



## Assessment of digital tool impact in language education: Insights from educators and students

### *Impacto de las herramientas digitales en educación lingüística: Perspectiva de docentes y alumnos*

Tijana Gajić , Maja Veljković Michos , Aleksandra Gagić , Neda M. Maenza 

Singidunum University, Belgrade, Serbia

✉ [tgajic@singidunum.ac.rs](mailto:tgajic@singidunum.ac.rs)

Manuscript received: 15/08/2024

Manuscript accepted: 08/10/2024

Date of publication: 25/10/2024

**Abstract** — This study evaluates the implementation and impact of digital educational tools in foreign language classrooms from both educators' and students' perspectives in Serbian secondary schools before, during, and after the COVID-19 pandemic. The research investigates the digital tools used, the challenges faced, and the perceived benefits of these tools in enhancing teaching and learning experiences. Quantitative data were collected through online surveys administered to 173 language teachers and 126 fourth-year secondary students, focusing on their experiences with digital tools in various instructional models—traditional, online, and hybrid. Results reveal significant discrepancies between teachers' and students' perceptions of digital tool usage and its frequency. While the majority of teachers reported frequent use of digital tools, students indicated less frequent exposure. Key findings indicate that digital tools like Google Classroom, Kahoot!, and Quizziz were widely used during the pandemic and continued to be utilized post-pandemic. Teachers highlighted the need for comprehensive training in digital competencies to integrate these tools into their teaching practices effectively. Both educators and students acknowledged the benefits of digital tools in creating dynamic and engaging learning environments, yet challenges such as maintaining student motivation and balancing attention in hybrid models were noted. This study underscores the importance of aligning training programs with teachers' needs and suggests future research to assess the effectiveness of such programs and explore non-technology-related factors influencing digital tool adoption in foreign language teaching.

**Keywords** — digital educational tools, foreign language teaching, COVID-19 pandemic, learning environments, teacher training.

**Resumen** — Este estudio evalúa la implementación e impacto de las herramientas educativas digitales en las clases de lenguas extranjeras desde las perspectivas de educadores y estudiantes en escuelas secundarias serbias antes, durante y después de la pandemia de COVID-19. La investigación examina las herramientas digitales utilizadas, los desafíos enfrentados y los beneficios percibidos de estas herramientas para mejorar las experiencias de enseñanza y aprendizaje. Se recopilieron datos cuantitativos a través de encuestas en línea administradas a 173 profesores de idiomas y 126 estudiantes de cuarto año de secundaria, centrándose en sus experiencias con herramientas digitales en diversos modelos educativos: tradicional, en línea e híbrido. Los resultados revelan discrepancias significativas entre las percepciones de los docentes y los estudiantes sobre el uso de herramientas digitales y su frecuencia. Mientras que la mayoría de los profesores reportaron un uso frecuente de estas herramientas, los estudiantes indicaron una exposición menos frecuente. Los hallazgos clave indican que herramientas digitales como Google Classroom, Kahoot! y Quizziz fueron ampliamente utilizadas durante la pandemia y continuaron siendo empleadas después de ella. Los docentes destacaron la necesidad de una formación integral en competencias digitales para integrar eficazmente estas herramientas en sus prácticas pedagógicas. Tanto educadores como estudiantes reconocieron los beneficios de las herramientas digitales para crear entornos de aprendizaje dinámicos y atractivos, aunque se señalaron desafíos como el mantenimiento de la motivación estudiantil y el equilibrio de la atención en modelos híbridos. Este estudio subraya la importancia de alinear los programas de formación con las necesidades de los docentes y sugiere futuras investigaciones para evaluar la eficacia de dichos programas y explorar factores no relacionados con la tecnología que influyen en la adopción de herramientas digitales en la enseñanza de lenguas extranjeras.

**Palabras clave** — herramientas educativas digitales, enseñanza de lenguas extranjeras, pandemia de COVID-19, entornos de aprendizaje, formación docente.

**How to Cite:** Gajić, T., Veljković Michos, M., Gagić, A., & M. Maenza, N. (2024). Impacto de las Herramientas Digitales en Educación Lingüística: Perspectiva de Docentes y Alumnos. *Revista Publicando*, 11(44), 14-34. <https://doi.org/10.51528/rp.vol11.id2435>





## INTRODUCTION

**D**ue to global changes in education caused by the emergence of the coronavirus, teachers, students, and educational institutions have had to suddenly switch to the new educational reality, where they confronted both, the advantages and disadvantages of online or hybrid environments and had to use a variety of digital tools as a prerogative in teaching and learning practices (Koet & Aziz, 2021). In the same context, UNESCO reported that the pandemic had transformed the educational environment, not only in the form of using platforms and applications but also in the form of acquiring new digital knowledge and competences that would help to effective learning in a new digital environment (COVID-19 Report ECLAC-UNESCO, 2020). These changes implied new or more active engagement of educators and teachers regardless of their teaching subject: regular training, development of a variety of skills, and use of technological resources to enhance teaching practices in such circumstances. Lošonc et al. (2021) indicate that the state of emergency caused by the pandemic required emergency measures that could be named "technologization of education."

