their instructional practices? To what extent do these instructional uses support linguistically responsive pedagogies for MLs?

Literature Review

Multilingual learners face numerous challenges in traditional instruction in literacy in US public schooling, because the curricula and instruction are often rooted in a monolingual bias and deficit-based perspectives that fail to recognize their full communicative repertoires (García, 2009; García & Kleifgen, 2019). These challenges are especially compounded for students identified as English learners, who are deemed to be in need of additional academic English language support in content area and literacy

learning. This classification, though, has serious material consequences for students' academic opportunities and outcomes, as it reflects a deficit framing of linguistically minoritized students (Kanno et al., 2024). In this article, I use MLs to refer to linguistically minoritized students, including, but not limited to, English Learners, who share experiences of confronting deficit-based, raciolinguistic ideologies (Flores & Rosa, 2015; 2022).

Teachers of MLs make space for multilingualism in their classrooms and instructional practices primarily through bridging, scaffolding, and grouping strategies (Daniel et al., 2016). Digital technologies have supported such practices for language and literacy education, including e-books, digital learning platforms, assistive grammar/spelling technologies, and closed captioning/subtitling (Liu, Reynolds et al., 2024; Mahalingappa et al., 2024). Machine translation is becoming increasingly prevalent in classrooms where gaps exist between the communicative repertoires of MLs and their teachers (Ducar & Shocket, 2018). The use of digital translation tools not only facilitates communication among MLs, their teachers, and their classmates, but also supports MLs' receptive language skills, like reading comprehension, as well as productive writing skills (Garcia & Pena, 2011; Kelly & Hou, 2021).

Though a recent phenomenon, the role of AI in education is a burgeoning area of research that highlights its potential to transform teaching and learning practices across a variety of contexts (Limna et al., 2022; Zhai et al., 2021), as well as drawing critical attention to its sociopolitical and ethical implications for schooling (Akgun & Greenhow, 2022; Tacheva & Ramasubramanian, 2023). On the one hand, AI technologies can support a range of pedagogical tasks, such as providing feedback, generating lesson plans, facilitating personalized and adaptive learning, and creating curricular materials and texts (Chen et al., 2020). On the other hand, there are concerns with generative AI tools, particularly ChatGPT (and its continued iterations), as they represent an increased risk for potential misuses and biases, thus necessitating continuous human oversight and exploration of its uses to support critical thinking (Kasneci et al., 2023).

More specifically, generative AI refers to the technological tools that can produce texts, images, video, computer code, and other digital outputs in response to user prompts, based on extremely large amounts of training data (Baidoo-anu & Ansah, 2023). These technologies are powered by large language models (LLMs), which can generate human-like text with far greater accuracy than machine text and translation tools (Myers et al., 2024). Tools like ChatGPT can perform a wide array of language-related tasks, like translation, question/response or chatbot discussions, content creation, and many others. This has potentially transformative implications for literacy instruction, where ChatGPT could be used to support multilingual and multimodal practices (Chang et al., 2024).

Despite its rapid emergence in practice, the affordances of ChatGPT and generative AI for MLs or in language learning contexts is underexplored. Some of this work so far has focused on the uses and affordances of AI tools in formal university-level foreign language learning settings (Huang et al., 2023). For example, Yan (2023) investigated the use of chatbots in English as a foreign language settings in Chinese universities, finding that increased use can support students' academic English acquisition when they are offered explicit guidance about how to properly use tools like ChatGPT. Liu, Darvin et al. (2024) similarly found that university-aged language learners in China found AI chatbot tools more useful for language acquisition with increased hands-on experimentation, guidance on intentional uses, and explicit learning about how to train chatbots. More specifically related to the context of K–12 language learners, other research has examined how LLM-generated feedback can support secondary students' writing motivation and positive emotions about their writing, which are associated with more accurate textual revisions (Meyer et al., 2024). Moreover, the ability of AI to generate subtitles and closed captions can aid MLs in comprehending and interpreting complex texts, making content more accessible (Mahalingappa et al., 2024). Nonetheless, the application of AI in

the education of MLs needs further examination and documentation, which calls for a focused examination of how these tools can be leveraged to support the unique linguistic and cultural needs of this group of students.

It is important to consider, however, that AI in education is not without numerous challenges. These issues include bias in AI-generated contexts, students' privacy and data concerns, and the potential for inappropriate uses and overreliance on the technology (Kasneci et al., 2023). While there are the benefits of increased student engagement, accessibility, collaboration, and agency, especially for MLs in English-monolingual learning contexts, there are difficult challenges related to detecting and preventing academic dishonesty and plagiarism (Cotton et al., 2023; Yeo, 2023). For example, Fleckenstein and colleagues (2024) highlighted concerns about teachers' overconfidence and inability to detect AI-generated texts and essays, which they also tend to assess more positively than student-generated texts.

