



# Navigating Foreign Language-Taught Degrees: Embracing Artificial Intelligence-Driven Language Translators to Overcome Linguistic Challenges

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*Artificial intelligence-driven language translation tools could be valuable for facilitating knowledge exchanges and*

*overcoming linguistic barriers in foreign language-taught degree programs. Integration with large language models could enhance knowledge exchanges through technological innovations.*

**S**tudents pursuing degrees in a foreign language frequently face difficult linguistic obstacles that can impede their academic success. Academic success depends on overcoming these obstacles and acquiring linguistic competency.<sup>1</sup>

## INTRODUCTION

Students who are required to complete degree programs exclusively taught in foreign languages may encounter challenges even though they may have foreign language certifications, as will students with limited foreign language proficiency. The function of language translators is crucial for ensuring the greater inclusivity of foreign degrees given the rapid growth of technology and the increasing disruption caused by technologies like artificial intelligence (AI) in the education sector.

This article seeks to show how language translators can revolutionize foreign language instruction based on the successful integration of Microsoft

quality and accuracy, such translators use cutting-edge machine learning techniques to provide multilingual real-time conversations among participants through apps or web browsers. Translating speech or text into the required language almost instantaneously allows people to converse. The Translator app supports a variety of conversational styles, including one-on-one and multiparticipant group talks. This is extremely helpful when teaching in a classroom, at parent-teacher meetings, in one-on-one student sessions, etc.

The Translator app facilitates overcoming language hurdles during learning by allowing students to translate

integration into one of the bilingual degree programs taught in English and Spanish in one of the Spanish universities, translating all live Spanish classes into English. The fundamental infrastructure, such as a computer, headphones, and an Internet connection, will be needed for the foreign language-taught degree program to translate live streamed lectures into another language, whether delivered entirely online, in person, or in a hybrid format. In addition, it is necessary to do the following actions:

1. Start the chat using the Translator app or a web browser.
2. Provide the technical administrator (the person in charge of handling technical issues during blended learning sessions) with the conversation code.
3. Students must choose the translation output style (speech if necessary, text only by default). The speech option is preferable if students wish to concentrate on teacher presentations in addition to the translated real-time audio communications rather than only the translated text messages.

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The Translator app supports a variety of conversational styles, including one-on-one and multiparticipant group talks.

Translator technology (hereinafter referred to as *Translator*) in education as one of the cases. Language translators are essential for a variety of reasons, including reducing language barriers, enhancing language learning, and creating a more welcoming learning atmosphere. This article explores how integrating language translators into the classroom can help students overcome linguistic barriers, improve their language learning, and reach their full potential in degree programs that are either bilingual or entirely taught in foreign languages.

## AI LANGUAGE TRANSLATORS: A CATALYST FOR OVERCOMING LANGUAGE BARRIERS IN LEARNING

AI language translators effectively use AI algorithms to translate text or speech between several languages automatically. One such translator is Microsoft Translator, developed by Microsoft, offering a multilingual automatic translation of audio, pictures, and text (<https://translator.microsoft.com>). To increase translation

foreign language text and follow lectures in both text and speech in real time. This enables students to participate actively in their education and guarantees that they do not lose out on important information due to language barriers, thereby promoting inclusivity and belongingness in the classroom.

Little information exists in the literature about adopting this technology in educational settings, but some successful case studies are listed on the technology provider's website. This includes adopting technology in parent-teacher conferences, teaching special needs students at the Rochester Institute of Technology, Rochester, NY, USA, passing English-taught courses, etc. (<https://www.microsoft.com/en-us/translator/education/case-studies/>).

## ADOPTING TRANSLATOR TECHNOLOGY IN CLASSROOMS

This part focuses primarily on the real-time discussion feature offered by the Translator app, which enabled its

A minimum amount of instruction on how to initiate the conversation (and afterward share the code) or how to connect with the code (if shared by the student) must be given to the technical administrator (Figures 1–3).