Nevertheless, the constant development of technology is still transforming educational systems. Contemporary teaching has become hybrid or blended, being performed both synchronously and asynchronously. Technological tools are indispensable for the modern digital and effective classroom experience. In addition, for effective learning in the online environment, teachers must encourage students to be active participants as if they were present in person in the class (Sadiku et al., 2018). Such circumstances imply students' participation, interaction, cooperation, and active learning, while educators provide students with immediate feedback, and create authentic and interesting teaching materials, respecting students' needs and differences. For these purposes, technological aids can help teachers to support innovative methodologies in both face-to-face and online environments, as a familiar and motivating tool for students, to develop the knowledge and skills they need in a digital age (Bates, 2022). However, teachers must adopt and improve various skills, starting with technological, pedagogical, and content knowledge, as was proposed in the framework designed by Mishra and Koehler (2006). Besides that, other skills such as digital literacy, cultural awareness, and multilingual competencies are recommended for lifelong learning by the European Council (2018). This institution adopted a document as a reference tool with recommendations on eight key competencies, including personal, social, and learning-to-learn competence, among others, to enhance educational opportunities in contemporary society. The recommendation promotes innovative learning approaches, and the modernization of higher education and assessment methods, and supports educators and learners to achieve their learning needs at all levels. More recently and in the same context, the EU (2020) adopted the Digital Education Action Plan (2021-2027), to provide an updated educational framework that relies on a digital environment and tools to help all education systems confront digital challenges and understand the opportunities for better teaching and learning. On the other hand, the Common European Framework of Reference for Languages (CEFR), in their updated Companion Volume, fosters action-oriented teaching and learning, prioritizing interaction, collaboration, and autonomous learning through online discussion, and using the Internet and web-based tools for spoken or written tasks (Council of Europe, 2020). Both educators and students in different



educational levels and places recognized the positive and negative aspects of digital technology and online teaching environments, prioritizing the in-class interaction and the teacher's role as essential elements for effective language learning (Diert-Boté, 2023).

For this reason, the digital education framework was adopted by the European Commission to provide directions and support to teachers in the newly imposed educational environments (EU, 2020).

Following these world educational trends, the digital competencies framework for teachers was also implemented in the Republic of Serbia to describe competencies necessary for teachers and students to improve the quality of education development in a digital era (Framework of Digital Competencies – Teacher for the Digital Age, 2019).

In the same context, teachers conducted various research regarding teaching experiences in an online or hybrid environment (Gavranović et al., 2024; Maenza et al., 2024; Vidosavljević, 2023; Gagić et al., 2023; Veljković Michos & Bošković Marković, 2021; Gajić & Maenza, 2019). The results showed that their digital competencies became one of the essential skills, to support effective teaching practices assessment and interaction in the classroom, confirming that the role of the teacher and human interaction are essentially significant for learners and effective personalized learning process. Based on research conducted with Serbian educators, incorporating digital tools in language teaching fosters autonomy, motivation, and creativity among students, enriching their language learning journey. The pedagogical implications highlight the importance of using diverse digital tools to accommodate varied learning styles, thereby enhancing students' critical thinking and problem-solving abilities. Research conducted with students suggests that the foremost benefit of integrating digital tools into foreign language instruction is the development of an engaging and dynamic learning environment. Following the frameworks and standards, but also doing continuous research with learners and language teachers, within specific educational environments, significant data can be acquired to explore and evaluate, allowing educators at all levels to improve and update their teaching practices.

## METHODOLOGY

This section describes the participant characteristics, the research objectives, questions, hypotheses, and the questionnaire structure.

### Research Objectives, Questions, and Hypotheses

The study seeks to identify the digital tools employed in language teaching in Serbian secondary schools before, during, and after the COVID-19 pandemic, and to analyze the primary challenges faced by language teachers and their students during this period. Additionally, the research aims to highlight contemporary trends in language instruction and evaluate the pros and cons of using digital tools to motivate students, thereby informing decisions on their effective integration into teaching curricula. It is also of the utmost importance to explore diverse ways digital tools can be used as methodologically versatile tools for foreign language teaching and learning, as well as to



understand how to choose digital tools for certain foreign language learning and teaching scenarios and the potentials of these digital tools (Strasser, 2023). The roles of teachers and learners will be discussed in the context of distance learning, blended learning, and face-to-face learning.

In this context, the researchers aim to address the following questions:

**RQ1:** How do foreign language teachers and their students perceive the differences between online and face-to-face instruction? Which form of instruction is more challenging for one or both parties involved in the teaching process, and why?

**RQ2:** Which digital tools have teachers used to enhance student motivation and facilitate interaction in online learning environments? Do students believe teachers have successfully exploited these tools and achieved educational objectives?

Thus, the following hypotheses are proposed:

**H1:** The online learning environment is far more challenging for both teachers and students compared to face-to-face instruction.

**H2:** Teachers have predominantly utilized digital tools in the online learning environment (for the first time). The use of digital tools has been well-received by students.

## **Instrument**

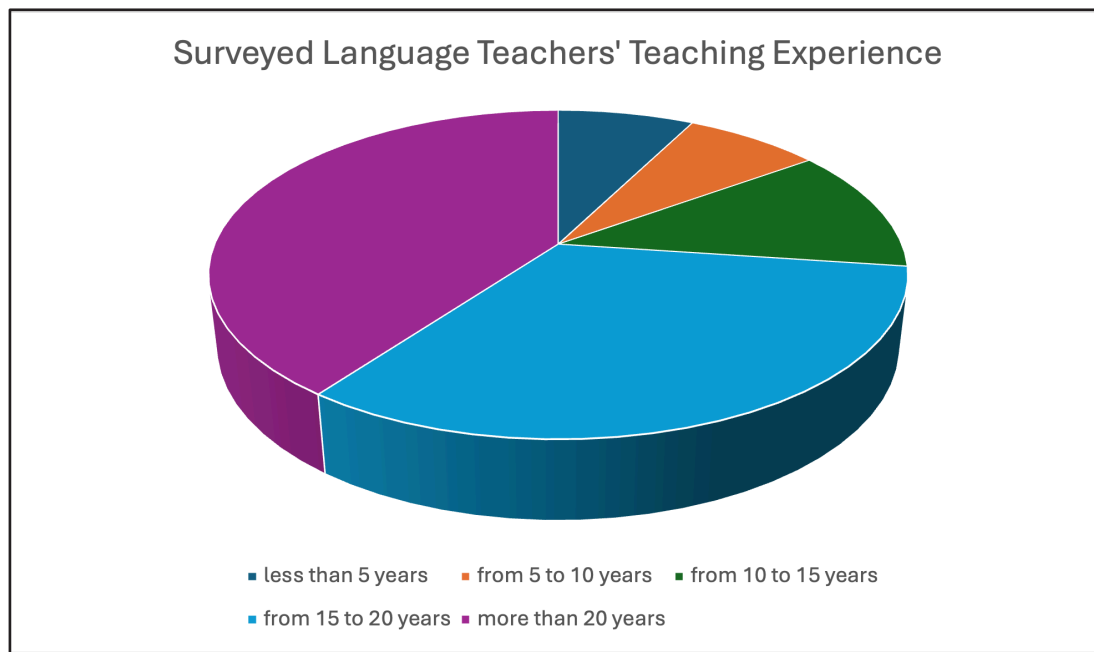
The research was conducted in 2023. Quantitative research was conducted through two online surveys distributed to respondents via email and various communication channels, including personal contacts. This research aimed to analyze the overall perceptions of digital tools in language teaching and learning among teachers and students before, during, and after the COVID-19 pandemic. The questionnaires, specifically designed for this study, were written in Serbian, and completed anonymously and voluntarily by teachers and students. Each survey included nine multiple-choice questions and two open-ended questions. In that way, respondents had the opportunity to provide their own responses in the form of comments and/or suggestions, allowing for a deeper understanding of their thoughts, attitudes, and genuine needs. The research employs data analysis and synthesis methods, which are then interpreted, compared, and analyzed in the paper's main section, along with graphical representations.

