



TRANSLANGUAGING IN DIGITAL SPACES: COGNITIVE AND LINGUISTIC DIMENSIONS OF LANGUAGE ACQUISITION IN PAKISTAN

Naureen Sattar

Lecturer, Department of English Language and Literature, Qassim University

Saudia Arabia. Email: Qasimplush.ksa@gmail.com

Fouzia Rashid

Lecturer, Coordinator PYP Uneizeh, Qassim University Saudia Arabia.

Email: 3078@qu.edu.pk

Muhammad Ramzan

(Corresponding Author)

Department of English Linguistics, the Islamia University of Bahawalpur,
Pakistan.

Email: f21benlg4m01007@iub.edu.pk

Abstract

The fast growth of digital technologies has transformed the practices of language learning in multilingual societies, making more evident the centrality of translanguaging in digitally mediated communication. This qualitative study examines translanguaging within digital spaces and how it has cognitive and linguistic implications for Language Acquisition in Pakistan, taking its theoretical framework from the Sociocultural Theory (SCT) for this study. Situated in the urban and semi-younger schooling higher-education contexts, the research investigates the navigation of Urdu, English, and regional tongues in digital surroundings by means of social Immediate, knowledge management systems, and language studying applications. Data had been produced via semi-structured interviews, focus group discussions and reflective narratives and have been analysed using reflexive thematic analysis. The findings reveal that digital platforms are powerful mediational tools that help extend the zones of proximal development of learners by facilitating, collocating, and allocating access to multimodal resources. Translanguaging is revealed to be a strategic cognitive and linguistic practice that reduces cognitive load, promotes understanding, supports vocabulary development, and leads to internalisation of language skills. Both multilingual, multimodal digital resources further promote cognitive engagement; digital translanguaging practices promote learner autonomy and metacognitive awareness. However, structural and pedagogical constraints, such as poor digital access, monolingual curricular norms, and inadequate teacher training, constrain the integration of translanguaging on a systematic basis within formal education. Through providing context-specific evidence from Pakistan, this study adds to the international literature by showing that translanguaging in digital spaces is not peripheral but central in language acquisition in multilingual contexts. The results here highlight the need for SCT-informed, digitally inclusive pedagogical models that value translanguaging as an important cognitive, linguistic, and sociocultural asset to contemporary language educational practices.

Keywords: Translanguaging, Digital Spaces, Cognition, Sociocultural Theory, Language Acquisition

Introduction

The massive growth of digital technologies has dramatically changed the ways that language is used, learned, and negotiated in multilingual societies (Akram & Abdelrady, 2023, 2025). In



modern educational contexts, language acquisition no longer takes place exclusively in formal classroom contexts but is increasingly mediated by digital spaces such as social media platforms or learning management systems, mobile applications, and online communities (Jalalzai et al., 2025; Kuure, 2011). These environments allow learners to interact with multiple languages at the same time, thus defying traditional monolingual assumptions about language learning/competence (Abdelrady et al., 2025). In multilingual contexts like Pakistan, where learners regularly move between Urdu, English, and various regional languages, the digital spheres have become an important place for translanguaging practices that influence cognitive as well as linguistic development (Atta 2024).

Translanguaging (understood as the dynamic and strategic use of one's entire linguistic repertoire to build meaning) has been a subject of growing interest in applied linguistics and language educational research. Unlike traditional understandings of code-switching that produce discrete and bounded concepts of individual language, translanguaging brings fluidity to multilingual practices and recognizes language use as an integrated cognitive process (Chew, 2022). In digital environments, translanguaging is made especially visible through learners interacting across platforms that encourage multimodal communication, informal discourse, and rapid negotiation of meaning. These practices not only serve communicative effectiveness but also perform pivotal cognitive functions from which learners are able to process complex information, scaffold understanding, and employ higher-order thinking (Canals, 2021).

From a cognitive point of view, translanguaging in digital spaces is key in mediating language learning through the decrease in cognitive load and in facilitating conceptual learning across languages (Putra, 2025). Digital platforms often contain multimodal resources (Congman et al., 2019), including visuals, audio, hyperlinks, and interactive feedback (Akram et al., 2021, 2022), which complement the linguistic input and facilitate the processing of learning material at deeper levels (Ma et al., 2024, 2025). When people use multiple languages in engaging with such resources, they activate their prior knowledge and form connections between the systems of language (Li & Akram, 2023, 2024). This process strengthens comprehension, vocabulary development, inferencing, and metacognitive regulation, building blocks of effective language learning. Accordingly, translanguaging should be recognized not as a compensatory practice, but as a cognitively beneficial manifestation of the natural workings of multilingual minds in a digitally mediated context (Aslam et al., 2020; Wei, 2018).