There are important ethical considerations for the use of ChatGPT with MLs of which teachers must also be aware. For example, the outputs of AI technologies based on LLMs often reinforce traditional language hierarchies and standard language ideologies (Schneider, 2022). Questions persist about the ability of AI tools to understand, interact with, affirm, and produce non-standard language practices, both within a language and across them. This is compounded by a cultural bias rooted in English monolingualism that is inherent in the technology and outputs of ChatGPT, in that most of its source texts are in English and it includes words that are more often from standardized, written languages rather than oral ones (Kohnke et al., 2023). This means that teachers must pay particular attention to how MLs can engage with ChatGPT in ways that affirm their linguistic and cultural diversity. Taken together, this context of AI in language education, especially for linguistically minoritized MLs, requires a critical approach that considers its limitations and the sociopolitical contexts in which it is used (Gupta et al., 2024).

Theoretical Framework

Given the need for critical orientations and approaches to the affordances and limitations of generative AI in language learning contexts, this study is rooted in a translanguaging stance towards language and pedagogy. As a stance towards language and multilingualism, translanguaging affirms the non-standard ways that MLs draw on the entirety of their communicative repertoire, in resistance to English monolingual classroom norms (García, 2009; Otheguy et al., 2019). As a stance towards pedagogy, translanguaging calls on teachers of linguistically minoritized MLs to not only create classroom spaces where students can critically and creatively do language but also to validate them as academically legitimate practices (García et al., 2017; García & Lin, 2016). To put it differently, translanguaging is a student-centered theory of language and pedagogy that highlights the individual and interpersonal creativity with which MLs engage in communication, specifically in ways that disrupt the logics of raciolinguistic ideologies (Flores, 2019).

In the context of language and literacy education, García and Kleifgen (2019) have theorized multiple dimensions of applying translanguaging to pedagogy (Table 1). Specifically, they argued that multilingualism and multiliteracies cannot be simply understood as the mixing or combination of separate communicative modes. Rather, these must be understood through a lens that captures the diversity of ways in which MLs understand texts, generate texts, and foster critical linguistic and cultural consciousness. Thus, beyond a focus on the ways in which students produce translanguaging practices, such a framework must also include the kinds of translanguaging materials, collaborative learning, assessment practices, and opportunities for critical reflection, which require intentional, conscious efforts by teachers to cultivate these kinds of translanguaging literacy pedagogies.

Table 1 *A Translanguaging Framework for Literacy Education*

Affordances	Providing students with multimodal and translingual mentor texts (including families and communities)
Co-labor	Creating opportunities for collaborative learning that affirms multiple voices and means of knowledge production between ML peers
Production	Mobilizing students to leverage translanguaging practices, produce translingual texts, and model non-standard language variations
Assessment	Developing multimodal and multilingual assessment practices that legitimize translanguaging in formative and summative evaluation
Reflection	Reflecting on language practices, cross-linguistic comparisons, and the sociopo-litical dimensions of language to inform further learning practices

Note: This table represents the multiple dimensions of translanguaging pedagogy in the context of literacy education for MLs, adapted from the work of García & Kleifgen (2019).

The first dimension of this translanguaging framework for literacy education is called affordances. This refers to the ways in which teachers provide students with multimodal and translingual mentor texts, including those that reflect the multiple literacies of their families and communities beyond their particular classroom context. In providing students with translanguaging affordances, teachers can leverage a variety of multimodal texts and media to foster inclusive, accessible learning environments where MLs are affirmatively represented. By doing so, teachers can further support a diversity of learning styles that encourage students to draw connections and find relevance between their home and school literacies.

The second dimension is translanguaging co-labor, which includes opportunities for collaborative learning that affirm multiple voices and means of knowledge production among ML peers. Through intentional grouping and maximizing students' agency in learning activities, teachers can promote a sense of community and mutual respect as a way of valuing the diverse linguistic and cultural assets that students bring to the classroom. By facilitating peer-to-peer learning, teachers can cultivate opportunities for students to share and build knowledge collectively. This supports the building of an inclusive and participatory learning environment in which the teacher is not the sole expert in the classroom.

The next dimension is translanguaging production, which includes the ways in which students actually produce translanguaging practices. Teachers should mobilize students to leverage translanguaging practices, produce translingual texts, and model non-standard language variations. This, in turn, can empower MLs to authentically, critically, and creatively draw on their entire communicative repertoire in learning. By extension, this positions students to produce original texts that reflect their cultural and linguistic identities, further challenging standardized, monolingual literacy norms. By engaging in and modeling non-standard literacies, MLs can develop an appreciation for these practices as academically valid and legitimate.