## **Participants**

The teachers' online questionnaire was done by 173 respondents. The respondents were secondary school language teachers from Serbia, primarily teaching English as a foreign language, with some also teaching French, Russian, Norwegian, Spanish, and German. Most of the surveyed teachers have extensive experience, with 33% having taught for over twenty years. Only a small percentage of respondents have been teaching for less than five years. Due to the online data collection method employed, the researchers could not control the respondents' distribution regarding the foreign languages they teach.



**Figure 1:** *Surveyed Language Teachers' Teaching Experience*



The students' online questionnaire was done by 126 respondents. The respondents were fourth-year secondary school students from Serbia. When distributing the questionnaire, the decision was made to target only the fourth-year secondary school students because they had experience with online, face-to-face, and hybrid learning environments and researchers were hoping to get insights into their actual needs in terms of digital tools.

The relatively small sample sizes of 173 teachers and 126 students limit the ability to generalize the findings, especially given the diversity of languages and learning environments. These results are specific to the study's context. Larger and more diverse samples in future research are recommended to validate these findings and expand their relevance to broader educational contexts.

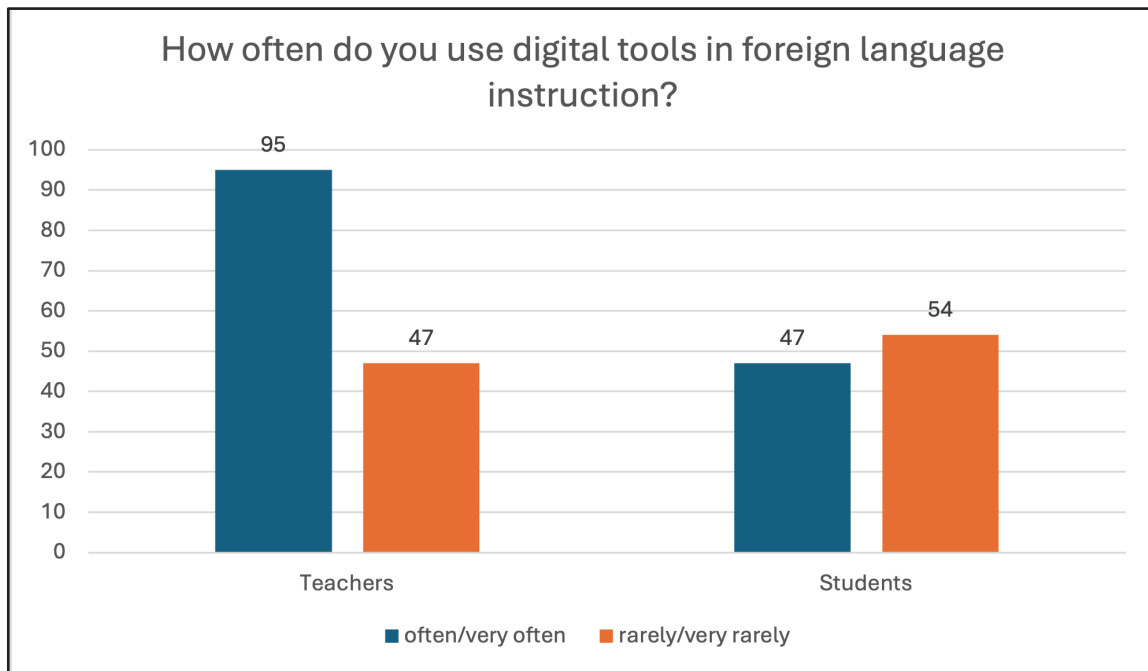
## RESULTS AND DISCUSSION

This section presents and discusses the results of the study. Researchers aim to present a comparative analysis of responses from foreign language teachers and high school students in the Republic of Serbia regarding the usage and utility of digital tools in foreign language instruction before, during, and after the COVID-19 pandemic.

In responding to the first two questions aimed at determining whether and how often digital tools were used in foreign language classes before the COVID-19 pandemic, the responses of teachers and students differ considerably. A significant majority of teachers, encompassing 95.38% of respondents, reported employing digital tools in the instruction of foreign languages. Conversely,

only 62.7% of students affirmed the use of digital tools by their instructors. Regarding the frequency of digital tools usage, a parallel trend emerges. Approximately 54.91% of teachers indicated frequent or very frequent usage (defined as at least once a week), whereas only 37.3% of students confirmed this trend. Additionally, findings revealed that 27.17% of teachers reported rare or exceedingly rare implementation of digital tools (a few times a year). In contrast, 42.86% of students indicated infrequent exposure to digital tools in foreign language instruction.

