



Artificial Intelligence in the Teaching of Foreign Languages in Primary Schools in Podgorica

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Abstract

The goal of the research is to provide insight into the extent to which foreign language teachers in Podgorica use generative artificial intelligence tools, as well as the reasons for using or not using it. The paper first analyzes the literature on the use of Generative artificial intelligence in education. Then it investigates how and to what extent artificial intelligence is used in foreign language teaching, including available tools, methods and technologies. Empirical research includes surveying teachers, analyzing the frequency of use of different teaching tools, as well as teachers' perception of the application of artificial intelligence in adapting the teaching experience and assessing students' knowledge. The research results provide a clear picture of the current situation and provide suggestions for all participants in this process, both at the local and state level. Finally, the paper summarizes the conclusions of the research, identifies certain challenges and gives recommendations for the integration of generative artificial intelligence in teaching, while ensuring continuous support for teachers of foreign languages, as well as the development of clear guidelines for the ethical application of these technologies. The aim of this paper is to contribute to the understanding and practice of generative AI in primary school education to start a forward looking discussion for the context of Montenegro. Generative AI is a very new tool and needs a broad base response where both local and state level entities including parents, teachers and school administrators need to be involved.

Keywords: generative artificial intelligence, teaching tools, elementary education, foreign languages

The authors would like to assert that AI tools have been used throughout the research process, including creation of materials consultation with AI on the current and potential use of generative AI technologies and refinement.

1. Introduction

1.1 Rise of GenAI in Education

Artificial Intelligence has entered every sphere of human activity, going much beyond the generation of text and images. Its use in the era of circular economy is as varied as sandboxing metal alloys [2] to inventory management [2] and its stamp on education may already be an undeniable fact, from tutor programs such as Khanmigo.ai, language teaching AI Duolingo AI, or DreamBox AI offering personalized Math tutoring for primary school children. Students can learn anything from a language to how to play the piano, get detailed feedback on their latest essay, quickly create videos or presentations. Teachers can plan lessons, create quizzes, differentiate their materials - the list is getting longer each day, as the technology gets more sophisticated and user-friendly. However as generative AI fast becomes a part of everyday life, there are still many questions facing educators. There are ethical issues – since AI collects and works with large volumes of data, data privacy and protection, bias, consent, and security all become issues. Who owns the data? How is it stored? What is it used for? When AI captures sound and video, how can we be sure it is not misused? Large language models such as ChatGPT are already on the hook for collecting data without permission and it is not an issue that can be resolved any time soon. How will minors be impacted in this process? Teachers share the data belonging to their students when they use plagiarism checkers or AI for marking purposes. How can they be sure of the security of the data thus provided? These are not the only questions but just a starter set. Then too come the other types of ethical concerns – as with any other technology, there is the question of the haves and the have-nots. UNESCO in 2021 [3] already raised the issue of inequality of access – the digital divide is only getting wider. Another issue is the still evolving nature of AI creating situations where wrong or misleading information is being provided,



and potentially causing students or even adults who do not factcheck to erroneous conclusions. Yet educators cannot simply turn their backs and refuse to acknowledge this elephant in the room – as with any technology, once it becomes available, it soon becomes widely accepted, and teachers need to learn to deal with it.

1.2 Relevance to Montenegro and Foreign Language Instruction

The context of this research is Montenegro as it is the context the authors live and work in. This study specifically seeks to determine the attitudes and level of knowledge of generative AI among the primary school teachers (that is to say, teachers of first to eighth grades) in Podgorica as the capital as well as the largest city. Since its declaration of independence in 2007, Montenegro has been working hard to modernize, including the education system. The focus of our research is foreign language teachers as emerging research suggests that language teachers often demonstrate greater openness to cultural diversity. Foreign language teachers are themselves lifelong learners, and by the nature of their profession are more aware of cultural and linguistic differences between their native tongue and the language they teach, and that in turn translates into a proactive stance toward adopting new technologies compared to educators in other disciplines.

1.3 Research Aim And Motivation

In this research, the main aim was to investigate the attitudes and level of knowledge among primary school foreign language teachers in Montenegro regarding the use of artificial intelligence (AI) in the classroom, with an eye towards employing their perspectives as an indicative benchmark for the broader teaching population in the country. This would be the first step to starting a discussion among all stakeholders on the collective stance of Montenegrin society in the development of a national AI policy.