The fourth dimension is related to how translanguaging is included in assessment practices. When teaching from a translanguaging stance, teachers should develop multimodal and multilingual assessment practices that legitimize translanguaging in formative and summative evaluations and ensure that all students' communicative abilities are recognized and valued. More specifically, this means incorporating opportunities for translanguaging production in various modes of assessment, such as oral presentations, written texts, portfolios, and project-based assessments. In this way, teachers can more fully capture the range of students' communicative competencies and content knowledge in more equitable and inclusive ways.

Finally, the fifth dimension is reflection. This means that it is an integral component of translanguaging pedagogy, for teachers and students alike, to intentionally and explicitly reflect on their own language practices, to make cross-linguistic comparisons, and to develop critical consciousness of the sociopolitical dynamics of language and literacy in academic contexts. Teachers especially should engage in this kind of critical reflection with the purpose of informing further instructional practices and to highlight ways to develop and promote critical metalinguistic awareness. This means that students and their teachers should consider the broader implications of language, power, identity, and equity. Thus, through this reflection, students and teachers can better understand their own language practices and the sociopolitical contexts that shape them, leading to more informed and intentional learning practices.

In sum, this study is grounded in a foundational understanding of translanguaging as a framework for a linguistically responsive pedagogy. As a linguistically responsive pedagogy, it is meant to not just make space for linguistic flexibility and diversity, but also to promote opportunities for MLs to make real-life connections to the content and curriculum (Lucas et al., 2008). In other words, teachers should enact multilingual and multimodal instructional practices for the purpose of affirming, representing, and developing MLs' cultural identities and critical consciousness (Lucas & Villegas, 2010; 2011). To build on students' communicative strengths in responsive ways therefore means maintaining high academic expectations as well as sustaining pluralism, building cultural competence, and fostering critical consciousness (Dunham et al., 2022). This is the job of teachers of linguistically minoritized MLs in language and literacy instruction.

Methods

This qualitative study aimed to empirically document the instructional applications of AI in the context of K–12 ML education, specifically in US public schools. It is part of a larger research initiative known as Project ELEECT (Donley et al., 2023), which is funded by a National Professional Development Grant through the Office of English Language Acquisition. Project ELEECT aims to expand access to teacher education and PD in culturally and linguistically responsive pedagogies (CLRP). A core component of this initiative is the creation of a PD course for in-service teachers of MLs about the implementation of CLRP into foundational and content area literacy, across grade levels and instructional contexts. The course is delivered through a combination of in-person workshops, individual coaching, and asynchronous professional learning activities. It is particularly for teachers located in Washington, DC, a unique context in which nearly half of the K–12 students are educated in public schools while the other half attend public charter schools, contributing to a complex context in which teachers' experience with and training in effective instruction for MLs can vary widely.

Participants

The study draws from two cohorts of in-service teachers enrolled in a PD course on literacy instruction for MLs over two academic years (fall 2022 to spring 2024). To be included in the PD, participants had to be teachers of MLs within the DC public schools or public charter schools. Informed consent was secured as part of the larger research agenda associated with Project ELEECT. Specifically, the participants were informed of the range of research interests during the first PD session and asked to give permission to participate in classroom observations. In total, there were 61 participants across both cohorts, of whom 42 were observed (in person) during at least one full lesson or class period, which typically lasted 40–60 minutes. The observed teachers taught across various grade levels and instructional contexts, including pre-K, primary (K–5), and secondary (6–12) education, covering subjects such as Spanish immersion, English as a second language (ESL), dual-language bilingual education (DLBE), general education, special education, science, math, and English language arts (ELA).

Table 2 *Participant Information for Relevant Observations*

	Cohort	Schooling system	Content area	Grade level
1	2022–2023	DCPS	General education	Primary (3 rd grade)
2	2022–2023	PCS	Mathematics	Secondary (6 th grade)
3	2022–2023	PCS	English language arts	Secondary (11 th grade)
4	2023–2024	DCPS	Spanish immersion	Primary (K–2 nd grade)
5	2023–2024	DCPS	Science	Secondary (9 th grade)
6	2023–2024	PCS	English as a second language	Secondary (9–12 th grade)
7	2023–2024	PCS	English as a second language	Secondary (10 th grade)
8	2023–2024	PCS	English language arts	Secondary (11–12 th grade)

Note: This table provides information on the small subset of observed teachers in both cohorts of professional development participants. DCPS, DC public schools; PCS, public charter schools.

