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Research Article

Navigating Language Pedagogy through Digital Interfaces: A Pathway to Inclusive and Multilingual Classrooms

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Abstract

Digital interfaces are disrupting language education as a vehicle for transactional experiences, resulting from the emphasis on interdisciplinary learning in multimodal and multilingual settings under NEP 2020. This paper focuses on how various digital learning interfaces, including apps for language learning, artificial intelligence, and online collaborative spaces, are disrupting the teaching and learning of languages by supporting translanguaging, facilitating language transition, and encouraging inclusivity in diverse classrooms.

Informed through theoretical framings of Vygotskian sociocultural construction of knowledge and Krashen's Input Hypothesis, as well as a survey of undergraduate students and their teachers, the study explores how a range of digital tools including Google Translate, the DIKSHA learning solution, subtitled videos, and Google Docs's AI writing assistant, provide epistemic access to knowledge and legitimate learners' linguistic identities, both as students and as individuals. Findings suggest that students and teachers used translation to translanguaging academic content into native or simpler forms, thereby enhancing understanding and engagement. Discussion also attends to the implications of the digital divide for access to learning resources and the impact of bias inherent in algorithms, suggesting student-centered approaches to digital pedagogies in equitable practices. The study concludes that there are opportunities for digital interfaces to shape purposeful and equitable approaches to language teaching and learning that are in alignment with NEP 2020.

1. INTRODUCTION

India's rich linguistic diversity offers both important opportunities and ongoing challenges for language education. In many classrooms, students speak one language at home and learn in another, often English. Acknowledging this complexity, the National Education Policy (NEP) 2020 supports using the mother tongue as a medium of instruction whenever possible. It also highlights how technology can play a key role in improving educational outcomes.

This dual focus has led to the development of inclusive, multilingual, and technology-based teaching methods. Digital platforms, such as AI writing assistants, translation tools, and structured learning systems like DIKSHA, are changing how languages are taught and experienced. These resources encourage translanguaging, which allows students to use all their language skills to understand content and express their ideas. For instance, a student might read a lesson in English, translate some words into Hindi using Google Translate, and then write their answer in English with help from ChatGPT. This approach helps them grasp the topic clearly and communicate their thoughts with confidence. It improves understanding while also building learner confidence.

Teachers are increasingly addressing students' language needs by simplifying content, strategically using regional languages, and incorporating multimedia resources. These methods align with essential educational theories: Vygotsky's sociocultural theory emphasizes the importance of tools and social interaction in learning, while Krashen's Input Hypothesis advocates exposing learners to language just beyond their current level, with the support of understandable input. These principles appear in classroom practices like using subtitled videos, encouraging group work, and providing AI-assisted feedback.

Despite these advances, several obstacles remain. Digital inequality, unstable internet access, and low digital literacy, especially in rural and semi-urban areas, limit widespread adoption. Additionally, biases in algorithms often overlook the nuances of regional languages and dialects.

In this context, the present study examines the use of digital tools in language teaching through a mixed-methods approach that includes surveys of undergraduate students and language educators. The research aims to understand how these tools aid inclusive and multilingual teaching practices, explore the challenges faced by educators and learners, and evaluate how digital strategies align with the broader goals of NEP 2020.

2. OBJECTIVES

1. To explore the integration of digital interfaces in language pedagogy within multilingual classroom settings.
2. To investigate the impact of digital tools on learner accessibility, linguistic inclusivity, and academic confidence.
3. To analyze the pedagogical alignment of digital practices with the principles of NEP 2020.

3. LITERATURE REVIEW

The use of digital technologies in language education has become a key focus in modern educational research, especially regarding multilingualism and inclusive teaching. García and Wei (2014) introduced the idea of translanguaging as a teaching method that allows multilingual learners to use their full range of language skills for understanding, which challenges single-language norms and negative views on language diversity. This approach has led to various teaching strategies that support and make use of students' language skills in formal educational settings.