1.4 Overview Of Article Structure

This article starts with the Introduction, followed by the Literature Review, Research Objectives, Methodology, Results and Conclusion.

2. Literature Review

2.1 Definitions and Origins of Generative AI

Generative artificial intelligence is an umbrella term for technologies that, through Machine Learning, Deep Learning and Neural Language Learning, generate text, images, audio and video. For the future employee or entrepreneur, these technologies have become an absolute necessity to master, as their use is increasing at a breakneck speed. In their 2024 Report [4], Institute for Human-Centered AI, Stanford University (HAI) have pointed out ten main points on the rise of AI, the key ones towards education being GenAI funding and investment rising both both in public and private sectors, that AI is shown to improve worker productivity and work quality, and across the world, more people have begun to adapt to and adopt AI in various tasks. There are negatives mentioned in the report as well – energy consumption and the lack of legislative measures add to the concerns regarding potential abuses and misuses of AI among the general public. Bowles and Kruger [5] and the US Office of Educational Technology [6] in their May 2023 Report both mention the need for all stakeholders in education to pay close attention to the developments in this constantly changing but very impactful field as it will definitely have a bearing on the future of work. In their report [6], the US Office of Educational Technology pointed out that educators are well-aware of both the potential for GenAI to bring improvements to their teaching and administrative tasks and the threats posed by a biased, or misinformed automated system.

As many researchers have pointed out, the uses of GenAI in an educational setting are numerous: from creating tests [2, 4, 8, 9, 10, 11, 12, 13] to lesson plans [2, 8, 9, 10, 11, 12, 13], to generating individualized study material [9, 10, 11, 12, 13] for specific students [2, 4, 7, 8, 9, 10, 11, 12, 13], to automatizing grading [2, 10, 11, 12, 13] and much more. The inclusion of AI in a smart classroom, where technology is used to connect the classroom to real-world situations and contexts, from the physical environment to the internet [1, 2, 12, 13] is another major adaptation in both primary and post-primary education. Smart classrooms have features that almost require AI to make full use of



their capacities, as the teacher deals with orchestrating the learning tasks, the AI monitors individual students, marks their responses, personalizes content based on their responses, allows a seamless integration with the internet and generally acts as an executive officer to the captain in the classroom that is the teacher.

That is of course possible with a Learning Management System (LMS) with an integrated AI [1, 12, 13] – whether in a virtual or augmented reality classroom, an educational robot or an integrated learning and surveillance system.

2.2 Educational Uses of AI

2.2a Administration

One use of AI that can truly help a teacher is by reducing the time spent in dealing with administrative tasks such as lesson planning and materials design. Lesson planning takes a tremendous amount of time, but free AI tools such as Copilot and ChatGPT are able to quickly and effectively create the backbone of the lesson plan, and even follow specific curriculum outlines and requirements. This ability of the AI to create or help formulate lessons plans is frequently mentioned in literature [1, 2, 4, 9,10]. Good teachers are able and willing to create and adapt materials to the requirements and needs of their students, but this takes uncounted hours and requires materials that may or may not be allocated to the teacher by the school or the relevant educational authorities. Having AI create such materials for a special needs or a highly talented student who may otherwise be over- or underchallenged by the lesson in a matter of minutes is a true gift of technology to the teacher as well as the learner. While the free versions of AI platforms frequently have limitations on both quality and quantity, it still aids in the personalization process. The authors have used CoPilot and ChatGPT to produce good and bad examples of materials for an English vocabulary lesson [1, 12, 13] Another administrative task that can be simplified by AI is communication: teachers are expected to write reports for students, for their management, for self-development, prepare and send out memos, emails, greeting and celebration cards and messages, to name a few. AI can help by not only creating these but also automating the sending times and days, so a busy teacher can prepare such a message ahead of time and the AI can post or mail [1, 2, 4, 6, 10, 11, 12, 13].

2.2b Assessment

Assessment is an area that can also benefit from AI assistance, from a pre-generated language skill assessment test for a learner to automated quizzes and tests for both self-check and teacher-led assessment. Teachers may use AI to both prepare unit or theme tests prior to the real assessment for students, and to assess their answers. Multiple choice tests can be totally automated, and even pre-set feedback can be fed to the AI. However, AI is fully capable of synthesizing feedback for the student, though it would be a good idea to check the accuracy. [1, 2, 4, 6, 10, 11, 12, 13].