In the first cohort (2022–2023), 20 teachers in total were observed across multiple schooling systems, content areas, and grade levels. In the second cohort (2023–2024), 22 observations were completed with teachers similarly distributed across schooling systems, content areas, and grade levels. From this larger pool of participants, instances of instructional uses of ChatGPT were identified in eight different observations, which are identified in Table 2.

Data Collection

During the observations, data collection involved detailed field notes documenting the instructional practices by the researcher. While the overarching purpose of the observations, as part of the larger Project ELEECT, focused on the implementation of CLRP, general instances of flexible language-oriented pedagogies were recorded in the field notes, which, when relevant, included the use of AI tools like ChatGPT. Following the observations, semi-structured interviews were conducted via Zoom to gather more comprehensive insights into the teachers' pedagogical practices beyond what was observed. These interviews allowed teachers to provide contextualization of their lessons, discuss the feedback received, and explore additional examples of CLRP. They typically lasted 20–40 minutes. The combination of field notes and interview transcripts, in this case, offers the potential for a more expansive documentation of instructional applications of AI in ML education.

Data Analysis

Data analysis began with a round of content analysis of the field notes and interview transcripts of all 42 observations, with the purpose of identifying specific pedagogical examples of the use of ChatGPT or other related AI tools in instances of literacy instruction with MLs. After this round of analysis, such instances were identified in the practices of 8 of the 42 observed participants. Following this, a round of thematic analysis was conducted with the purpose of categorizing the practices that were identified and uncovering any potential themes that encompassed the practices observed. This led to the identification of two types of practices that were present at both the primary and secondary levels, as well as two types of practices that were only observed at the secondary level. Triangulation and cross-referencing of data between the field notes and transcripts was utilized when possible to ensure the accuracy and context of the findings.

Findings

The findings in this study highlight eight instances of instructional uses of ChatGPT across the classroom observations and interviews with 42 in-service teachers of MLs, across grade levels and

instructional contexts. These practices were observed in two primary contexts and six secondary contexts (none were observed in the pre-K context). The primary-level examples included teachers' uses of ChatGPT to facilitate communication and differentiate content for MLs. These themes were similarly observed in four of the secondary contexts. Additionally, the findings include two kinds of instructional applications of ChatGPT in secondary contexts (high school, in both cases), in which the teachers facilitated the students' use of AI by offering structured support for prompting and designing an experimental activity to support multimodal literacy. Generally, the findings suggest that teachers utilized AI tools primarily to facilitate communication and differentiate content for MLs, with secondary educators also exploring innovative ways to integrate AI into their instructional practices. Below, I describe the specific examples of how teachers of MLs use ChatGPT in their instructional practices and the extent to which these practices align with the dimensions of a translanguaging framework for literacy instruction.

Using ChatGPT to Facilitate Communication

The most common instructional applications of ChatGPT that were documented were implemented for the purpose of facilitating communication, which was observed in both primary and secondary contexts. This refers to those uses of ChatGPT to scaffold MLs' linguistic comprehension and access to content, texts, and class participation. Specifically, these uses included using the tool to translate texts or parts of texts, such as key vocabulary or important passages, as well as to translate and transcribe students' language practices. There was also a case in which ChatGPT and other applications in which it is integrated was used to generate video subtitles for MLs.

Most cases (three of four) of using ChatGPT to facilitate communication for MLs were observed in secondary contexts. For example, in an observation (2022–2023 cohort) of a sixth grade math teacher (in a course for newcomer ELs), students were provided with text translations (in Spanish, Amharic, and French) of content area vocabulary and their definitions, as well as translated explanations of key concepts that were generated with ChatGPT. In this case, the teacher used ChatGPT not only to translate text excerpts from a math textbook but also to create new texts explaining key concepts, such as rate and percentage, in multiple languages. In the post-interview, the teacher explained that she did not have the resources to verify the quality of the translations but reported that the students seemed to understand these translations better than ones generated by machine translation, like Google Translate, which she had previously used. A similar practice was observed in a third-grade Spanish–English DLBE teacher (2022–2023 cohort), who generated translations of different content area texts and vocabulary into English for her EL students, who made up just under half the class, explaining that it facilitated her practice, as Spanish is her more comfortable language of communication. In other words, this teacher used ChatGPT as a more reliable tool to translate content into English to facilitate comprehension and communication for her students.