**Figure 2.** *Digital tools usage frequency*

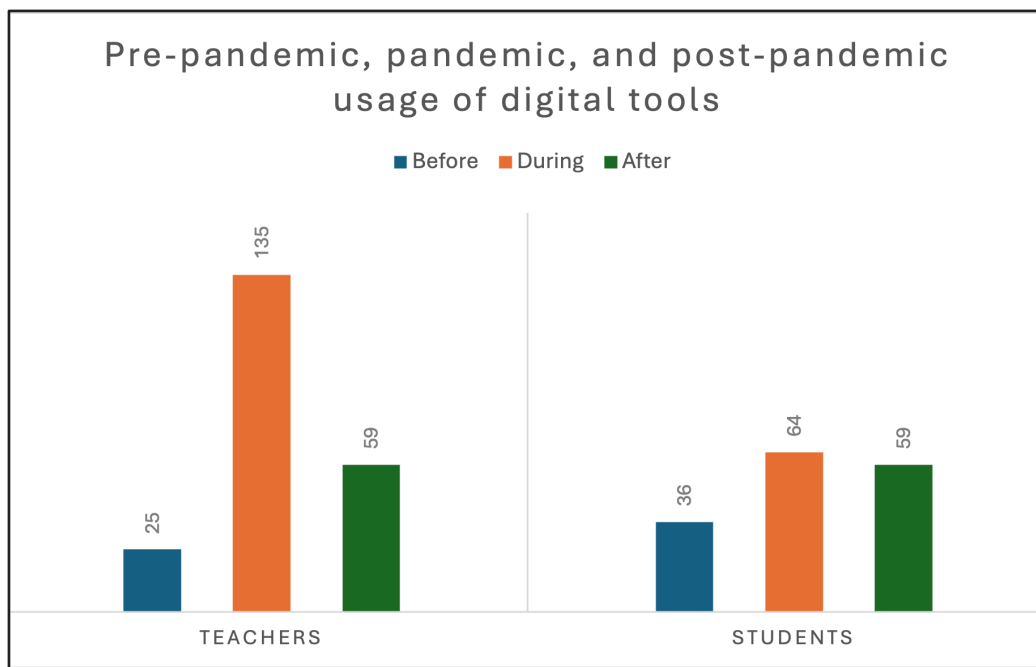


The subsequent inquiry pertained to the prevalent platform employed during the COVID-19 pandemic in the Republic of Serbia. Given that the selection was largely dictated by educational institutions, minimal disparity was evident between the responses of teachers and students. Teachers overwhelmingly cited Google Classroom as their primary platform of use (80.35%), with a smaller proportion employing the Microsoft Teams platform to some degree (9.25%). Similarly, students predominantly indicated using Google Classroom (85.71%), while approximately 2% reported utilizing MS Teams.

The subsequent query explores the patterns of digital tool utilization during and post the COVID-19 pandemic. Throughout the pandemic, 78% of educators reported a heightened frequency in digital tool usage compared to pre-pandemic levels, a trend anticipated given the remote learning shift. Conversely, only approximately 7% of teachers abstained from employing digital tools entirely during the pandemic period. Approximately 14% of respondents maintained a consistent usage level of ICT before and during the pandemic. Post-pandemic, approximately 74% of teachers continued integrating ICT into their instructional practices, while 26% discontinued using ICT entirely.



**Figure 3.** *Pre-pandemic, pandemic, and post-pandemic usage of digital tools*



However, student responses reveal distinctive perspectives. Approximately 51% of students reported regular application of ICT by their instructors during the pandemic, while approximately 20% indicated no exposure to ICT in foreign language classes. The remaining respondents confirmed that their teachers consistently employed ICT before and during the pandemic. In the post-pandemic period, students reported that approximately 18% of their teachers continued regular use of digital tools, while nearly 47% maintained the same frequency of usage as during the pandemic. A considerable proportion, approximately 35% of teachers, discontinued using digital tools entirely.

Teachers and students may have different perceptions of what represents the regular use of digital tools. Teachers may consider their usage to be consistent, while students may perceive it as infrequent. Researchers believe that classroom management is one of the most critical issues to be discussed at this point. Teachers may employ digital tools for administrative tasks or supplemental materials, which students may not perceive as frequent usage during language instruction. Furthermore, students may not always be aware of all instances of digital tool usage in the classroom, especially if it occurs behind the scenes or during preparation by the teacher. Finally, teachers and students may have different interpretations when reporting their usage of digital tools, leading to discrepancies in their responses.

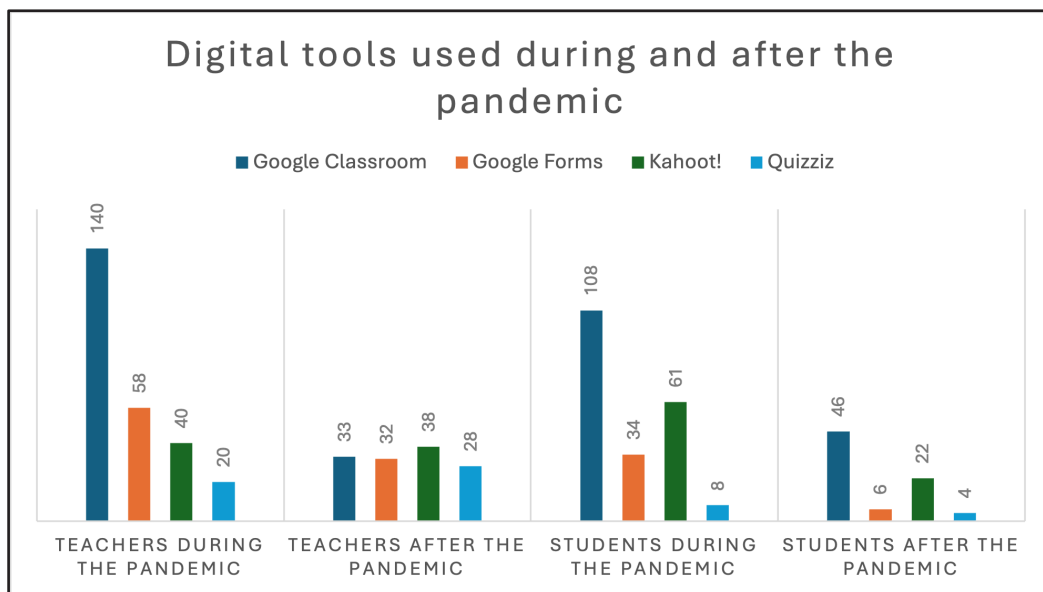
The subsequent section of the questionnaire explores the specific digital tools teachers implemented during and after the pandemic. Amidst the pandemic, teachers primarily reported employing Google Forms (34%), Kahoot! (23%), and Quizziz (12%). The use of Google Classroom during the pandemic was the official choice of educational institutions. Noteworthy tools that



