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Original research paper
UDC 378.016:811.111]:004.8
DOI: 10.19090/MV.2025.16.2.163-184

UNIVERSITY TEACHERS' PERSPECTIVES ON USING THE TESLA CHATBOT IN EMI COURSES: A CASE STUDY FROM SINGIDUNUM UNIVERSITY

ABSTRACT: As English-medium instruction (EMI) expands in Serbian higher education, university teachers who are non-native English speakers face unique challenges in engaging international students. This study presents a pilot initiative involving a multilingual AI chatbot modeled on the persona of Nikola Tesla, designed to support student motivation, interaction, and informal language practice in English. The chatbot was implemented at Singidunum University in Belgrade, where ten subject-specialist professors, native speakers of Serbian, used the tool while teaching international students enrolled in the university's *Studies in English* programs. The paper examines teachers' reflections on the chatbot's technical usability, its perceived impact on student engagement, and its contribution to pedagogical innovation and creativity. Rather than positioning the chatbot as a replacement for traditional teaching methods, the study emphasizes its role as a supplementary tool that can enrich EMI delivery. It calls for further research into teacher-driven perspectives on digital augmentation in multilingual classrooms, particularly with respect to refining chatbot design to meet the specific pedagogical demands of different academic disciplines.

Keywords: AI tools, educational chatbots, Tesla chatbot, EMI courses, higher education, teacher perspectives, instructional innovation.

PERSPEKTIVE UNIVERZITETSKIH NASTAVNIKA O UPOTREBI TESLINOG ČETBOTA U IZVOĐENJU NASTAVE NA ENGLESKOM JEZIKU: STUDIJA SLUČAJA UNIVERZITETA SINGIDUNUM

APSTRAKT: Kako nastava na engleskom jeziku postaje sve prisutnija u visokom obrazovanju u Srbiji, univerzitetski nastavnici, čiji maternji jezik nije engleski, suočavaju se sa specifičnim izazovima u radu sa međunarodnim studentima. Ova studija predstavlja pilot istraživanje koje uključuje upotrebu višejezičnog četbota zasnovanog na veštačkoj inteligenciji (VI) i modelovanog prema ličnosti Nikole Tesle, razvijenog sa ciljem da podstakne motivaciju, interakciju i neformalno učenje na engleskom jeziku. Alat je primenjen na Univerzitetu Singidunum u Beogradu, gde je deset nastavnika, izvornih govornika srpskog jezika i stručnjaka u svojim oblastima, koristilo četbot tokom izvođenja nastave u okviru studijskih programa na engleskom jeziku. U radu se analiziraju njihova zapažanja o upotrebljivosti alata, njegovom uticaju na angažovanje studenata i doprinosu inovativnosti u nastavi. Zaključuje se da ovakvi alati mogu obogatiti izvođenje nastave na engleskom jeziku i ukazuje se na potrebu za daljim istraživanjima, posebno u pogledu usavršavanja obrazovnih četbotova kako bi se u većoj meri prilagodili specifičnim pedagoškim zahtevima pojedinačnih nastavnih predmeta.

Ključne reči: alati veštačke inteligencije, obrazovni četbotovi, Teslin četbot, kursevi na engleskom kao jeziku visokoškolske nastave, visoko obrazovanje, perspektive nastavnika, inovacije u nastavi.

1. INTRODUCTION

The global expansion of English-Medium Instruction (EMI) has transformed higher education landscapes, especially in non-Anglophone countries seeking greater international visibility and academic competitiveness (Dearden 2014; Hultgren et al. 2015). EMI is now viewed not merely as a linguistic shift but as a structural and pedagogical transformation aligned with broader goals of internationalization, mobility, and employability (Hultgren 2014; Phillipson 2009). However, in many contexts, including Serbia, EMI remains underdeveloped, inconsistently implemented, and insufficiently supported through policy, training, or pedagogical innovation.