The teacher's live audio feed is translated into English speech during the lecture session. However, because attention is also drawn to the presentations on the whiteboard (entirely in Spanish), it is necessary to check the meaning of unfamiliar terms. This can be done using text translation or Google Lens or by asking the teacher to share their presentations with the class beforehand. Here, students with little to no foreign language knowledge may need other tools to translate the presentation text or may need to

ask the teacher for assistance, such as requesting a copy of the presentation before class. Assignments and questions on online exams can also be translated using the same Translator app (via browsers with an inbuilt translation). The conversational feature can be used for group projects if some participants speak only Spanish to share ideas and create a winning assignment. To better understand the topic, assignment, and concept, utilize the same conversational feature to talk with only Spanish faculty members. Also, the lecture transcript can be generated after ending or leaving the online conversation room (Table 1).

## CHALLENGES AND LESSONS LEARNED

The Translator technology is incredibly helpful and straightforward to use. This technology provides numerous capabilities (for instance, real-time language audio and text conversation) that are useful for the students. Additionally, there is a great deal of Web-based information about how to utilize this technology. These technologies are usually powered with user-friendly interfaces to allow their adoption with a little training. For instance, the technical administrator at a Spanish university just needed a brief amount of time to grasp conversation code and use it in Spanish-taught classes. Finally, this technology requires minimal infrastructure, enhancing the behavioral intention to adopt this technology. Further, this technology requires minimal training and minimal infrastructure. The adoption of translators in the classroom faces multiple challenges, which are described next. Future technical advances will result from tackling these issues.

1. The conversation meeting lasts a maximum of 4 h. This indicates that a new session with a new conversion code needs to be started if the teaching session lasts longer than 4 h. This is acceptable if done during short breaks, but if not,

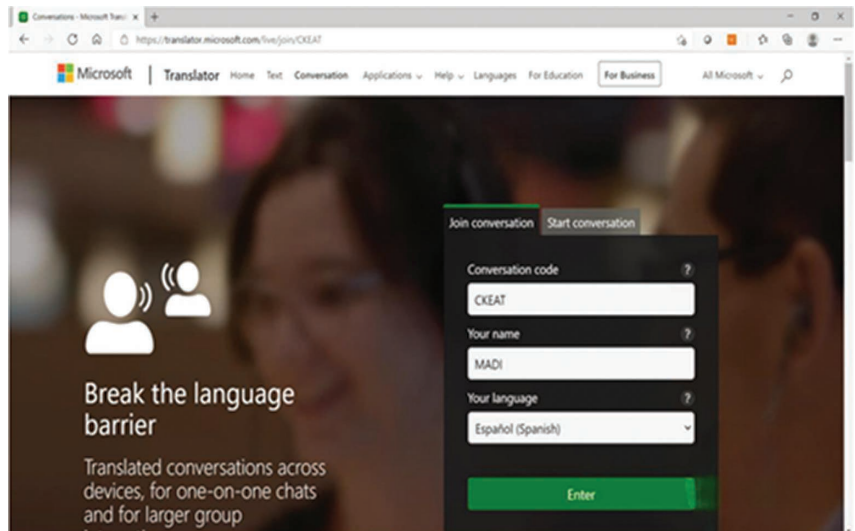


FIGURE 1. Joining with conversation code.

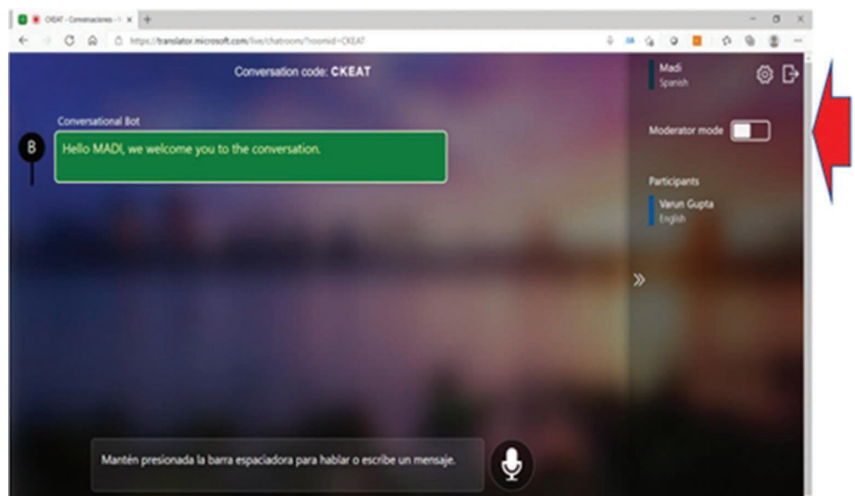


FIGURE 2. Selecting moderator mode.