The sociocultural aspect of translanguaging also makes it even more relevant in digital spaces. Based on Vygotskian sociocultural theory, language learning is viewed as a socially situated process mediated by cultural tools and interaction (1987; 1997). Digital technologies have a role as powerful mediational tools that extend the zones of proximal development of learners by facilitating collaboration, peer scaffolding, and access to various linguistic communities (Akram & Sohail, 2024; Akram & Yingxiu, 2019). In a linguistically diverse society like Pakistan, online interactions often involve the strategic mixing of Urdu, English, and regional languages in order to negotiate the issues of meaning and identity and of belonging to a social group (Ahmad et al., 2022). These sorts of practices are the manifestation of wider sociocultural realities and reveal how digital translanguaging is integrated in learners' lived experiences rather than in the pedagogical setting (Ho, 2022). Despite the rising recognition of translanguaging as a legitimate and productive practice, there is still a lack of formal language education in Pakistan, led by monolingual



ideologies, especially in English language teaching. Such approaches often marginalize the languages of learners and overlook the cognitive and linguistic resources that multilingual students may contribute to the learning process. This disconnection between classroom practices and language use by the learners in digital language settings begs several vital questions about how translanguaging in digital spaces affects language acquisition and cognitive development. While initial efforts have been made in the research literature to address translanguaging in the online space (Prilutskaya, 2021), empirical research involving Pakistan is scarce, and even more so, empirical research that combines the cognitive and sociocultural perspectives (Parveen & Akram, 2021).

Addressing this lacuna, the present study investigates translanguaging practices in digital spaces and their cognitive and linguistic implications for language acquisition in Pakistan. By concentrating on the digitally mediated interactions of the learners, this study aims to highlight how multilingual individuals strategically use their linguistic repertoires to help them understand, learn, and make meaning. Adopting a qualitative approach, based on sociocultural theory and multiliteracies frameworks, the study examines how translanguaging is both a cognitive strategy and a socially situated practice in digital environments. The paper contributes to current discussions about language education by making translanguaging a rather central mechanism in digital language learning as opposed to being a kind of side-effect. It provides contextually grounded understandings of the changing processes of language acquisition in multilingual societies in particular and the need for pedagogical models that consider and capitalize on the role that translanguaging plays as a cognitive and linguistic resource. Ultimately, by locating translanguaging in the digital and multilingual realities of Pakistan, this research will attempt to make informed decisions about developing more inclusive, cognitively responsive, and socially grounded approaches to language education.

Literature Review

Translanguaging has come to be a foundational concept within multilingual research in order to challenge traditional compartmentalised notions of language utilisation and highlight the deployment of a speaker's full linguistic repository instead, as a fluid system for communication and learning (MacLeod, 2022). Scholars say that translanguaging goes beyond alternation between languages to the creation of complex, multimodal discursive practices which transcend conventional linguistic demarcations. This repositioning, in theory, has important implications for the whole concept of second language acquisition (SLA), especially in multilingual learning contexts where learners routinely negotiate meaning in disparate linguistic systems. Translanguaging theory is underpinned by the wider sociolinguistic understanding that multilingual speakers draw on and utilise all available linguistic and semiotic resources in order to produce meaning which facilitates, in turn, communication, identity construction, and cognitive engagement in ways that conventional monolingual understandings often ignore (Wei, 2018). Moreover, the growth of the scholarship on translanguaging has expanded upon its potential to facilitate linguistic inclusivity and equality in a range of educational contexts, hence establishing its relevance in digital language learning environments with prominent multilingual practices.

A growing body of documentation backs up the cognitive and pedagogical benefits of translanguaging on language learning. A systematic review on the topic of translanguaging and second language reading proficiency found that translanguaging practices have been shown to



significantly increase reading comprehension and learning outcomes in several studies, despite inconsistency with methodological rigor across research designs (Qureshi & Al-Surmi, 2025). This line of inquiry supports the contention that translanguaging may relieve cognitive load by allowing learners to scaffold new linguistic information upon their pre-existing multilingual knowledge base in order to deepen their engagement with complex linguistic tasks.

Translanguaging has been found to impact learner identity, motivation, and agency as well. Empirical studies exploring the linguistic narratives across multilingual learners have shown that translanguaging may foster positive self-perceptions and intrinsic motivation through a validation of learners' multilingual identities and by empowering this group to take advantage of their full linguistic repertoire (Ali et al., 2025). These affective outcomes are crucial in the study of SLA because learner identity and motivation are closely connected with persistence, engagement, and success in language acquisition. In the more practical environment of the classroom, translanguaging has been linked to improved comprehension and academic participation in class. For example, empirical studies conducted in Pakistan and in similar situations where multiple languages are used have shown that learners and educators often have a positive view of translanguaging, which they see as a helpful approach that leads to better understanding and the development of bilingual or multilingual competence, alongside the alleviation of language anxiety (Iqbal and Maqbool, 2025). These context-specific findings provide further support to the worldwide evidence of the pedagogical value of translanguaging as both a cognitive and communicative strategy within authentic learning contexts.

The spread of digital technologies and online communication platforms has taken translanguaging practices beyond the walls of physical classrooms into online spaces (Ramzan et al., 2025, 2023, 2020). The rise of digital spaces has added to the possibilities of multilingual learners engaging in multiple languages in dynamic and interactive spaces (Chen & Ramzan, 2024). Research on digital translanguaging shows the technological affordances that enable the fluid mixing of languages and offer a multimodal communication resource (text, audio, visual, and interactive tools) that facilitates cognitive processing and language engagement not possible in traditional face-to-face settings (Lu & Gu, 2024; Ramzan & Alahmadi, 2024). Studies from digital multilingual assessments of learning have shown that when learners are given the freedom to use translanguaging in tasks such as science assessments, they are more likely to show increased agency and deep understanding, cognitive engagement with the task (Lopez, 2025; Ramzan et al., 2023), utilising linguistic and semiotic resources strategically in problem solving and articulating understanding. These research findings highlight that digital translanguaging does not just widen the communicative possibilities, but it also strengthens cognitive dimensions of learning in the form of an enriched semiotic repertoire. From a pedagogical point of view, translanguaging is gaining an ever more positive appraisal as an inclusive approach aligned to modern understandings of language learning as a socially situated practice. Translanguaging pedagogy encourages learners to use their home languages alongside target languages in their interpretation of content, negotiation of meaning, and co-construction of knowledge (Elshafie & Zhang, 2024). This approach acts as a challenge to conventional norms in terms of instruction based on monolingualism and aims to foster responsive teaching that is sensitive to the linguistic realities of learners (Nawaz et al., 2021, 2022). Furthermore, translanguaging has been suggested as a decolonising tool in situations where language hierarchy represents greater sociopolitical