2.2c Tutoring and Class Activities

One of the great ways AI can aid a teacher is by integrating target vocabulary or language structures easily in a story that can also incorporate elements from the class, such as names, places, details of the school/city/country/culture or adapting a general text into the context of the culture or the group. AI is supremely suitable for guided adaptation of materials to suit the level and complexity needs of a class. For language teachers, AI can provide real-world like dialogue or simulate a conversation as any person from history or fiction for the students to interact with in the target language. Creating thematic tests, quizzes and exercises (such as cloze tests, crossword puzzles, games and roleplays) are easily accomplished tasks for even free AI [1, 5, 6, 10, 11, 12, 13]. There is a growing number of free and AI resources available, from the near ubiquitous ChatGPT and the growing popularity of Gemini, Google Text-to-Speech, Canva for Educators with premium features available for teachers and students that help with personalizing education.

3. Research Objectives and Questions

The main goal of this research was to understand primary school FL teachers' knowledge, use, and perceptions of GenAI in our country, in order to start a discussion among the Montenegrin stakeholders.



Research questions:

The research focused on answering three main questions:

What are teachers' perceptions of AI in the classroom?

How do they approach its use?

To what extent do they currently apply AI tools?

4. Methodology

This research is qualitative descriptive. The research was carried out using a questionnaire (survey) as a basic research instrument in order to collect data on the frequency of use of generative artificial intelligence by teachers, the types of tasks for which artificial intelligence is used, their perceptions of the positive and negative impacts of artificial intelligence in primary education, and their attitudes regarding the future application of artificial intelligence in education.

The survey consists of two parts. In the first part, questions were asked about primary school teachers who teach foreign languages in public schools in Podgorica. The questions refer to their teaching engagements, the class they teach, as well as their years of work experience in education. These questions do not directly relate to the research questions asked in the survey. They are here to better understand where our research group is coming from. The second part of the survey involved questions about the level of knowledge of generative AI, the types of tasks for which AI is or can be employed for in the future, their perceptions of the positive and negative impacts of AI in primary schools as well as their current and future expectations towards its adoption and use.

5. Results

5.1 Demographics (Language Taught, Experience, Grade Levels)

Out of the 64 teachers who took part in the survey, 57.8% were teachers of English as a foreign language, 12.5% teachers of German, 10.9% of Italian, 9.4% of French and 7.8% of Russian. One participant is an English language trainee. The survey participants teach all grades from 1st to 9th grade of elementary school. In Montenegro, primary school comprises grades 1 to 9, with English being part of the curriculum from Grade 1, and a second foreign language from Grade 6. Thus most of the participants were teachers of Grade 6 and higher. The last question about the surveyed teachers was about their years of experience. We found out that the largest percentage of survey participants are teachers with 10-20 years of work experience (34.4%), followed by participants with 20 or more years of teaching experience (32.8%). Teachers with 2 to 5 years of work experience make up the third group (15.6%) and the fourth group was teachers with 5 to 10 years of work experience (12.5%). Surprisingly, the youngest group of teachers make up the smallest group of respondents with (4.7%). We posited this may be a reflection of the fact that junior teachers cannot easily find work in a public school.

5.2 Awareness of GenAI Tools

Regarding AI knowledge and use, 42.2% were familiar with AI in primary education, while 40.6% had only heard of the term. A notable 9.4% were completely unaware of AI in education, and only 1.6% considered themselves fully familiar.

5.3 Frequency and Context of Usage

The majority (54.7%) did not use generative AI tools in the classroom. However, some teachers reported using these tools for creating teaching materials (29.7%), supplementary teaching (21.9%), lesson plans (20.3%), and adapting individual student experiences (12.5%). Fewer teachers used AI for administrative tasks (10.9%), classroom assistance (9.4%), analyzing student data (7.8%), and assessment (4.7%). Common AI tools mentioned included ChatGPT, Bard/Gemini/CoPilot, and DALL-E.

5.4 Perceived Benefits and Barriers

The primary reason for not using generative AI tools was a lack of familiarity (48.4%). Other reasons included increased screen time (15.6%), lack of access to necessary technology (15.6%), the belief



that it has no place in the classroom (9.6%), concerns about bias (6.3%), and doubts about its benefits, moral implications, or accuracy (4.7%).