Within the Serbian higher education system, EMI remains a relatively recent and unevenly implemented development. Đorđević and Blagojević (2019) point to two key challenges: insufficient English language proficiency among university teachers and a persistent reliance on traditional, teacher-centered instructional methods. Their claims are echoed by more recent studies such as Janković, Beko and Paris (2025), who underline conceptual ambiguities in defining EMI and note that instructional practices are often fragmented and lack clear pedagogical direction.

Despite these challenges, innovative digital tools may offer opportunities to support EMI delivery, especially in contexts where institutional support and formal training are lacking. This study addresses a gap in the literature by exploring the use of an AI-powered educational chatbot based on the persona of Nikola Tesla, implemented as a multilingual tool in EMI courses at Singidunum University in Belgrade. The chatbot was designed not to replace traditional instruction, but to support informal learning, enhance student engagement, and foster creativity and interaction in English-language academic environments.

Focusing on the perspectives of ten university teachers who used the chatbot while delivering courses in English to international students, this paper examines the perceived pedagogical value, usability, and motivational potential of AI tools in EMI settings. In a system where EMI is often adopted superficially and where academic staff may lack both linguistic and didactic support (Dearden 2014; Phillipson 2006), this case study introduces a teacher-centered approach to integrating digital tools that support engagement and communicative competence. To contextualize this intervention, the following section reviews relevant literature on EMI implementation, instructional challenges, and the evolving role of educational technology in higher education.

2. LITERATURE REVIEW

As EMI becomes more widespread, educators and researchers have increasingly turned their attention to the practical challenges it poses in classroom settings – particularly in relation to academic support, pedagogical strategies, and technology use. Defined broadly as the use of English to teach academic subjects in contexts where it is not the first language, EMI remains a relatively new and evolving instructional model. Its definitions vary across literature, and unlike CLIL, EMI often prioritizes subject content over language development, leading to ongoing debates about its scope and instructional balance (Janković et al. 2025; Smit 2023). Among emerging responses to these challenges, generative AI tools have drawn significant interest for their potential to enhance instruction, support student engagement, and reduce teacher workload in multilingual environments.

Recent studies have examined how instructors and students interact with AI applications such as ChatGPT and machine translation tools in EMI courses. From the educator's perspective, successful AI integration often hinges on experience, training, and openness to innovation. Zimotti et al. (2024) found that teachers with prior experience using ChatGPT were significantly more optimistic about its classroom potential than those with no such background. Yet concerns

about over-reliance and unsupervised student use persist, particularly in EMI contexts that lack formal policy frameworks. Studies by Pokrivcakova (2022) and Belda-Medina and Calvo-Ferrer (2022) report that while pre-service teachers recognize the usefulness and interactivity of AI tools, many remain hesitant to incorporate them into formal instruction, citing the irreplaceable value of human guidance and communicative nuance. In addition, instructors in EMI settings often resist assuming responsibility for students' language development, viewing themselves primarily as content specialists rather than language teachers – a stance that complicates the integration of language and content in practice (Anđelkov 2022).

Structural limitations within EMI systems also drive interest in AI-based support. Many higher education institutions face a shortage of qualified EMI instructors who possess the necessary language proficiency, content knowledge, and pedagogical expertise (Galloway & Ruegg 2022). In this context, digital tools are increasingly viewed not as replacements for teachers, but as supplemental aids capable of easing the burdens placed on both educators and students.

Empirical evidence from recent AI-in-EMI studies suggests that AI use correlates with academic performance more than language proficiency alone. In a study involving 142 students, Kikuchi (2024a) found that stronger academic achievers engaged with AI tools more meaningfully, regardless of their English level. These findings suggest that while AI tools may be accessible to all learners, their educational impact depends on users' prior skills and engagement patterns – an insight that has implications for equity and digital literacy in EMI.

