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Shevchenko O.M.

MBA,

Senior lecturer, Department of English for Humanities 3

National Technical University of Ukraine

“Igor Sikorsky Kyiv Polytechnic Institute”

Ogurtsova O.L.

Ph.D. in philology

Associate Professor, Department of English for Humanities 3

National Technical University of Ukraine

“Igor Sikorsky Kyiv Polytechnic Institute”

ARTIFICIAL INTELLIGENCE FOR LANGUAGE TEACHING AND LEARNING

Abstract. This paper provides an overview of some innovative methods of learning a foreign language using modern Artificial Intelligence-based technologies such as Google Translate system and ChatGPT.

The use of Google Translate and ChatGPT has revolutionized the way people learn and communicate in different languages. Google Translate system is a free online translation tool that uses Artificial Intelligence to translate text and speech from

one language to another. With the help of machine learning this system has become more efficient and versatile. The use of Google Translate system has gained popularity among the ESL (English as a second language) students who often need to translate large amounts of texts on their specific subjects. Google Translate can also perform the role of an assistant in the process of language teaching by providing a teacher with some new tools and opportunities. The advanced features offered by Google Translate can help language learners comprehend their current and potential errors, improve their abilities in a language they study and also enhance their analytical skills. Another innovative technology referred to in this paper is Chat GPT. It is a chat-bot with artificial intelligence used for a real life interaction with the user. ChatGPT can provide customized language learning based on the learner's aim and level. Through chat-based interactions learners can practice and improve their grammar, vocabulary, and pronunciation skills. ChatGPT can provide immediate feedback to learners allowing them to correct mistakes in real-time. ChatGPT can simulate real-world situations allowing learners to practice their language skills in a practical way. As an AI language model, ChatGPT has the potential to provide good perspectives for language teaching and learning. In future it can become an effective tool in foreign language practice improving learners' speaking, reading and writing skills and providing them with an instant feedback in a language they learn.

Key words: Google Translate, Artificial Intelligence (AI), Google Neural Machine Translation (GNMT), ChatGPT

Шевченко О.М.

МБА,

старший викладач кафедри англійської мови гуманітарного спрямування

№3

*Національний технічний університет України
“Київський політехнічний інститут імені Ігоря Сікорського”*

Огурицова О.Л.

кандидат філологічних наук,

доцент кафедри англійської мови гуманітарного спрямування №3

*Національний технічний університет України
“Київський політехнічний інститут імені Ігоря Сікорського”*

Анотація. Дана стаття містить огляд деяких інноваційних методів вивчення іноземної мови з використанням сучасних технологій на основі штучного інтелекту, таких як система Google Translate і ChatGPT.

Використання Google Translate і ChatGPT трансформувало метод викладання і вивчення іноземних мов. Система Google Translate – це безкоштовний онлайн-інструмент перекладу, який використовує штучний інтелект для перекладу тексту з однієї мови на іншу. Завдяки машинному навчанню ця система стала більш ефективною та універсальною. Використання системи Google Translate набуло популярності серед студентів ESL (англійська як друга мова), які часто перекладають великі обсяги фахових текстів. Крім цього, Google Translate може також виконувати роль помічника в процесі навчання мови, пропонуючи викладачу нові інструменти та можливості. Розширені функції Google Translate можуть допомогти тим, хто вивчає мову, досягнути своїх реальних та потенційних помилок, покращити знання мови, яка вивчається, а також покращити свої аналітичні навички. Ще одна інноваційна

технологія, зазначена в цій роботі, це Chat GPT. Це чат-бот зі штучним інтелектом, який використовується для взаємодії з користувачем у реальному часі. ChatGPT може забезпечити індивідуальне вивчення мови відповідно до мети та рівня студента. Спілкуючись зі штучним інтелектом, студенти можуть практикувати й покращувати свій рівень граматики, словниковий запас і фонетичні навички. ChatGPT може надати миттєвий зворотний зв'язок, дозволяючи студентам виправляти помилки в реальному часі. ChatGPT може моделювати реальні ситуації, дозволяючи студентам практикувати свої мовні навички на практиці. Як мовна модель штучного інтелекту, ChatGPT має потенціал для подальшого розвитку для використання у сфері викладання та вивчення мов. У майбутньому ChatGPT може стати ефективним інструментом у практиці викладання і вивчення іноземних мов, покращуючи навички мовлення, читання та письма студентів і надаючи їм можливість миттєвого зворотнього зв'язку мовою, яку вони вивчають.

Ключові слова: Google Translate, Artificial Intelligence (AI), Google Neural Machine Translation (GNMT), ChatGPT

Introduction. The introduction of new technologies has completely changed the traditional methods of teaching and learning foreign languages. Today Machine Translation (MT) based on artificial intelligence (AI) provides multiple tools to help both teachers of language and students who are engaged in language study.

At present one of the most popular and commonly used machine translation services is certainly Google Translate. Every day it handles hundreds of millions of translations in more than one hundred languages.