A further practice was noted in an 11th grade ELA teacher (2022–2023 cohort) for a specific track of DLBE students, in which the teacher used ChatGPT to translate key passages of the assigned texts to facilitate the students' reading comprehension, and questions about characters, plot, and author choices to facilitate students' writing in their more dominant language. In this instance, the teacher created the reading comprehension questions, then used ChatGPT to translate them, rather than using the tool to brainstorm possible questions. Finally, a case was observed in the secondary context that came up in the post-interview with a high school (ninth grade) science teacher (2023–2024 cohort), in the context of a course taught specifically for ELs. She shared that with ChatGPT-supported tools, she can transcribe and translate students' oral language about their content area knowledge. Specifically, she uses detailed prompts for ChatGPT to leverage its voice-to-text capabilities to first transcribe students' speech in a particular language, then translate it to English. For this teacher, who only communicates

in English, this has served as a valuable tool to facilitate communication with speakers of Spanish, Amharic, and Turkish, among other languages.

Using ChatGPT to Differentiate Content

The next way of describing the applications of ChatGPT observed in this study focused on their use for the purpose of differentiating content for MLs. This was also observed in both primary and secondary contexts. Practices include one case of a primary teachers' application of ChatGPT to manipulate the reading levels of texts to support foundational literacy skills, as well as a case of a secondary teacher's use of the tool to create exemplar disciplinary texts for dually identified MLs. These are different applications from those meant to facilitate communication because these involve the manipulation of content in ways beyond translation to support foundational and content area literacy skills.

One notable instance of using ChatGPT to differentiate context was observed in the primary context. In this case, in the post-interview, a K–2 grade Spanish immersion teacher (2023–2024 cohort) reported using the tool to manipulate the reading levels (syntactic complexity and content) by grade and English language proficiency levels of a variety of texts in Spanish and English for her students, half of whom are ELs, whereas the other half are English-dominant Spanish-heritage learners. She shared, though, that this practice requires more time and effort to construct effective prompts and request revisions than she had expected, but she also feels that she has been able to make changes and use portions of ChatGPT's outputs for her students. She shared that by specifically prompting the tool to produce texts that take advantage of things like rhyming, sound blending, and phoneme identification, she can create and utilize texts across both languages of instruction that support phonological awareness.

In the secondary context, an example of content differentiation was observed in the instructional practices of a high school ESL/special education teacher (2023–2024 cohort), who offers push-in or inclusion support to dually identified MLs from 9th to 12th grade across multiple content areas, including math, social studies, and ELA. In an observation of a co-teaching context in a social studies lesson, this teacher offered students exemplar texts of analysis statements and paragraphs that reflected academic writing practices related to evaluating evidence and citation practices, which are important disciplinary literacy practices. In the post-interview, this teacher shared how the texts seem to support dually identified MLs with specific models of foundational disciplinary literacy and writing practices that are important parts of their academic evaluation, as well as supporting their understanding of more complex texts by offering examples of how to identify and decode standardized literacy practices that are specific to each discipline. In this context, it is clear why this teacher finds value in ChatGPT to produce texts that reflect these specific practices, given his work with students across content areas.

Using ChatGPT to Offer Structured Support for Prompting

While the previous examples of instructional applications of ChatGPT were observed across primary and secondary contexts, there were two particularly interesting cases of secondary teachers using the tool in innovative ways that directly and explicitly engage students in using the tools, rather than just facilitating communication or differentiating content. The first example is one of a teacher offering structured support to scaffold students' use of ChatGPT by focusing on prompting. This was documented in an observation of a 10th-grade ESL teacher (2023–2024 cohort), who created prompting frames, much like paragraph frames, that offered the students guidance on instructing ChatGPT to support different stages of their writing, such as brainstorming topics in their more comfortable language; asking for specific and targeted feedback on spelling, grammar, and syntax; and assessing the tone

of their writing. While this parallels traditional supports like sentence starters or paragraph frames, it highlights the need to explicitly guide and facilitate students' understanding and use of ChatGPT if it is to be used effectively and appropriately. By explicitly teaching MLs how to construct prompts, MLs may be positioned to obtain more accurate and useful outputs, as well as to improve their ability to articulate their questions, needs, and instructions clearly across languages.

Using ChatGPT for Multimodal Literacy Experimentation

The second noteworthy example of an instructional application of ChatGPT that was only observed in one case in the secondary context is related to its use in activities meant to support MLs' development of multimodal literacy. This was documented in the post-interview with an 11th–12th grade ELA teacher (2023–2024 cohort), who experimented with ChatGPT's image generator, Dall-E, in a class specifically for newcomers and long-term ELs, all of whom also communicate in Spanish. Specifically, this teacher described an activity in which she asked students to generate text descriptions of a landscape or natural setting of their choice. First, the students were asked to write one sentence, then generate an image. Next, they were asked to choose one adjective that represented a change they want to make to the image and to write a sentence using that adjective to further describe their desired image output. In the third step, students chose one more adjective and one adverb to construct another prompt. After this image was generated, the teacher held a discussion with students on the changes they noticed in the multiple stages of image output and the impact they perceived to be related to the detail added to their text prompts at each stage. This is a potentially innovative use of ChatGPT in collaboration with MLs, as it not only supports descriptive language and multimodal engagement, but can also foster opportunities to think about, discuss, and write about metalinguistic awareness.