Building on this, Kukulska-Hulme et al. (2020) highlight the teaching benefits of mobile-assisted language learning (MALL). They stress that it can provide personalized, context-aware help and help reduce language inequalities. In the context of higher education in India, Sharma (2022) points out the growing use of artificial intelligence tools, such as ChatGPT, Grammarly, and Google Translate. These tools play a crucial role in helping learners navigate academic discourse, especially for those using English as a second or additional language.

Despite the increasing research on translanguaging and educational technologies, there is still a significant lack of empirical studies examining the use of digital tools in line with India's National Education Policy (NEP) 2020. This policy emphasizes language diversity, fairness, and digital access as essential parts of educational reform. Therefore, this study aims to fill this gap by looking at how digital tools are used by both students and teachers in linguistically diverse classrooms and by assessing their potential to promote inclusive and multilingual teaching practices.

4. METHODOLOGY

The current study used a mixed-methods research design to explore how students and educators use digital tools and platforms in multilingual language learning environments. Grounded in socio-constructivist theories of learning, especially Vygotsky's sociocultural theory and Krashen's Input Hypothesis, this research aims to understand how digital interfaces improve comprehension and engagement in classrooms where English is not always the first language.

The main research questions guiding the study were:

1. How do undergraduate students and teachers use digital tools to support language learning and teaching in multilingual classrooms?
2. What challenges and preferences arise when using these tools for translation, simplification, and engagement?

Data was collected through two structured online surveys, one for students and another for educators. These surveys were created using Google Forms and included multiple-choice, Likert-scale, and open-ended questions that captured both quantitative and qualitative insights. The student survey looked at issues like understanding academic English, translating materials into native languages, the frequency and types of digital tools used, and confidence in expressing academic ideas in English. The teacher survey focused on strategies for

simplifying content, preferred digital tools, perceived student outcomes, and obstacles to effective digital teaching.

The study received 34 responses from students and 20 responses from educators from various undergraduate programs, including Bachelor of Mass Media (BMM), Arts, Commerce, and English Literature, as well as from postgraduate levels. The responses were anonymized for ethical reasons. Quantitative data were analysed using descriptive statistics, with frequency and percentage calculations for each survey item. Visual aids like pie charts and bar graphs illustrated patterns of tool usage and participant preferences. Qualitative responses from open-ended questions were thematically coded to identify recurring themes and participant feelings.

This approach provided a clear understanding of how digital tools are integrated from both learner and educator perspectives, especially in India's multilingual and multimodal classrooms, as outlined in the National Education Policy (NEP) 2020.

5. RESULTS

The data collected from the two surveys provided several insights into how students and educators use digital tools for multilingual and inclusive language learning. The results are outlined below, focusing on tool usage patterns, learner attitudes, educator practices, and perceived challenges.

5.1. Student Responses

The student survey offered detailed insights into their engagement with language learning through digital platforms. As shown in Figure 1, a significant number of students reported occasional or frequent difficulty understanding academic English. While 35.3% of students said they often struggle with academic English, a notable 61.8% experienced occasional difficulty. This indicates that students generally follow the content, but there are ongoing comprehension gaps that need attention. It suggests a need for different teaching strategies, especially in classrooms with diverse language backgrounds.
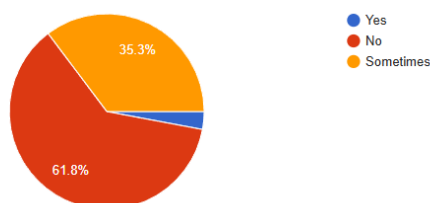

Figure 1: Difficulty Understanding Academic English

When asked about translation practices, more than 90% of students, as shown in Figure 2 (29.4% always, 61.8% sometimes), reported translating subjects into their native language. This strong reliance on translation highlights a challenge in understanding academic content directly in English. It shows the need for multilingual support in course materials.
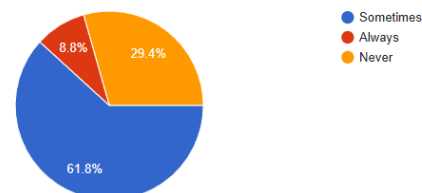