Google Translate provides its users with the possibility to instantly translate separate words, phrases, texts, Websites and so on [1]. It is integrated with numerous Android apps which provide its users with the possibility to translate text

on web pages and email messages or even speech due to ‘text-to-speech’ function. Free online translators , such as Bing Translator, DeepL Translator, Systran Translate and some others are also popular among learners of languages. Nevertheless, Google Translate remains the leader among other free online translators in spite of the fact that in many cases it is unable to provide consistent, human-like translation [2]. Most of users still continue to prefer this translation tool because it is fast and free.

Before 2016 Google translate used a statistical machine translation method where translations were generated on the basis of statistical models of bilingual content. It used a huge corpus of bilingual texts including thousands of the United Nations and European Union official documents [3]. Beginning with 2016 Google Translate switched to a new system called Google Neural Machine Translation (GNMT) which uses trained neural networks that read sentences and output their translation. These are efficient end-to-end systems which greatly enhance the translation performance as they require only one model for the translation. At the same time, the translation quality in such systems largely depends on the language pair frequency, i.e. the more frequently the language pair is used - the better the translation [4].

The use of Google Translate system has gained popularity among the ESL (English as a second language) students who often need to translate large amounts of texts on their specific subjects [5]. Google Translate also proved to be effective in students’ writing activity, increasing their vocabulary and its use [6]. A good example are students of such fast-growing field as information technology and computer science who have to regularly process huge amounts of subject-related information which is not available in their native tongue. Most of them have insufficient level of foreign language knowledge and need language support. For this reason such students look for ways to get quick access to the required

information in a foreign language and also for effective tools that can help them achieve this goal.

Unfortunately, the simplicity and availability of such tools as Google Translate does not always stimulate or benefit students. It may even have a negative effect on those who do not use the translation system for language development or for the purpose of mastering language and vocabulary. According to our study most students use Google Translate to do their English homework (translation of new words and phrases, sometimes texts), to prepare projects and reports for classroom presentations or for submission of assignments. Although there is a general belief that Google Translate does not always provide a high-quality and accurate translation [7], it still provides its users with the main idea of the text and to some extent helps them with vocabulary acquisition and with the development of their pronunciation skills by using GT pronunciation checker [8].

Nowadays Machine Translation seems to have acquired a new role by providing multiple tools that may assist in teaching and learning foreign languages. It can be a useful tool for teachers and in many ways can benefit learners. Google Translate can also perform the role of an assistant in the process of language teaching by providing a teacher with some new opportunities [9]. It is worth mentioning that Google Translate is especially effective at the early stages of foreign language study.

At present a foreign language teacher can offer a variety of translation activities to his students by using Google Translate system.

Before planning a lesson, a teacher needs to identify the learning objectives and to choose the type of activity for students, for example:

- Translate text from/into a target language;
- Translate separate words or phrases;
- Listen to the correct pronunciation of words, phrases or sentences;

- Test your own pronunciation of phrases and sentences.

All the above-mentioned types of classroom activities can raise awareness among students of their current and potential errors, improve their abilities in a language they study and also enhance their analytical skills.

But how can a teacher use Google Translate for teaching his students a foreign language in class? Below are presented some foreign language teaching approaches with the use of Google Translate :

1. **Translation comparison (Google Translate vs Human).** A teacher can provide some short texts in English and allow students to translate them into their mother tongue. Then he can ask them to compare their own translations with the Google Translate variant.
2. **Translation comparison (Google Translate vs Human) followed by analysis of mistakes.** Students can be asked to translate a simple short text from English into their native tongue using both techniques: by themselves (in a written form) and by means of Google Translate . The results can be compared to help students analyze the mistakes they made and also to help them identify and correct the errors made by the Machine Translation system.
3. **Grammar error analysis (in Google Translate vs Human translations).** A teacher can ask students to write short essays in their mother tongue and then translate these texts into English using two methods: by themselves and by means of Google Translate system. When comparing the translation results students can identify and analyze grammar errors.
4. **Error correction (in Google Translate vs Human translations).** A teacher may ask students to do error correction. He will give them translations generated by Google Translate and by a human translator. Then he can ask

students to explain where Google Translate was wrong. This type of activity improves students' knowledge of grammar and word meaning.

5. **Translation quality assessment (Google Translate vs Human) based on linguistic analysis.** For more advanced students a teacher may give translations generated by Google Translate and a human-made translation to compare them at a phrase, clause, sentence and paragraph levels. Students will have to choose the best translation and to explain what was wrong with the translation generated by Google Translate. The teacher may ask students to pay special attention to the accuracy of the translation and to highlight limitations of Google Translate.