inequalities, such as English language instruction in Pakistan. Scholars contend that engaging in translanguaging can resist colonial language dominance, as this model can be used to empower local language practices and validate the sociocultural identities of learners (Ali et al., 2024). Integrating translanguaging pedagogies in digital and classroom settings, therefore, is influential for both cognitive development and linguistic development as well as for equity-oriented educational goals.

Gaps and Future Directions

Although there is strong theoretical and empirical work in translanguaging scholarship, several gaps still remain. Although systematic reviews exist documenting the advantages of translanguaging for specific language skills (e.g., reading comprehension), comprehensive studies on digital translanguaging and the cognitive mechanisms that underlie its use are still emerging and call for further empirical study, especially in under-conducted research settings such as the multilingual educational situation of Pakistan (Qureshi & Al-surmi, 2025). In addition, studies purposely scheduled to connect translanguaging practices in digital spaces, in relation to cognitive development and language acquisition outcomes, mediated by digital literacy competencies, are scant. Addressing these deficiencies will not only extend translanguaging research but also inform pedagogical strategies targeted at digital learning environments in the context of multilingual societies.

Sociocultural Theory as a Language Acquisition Theory

Sociocultural Theory (SCT), which draws on the work of Vygotsky (1978), views language learning and cognitive development as being socially mediated processes mediated through interaction, cultural tools, and historically situated practices. From this perspective, language is not simply an object of study, but a primary mediational instrument used by the individual to organise thought, construct meaning, and participate in social activity. Learning takes place at an interpsychological level through social interaction, then at an intrapsychological level after internalisation. This theoretical orientation has had an immense influence on current understandings in second language acquisition, especially in multilingual and technologically mediated contexts. Within SCT, the concepts of mediation, the zone of proximal development (ZPD), and internalisation are central constructs that account for the development of linguistic and cognitive competence of the learner. Digital technologies - such as online platforms, mobile applications, and multimodal texts - are increasingly recognised as potent mediational tools that reconfigure the conditions under which language learning transpires (Hafner & Chik, 2015; Jones & Hafner, 2021). In multilingual societies such as Pakistan, where people are regularly exposed to language switching, SCT offers a strong framework for investigating the relationship between translanguaging practices in digital spaces and the acquisition of language and cognitive development. From a sociocultural perspective, translanguaging is a type of mediated action in which multilingual learners use their entire language repertoire to regulate their cognition, scaffold their understanding, and co-construct meaning. Rather than viewing languages as discrete systems, SCT-oriented translanguaging research highlights the interrelatedness of multilingual cognitive processes and explains how language practices are influenced by social interaction and culture (Wei, 2018). Consequently, the translanguaging functions as a cognitive and social resource for learners to function within their ZPD by using linguistic tools that are familiar in order to engage with new or complex concepts. Empirical studies have shown that translanguaging enables



cognitive mediation, the process whereby we link new linguistic input to prior knowledge to aid comprehension and problem-solving (Hou et al., 2025). In multilingual classrooms and digital environments, translanguaging enables learners to engage in shared meaning-making, self-regulate their thinking, and participate more fully in academic discourse. These findings are consistent with SCT's stress on the function of language as a psychological tool mediating higher-order cognitive functions.

Methodology

Research Design and Theoretical Orientation

The nature of this investigation was qualitative in order to understand the aspects of translanguaging practices in the digital arenas as facilitating cognitive and linguistic components of language acquisition in the context of Pakistan. A qualitative methodology was considered appropriate in light of the exploratory and interpretive nature of this study, which seeks to explain the lived experiences and meaning-making as well as socially-situated language practices of participants rather than to quantify predetermined variables. Grounded in Vygotsky's Sociocultural Theory (1978), the study conceptualizes language learning as a mediated, social, interactionally and culturally artifactually and contextually contingent process. Digital technologies are understood as mediational devices that facilitate the use of translanguaging practices by learners to foster cognitive development and language acquisition. By using a qualitative framework, the research could address the complexity of multilingual digital interactions and examine learners' strategies when using their linguistic repertoires in online platforms. This approach is in line with sociocultural perspectives that emphasize the importance of context, discourse, and participant agency in understanding language learning processes.

Research Context

The study was carried out in urban and semi-urban higher education institutions located in Pakistan, where multilingualism is an important feature of academic and day-to-day communication. Participants routinely negotiated in Urdu and in English, as well as in one or more regional languages (e.g., Punjabi, Sindhi, Pashto, or Saraiki) in formal and informal contexts. Digital spaces (such as those found on social media platforms, learning management systems, messaging applications, and online educational resources) constituted integral sites of language use and language learning for the participants. These technologically mediated environments are perfect examples of authentic translanguaging spaces in which linguistic boundaries are ill-defined, and meaning-making is multimodal. Positioning the study within this context allowed an investigation of translanguaging as a naturally occurring aspect of digital practices in which learners engage, rather than as a man-made, imposed approach used in the classroom.