Figure 2: Translation Practices into Native Language

In terms of using digital tools, students most often relied on ChatGPT and Google Translate, each used by 67.6% of students, as shown in Figure 3. After these, platforms like YouTube, Grammarly, and Quillbot were also popular. The popularity of these tools indicates a move towards independent digital learning habits, where students enhance their classroom learning with personalized, technology-driven support.
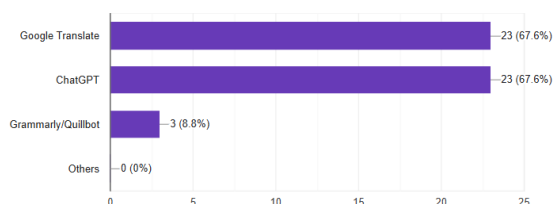

Figure 3: Digital Tools Used for Translation/Simplification

Interestingly, 58.8% preferred bilingual content delivery, as shown in Figure 4. This supports the case for using translanguaging in classrooms. Confidence in expressing ideas in English also varied, as illustrated in Figure 5. Here, 47.1% rated themselves as moderately confident (3/5), while only 20.6% felt fully confident (5/5). This pattern matches the earlier observation of a translation-dependence cycle, where people use digital tools more for understanding than for learning the language.
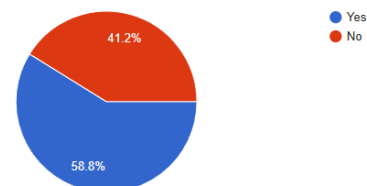

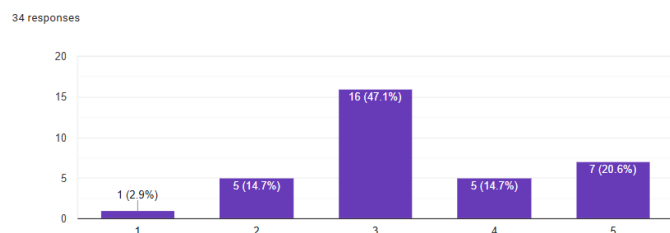**Figure 4:** Preference for Bilingual Content

Figure 5: Confidence in Expressing Academic Ideas in English

5.2. Teacher Responses

Educator responses reflected student concerns and added other teaching viewpoints. As shown in Figure 6, 65% of teachers said they simplified content by using explanations in the students' native language. This shows a clear effort to close the language gap in classrooms. Additionally, all teachers (100%) agreed that students learn better when instruction is bilingual or simplified. This provides solid support for delivering inclusive content.
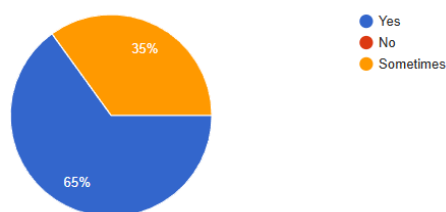

Figure 6: Do You Simplify English Content Using Native Languages?

When looking at digital tool preferences, ChatGPT (80%) and Google Translate (75%) were the most popular, as shown in Figure 7. A smaller number of teachers used Grammarly, Quillbot, and DIKSHA. This suggests that teachers, similar to students, prefer user-friendly and accessible platforms. However, they may also choose tools that fit their teaching goals.
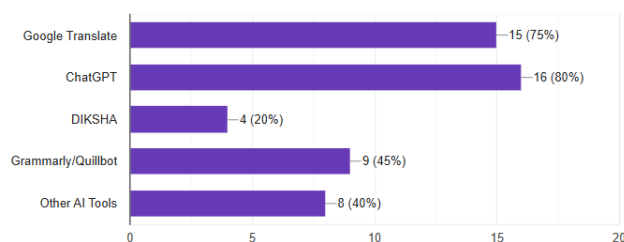

Figure 7: Tools/Apps Teachers Use in Teaching

Only 50% of educators use digital tools regularly, as shown in Figure 8. This may point to issues with infrastructure, training, or time. The other 50% reported using these tools occasionally. Teachers also noted several key barriers, shown in Figure 9. These include limited digital infrastructure, a lack of training, the complexity of tools, and difficulties with algorithms related to regional languages. We must address these limitations to fully unlock the teaching potential of digital tools.

