Chapter 2
AI-Powered Language Translation for Multilingual Classrooms

Muhammad Usman Tariq
https://orcid.org/0000-0002-7605-3040
Abu Dhabi University, Abu Dhabi, UAE & University of Glasgow, Glasgow, UK

ABSTRACT

The revolutionary effects of AI-powered language translation technologies on multilingual classrooms in the modern educational environment are explored in this chapter proposal. It starts with a historical investigation and follows the development of AI translation, highlighting innovations in neural networks and machine learning models that improve efficiency and accuracy. After that, the chapter focuses on deploying AI translation tools in educational contexts. To support this study, real-world case studies are used to examine platforms and apps that are already in use thoroughly. The use of AI-powered translation to improve accessibility for non-native speakers and foster an equal learning environment for students with different linguistic origins is critically discussed. The chapter also looks at how AI may help teachers and students from different cultural backgrounds communicate with one another, which can promote an inclusive learning environment.

OVERVIEW

Incorporating AI-powered language translation systems has caused a paradigm change in the educational field in recent years, changing the conventional structure of multilingual classrooms. Adopting these cutting-edge technologies has significantly changed traditional methods, ushering in a new era where language barriers are broken down and fostering a more welcoming and inclusive learning atmosphere. The revolutionary potential of AI language translation is thoroughly explored in this chapter, along with its implications for educational contexts and its far-reaching effects on students from various linguistic backgrounds.

DOI: 10.4018/979-8-3693-2440-0.ch002

A crucial starting point is the development of AI-powered language translation, viewed through a historical perspective highlighting significant technical advancements. One of the main themes is the introduction of neural networks and machine learning models, which explain how they have significantly improved language processing accuracy and efficiency (Smith, 2018). This chapter offers a thorough review of the technology landscape, outlining significant discoveries and successes in the area and tracing the trajectory of progress from basic text translation to real-time speech translation capabilities (Jones & Brown, 2020).

Beyond the technical details, the story explores how AI translation systems are used in educational contexts. The foundation of this investigation is a thorough examination of the several platforms and apps now in use, which throws light on the range of approaches taken by educational institutions throughout the globe (García et al., 2021). Case studies from the real world are used to show how AI translation technologies have been effectively incorporated, providing concrete examples of how they have affected the processes of teaching and learning (Lee & Wang, 2019).

The important topic of improving inclusivity and accessibility using AI-powered translation is covered in the following section. A vital conversation ensues, clarifying how these technologies act as accessibility accelerators, especially for non-native speakers (Chen & Kim, 2017). The chapter walks readers through how AI-driven translation promotes fairness in the classroom. It allows learners of different languages to easily obtain instructional materials and resources (Johnson, 2019). A thorough examination of AI translation's function in creating an inclusive learning environment highlights how it may help students and teachers from different cultural backgrounds communicate more effectively and understand one another better (Brown & García, 2022).

The chapter discusses the pedagogical ramifications and cultural sensitivity of integrating AI-powered language translation in the classroom. In order to improve learning outcomes and meet the varied requirements of students, this section explores how these technologies may be smoothly integrated into teaching approaches (Miller & Patel, 2018). The story highlights the value of cultural sensitivity and awareness in multilingual environments, guiding AI tools through the complexities and intricacies of language to guarantee successful communication (Nguyen & Smith, 2020). Furthermore, the conversation includes how teachers might use these resources to foster respect and understanding of other cultures among students from different backgrounds, in addition to using them to improve language skills (Wang et al., 2021).

As the chapter progresses, focus is placed on the difficulties and potential opportunities that lie ahead in the field of AI-powered language translation in educational environments. The difficulties and restrictions related to context awareness, accuracy, and the moral ramifications of implementing AI in the classroom are examined critically (Morgan & Clark, 2019). The investigation concludes with a prospective viewpoint that forecasts future developments and trends in artificial intelligence (AI) language translation. Through a future viewpoint, Kim and Lee (2022) study how these technologies can become more smoothly incorporated into educational institutions and how their function in moulding multilingual and multicultural classrooms evolves.

This chapter concludes with a comprehensive analysis of the significant effects of AI-powered language translation in education. Reiterating the critical role that artificial intelligence (AI) plays in fostering inclusive, accessible, and culturally sensitive learning environments, it synthesises the historical development, practical implementations, accessibility advancements, pedagogical implications, and future trajectories.