Participants and Sampling Strategy

Participants were chosen using purposive sampling to ensure the information-rich case relevant to the research aim was obtained. The sample included undergraduate students and language instructors who regularly used digital technologies for the academic, communicative, and instructional contexts in a multilingual setting. Inclusion criteria required participants to have long-term experiences working with digital platforms and to have more than one language in their daily academic or social experiences. This sampling approach made it easier to gather people's varied views on digital translanguaging practices, thus making it possible to achieve an understanding of some of the cognitive and linguistic processes mediated between participant roles. The inclusion



of both learners and instructors also allowed for triangulation of views for pedagogical practices and learner experiences in digitally mediated environments.

Data Collection Methods

Data were generated using a variety of qualitative methods to understand the in-depth and expanse of participants' experiences. Semi-structured interviews were used as the main data collection tool, giving participants space to reflect on their digital language practices, cognitive engagement, and translanguaging experiences. The semi-structured nature of the interviews allowed the researcher to probe into emerging themes whilst ensuring that no dissonance was introduced into the study's theoretical framework. In addition, focus group discussions were held to explore the collective meaning-making and common practices in digital translanguaging. These discussions helped between occurrences, participants showed what translanguaging is negotiated in a social way, and cognitive strategies are co-constructed in group contexts. To further complement the data set, reflective narratives were gathered that allowed participants to describe their developmental journey with digital literacy and multilingual language learning over time. Participants were given an option of the use of English, Urdu, and/or a combination of both in the course of conducting interviews and discussions in order to ensure comfort and veracity. All sessions were audio-captured using informed consent and later transcribed verbatim for analysis.

Data Analysis

Data analysis followed a reflexive thematic analysis protocol (using Braun and Clarke's (2019) six-phase framework as a guide). The analytical process began with repeated readings of the transcripts in an attempt to achieve immersion and familiarity with the data. Initial open coding was done inductively to identify recurring patterns relating to translanguaging practices, cognitive mediation, digital engagement, and language learning experiences. While coding was data-driven, it is also sensitized by salient sociocultural concepts, such as mediation, scaffolding, internalization, and the zone of proximal development. In subsequent phases, codes were grouped into broader categories and developed into themes by the constant comparison between the participants and data sources. These themes were discussed for coherence and theoretical relevance and defined to represent their meaning within the sociocultural framework. Throughout the analysis, analytic memos were kept to record interpretive choices and new insights, which increased reflexivity and transparency in the analytical process.

Trustworthiness and Rigor

In order to guarantee the trustworthiness of the study, a number of strategies were used in accordance with the standards of qualitative studies. Triangulation was done by using a variety of analyses on data collected from interviews, focus groups, reflective narratives, and from both the students and instructors. Member checking was carried out by trying to share preliminary interpretations with select participants to see if findings were accurate and resonated. The thick description method was used to present a specific, in-depth accounting of participants' digital practices and multilingual space in order for readers to judge the transferability of the findings. An audit trail of methodological and analytical choices was kept throughout the study to ensure a greater degree of dependability and conformability.

Ethical Considerations

Ethical permission was secured before the data was gathered. Participants were fully informed of the purpose of the study, the voluntary nature of their participation, and their right to withdraw



their participation at any stage, without consequence. Written informed consent was obtained, and confidentiality was maintained by using pseudonyms and eliminating identifying information from transcripts and reports. All the data were stored securely and used only for academic and research purposes.

Results

The interviews, focus group discussions, and narrative reflections gave me rich insights about the cognitive and linguistic development of multilingual learners, in fact, interacting through the use of digital translanguaging. Five interrelated themes emerged, which reflect both the cognitive dimensions and the socially situated nature of digital language practices.

Theme 1: Digital Spaces as Mediating Tools

Participants consistently spoke of the use of digital platforms - such as WhatsApp, Google Classroom, YouTube, and interactive language apps - being key mediational tools for language learning. These platforms allowed learners to have instant access to authentic linguistic input, opportunities for collaborative interaction, and scaffolding mechanisms to extend the learning outside the classroom. For example, students commented on how the use of video tutorials enabled them to see and hear new vocabulary at the same time as seeing that vocabulary being used in context, which helped them to better understand and remember new vocabulary. Instructors reported that digital discussion forums allowed learners to ask, get feedback, and work together in a multilingual environment, which is the zone of proximal development (ZPD) in action. These findings put in perspective the role of technology as a sociocultural tool mediating both cognitive engagement and language acquisition." "I often use YouTube videos to understand difficult English phrases. I can pause, repeat, or even read subtitles if necessary in Urdu or Punjabi. It helps me know what it means in my own language before trying to understand its meaning in English. – Student, FG3