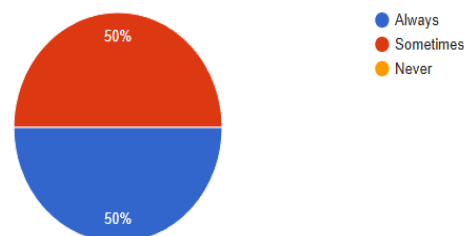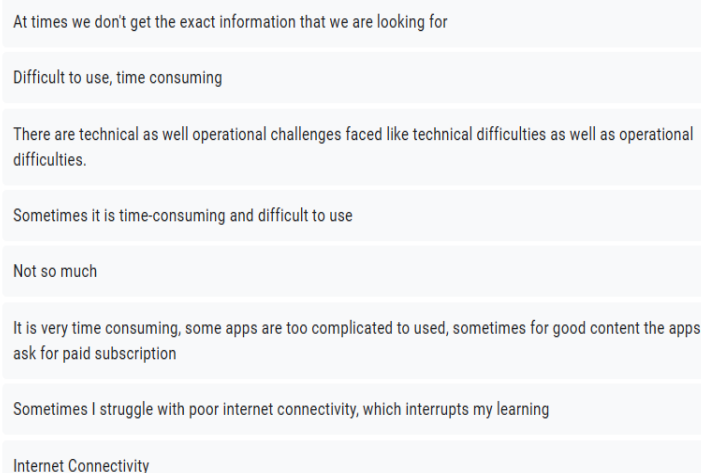**Figure 8:** How Often Do You Use Digital Tools in Teaching?

Figure 9: Challenges Faced in Using Digital Tools

5.3. Comparative Analysis of Student and Teacher Perspectives

Table 1: Comparative Summary of Student and Teacher Survey Responses on Digital Language Pedagogy

Category	Student Responses (n = 34)	Teacher Responses (n = 20)
Understanding Academic English	35.3% of students frequently face difficulty; 61.8% experience occasional difficulty; only 2.9% report no difficulty.	The majority of teachers acknowledge that students struggle with academic English and require content simplification.
Translation Practices	29.4% of students always translate content into their native language; 61.8% do so sometimes; 8.8% never translate.	65% of teachers simplify English content using native language explanations.
Digital Tools Used	Most frequently used tools include ChatGPT (67.6%), Google Translate (67.6%), YouTube, Grammarly, and Duolingo.	Common tools include ChatGPT (80%), Google Translate (75%), Grammarly/Quillbot (45%), and DIKSHA (20%).
Preferred Content Format	58.8% of students prefer subject content in bilingual format.	100% of teachers agree that students benefit from bilingual or simplified instructional content.
Confidence in English Expression	47.1% of students rate their confidence as moderate (3/5); 20.6% report high confidence (5/5).	Teachers observe improved student engagement and participation when multilingual tools are used.
Frequency of Digital Tool Use	Students report regular use of digital tools for translation and concept clarification.	50% of educators use digital tools consistently; 50% use them occasionally.
Perceived Benefits of Digital Tools	100% of students agree that digital tools enhance understanding and engagement.	Teachers strongly agree that digital tools facilitate comprehension, especially in multilingual classrooms.
Challenges Encountered	Students cite limited digital literacy and over-dependence on translations as barriers.	Teachers report issues such as poor internet access, complexity of tools, limited training, and lack of linguistic inclusivity in some AI applications.
Recommended Tools and Platforms	Students recommend tools like ChatGPT, YouTube, Duolingo, and Quizlet.	Teachers suggest platforms such as Padlet, Nearpod, Quizlet, and Google tools to foster interactive and accessible learning environments.
Pedagogical Recommendations	Students recommend bilingual content, use of video subtitles, and simplified explanations to improve comprehension.	Teachers advocate for structured training on digital pedagogy, integration of gamified and culturally responsive tools, and wider access to multilingual resources.

As shown in Table 1, both groups of students and teachers believe in the importance of digital tools and bilingual instruction, but from different viewpoints: students see themselves as users looking for clarity, while teachers view themselves as facilitators who adjust their teaching methods. Students rely on translation tools, and teachers focus on simplifying material, pointing to a language gap that digital methods are starting to address. However, the uneven use of these tools suggests that school initiatives and teacher training programs could be vital in connecting teaching with what learners need.