continued to hold prominence post-pandemic, as indicated by teachers, include Kahoot! (22%), Google Classroom (19%), Google Forms (18.5%), and Quizziz (16%). Additionally, teachers maintained the use of supplementary tools and apps such as Duolingo, WordUp, Paddle, Socrative, Wordwall, and Mentimeter, albeit to a lesser extent.

Conversely, student responses revealed predominant usage of Kahoot! (49%), Google Forms (27%), and Quizziz (7%) during the pandemic, with a continued reliance on Google Classroom (37%) and Kahoot! (18%) post-pandemic. Additionally, students mentioned employing supplementary platforms, including Duolingo, WordUp, Paddle, Socrative, Wordwall, Mentimeter, YouTube, and social media, among others.

**Figure 4.** Digital tools during and after the pandemic



The following question posed to high school students pertains to their motivation for learning and represents one of the pivotal inquiries in this questionnaire. Researchers were interested in whether foreign language teachers succeeded in further motivating students through the utilization of digital tools in teaching. Student opinions were divided. Approximately 33% of students prefer the use of digital tools in every or nearly every class. For them, digital tools contribute to better class dynamics, engage students in the learning process, including those who are not always active, foster a relaxed atmosphere in the classroom, and create the illusion of gaming. About 25% of students believe that the best combination involves traditional and innovative methods; they like digital tools but do not wish to use them in every class.

Conversely, around 10% of students prefer the traditional method of teaching. They agree that digital tools should be used occasionally, but only a few times per year. Most concerning is the data indicating that approximately 25% of students responded that they are completely indifferent to whether teachers use digital tools in teaching or not. These students, by their admission, are





difficult to motivate, and a sense of indifference often prevails among them. Researchers believe that a complicated interaction of individual and social factors may be the cause of students' disinterest in instructional strategies. Teachers may assist students become more motivated and engaged by being aware of these characteristics and using various teaching tactics customized to each student's requirements and preferences.

The following question pertained to the preferred teaching model and was posed to both foreign language instructors and students. Students and instructors were asked to elaborate on their responses and identify their greatest challenges in traditional, online, and hybrid teaching models. Approximately 36% of teachers perceive online teaching as the most challenging form of instruction to conduct. Educators cite a lack of student motivation, attention deficit, or the inability to sustain focus throughout the 45-minute duration of a class as primary concerns. Conversely, teachers acknowledge that they have found themselves, particularly amid the COVID-19 pandemic, lacking sufficient digital competencies to design and deliver online lessons effectively. Similar rationales are articulated by educators facing the challenges of hybrid instruction. They further note the specific difficulty they encounter in managing what is termed as "divided attention." There is an ongoing uncertainty in their ability to balance engagement between in-person and online students simultaneously. Johansson and Söderlund (2018) discovered that teachers' effective implementation of digital tools relies on their competence, which is rooted in the TPACK model. This model comprises three distinct components: technological knowledge, content knowledge, and pedagogical knowledge. The interviews with educators suggest a need for more comprehensive and intensive professional development to foster confidence and a deeper understanding of the use of digital tools. Approximately 13% of teachers express significant difficulty navigating the concept of hybrid instruction. Delivering high-quality online and hybrid instruction also demands significantly more preparation time for teachers who are already burdened with administrative responsibilities. These additional duties often impinge upon teachers' enthusiasm. Nearly all teachers cite the students' response to digital platforms such as Kahoot and Quizziz as a positive aspect. These digital tools have proven to be particularly effective in student assessment. Both teachers and students regard Kahoot and Quizziz as excellent resources for formative assessment, aligning with findings from other researchers (Degirmenci, 2021; Tao & Zou, 2023; Author et al., 2023). Gamification positively impacts student motivation, classroom interaction, and engagement, and reduces anxiety during testing. Conversely, only about 8% of educators identify traditional, classroom-based teaching as their primary challenge. The most common reason cited is the difficulty in maintaining discipline within the classroom, especially in large student cohorts. Particularly challenging are large groups comprising students of varying levels of proficiency.

On the other hand, 36% of students perceive online teaching as the most challenging form of instruction to conduct. Around 30% of them believe the hybrid learning model is the most demanding one for both teachers and students, and approximately 20% of students find the traditional teaching model the most difficult one. Students expressed dissatisfaction with remote learning due to a diminished sense of social interaction, while also acknowledging its benefits, including the flexibility of time and location. The predominant themes identified in students'



feedback regarding their experience with online and/or hybrid learning encompassed the absence of human interaction, social bonds, self-drive, and focus. Interestingly, they also highlighted the acceptance of personal responsibility as one of the factors that greatly influenced their learning experience, which is in line with similar research conducted worldwide (Al-Mawee et al., 2021). When it comes to traditional instruction, the primary challenges cited by students include the considerable time spent commuting to and from school, and a sense of anxiety and tension, particularly heightened during the COVID-19 pandemic and persisting post-pandemic. However, numerous benefits of classroom-based traditional instruction were highlighted, such as socialization, extracurricular activities, enhanced focus on specific topics and teacher instruction, and the subjective perception of easier learning when physically present in school.