Discussion of the Findings

The examples offered above point towards the potential value of integrating ChatGPT into instructional practices meant to support MLs' comprehension, access, and participation across classroom contexts. However, it is important to not take these affordances for granted but instead to more critically consider their reach and potential limitations, given the complex and challenging schooling landscape that minoritized MLs experience in US public schools. Therefore, this section aims to answer the following question. To what extent do instructional uses of ChatGPT support linguistically responsive pedagogies for MLs? To do this, I examined the findings from a translanguaging lens, specifically considering the extent to which the practices documented in this study fit with the dimensions of a translanguaging as a linguistically responsive framework for literacy instruction, which include affordances, co-labor, production, assessment, and reflection (García & Kleifgen, 2019).

Affordances of Translanguaging

Multiple instances were documented in which ChatGPT was used to facilitate communication and differentiate content in ways that are in line with the affordances dimension of translanguaging pedagogy. This dimension refers to the way that teachers provide students with multimodal and translingual mentor texts. By incorporating texts that reflect multiple languages, identities, and literacies, and from multiple families and communities, teachers of MLs can support linguistically responsive classroom spaces and instructional practices. In primary settings, ChatGPT was used to manipulate the reading levels of texts and create phonological awareness materials that supported foundational literacy skills. In secondary contexts, ChatGPT was utilized to create disciplinary-specific exemplar texts, which served as models for MLs, helping them navigate complex content and develop disciplinary literacy skills. However, beyond using ChatGPT to facilitate communication with MLs, such as through translation or transcription of language practices, there were no clear examples of responsively

integrating texts or literacies from families and communities, which is one of the primary components of this dimension.

Production in Translanguaging

Examples of using ChatGPT to facilitate communication and differentiate content in ways that support production in translanguaging were similarly common. For example, in primary and secondary settings, teachers used ChatGPT to help students create texts that integrated their home languages with English at different stages of the writing process. This was achieved by providing students with a tool to transcribe oral language in their preferred language of communication and later translate it to support their teachers' comprehension. More specifically, in secondary settings, there were more pronounced examples. For instance, the teacher who provided structured support for prompting created opportunities for MLs to flexibly use the entirety of their communicative repertoire to build detailed and structured prompts. This, in turn, supported their ability for self-expression through prompting, as well as effectively using the tool to support self-expression across multiple languages and modes.

The example involving Dall-E to support multimodal literacy further reflects how AI tools can support MLs to develop descriptive language, engage in multimodal and visual literacy, and think more deeply about how language can shape and be shaped by visual representations. This engages the production dimension by supporting students' metalinguistic awareness, which can further develop their ability to communicate complex ideas. However, one aspect of this dimension that was not observed was the use of the tool to support non-standard language practices in ways that validate and affirm them as academically legitimate practices. Using the tool in ways that only supports standardized language practices and norms may risk the reproduction of harmful raciolinguistic ideologies and silence the ways that minoritized MLs engage in communication.

Co-Labor of Translanguaging

The co-labor dimension of translanguaging refers to instructional opportunities for collaborative learning that affirms multiple voices and means of knowledge production between ML peers. In secondary contexts, ChatGPT facilitated collaborative learning by creating opportunities for students to engage in co-labor, where multiple voices and means of language production were affirmed. This was particularly evident in the multimodal literacy experimentation activity, where the students worked together to generate and refine text prompts, create images, and discuss the changes in their outputs. This not only supported individuals' language development but also promoted a collaborative learning environment that valued and leveraged a wider array of MLs' communicative resources. This kind of innovative application of ChatGPT demonstrates how the tool can be supportive of students' agency to engage with content and learning across multiple modes of language and kinds of literacies. Despite its potential to support students' agency to engage more flexibly in literacy practices, there were no clear examples in which the tool was employed to facilitate students' engagement with multiple means of knowledge production. Part of the co-laboring aspect of translanguaging requires a repositioning of teachers and students in a way that is disruptive of the traditional hierarchy in which the teacher is the expert and in control of the students' classroom and language practices. In the examples observed in this study, there were no instances in which ChatGPT supported a repositioning of MLs as co-leaders or co-teachers in their classroom settings.