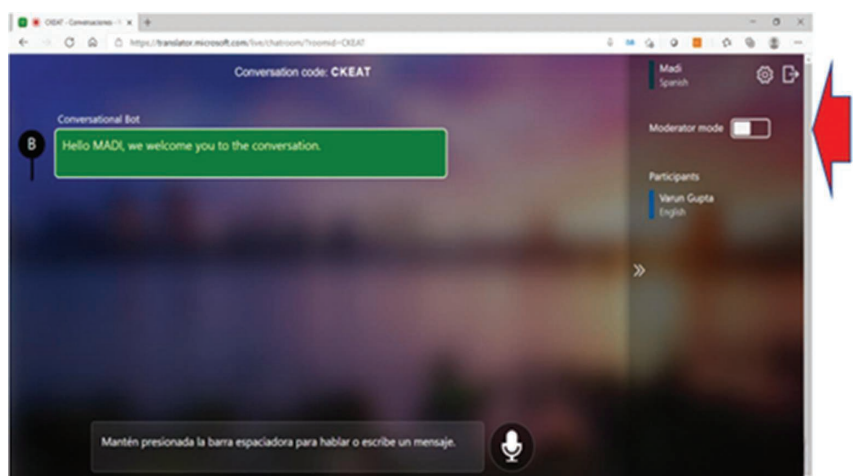


FIGURE 3. The conversation screen.

it disrupts the current class session as a new session must be set up.

2. Students typically want the Translator app to replicate exactly what it's like to be in class, including hearing lectures in their original language and taking notes while also paying attention to the teacher's presentation. Translational

required for learning) and *distractions* (that is, the factors that divert attention from the learning task).

3. Depending on the connection, there can occasionally be a slight delay between the time speech is generated and the time translated text displays on the screen or is heard on the student's computer.

Translational technology makes it easier to see the translated text and simultaneously hear the translated audio.

technology makes it easier to see the translated text and simultaneously hear the translated audio. The students must divide their attention between the computer screen, where the translated text is displayed, and the presentation slides. The situation is problematic for online students because they must divide their computer screen into the one where translated text appears and the one showing the teacher's presentation. This will increase students' *cognitive load* (that is, the mental effort

4. Additionally, there may be disconnections or translation hang-ups because of connection-related problems, ultimately requiring the commencement of a new session. This can frustrate learners because the classroom session must be interrupted until a new session is begun. This challenge must be addressed technically by the technology provider. The community's enthusiastic support is essential for the successful outcomes of the technology adoption.

5. The length of spoken words can occasionally affect the quality of translations. It was observed that a targeted translation is perfect if spoken material is long and well composed in a foreign language. There is also a problem with several Spanish expressions. Spanish speakers frequently use expressions to emphasize their points, which is also true in teaching. Since few literary works use these terms in English, most have yet to be translated. These circumstances lead to minor learning gaps. There is a need to boost translation quality further and assist in translating foreign language expressions for which machine learning techniques will need to be innovated. For instance, by creating a lexicon of idioms and frequently used foreign terms, the application can let students personalize their translation experience. This will reduce students' cognitive load and distractions because they won't have to struggle to understand unfamiliar or poorly translated expressions or become sidetracked from their learning.
6. It's unclear how this technology will foster relationships outside of the classroom. Of course, nobody wants to drink in a bar or cafe while wearing headphones for translated conversations. However, this issue pertains more to individual interests or their comfort zones rather than the technical aspect of the technology.

**TABLE 1.** Sample translations (anonymous teacher name).

**Teacher89**

**Translation (English)\*:** I agree then to preselect a market I will see markets that have potential, that are easily accessible, and that are safe.

**Recognition (English)†:** De acuerdo entonces, para preseleccionar un mercado voy a ver mercados que tengan potencial, que sean fácilmente accesibles y que sean seguros.

**Teacher89**

**Translation (English):** How is a country's potential measured?

**Recognition (English):** ¿En qué se mide el potencial de un país?

**Teacher89**

**Translation (English):** The ability to buy, the ability to buy, I have to see if for my product that market has the ability to buy.