Based on a detailed analysis of teachers' and students' responses, research concludes that both hypotheses have been confirmed. Both educators and students perceive online and hybrid instruction as more challenging compared to traditional teaching methods. This was particularly evident during the outbreak of the COVID-19 pandemic when all participants in the educational process practically overnight had to transition from traditional to digital instruction. However, during the online instruction they were compelled to conduct, teachers began introducing digital tools for the first time to enhance interactivity in the virtual classroom and boost student motivation and enthusiasm. Some of these digital tools, such as Kahoot and Quizziz, have proven particularly effective due to their gamified elements, not only in terms of classroom atmosphere but also in formative assessment. In addition to these digital platforms, a significant percentage of teachers have continued to use Google Classroom, Google Forms, and Microsoft Forms to consolidate all necessary instructional materials for students in one place to facilitate learning progress. These tools are also employed for assigning homework tasks. The majority of students have warmly embraced digital tools in foreign language instruction, perceiving them as beneficial aids that inject an element of enjoyment and refreshment into the classroom. However, it is concerning that a certain number of students are highly resistant to motivation, regardless of the tools and techniques employed.

The research findings indicate that foreign language teachers generally hold a positive attitude towards digital tools in the classroom, both in the context of virtual and traditional instruction. Their perceptions are influenced by their attitudes towards the adoption of modern technologies (especially among older teachers), subjective assessment of their own ICT skills, prior experience, institutional support, access to the internet in classrooms, time constraints, and student reactions. Teachers particularly emphasize the need for specialized training in this area to enable them to use digital tools in teaching with greater confidence. Their request entails resources that are pragmatic and readily adaptable for their implementation. Conversely, researchers, who are also responsible for designing and implementing such training programs, consider teachers' feedback crucial for shaping future programs and tailoring training to the specific needs of teachers in secondary schools in Serbia. Therefore, future research in this field could focus on assessing the effectiveness of training programs for foreign language teachers as well the influence of the work environment on facilitating the implementation of digital tools, thereby fostering supportive settings for foreign language educators. According to similar research, non-technology-related factors such as cultural



factors and regional variations may influence technology acceptance among foreign language teachers (Sim & Ismail, 2023). The implications of our findings extend to both theoretical frameworks and practical applications in pre-service and in-service teacher education.

## CONCLUSION

In conclusion, this study provided a comprehensive analysis of digital tools' usage and perceived utility in foreign language instruction among teachers and high school students in the Republic of Serbia, before, during, and after the COVID-19 pandemic. The results revealed significant disparities between teachers' and students' perspectives on the frequency and efficacy of digital tool usage and challenges encountered in different instructional models.

Teachers overwhelmingly reported employing digital tools in foreign language instruction, with Google Classroom emerging as the predominant platform during the pandemic. While the majority of teachers increased their usage of digital tools during the pandemic and continued to integrate them post-pandemic, a notable proportion discontinued their use entirely. On the other hand, students reported varying levels of exposure to digital tools, with a considerable percentage expressing indifference toward their use.

The study highlighted the importance of understanding the discrepancy between teachers' and students' perceptions of digital tool usage. Teachers may perceive their usage as consistent, whereas students may interpret it as infrequent. Classroom management emerged as a crucial issue, with teachers using digital tools for administrative tasks or supplementary materials, which may not always be perceived as frequent usage by students.

Furthermore, the findings underscored the need for comprehensive and intensive professional development for teachers to foster confidence and deeper understanding in the utilization of digital tools. Teachers emphasized the importance of practical and easily adaptable resources tailored to their needs, suggesting a gap between existing training programs and the specific requirements of teachers in Serbian secondary schools.

Looking ahead, future research could focus on assessing the effectiveness of training programs for foreign language teachers and examining the influence of non-technology-related factors on technology acceptance. By addressing these issues, educators can better navigate the integration of digital tools into foreign language instruction, ultimately enhancing the learning experience for students.



## REFERENCES

- Al-Mawee, W., Kwayu, K. M., & Gharaibeh, T. (2021). Student's perspective on distance learning during COVID-19 pandemic: A case study of Western Michigan University, United States. *International journal of educational research open*, 2, 100080. <https://doi.org/10.1016/j.ijedro.2021.100080>
- Bates, A.W. (2022). *Teaching in a Digital Age: Guidelines for Designing Teaching and Learning* (3rd ed.). Tony Bates Associates Ltd. <https://pressbooks.bccampus.ca/teachinginadigitalagev2/>
- Council of Europe (2020). *Common European Framework of Reference for Languages: Learning, teaching, assessment – Companion volume*. Council of Europe Publishing, Strasbourg. [www.coe.int/lang-cefr](http://www.coe.int/lang-cefr).
- Council Recommendation of 22 May 2018 on key competences for lifelong learning (2018). *Official Journal of the European Union*, C 189/7, 1-13. [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0604\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0604(01))
- Degirmenci, R. (2021). The Use of Quizizz in Language Learning and Teaching from the Teachers' and Students' Perspectives: A Literature Review. *Language Education and Technology (LET Journal)*, 1(1), 1-11.
- Diert-Boté, I. (2023). Positivity in the English language learning classroom: Analyzing teacher-student moments of contact. *Spanish Journal of Applied Linguistics*, 36(2), 357-385. <https://doi.org/10.1075/resla.20057.die>
- European Union (2020). *Digital Education Action Plan (2021-2027)*. <https://education.ec.europa.eu/focus-topics/digitaleducation/action-plan>.
- Gajić, A., Gajić, T., Gavranović, V., Maenza, N., & Veljković Michos, M. (2023). Digital Tools for Language Learning: Exploring Teachers' Innovative and Engaging Practices. *International Scientific Conference on Information Technology, Computer Science, and Data Science Sinteza 2023 Book of Proceedings*, 281-287. <https://doi.org/10.15308/Sinteza-2023-281-287>
- Gajić, T., & Maenza, N. (2019). Mobile Applications in Teaching Foreign Languages in Tertiary Education. *Teaching Innovations*, 32(4), 133-142.
- Gavranović, V., Michos, M. V., & Alčaković, S. (2024). Utilización de la evaluación formativa para mejorar los resultados de aprendizaje de estudiantes en los ambientes híbridos de la enseñanza superior. *Didáctica. Lengua y literatura*, (36), 145-152. <https://dx.doi.org/10.5209/dill.87558>
- Johansson, W., & Söderlund, A. (2018). *Teachers' Views on Digital Tools in the English as a Second Language Classroom*. Unpublished Thesis. Malmö University.
- Koet, T. W., & Aziz, A. A. (2021). Teachers' and Students' Perceptions towards Distance Learning during the Covid-19 Pandemic: A Systematic Review. *International Journal of Academic*