A significant percentage of teachers (35.9%) reported receiving no training in using generative AI tools, which aligns with the lack of official training from the Ministry of Education. Another 32.8% felt insufficiently trained, while 20.3% reported partial training. Only 9.4% considered themselves trained, and a mere 1.6% felt very trained.

When asked about the future impact of generative AI, 40.6% were unsure, 32.8% had a partially positive attitude, 12.5% a partially negative attitude, and 9.4% a very positive attitude. Only 4.7% expressed a very negative view.

The most desired form of support for using AI tools was better technical support and information (57.8%). Teachers also requested better-adapted AI tools (18.8%) and better integration with current systems (17.2%), while a smaller group (6.3%) indicated a need for training.

5.5. Expectations for the Future of AI

A majority of teachers (56.3%) believed that generative AI tools would be used more in the future, while 34.4% were unsure, and 9.4% did not think so. Regarding future use, teachers anticipated using generative AI tools primarily for creating teaching materials (25%) and supplementary teaching (23.4%). Smaller percentages foresaw using them for monitoring student progress (10.9%), classroom help (9.4%), lesson planning (6.3%), and analyzing student data, automating administrative tasks, and grading (all 3.1%). 15.6% were still unsure about their future use.

Based on the research results, we came to the conclusion that there is a lack of knowledge, will, and general unwillingness to use AI tools. There are also answers that highlight concerns about moral and ethical issues, the possibility of misuse of AI tools, lack of creativity, as well as issues related to data security.

All this tells us that it is necessary to provide training, and in order to get a clearer picture of the current situation regarding the application of AI tools in the classroom, it is necessary to conduct research like this on the territory of Montenegro, not only for primary schools, but also for secondary schools and universities.

5.6 Limitations of Study

There are several limitations to this survey. One of the main limitations of this survey is that it was only open to foreign language teachers in primary schools in Podgorica, and if we want to get a clearer picture of this issue, we should include all primary school teachers in Podgorica or even all primary school teachers in Montenegro.

6. Conclusion

What inspired us to do this survey were the latest developments in the field of artificial intelligence, the increasing number of students using or abusing the possibilities of artificial intelligence, as well as the constant debate among teachers about whether or not the increasing influence of artificial intelligence is positive or negative in both education and everyday life and where it all leads. This survey enabled us to collect feedback from teachers, as well as to better understand their attitudes, needs and concerns regarding the use of generative AI tools in the teaching of foreign languages in primary schools in Podgorica, and we believe that it also provides the opportunity to identify potential obstacles and opportunities for the introduction of generative AI tools in the educational process.

The results of this survey gave us an insight into the level of knowledge and skills of the surveyed teachers related to AI tools, which can be very useful for planning adequate training programs and developing the professional competencies of teachers. They can also influence the improvement of the quality of teaching in terms of developing strategies to improve the quality of teaching and learning and motivate teachers to get directly involved in the decision-making process related to the introduction of artificial intelligence in teaching and thus make the educational process more efficient.

This survey is also useful if we consider ethical and pedagogical issues, which are crucial to ensure that AI technologies are used in a pedagogical and responsible way.

The results of the survey did not surprise us at all, the majority of teachers are very poorly aware of the possibilities and limitations offered by generative AI tools, which is logical because until now there was no training organized by any official institution so that teachers could start implementing AI tools



in the classroom. What is worrying is the fact that many teachers think that AI tools can make the teaching process easier for the teacher, but they still do not intend to use these tools.

Once a clear picture is obtained, then the Government of Montenegro or the Ministry of Education, Science and Innovation or some other relevant institution can make decisions based on real results and decide what position to take in the future, such as: whether teachers should be trained to use AI tools in the classroom, which teachers should be trained first and after training provide mechanisms for checking whether and in what way these tools are used in the classroom.

We are of the opinion that it is not enough just to train teachers, but also to pass regulations, some universal act that regulates where, when and how AI tools should be implemented in primary, secondary schools and colleges. In this way, responsible and efficient use of this technology would be ensured. The act should establish clear guidelines for AI tool usage in teaching and administration, provide support for teachers to effectively integrate AI in classrooms, ensure consistent monitoring and evaluation of AI's impact on education, promote the ethical application of AI tools aligned with educational values and objectives, guarantee sufficient technological support for classroom implementation, foster equal access for all schools irrespective of location or socioeconomic factors, and include relevant regulations.

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