Dimensions not Documented: Assessment and Reflection

While the documented uses of ChatGPT demonstrate, to different extents, engagement with the affordances, production, and co-labor dimensions of translanguaging, there was a notable absence of practices related to the areas of assessment and reflection. The study did not document any instances

where ChatGPT was used to develop multimodal and multilingual assessment practices that legitimize translanguaging in formative and summative evaluations. However, this is crucial for affirming and legitimizing the diverse communicative competencies of MLs, especially when it comes to non-standard language practices. Thus, the lack of documented examples of using ChatGPT to support translanguaging assessment suggests a need for further exploration, documentation, and evaluation of the potential applications in the context of MLs' education.

Similarly, there were no concrete examples of teachers using ChatGPT to critically reflect on their language practices, to make cross-linguistic comparisons in ways that support metalinguistic or metacognitive awareness, or to reflect on the sociopolitical dimensions of language. Nor were there instances of teachers facilitating their students' use of the tool to do the same. We must consider that the reflection dimension is a deeply significant part of linguistically responsive pedagogy, as it encourages both teachers and students to critically examine their language practices and the broader sociopolitical contexts in which they communicate and learn. Therefore, the absence of reflective practices with ChatGPT indicates an area for growth, where teachers of MLs can more explicitly examine the affordances of AI to facilitate critical metalinguistic and metacognitive awareness.

Conclusions

To summarize, there were several ways in which teachers of MLs used ChatGPT to facilitate communication and differentiate content, as well as providing structured support for prompting, and engaging in multimodal literacy experimentation. These documented practices reflect several important aspects of linguistically responsive pedagogies through a translanguaging lens. They highlight the potential of ChatGPT to support the affordances, production, and co-labor dimensions of translanguaging which, taken together, can enhance MLs' agency in the classroom. Overall, the findings point towards the multiple potential affordances of AI tools to support linguistically responsive pedagogies by expanding MLs' access to a wider part of their communicative repertoire in the classroom.

One significant affordance is the enhancement of students' agency. By using ChatGPT to facilitate communication and differentiate content, teachers can empower MLs to take a more active role in their learning processes. For instance, translating key vocabulary and generating video subtitles enable MLs to access content in their home languages. By making content more accessible, this practice fosters greater comprehension and participation (Mahalingappa et al., 2024), which, in turn, supports students' agency. Additionally, the structured support for prompting allows students to learn how to effectively interact with AI, improving their ability to articulate questions and instructions across languages. This kind of explicit guidance and scaffolding of students' uses of ChatGPT has the potential to combat concerns about academic dishonesty (Cotton et al., 2023; Yeo, 2023), and to minimize students' overreliance on the technology (Kasneci et al., 2023).

The findings in this study offer multiple examples of how ChatGPT can support multilingual and multimodal learning across a variety of classroom contexts, affirming its potential transformative value for literacy instruction (Chang et al., 2024). However, more explicit attention must be paid to the ways in which the tool can be leveraged to position MLs as co-teachers and center multiple ways of knowing and knowledge production. Thus, it can be concluded that these affordances require further exploration, particularly in co-learning environments where teachers and students collaboratively engage with AI tools. This can help maximize the educational benefits of AI by positioning students as co-teachers and experts in their linguistic practices, thereby democratizing access to technology and fostering a more equitable, power-balanced learning environment.

While the study highlights several examples of how teachers draw on ChatGPT in line with the affordances, production, and co-labor dimensions of translanguaging, it does not document practices related

to assessment and reflection (García & Kleifgen, 2019). The absence of multimodal and multilingual assessment practices suggests a gap in evaluating students' linguistic competencies comprehensively, or an understanding of how AI may support teachers' ability to do so across languages and dimensions of literacy. This may suggest that teachers of MLs need to further explore and develop assessment strategies that not only incorporate teachers' uses of ChatGPT but also explicitly scaffold students' critical, effective, and appropriate uses of the tool. Similarly, there were no examples of teachers using ChatGPT to reflect on language practices, cross-linguistic comparisons, or the sociopolitical dimensions of language. This also indicates an area for growth or further exploration related to how educators can incorporate AI tools to facilitate deeper critical thinking and metalinguistic awareness among MLs.

This points towards important limitations and concerns that need to be addressed. One limitation is the relatively few documented instances of ChatGPT use in classroom settings in this study, which raises questions about a potential reluctance in teachers to integrate these tools or experiment with their use in their instructional practices. Moreover, the lack of use within the reflection dimension suggests a need for explicit, critical engagement with this area of translanguaging, which would involve building cultural competence, fostering critical consciousness, and sustaining pluralistic stances towards students' cultural, identity, and language practices, especially non-standard language practices. Therefore, when teachers use tools like ChatGPT, they must also intentionally seek opportunities to consciously engage with and disrupt commonplace norms and standards, especially about academic language use, when teaching minoritized MLs. This kind of critical pedagogical engagement with AI will be essential to apply it in ways that disrupt existing biases and affirm minoritized voices and experiences.