- Research in Progressive Education and Development, 10(3), 531–562. <http://dx.doi.org/10.6007/IJARPED/v10-i3/11005>
- Lošonc, A., Ivanišević, A., Katić, I., Radišić, M., & Pavlović, A. (2021). Online Learning: Adapting to the Pandemic or the Definitive Technologization of Education? XXVII Conference on Development Trends: Online Teaching at Universities Proceedings, 62-65.
- Maenza, N., Gajic, T., Veljković Michos, M., & Gagić, A. (2024). Understanding the Role of Digital Tools in Serbian High School Language Education. International Scientific Conference on Information Technology, Computer Science, and Data Science Sinteza 2024 Book of Proceedings, 304-309. <https://doi.org/10.15308/Sinteza-2024-304-309>
- Ministry of Education, Science and Technological Development (2019). Digital Competence Framework – Teacher for the Digital Age 2019. [https://prosveta.gov.rs/wp-content/uploads/2021/10/2019\\_ODK\\_Nastavnik-za-digitalno-doba.pdf](https://prosveta.gov.rs/wp-content/uploads/2021/10/2019_ODK_Nastavnik-za-digitalno-doba.pdf)
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. Teachers College Record, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Sadiku, M. N., Adebo, P. O., & Musa, S. M. (2018). Online teaching and learning. International Journals of Advanced Research in Computer Science and Software Engineering, 8(2), 73-75. <https://doi.org/10.1177/10567879231202485>
- Sim, J., & Ismail, H. (2023). Using Digital Tools in Teaching and Learning English: Delving into English Language Teachers' Perspectives. Creative Education, 14, 2021-2036. <https://doi.org/10.4236/ce.2023.1410129>
- Strasser, T. (2023). Digital tools in foreign language teaching and learning: Educational applications. In N. Pachler & A. Redondo (Eds.), A Practical Guide to Teaching Foreign Languages in the Secondary School (3rd ed., pp. 62-80). Routledge.
- Tao, Y., & Zou, B. (2023). Students' perceptions of the use of Kahoot! in English as a foreign language classroom learning context. Computer Assisted Language Learning, 36(8), 1668-1687, <https://doi.org/10.1080/09588221.2021.2011323>
- United Nations (2020). Education in the time of Covid-19 Report. [https://repositorio.cepal.org/bitstream/handle/11362/45905/1/S2000509\\_en.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45905/1/S2000509_en.pdf)
- Veljković Michos, M., & Bošković Marković, V. (2021). Information and Communication Technologies in Foreign Language Teaching before and during Covid-19 Pandemic: A Review of Research at University Level. Annals of the Faculty of Philology, 33(2), 135-150. <https://doi.org/10.18485/analiff.2021.33.2.7>
- Vidosavljević, M. (2023). Foreign Language Teaching in a Digital Environment: Teachers' Attitudes and Beliefs. Philologist – journal of language, literary and cultural studies, 14(27), 153-172. <https://doi.org/10.21618/fil2327153v>



## APPENDIX 1. DIGITALNI ALATI U NASTAVI STRANIH JEZIKA – PERSPEKTIVA UČENIKA

Molimo vas da popunite ovaj kratak upitnik kako biste nam pomogli da bolje razumemo značaj i upotrebu digitalnih alata u nastavi stranih jezika iz perspektive učenika. Upitnik je anoniman i planirano trajanje je 5-10 minuta.

*Da li vaši nastavnici stranih jezika koriste digitalne alate (mobilne aplikacije, online kvizove i slično) na časovima stranih jezika u učionici?*

- Da
- Ne

*Ukoliko ste na prethodno pitanje odgovorili potvrdno, navedite koliko često vaši nastavnici stranih jezika koriste digitalne alate u neposrednom obliku nastave u učionici?*

- Na svakom času
- Jednom nedeljno
- Jednom mesečno
- Nekoliko puta godišnje

*Da li ste nastavu na daljinu, tokom pandemije Kovida 19, realizovali putem neke od dostupnih digitalnih platformi?*

- Da
- Ne

*Koju platformu ste koristili tokom izvođenja onlajn nastave?*

- Google Classroom
- Microsoft Teams
- Zoom
- Drugo

*Da li su tokom izvođenja onlajn nastave vaši nastavnici stranih jezika češće koristili digitalne alate nego u neposrednom obliku nastave u učionici?*

- Da
- Ne

Podjednako

*Koje digitalne alate su vaši nastavnici stranih jezika najčešće koristili u onlajn nastavi?*

- Kahoot



- Quizziz
- Mentimeter
- Google Forms
- Duolingo
- HelloTalk
- WordUp
- Drugo

*Koja od ponuđenih opcija iz prethodnog pitanja vam se najviše dopada i zašto?*

*Da li su vaši nastavnici stranih jezika nakon pandemije u neposrednom obliku nastave nastavili da koriste digitalne alate koje su koristili u onlajn nastavi tokom pandemije?*