Theme 2: Translanguaging: Cognitive and Linguistic Strategy

Translanguaging emerged as a strategic cognitive resource that learners implemented to facilitate comprehension, learning, and meaning-making cross-linguistically. Participants often shifted back and forth between the Urdu, English, and regional languages in their interaction with online materials, participation in forums, and completion of digital assignments. Rather than a hindrance to learning, this fluid movement between languages had positive benefits on understanding, transfer of vocabulary, and problem-solving as students described using their first language to scaffold their comprehension of complex English texts and then produced content in English for assignments, as an example of the internalization process, which was emphasized in the SCT. Instructors emphasized how translanguaging in digital spaces led students to interactively co-construct meaning through collaborative activity and scaffold student learning, all the more supporting socially mediated cognitive development." "I write my notes initially in Urdu, and then I translate and reorganize them in English for submission. This process actually helps me to think better and remember the words. – Student, Interview 5

Theme 3: Multimodal Digital Resources to Promote Cognitive Engagement

Participants emphasized that multimodal forms of digital text, including videos, podcasts, infographics, and interactive quizzes, significantly increased cognitive engagement. These resources were considered more stimulating than traditional print-based texts, given that they conveyed information in multiple channels, including visual, auditory, and text. Learners reported



that such multimodality facilitated deeper processing, inference-making, and vocabulary acquisition. From the cognitive perspective, the multimodal resources enabled the participants to integrate information across modalities, decreasing cognitive load but improving understanding. Instructors noticed that students incorporating interactive and multimedia learned material demonstrated greater evidence of analytical thinking and more flexible applications of linguistic knowledge in multilingual environments." "I remember concepts better when I watch a video while taking notes in my regional language first. Later, I explain it in English in the discussion - it makes the learning permanent." – Student, FG1.

Theme 4: Digital Practices Enhance Autonomy & Metacognition

Digital practices of translanguaging were strongly associated with learner autonomy and metacognitive control. Participants said that they used digital tools to plan, monitor, and evaluate their learning. For instance, learners monitored their vocabulary acquisition, thought aloud about their translation strategies, and made choices concerning the type of resources met their individual needs. This, which is self-directed engagement, is an example of the internalization of cognitive strategies as theorised by Vygotsky, whereby socially mediated activities become an independent skill. Learners did emphasize, however, that digital environments offered the flexibility to practice languages at their own pace, experiment with different translanguaging strategies, and receive immediate feedback from peers or automated systems. These practices not only improved language proficiency but also helped in promoting confidence and self-regulation in dealing with multiple linguistic systems." "When I use language apps, I can see my progress. I can choose the words which I must practise more in urdu, english or the regional language. I am more in control of how I learn." -Here is the student's complete reflective narrative: Reflective Narrative 7

Theme 5: Constraints of Structure and Pedagogy

Despite the merits of digital translanguaging, participants identified several structural and pedagogical constraints that constrained the possibilities of these practices. Some of the common challenges were intermittent internet connectivity, lack of institutional support, the availability of culturally and linguistically relevant digital content, and inadequate training of teachers in digital pedagogy. Some students reported that because of institutional limitations they had to rely on personal devices and informal platforms which reflected inequalities in digital access. 3 Instructors reported that even though there was rich translanguaging practices within student's independent activities, the instruction within the classroom often focused on monolingual norms to the extent that students multilingual competencies were not widely implemented. These findings suggest that successful digital language learning presumes that it is not only about access to technology, but about pedagogical informed integration with a belief in translanguaging and cognitive scaffolding." "Most digital exercises are in English, and some students struggle." We need to let translanguaging and support multiple languages online in order to make learning meaningful." – Instructor, Interview 3

Summary of Results

Collectively, these findings show the mediating role of digital translanguaging in the cognitive and linguistic development in the multilingual educational situation of Pakistan. Digital platforms serve as mediational tools for scaffolding, collaborative learning and ZPD expansion. Translanguaging is born out as a strategic cognitive practice, which allows learners to process complex information, scaffold understanding and internalize language skills. Multimodal



resources help to drive engagement and understanding, and self-directed digital practices encourage autonomy and metacognition. However, structural and pedagogical challenges (e.g. limited access, monolingual curricula, shortcomings of teacher training) limit the potential of digitally mediated translanguaging. These results underpin the interlinked cognitive, linguistic, and sociocultural nature of translanguaging in digital places, which again supports the view of SCT that language learning is a socially mediated, contextually situated, and cognitively scaffolded process.

Discussion

The present study set out to discuss issues regarding translanguaging practices in digital spaces and their cognitive and linguistic implications in language acquisition in Pakistan, drawing explicitly on Sociocultural Theory (SCT) as an analytical lens. The findings show that translanguaging in digitally mediated environments is not only an incidental communicative practice, but a central mechanism in and through which multilingual learners mediate cognition, scaffold learning, and internalise linguistic knowledge. By placing these findings in the context of SCT and the work already presented in the literature base, this discussion demonstrates how digital translanguaging fits into, extends and contextualises existing theoretical and empirical understanding of language acquisition in multilingual societies. consistent with SCT, the findings confirm digital platforms as powerful mediational tools that reshape the ZPD of learners. Participants' stories of their use of YouTube, Whatsapp, Google Classroom, and language learning applications demonstrate the media role played by technology to facilitate interaction, scaffolding, and access to language input that is less constrained by physical classrooms. From a Vygotskian perspective key to the effectiveness of these digital tools are their role as cultural artifacts facilitating higher order cognitive processes by making it possible for learners to engage in socially distributed cognition before internalising knowledge independently (Vygotsky, 1978) This finding echoes previous research that conceptualise digital environments as extensions of sociocultural activity systems whereby learning emerges from interaction with tools, texts, and communities (Guo et al., 2020)