**Recognition (English):** La capacidad de compra, la capacidad de compra, tengo que ver si para mi producto ese mercado tiene capacidad de compra.

\*Translation (English) refers to the translated version of the conversation from Spanish to English.

†Recognition (English) represents the spoken Spanish sentences.

Peers, instructors, and other academic staff must all fully embrace integration for it to be successful. Although the technology is valuable, there is still potential for advancements in technical issues, user experience, attention management, and social integration and adoption.



## RECOMMENDATIONS FOR MAXIMIZING LEARNING

Students who encounter language obstacles in learning foreign language-taught degree programs can benefit from this technology. However, the following suggestions will increase the true worth of the translator's contributions:

1. *Provide clear instructions and training:* Institutions can give students and teachers explicit directions on using the Translator technology. Pilot tests may assist in raising the tool's perceived value even while they call for only a minimal amount of training and may also alert users to potential technical issues, such as network problems. This will improve the tool's acceptability and the problems it may present in facilitating learning. Teachers can be instructed to use multilingual presentations, organize the material to make it easy to translate, and disseminate the material before in-class instruction. For instance, to meet the demands of international students who were from English-speaking nations, the first author incorporated translation technology into some of his sessions and used bilingual presentations (with individual presentation slides including Spanish and English text)
2. *Improve visual integration:* Institutions are replete with technical know-how. Their technical team may leverage the translator's application programming interfaces to create a combined solution that presents all the translator's features and ongoing course presentations on a single screen. Additional personalized experiences could be offered, such as the capability to examine a difficult foreign

word in relation to the topic being addressed in class.

3. *Promote language immersion:* Encourage students to immerse themselves in the target language outside the classroom by promoting language immersion without using technology. Offer chances for language practice, such as conversation groups, cultural activities, or language exchange programs. This will help them to integrate translation learning with learning gathered through social interactions.
4. *Encourage innovation and experimentation culture:* Encourage a culture of creativity and experimentation to test translation technology. The adoption of such technologies and contributions to their enhancement will be encouraged by the positive attitude toward such technology.
5. *Regularly assess effectiveness:* Analyze how well the translation technology facilitates learning outcomes. To ascertain whether the technology benefits students' language learning and topic understanding, keep an eye on their progress, engagement, and feedback.

## POTENTIAL APPLICATION OF CHATGPT


The sophisticated language model ChatGPT effectively uses natural language processing techniques to comprehend and respond to user input. It can deliver useful information, respond to inquiries, and provide advice on a variety of issues thanks to its extensive knowledge base and capacity to produce human-like responses. Like any other piece of technology, it ought to be used to supplement student learning instead of as a replacement for manual problem solving in education. There has been growing research about this technology's potential applications in education and research.<sup>2,3,4</sup>

Can ChatGPT support the instruction of students adopting translation technologies in learning? Well, it can be a helpful tool to improve learning when a translation chat feature is being used in class. For instance, it can offer additional aid and support to students to follow lectures and conversations in their original tongue, clarify unclear concepts, ask questions about the translated content, or request more examples or explanations. The translation chat feature of ChatGPT can be combined with Microsoft Translator to give students a dynamic and encouraging learning environment that fosters comprehension, engagement, and linguistic development. Large language models (LLMs), such as ChatGPT, have the power to transform the education sector. Still, it is necessary to investigate whether their adoption aligns with ethical values, social norms, accessibility, inclusivity, and learning effectiveness.<sup>4</sup>

**A**I-driven translation technology's live instantaneous translation feature makes it simpler to follow lectures and participate in class discussions. Even though there were some difficulties, such as a cap on session length and intermittent connectivity problems, the technology has considerable overall advantages. It can improve learning for both students and teachers by offering a user-friendly interface and requiring little infrastructure. Increasing learning effectiveness can be achieved through several valuable recommendations, such as offering users clear instructions and comprehensive training. Several suggestions are made to increase learning effectiveness based on the lessons learned, such as giving users clear instructions and technology training. There is room for further technical innovations in the tool—for instance, integration with LLMs, such as ChatGPT, to unlock additional potential in language learning and communication. It improves learning by providing extra assistance and explanation and

encouraging comprehension, engagement, and linguistic advancement.

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