Google Translate as a language teaching and learning tool has both its advantages and disadvantages including limitations [10]. Among Google Translate **advantages** we can point out the following:

- Google Translate helps learners experiment with the target language more freely than other methods available through traditional dictionary-based translation;
- Google Translate can significantly save time required for the translation process;
- Google translate facilitates the study of words and phrases;
- Google Translate enables learners to improve their pronunciation by listening to the correct pronunciation of words and phrases;

At the same time, Google Translate has certain **disadvantages** in language teaching and learning, namely:

- Google Translate often lacks accuracy of translation and in case of complex sentences or contexts may produce inadequate translations with non-standard linguistic forms;

- Google Translate may hinder the development of learners' analytical skills, making them less inquisitive in terms of target language grammar, syntax, etc.
- Google Translate lacks the ability to handle complex grammatical structures, plurals, verb tenses and the meaning of polysemantic words.

Another innovative technology, **Chat GPT**, is a chat-bot with artificial intelligence providing a real life interaction with the user.

What is ChatGPT and how can it help learners master a foreign language?

ChatGPT (**Generative Pretrained Transformer**) is a deep learning model that has been trained on large sets of data. The model can understand the meaning of the input text and in response provide a meaningful output [11].

ChatGPT can offer foreign language learners a personalized learning approach to help them achieve their specific goals:

1. **Vocabulary expansion.** It can provide learners with a wide range of English vocabulary and meaning. A user can ask the system for the meaning of any word, phrase or collocation and will be given a clear and extensive explanation with examples. For instance, when the user asks the system to explain the meaning of an idiomatic expression 'Break the ice', the system immediately generates the answer illustrating it with the examples: 'Break the ice' - this idiomatic expression refers to the act of easing the tension or awkwardness in a social situation. It is not used literally to describe breaking actual ice'. Then the system offers some situations where this expression can be used: 1. At a party: If you're at a party and don't know anyone, you may "break the ice" by introducing yourself, asking someone how they know the host, or commenting on the music or decorations. 2. On a first date. On a

first date, it can be helpful to ‘break the ice’ by talking about your interests, asking your date about their hobbies, or telling a funny story to lighten the mood. 3. In a business meeting. In a business meeting with new clients or colleagues, you may ‘break the ice’ by making a small talk, or sharing a relevant news article or industry update. 4. In a classroom. In a classroom setting, the teacher may ‘break the ice’ on the first day of class by having students introduce themselves, share their favorite hobbies, or participate in an icebreaking activity.

2. **Writing Practice.** Learners can practice their writing skills with the system which provides them with writing prompts. They can send their written work for feedback and corrections. These are the examples of the original and the revised writing with comments made by the system:

Original writing:

‘I went to the store and bought some food. It was a long trip and I was tired.’

Revised writing:

‘After a long trip to the store, I bought some much-needed food. Exhausted from the journey, I eagerly returned home to rest.’

ChatGPT comment:

‘In this revised writing, I have made a few changes to improve the sentence structure, word choice, and overall flow. By using descriptive language and varied sentence structure, the revised writing is more engaging and compelling to the reader.’

3. **Pronunciation Improvement.** You can practice your English pronunciation by using a text-to-speech feature. Type in the words or sentences you want to hear and the system will read it out loud for you.
4. **Conversation Practice.** You can practice English conversation skills. You can ask questions and respond to prompts that are given. The system can

provide feedback on any question you ask it.. Below is an example of a conversation between a user and a ChatGPT:

- *User:* Hi, how are you doing?
- *ChatGPT:* As an AI language model, I don't have feelings or a physical presence, but I'm functioning properly and ready to chat with you. How about you? How are you doing today?
- *User:* I am fine, thank you. Today I and my friends plan to have a dinner at an Italian restaurant. But we know nothing about the Italian cuisine. What can you recommend?
- *ChatGPT:* Italian cuisine is known for its delicious dishes. Here are some popular Italian dishes that you might enjoy: Pizza (with detailed description of different types), Pasta (with detailed description of different types), and so on.... Don't be afraid to ask your server for recommendations or to explain any unfamiliar dishes. Enjoy your meal!

Conclusions. In this paper we have analyzed some new approaches and methods of teaching and learning foreign languages that have been introduced within the last few years. These innovative approaches greatly improve and facilitate the process of foreign language acquisition by language learners. Google Translate proved to be a useful tool for people learning a foreign language, as it allows users to quickly and easily translate words, phrases and entire sentences from one language to another. Google Translate also provides users with the option to hear the pronunciation of translated words, phrases and sentences.

Chat GPT is a chat-bot with artificial intelligence for having a real life discussion with the user. As an AI language model, ChatGPT has the ability to

process and understand vast amounts of written and spoken text. This has revolutionized the method of learning a foreign language in several ways:

1. Personalized Learning: ChatGPT can provide customized language learning based on the learner's aims and level. Through chat-based interactions, learners can practice and improve their grammar, vocabulary, and pronunciation skills.
2. Instant Feedback: ChatGPT can provide immediate feedback to learners allowing them to correct mistakes in real-time.
3. Real-world practice: ChatGPT can simulate real-world situations, like ordering food at a restaurant or making small talk, allowing learners to practice their language skills in a practical way.

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