Similarly, the research study on digital language learning highlights that online platforms extend the ZPD of learners by providing opportunities for peer interaction, feedback, and iterative meaning-making (Lu & Gu, 2024). In the Pakistani situation, where institutional resources might be uneven, this reliance on informal digital spaces of learning by learners highlights the adaptive use of technology as a compensatory and enabling mediational means. Thus, extending SCT, the results show how digital spaces in multilingual contexts become primary rather than additional sites of language socialization and cognitive mediation. One of the most important conclusions is that translanguaging is a conscious cognitive process through which learners scaffold understanding and drive internalization of new language forms. Participants' practices of creating notes in Urdu or in regional languages before creating English outputs are an example of SCT's principle that learning shifts from other-regulation to self-regulation. Translanguaging in the current context serves as a psychological tool that enables learners to control thinking, to link new information with old structures and progressively to appropriate targets.

This is in good agreement with translanguaging scholarship which proposes that multilingual cognition is integrated and not compartmentalized (Hofer, 2025). Empirical studies likewise report a reduction in cognitive load and increased conceptual understanding when translanguaging is



permitted to process meaning through familiar linguistic resources (Tai, 2024). The present study is a contextually informed contribution as it demonstrates the enhancement of these cognitive advantages in digital spaces where learners can pause, replay, translate and re-organize information multi-modally. In so doing, the findings problematize persistent monolingual ideologies in SLA by demonstrating evidence for thinking that translanguaging supports rather than undermines the development of academic English. The prominence of multimodal digital resources in the participant narratives draws attention to the interaction between translanguaging and multimodality as mutually reinforcing processes. Videos, infographics, podcasts, and interactive quizzes allowed for learners to incorporate images, sounds, and words as they would draw upon multiple languages to make sense of content. From the perspective of SCT, these multimodal resources are semiotic tools that mediate the process of cognition and support the process of meaning-making at different levels.

This finding supports research which has shown that multimodal input increases cognitive engagement and supports deeper processing in second language learning (Zhao, 2023). Moreover, the translanguaging enables learners to deal flexibly with these semiotic resources, choosing linguistic and modal matches that fit the cognitive requirements on their side. The study therefore builds on multiliteracies frameworks to show how translanguaging allows learners to orchestrate complex semiotic repertoires in digital environments. In the multilingual context in Pakistan, such orchestration is reflective of everyday communicative realities of learners, increasing the argument that digital translanguaging is not a deficit-driven approach to language learning, but rather reflects real language use. The results also point to a strong correlation existing between the use of digital translanguaging, learner autonomy, and metacognitive awareness. Participants' ability to plan, monitor, and evaluate their learning through digital tools reflects the gradual internalisation of socially mediated strategies (a key tenet of SCT). As learners are given control over their translanguaging practices, the progression takes learners to independent regulation of cognitive and linguistic processes.

These findings are consistent with research that associates translanguaging with enhanced learner agency and motivation, especially within learning contexts where learners' identities are affirmed through forms of inclusive language use (Akram & Li, 2024; Ali et al., 2025; McDermott, 2022). Digital environments seem to accelerate this process by providing immediate feedback, individual pacing, and opportunities for self-reflection. Importantly, in the process of this demonstration, the study illustrates that autonomy is not emergent, but socially and technological mediated, and therefore SCT's emphasis on the social origins of individual cognition is furthered. Despite the documented benefits, participants identified important structural and pedagogical limitations, such as limited access to the internet, lack of institutional support, and monolingual curricular expectations. These problems show an ideological tension between the digitally mediated translanguaging practices of learners and formal educational policies that still give an advantage to the principle of English-only education. From a sociocultural perspective, such constraints constrain the effectiveness of mediation by limiting access to tools and by devaluing the linguistic resources of learners.

This finding echoes critical views that support the argument that monolingual ideologies in postcolonial contexts reproduce educational inequities and impede serious language learning (Ali et al., 2024). The study contributes to this debate by showing that although learners engage in



translanguaging very naturally in digital spaces, institutional resistance does not allow these practices to be pedagogically systematically integrated. However, this means that the potential of digital translanguaging as an equitable and cognitively responsive approach is underutilized. Taken together, the findings give powerful empirical evidence for SCT-informed models of digital language learning that cast translanguaging as a major mediational mechanism. The study contributes to existing literature by showing the convergence of cognitive mediation, multimodality, and sociocultural interaction in digital spaces in the context of language acquisition in a multilingual, Global South context. For theory, the results reinforce the view that translanguaging is best understood as an integrated cognitive - social process rather than a purely linguistic phenomenon. For practice, they highlight the need for pedagogical frameworks that validate translanguaging, for investing in teacher training, and for creating curricula that are digitally inclusive and reflect learners' sociocultural realities.

Conclusion

In sum, this study contributes new knowledge to the international scholarship because it presents context-specific evidence from Pakistan that digital translanguaging mediates the development of cognitive abilities, the internalization of languages, and is consistent with the main principles of Sociocultural Theory. By considering and integrating theory, empirical findings, and pedagogical implications, the discussion places translanguaging at the forefront of digital language learning, not at its margins, but at the core.