- Da
- Ne
- Da, ali ne u toj meri

*Koje digitalne alate ste nastavili da koristite u neposrednoj nastavi nakon pandemije?*

*Da li su vaši nastavnici stranih jezika uspeali da vas motivišu upotrebom digitalnih alata u nastavi?*

- Da, više mi se dopada kada koristimo digitalne alate u nastavi
- Ne, više mi se dopada tradicionalni način, bez digitalnih alata
- Najbolja je kombinacija
- Svejedno mi je
- Drugo

*Koji oblik nastave - uživo ili onlajn - za vas predstavlja najveći izazov i zašto?*



## APPENDIX 2. DIGITAL TOOLS IN FOREIGN LANGUAGE TEACHING – STUDENTS' PERSPECTIVE

Please complete this short questionnaire to help us better understand the importance and use of digital tools in foreign language teaching from the students' perspective. The questionnaire is anonymous, and it is estimated to take 5-10 minutes.

*Do your foreign language teachers use digital tools (mobile apps, online quizzes, etc.) in foreign language classes in the classroom?*

- Yes
- No

*If you answered "yes" to the previous question, how often do your foreign language teachers use digital tools during in-person classes in the classroom?*

- In every class
- Once a week
- Once a month
- A few times a year

*Did you participate in online learning during the COVID-19 pandemic using one of the available digital platforms?*

- Yes
- No

*Which platform did you use for online learning?*

- Google Classroom
- Microsoft Teams
- Zoom
- Other

*Did your foreign language teachers use digital tools more frequently during online learning than during in-person classroom instruction?*

- Yes
- No
- Equally

*Which digital tools did your foreign language teachers use most often during online learning?*

- Kahoot
- Quizziz





- Mentimeter
- Google Forms
- Duolingo
- HelloTalk
- WordUp
- Other

*Which of the options from the previous question did you like the most, and why?*

*After the pandemic, did your foreign language teachers continue using the digital tools in in-person instruction that they used during online learning?*

- Yes
- No
- Yes, but not as much

*Which digital tools did you continue using in in-person classes after the pandemic?*

*Did your foreign language teachers manage to motivate you by using digital tools in class?*

- Yes, I prefer classes with digital tools
- No, I prefer the traditional method without digital tools
- The best option is a combination
- I don't mind either way
- Other

*Which form of teaching - in-person or online - do you find the most challenging, and why?*



### APPENDIX 3. DIGITALNI ALATI U NASTAVI STRANIH JEZIKA – PERSPEKTIVA NASTAVNIKA

Molimo Vas da popunite ovaj kratak upitnik kako biste nam pomogli da bolje razumemo značaj i upotrebu digitalnih alata u nastavi stranih jezika iz perspektive nastavnika. Upitnik je anonimn i planirano trajanje je 5-10 minuta.

*Koliko godina iskustva imate u nastavi jezika?*

- Manje od 5
- Između 5 i 10
- Između 10 i 15
- Između 15 i 20
- Više od 20

*Da li ste u neposrednoj nastavi koristili digitalne alate?*

- Da
- Ne

*Ukoliko ste na prethodno pitanje odgovorili potvrdno, navedite koliko često ste u neposrednom obliku nastave koristili digitalne alate.*

- Na svakom času
- Jednom nedeljno
- Jednom mesečno
- Nekoliko puta godišnje

*Da li ste nastavu na daljinu, tokom pandemije, realizovali putem neke od dostupnih digitalnih platformi?*

- Da
- Ne

*Koju platformu ste koristili tokom izvođenja onlajn nastave?*

- Google Classroom
- Microsoft Teams
- Zoom
- Drugo

*Da li ste tokom izvođenja onlajn nastave češće koristili digitalne alate nego u neposrednom obliku nastave?*



- Da
- Ne

Podjednako

*Koje digitalne alate ste najčešće koristili u onlajn nastavi?*

- Kahoot
- Quizziz
- Mentimeter
- Google Forms
- Duolingo
- HelloTalk
- WordUp
- Drugo

*Da li ste nakon pandemije u neposrednom obliku nastave nastavili da koristite digitalne alate koje ste koristili u onlajn nastavi tokom pandemije?*

- Da
- Ne

*Koje digitalne alate ste nastavili da koristite u neposrednoj nastavi nakon pandemije?*

*Koji oblik nastave za Vas predstavlja najveći izazov i zašto?*



## APPENDIX 4. DIGITAL TOOLS IN FOREIGN LANGUAGE TEACHING – TEACHERS' PERSPECTIVE

Please complete this short questionnaire to help us better understand the importance and use of digital tools in foreign language teaching from the teachers' perspective. The questionnaire is anonymous, and it is estimated to take 5-10 minutes.

*How many years of experience do you have in language teaching?*

- Less than 5
- Between 5 and 10
- Between 10 and 15
- Between 15 and 20
- More than 20

*Have you used digital tools in in-person teaching?*

- Yes
- No

*If you answered "yes" to the previous question, how often do you use digital tools in in-person classes?*

- In every class
- Once a week
- Once a month
- A few times a year

*Did you conduct remote teaching during the pandemic using one of the available digital platforms?*

- Yes
- No

*Which platform did you use for online teaching?*

- Google Classroom
- Microsoft Teams
- Zoom
- Other

*Did you use digital tools more frequently during online teaching than in in-person classes?*

- Yes
- No



- Equally

*Which digital tools did you use most often in online teaching?*

- Kahoot
- Quizziz
- Mentimete
- Google Form
- Duolingo
- HelloTalk
- WordUp
- Other

*After the pandemic, did you continue using the digital tools in in-person teaching that you used during online teaching?*

- Yes
- No

*Which digital tools did you continue to use in in-person classes after the pandemic?*

*Which form of teaching do you find the most challenging, and why?*