6. DISCUSSION

The findings of this study reveal a strong agreement between students and teachers about the role of digital tools in language education. Both groups believe these tools significantly improve comprehension, engagement, and confidence, especially in classrooms where English is not the main language. This aligns with Vygotsky's sociocultural theory, which highlights the importance of tools and mediated learning, and Krashen's input hypothesis, which advocates for exposure to understandable input that slightly exceeds a learner's current proficiency level.

Students mainly reported using tools like Google Translate, ChatGPT, and YouTube with subtitles to simplify or translate academic content. These choices show their need for real-time, accessible help to overcome language barriers in content delivery. Teachers also reported using similar tools in their teaching, focusing on simplifying English using explanations in regional languages. This approach reflects NEP 2020's support for bilingual education and the use of technology to enhance learning outcomes.

Despite these positive findings, both groups recognized ongoing challenges. Students mentioned limited digital skills and an over-dependence on translations. Teachers identified issues with infrastructure, a lack of professional training, and the limitations of AI tools in addressing regional language diversity. These issues echo concerns in current literature about digital inequality and the need for context-sensitive applications.

The comparative summary in Table 1 provides an overview of key patterns and differences in responses. It highlights the need for targeted teaching strategies and policy changes, such as digital training for teachers, the creation of multilingual resources, and institutional support for using these tools.

In summary, while digital tools have their limitations, they increasingly serve as vital supports for inclusive and multilingual teaching, especially when integrated thoughtfully into classroom practices.

7. LIMITATIONS

While this study offers valuable insights into the connection between digital tools and multilingual teaching, a few limitations should be noted. The sample was geographically focused and relatively small, which limits the applicability of the results across India's broader education system.

Additionally, the study relied on self-reported survey data, which may have biases like social desirability or selective memory. The research did not include in-depth interviews or classroom observations, which could have added more context. Also, access to and knowledge of digital tools varied among participants, potentially affecting their responses. Future research should involve larger and more diverse samples, long-term studies, and mixed-methods approaches to further investigate the benefits and challenges of digital tools in inclusive, multilingual settings.

8. Future Research Directions

Following the current findings, future research should aim to expand the scope and depth of exploration into digital language teaching in multilingual classrooms. Large-scale studies with participants from diverse linguistic and geographic backgrounds would help generalise results across India's varied education contexts. Longitudinal studies could examine the lasting impact of digital tools on language skills and academic success. Moreover, qualitative studies—like classroom observations or interviews—would provide deeper insights into students' and teachers' experiences with translanguaging and digital support. Lastly, comparative evaluations of specific tools (such as ChatGPT, Google Translate, DIKSHA) regarding their linguistic accuracy, accessibility, and teaching effectiveness would inform focused educational strategies.

9. CONCLUSION

This study highlights the growing importance of digital tools in changing language teaching within multilingual and inclusive classrooms, particularly in the context of the National Education Policy (NEP) 2020 in India. The survey results from both students and teachers show that digital platforms not only help with content accessibility and understanding but also empower learners to engage more confidently with academic material in various languages.

The research illustrates how translanguaging practices—supported by tools like Google Translate, ChatGPT, YouTube, and DIKSHA—are becoming essential in modern language classrooms. These tools help fill linguistic gaps, simplify difficult content, and provide real-time support, especially for students learning in a language different from their first language. At the same time, the study highlights systemic problems like unequal access to digital resources, insufficient training for teachers, and the language limitations of current AI technologies.

To make the most of digital tools in language education, there is an urgent need for strategic actions. These should include providing teachers with digital teaching skills, developing culturally and linguistically inclusive resources, and ensuring fair access to technology for all learners. Thoughtful implementation of such initiatives can help realize the NEP's goal of a truly inclusive, multilingual, and technology-driven education system.

In conclusion, while digital tools cannot replace effective teaching practices, they are powerful allies in creating classrooms that celebrate linguistic diversity and support meaningful learning for all.

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