References

- Abdelrady, A. H., Ibrahim, D. O. O., & Akram, H. (2025). Unveiling the Role of Copilot in Enhancing EFL Learners' Writing Skills: A Content Analysis. *World Journal of English Language*, 15(8), 174-185.
- Ahmad, N., Akram, H., & Ranra, B. (2022). In quest of Language and National Identity: A Case of Urdu language in Pakistan. *International Journal of Business and Management Sciences*, 3(2), 48-66.
- Akram, H., & Abdelrady, A. H. (2023). Application of ClassPoint tool in reducing EFL learners' test anxiety: an empirical evidence from Saudi Arabia. *Journal of Computers in Education*, 1-19.
- Akram, H., & Abdelrady, A. H. (2025). Examining the role of ClassPoint tool in shaping EFL students' perceived E-learning experiences: A social cognitive theory perspective. *Acta Psychologica*, 254, 104775.
- Akram, H., & Li, S. (2024). Understanding the Role of Teacher-Student Relationships in Students' Online learning Engagement: Mediating Role of Academic Motivation. *Perceptual and Motor Skills*, 00315125241248709.
- Akram, H., & Sohail, A. (2024). Role of Goal-Setting and Planning on Students' academic Performance of Computational Mathematics: A Bayesian Inference Approach. *Educational Research and Innovation*, 4(4), 13-22.
- Akram, H., & Yingxiu, Y. (2019). The Academic Experience of 1st Year International Students at Northeast Normal University: A Case Study of Northeast Normal University, Changchun, China. *Education Quarterly Reviews*, 2(1), 106-115.



- Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in psychology, 13*, 920317.
- Akram, H., Yingxiu, Y., Aslam, S., & Umar, M. (2021, June). Analysis of synchronous and asynchronous approaches in students' online learning satisfaction during Covid-19 pandemic. In *2021 IEEE International Conference on Educational Technology (ICET)* (pp. 203-207). IEEE.
- Ali, A., Ahmad, K., & Afridi, M. K. (2025). THE ROLE OF TRANSLANGUAGING NARRATIVES IN SECOND-LANGUAGE LEARNERS' SELF-PERCEPTIONS AND MOTIVATION. *Journal of Applied Linguistics and TESOL (JALT)*, 8(4), 768-789.
- Ali, I., Azim, M. U., & Rehman, A. U. (2024). Translanguaging as a tool to Decolonize English Language Teaching in Pakistan: Opportunities and Challenges. *Pakistan Social Sciences Review*, 8(1), 246-254.
- Almashour, M. (2024, November). Bridging worlds with words: translanguaging and its impact on identity formation among Jordanian graduate students in Ontario. In *Frontiers in Education* (Vol. 9, p. 1464741).
- Aslam, S., Saleem, A., Akram, H., & Hali, A. U. (2020). Student Teachers' Achievements in English Language Learning: An Assessment of a Distance Teacher Education Program in Pakistan. *Universal Journal of Educational Research*, 8(12), 6770-6777.
- Atta, A. (2024). Prospective prognostication: An examination of translanguaging in Pakistan's educational landscape through the lens of teachers' and students' perceptions. *Language Teaching Research*, 13621688241259640.
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative research in sport, exercise and health*, 11(4), 589-597.
- Canals, L. (2021). Multimodality and translanguaging in negotiation of meaning. *Foreign Language Annals*, 54(3), 647-670.
- Chen, Z., & Ramzan, M. (2024). Analyzing the role of Facebook-based e-portfolio on motivation and performance in English as a second language learning. *International Journal of English Language and Literature Studies*, 13(2), 123-138.
- Chew, A. S. H. (2022). Beyond code-switching and translanguaging: Fluidity and fixity in everyday language practices of multilingual Singapore.
- Congman, R., Umar, M., Bhayo, N. H., Ijaz, M. S., Sharifi, A. F., & Akram, H. (2019). Smartphone addiction and subjective well-being: A case of international students at Northeast Normal University, China. *American Journal of Creative Education*, 2(2), 70-80.
- Elshafie, M., & Zhang, J. (2024). Pedagogical Translanguaging in Content Areas: Exploring Preservice Teachers' Lesson Plans for Emergent Bilinguals. *Education Sciences*, 14(7), 702.
- Guo, K., Bussey, F., & Adachi, C. (2020). Digital learning across cultures: an account of activity theory. *Intercultural Education*, 31(4), 447-461.
- Hafner, C. A., Chik, A., & Jones, R. (2015). Digital literacies and language learning.
- Ho, W. Y. J. (2022). The construction of translanguaging space through digital multimodal composing: A case study of students' creation of instructional videos. *Journal of English for Academic Purposes*, 58, 101134.