In conclusion, the integration of ChatGPT into instructional practices may show promise for supporting linguistically responsive pedagogies for MLs by facilitating communication, differentiating content, and encouraging the production and co-labor of translanguaging. When applied in these ways, ChatGPT can help create a more linguistically responsive classroom setting, in which MLs can more actively engage the entirety of their communicative repertoires. However, this study also highlights the need for much more extensive exploration and critical examination of the instructional applications of AI tools in the assessment and reflection dimensions of translanguaging pedagogy. By addressing these gaps from a translanguaging lens, and building on the practices documented in this study, researchers and educators may highlight further ways to leverage AI tools to enhance the educational agency, experiences, and outcomes of MLs.

Implications

The application of ChatGPT to support linguistically responsive pedagogies for MLs provokes critical questions about access and agency in academic spaces. This has important implications related to instructional concerns for teachers and researchers into teaching practices. As educators, we are increasingly confronted with linguistically diverse classrooms where students and teachers may not share the same communicative repertoire. This scenario poses challenges but also opportunities to leverage AI tools like ChatGPT to make classrooms more multilingual and translingual. By implementing, modeling, and scaffolding the use of these tools, teachers can deconstruct language barriers that have historically excluded MLs from mainstream classrooms and limited their access to enriched learning experiences.

This research also points to critical consciousness and critical engagement with AI as a vital component of the knowledge base of teaching, not just in the context of MLs' education. In other words, teachers of MLs must be prepared to understand and confront the ethical considerations of AI and

its pedagogical uses for MLs. This includes confronting the standard language ideologies and language hierarchies that are inherent in ChatGPT's outputs (Schneider, 2022). These also include the cultural biases that make these outputs possible, caused by the standard English monolingualism of ChatGPT's training data (Kohnke et al., 2023). This provokes important questions about how teachers can leverage ChatGPT for MLs in ways that affirm linguistic and cultural pluralism, rather than linguistic standardization. Questions about academic integrity continue to arise and persist, and as it becomes increasingly difficult to distinguish between human and AI-generated text (Yeo, 2023), we urgently need the development of critical AI literacy among both teachers and students.

Educators must explicitly teach the appropriate uses of AI, including understanding the potential biases, the need for human oversight, and the risks of misuse (Pleasants et al., 2023). In this vein, prompt engineering skills must be considered as crucial for effectively applying AI tools and should thus be integrated into educational curricula to support critical AI literacy (Knoth et al., 2024; Walter, 2024). When we fail to critically understand and engage with AI, we risk perpetuating biases and promoting the colonial logics of language, which, in turn, reinforce monolingual and standardized language norms (Gupta et al., 2024). Therefore, educators must foster a somewhat technoskeptical stance (Pleasants et al., 2023), in which teachers and students alike are encouraged to interrogate the sociopolitical dimensions of technology and use digital literacy to leverage critical consciousness, which, in the case of this study, should be concerned with the investigation of the power dynamics in language and literacy. As McDaniel (2024) argued, teachers of racialized youth must integrate digital literacy into culturally responsive pedagogies as a way to resist monolingualism and monoculturalism in schools and society.

If ethical engagement with AI is to become a critical skill in the knowledge base of teaching, particularly for MLs, then developing ethical guidelines and policies that guide the integration of AI tools for MLs is paramount. This can be facilitated by expanded access to PD for teachers focused on critical engagement with AI in the curriculum and instruction, which moves beyond simply understanding how AI tools work towards exploring how they can be used to combat monolingual biases and support culturally responsive pedagogies. This, though, requires funding initiatives to maximize teachers' access to AI resources, many of which are behind paywalls. For example, tools offering video caption transcription, live audio dubbing, and photo and video generation should be made accessible to all educators. Such access would allow teachers to effectively learn and implement these tools in the classroom, thereby enhancing the learning experiences of MLs.

Furthermore, it is crucial to ensure that AI tools are inclusive of Indigenous and endangered languages, supporting language revitalization programs and intercultural bilingual education. Specific populations, such as dually identified MLs, multilingual gifted students, newcomers, and refugees, can benefit from tailored AI applications. For instance, combining LLMs with speech-to-text or text-to-speech solutions can support students with visual impairments, providing inclusive learning strategies (Knoth et al., 2024). However, this must be accompanied by ethical guidelines for the use of AI in these contexts. Teachers and MLs should be involved in the development, training, and implementation of these tools to ensure they address linguistic diversity and disrupt harmful language ideologies.

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