- Hofer, B. (2025). The multicompetent mind—how does early multilingualism affect children’s language development and cognition?. *Intercultural Education*, 1-16.
- Hou, Y., Millin, T., Kim, J., & Ma, K. (2025). A Systematic Review of Translanguaging as a Pedagogical Practice in EFL Classrooms: Teacher Attitudes and Learner Voices. *Global Perspective on Issues and Trends in Educational Translanguaging*, 345-376.
- Iqbal, S., & Maqbool, S. (2025). Impact of Translanguaging on the Pragmatic Competence of English Language Learners: An Experimental Study at the Higher Secondary Level in Punjab. *Pakistan Social Sciences Review*, 9(1), 741-752.
- Jalalzai, N. N., Akram, H., Khan, M., Kakar, A. K. (2025). Technology Readiness in Education: An Analysis of ICT Facilities in High Schools of Loralai, Balochistan. *Contemporary Journal of Social Science Review*, 3(3), 2835-2842.
- Javaid, Z. K., Chen, Z., & Ramzan, M. (2024). Assessing stress causing factors and language related challenges among first year students in higher institutions in Pakistan. *Acta Psychologica*, 248, 104356.
- Jones, R. H., & Hafner, C. A. (2021). *Understanding digital literacies: A practical introduction*. Routledge.
- Kuure, L. (2011). Places for learning: Technology-mediated language learning practices beyond the classroom. In *Beyond the language classroom* (pp. 35-46). London: Palgrave Macmillan UK.
- Li, S., & Akram, H. (2023). Do emotional regulation behaviors matter in EFL teachers' professional development?: A process model approach. *Porta Linguarum: revista internacional de didáctica de las lenguas extranjeras*, (9), 273-291.
- Li, S., & Akram, H. (2024). Navigating Pronoun-Antecedent Challenges: A Study of ESL Academic Writing Errors. *SAGE Open*, 14(4), 21582440241296607.
- López, A. A. (2025). Insights from think-alouds on how multilingual learners engage in translanguaging in a multilingual science assessment. *Frontiers in Communication*, 10, 1583494.
- Lu, C., & Gu, M. M. (2024). Review of research on digital translanguaging among teachers and students: A visual analysis through CiteSpace. *System*, 123, 103314.
- Ma, D., Akram, H., & Chen, I. H. (2024). Artificial Intelligence in Higher Education: A Cross-Cultural Examination of Students’ Behavioral Intentions and Attitudes. *The International Review of Research in Open and Distributed Learning*, 25(3), 134-157.
- Ma, D., Akram, H., & Li, S. (2025). Assessing the role of physical activity in shaping students’ academic motivation: the mediating role of mental health. *BMC Public Health*.
- McDermott, A. E. (2022). *Translanguaging Identities. Multilinguals Using Linguistic Repertoires to Construct Everyday Roles*. Canterbury Christ Church University (United Kingdom).
- Nawaz, S., Aqeel, M., & Ramzan, M. (2021). Listening Comprehension Problems, Corresponding Factors and Strategies for Better or Enhanced Listening Skill. *Pakistan Languages and Humanities Review*, 5(2), 729-737.
- Nawaz, S., Sharif, S., Ramzan, M., & Nawaz, H. (2022). The portrayal of women in billboard advertisements installed in Bahawalpur, Punjab, Pakistan. *Harf-o-Sukhan*, 6(1), 200-207.
- Parveen, K., & Akram, H. (2021). Insight of Chinese culture by viewing historical picture of Qin Dynasty. *Journal of Social Sciences Advancement*, 2(1), 17–24.



- Prilutskaya, M. (2021). Examining pedagogical translanguaging: A systematic review of the literature. *Languages*, 6(4), 180.
- Putra, H. S., Sugiharto, S., Da Silva, A. M., & Syahrizal, T. (2025). Pedagogical Translanguaging in Language Education: Constructing Translanguaging Space to Reduce Cognitive Load in Support of Sustainable Development Goals (SDGs). *International Journal of Language Education*, 9(3), 656-675.
- Qureshi, M. A., & Al-Surmi, M. (2025). Translanguaging and Second-Language Reading Proficiency: A Systematic Review of Effects and Methodological Rigor. *Languages*, 10(8), 200.
- Ramzan, M., & Alahmadi, A. (2024). The Effect of Syntax Instruction on the Development of Complex Sentences in ESL Writing. *World Journal of English Language*, 14(4), 1-25.
- Ramzan, M., Akram, H., & kynat Javaid, Z. (2025). Challenges and Psychological Influences in Teaching English as a Medium of Instruction in Pakistani Institutions. *Social Science Review Archives*, 3(1), 370-379.
- Ramzan, M., Awan, H. J., Ramzan, M., & Maharvi, H. (2020). Comparative Pragmatic Study of Print media discourse in Baluchistan newspapers headlines. *Al-Burz*, 12(1), 30-44.
- Ramzan, M., Bibi, R., & Khunsa, N. (2023). Unraveling the Link between Social Media Usage and Academic Achievement among ESL Learners: A Quantitative Analysis. *Global. Educational Studies Review*, 8, 407-421.
- Ramzan, M., Mushtaq, A., & Ashraf, Z. (2023). Evacuation of difficulties and challenges for academic writing in ESL learning. *The University of Chitral Journal of Linguistics and Literature (JLL)*, 7(1), 42-49.
- Tai, K. W. (2024). Documenting students' conceptual understanding of second language vocabulary knowledge: A translanguaging analysis of classroom interactions in a primary English as a second language classroom for linguistically and culturally diverse students. *Applied Linguistics Review*, 15(6), 2775-2822.
- Vygotsky, L. S. (1987). *Thinking and speech*. New York: Plenum Press.
- Vygotsky, L. S. (1997). *Educational Psychology*. Florida: St. Lucie Press.
- Wei, L. (2018). Translanguaging as a practical theory of language. *Applied linguistics*, 39(1), 9-30.
- Zhao, J. (2023). Innovative design and research on cooperative learning of English and a Second Foreign Language in a multimedia environment. *Eurasian Journal of Applied Linguistics*, 9(2), 88-105.