Kikuchi's more recent study (2024b) further explored both student and teacher perceptions of AI integration in EMI. Students primarily used AI for basic tasks like translation and grammar correction, while higher-order functions were limited to digitally fluent individuals. Teachers, in turn, emphasized AI's utility in administrative and differentiation tasks but raised concerns about grading fairness, academic honesty, and the erosion of interpersonal teaching. These studies collectively advocate for thoughtful, guided implementation, with clear boundaries and pedagogical goals.

While these individual studies offer valuable insights, broader overviews also confirm that AI in EMI remains an emerging field. A systematic review by Bannister, Urbieta and Peñalver (2023), which analyzed 68 recent studies, emphasized the scarcity of empirical work directly linking generative AI to EMI pedagogy. The majority of the reviewed literature focuses on generalized uses such

as writing support or assessment, with no studies at the time addressing chatbot use in EMI specifically. This reinforces the exploratory value of the present research.

Lasagabaster (2022) complements these concerns by pointing to the broader risks and opportunities generative AI brings to EMI: from altering how language proficiency is assessed to reshaping expectations in intercultural communication and academic authorship. These pedagogical concerns are especially relevant in EMI classrooms, where instructors and students are handling complex linguistic and ethical terrains.

This study examines the use of a multilingual, persona-based chatbot – modeled after Nikola Tesla – as a general-purpose support tool in EMI courses at a Serbian university. The chatbot is not designed to address subject-specific content but aims to enhance communication, classroom engagement, and creative interaction. Rather than solving discipline-specific challenges, this pilot study explores whether such a tool can be meaningfully integrated into EMI contexts, paving the way for future research into the development of chatbots tailored to particular academic fields and linguistic demands.

2.1. EMI in Serbian tertiary education

In settings like Serbia – where EMI implementation is still in its early stages, institutional support remains limited, and digital innovation is gradually emerging – there is a pressing need to understand how educators engage with new technologies. This section addresses that gap by situating the present study within the Serbian higher education landscape. In recent years, Serbia has joined broader European efforts toward the internationalization of higher education, resulting in a notable increase in study programs delivered in English. According to Đorđević and Blagojević (2019), over 150 accredited programs across Serbian universities are now taught entirely or partially in English or other foreign languages, especially in medicine, engineering, ICT, and increasingly in the humanities and social sciences – particularly within private institutions. However, more recent work by Janković et al. (2025) emphasizes that this expansion is uneven and often lacks alignment with national curricular standards or clearly defined pedagogical strategies.

This expansion has been supported by Serbia's *Law on Higher Education* (*Zakon o visokom obrazovanju*, Official Gazette RS, No. 88/2017, 27/2018), which introduced frameworks for internalization and EMI programs, as well as by mobility initiatives such as Erasmus+. Despite this growth, systematic support for EMI remains underdeveloped. Most Serbian higher education institutions still lack

structured training for faculty who teach in English, and research on EMI practices within the local context remains limited (Antić & Milosavljević 2014; Popović et al. 2016). This research gap is compounded by the interchangeable use of terms like EMI, CLIL, and ESP/EAP – creating conceptual ambiguity and further complicating curriculum development (Janković et al. 2025).

Some progress has been made through externally funded projects. The Tempus-funded FUSE project (2013–2016) developed a dedicated EMI training course for non-native English-speaking university teachers, combining language and methodology training. Participant feedback was highly positive, especially regarding the inclusion of practical teaching simulations, and many requested that the course be institutionalized and offered regularly (FUSE 2016, as cited in Đorđević & Blagojević 2019). However, such initiatives remain isolated, and broader institutional strategies to support EMI are still lacking.

Instructor preparedness and pedagogical mindset are key challenges. Research shows that many Serbian university teachers – especially those from non-linguistic disciplines –perceive EMI primarily as a matter of language proficiency, neglecting the need for methodological adjustment (Ball & Lindsay 2013; Đorđević & Blagojević 2019; Helm & Guarda 2017). This reluctance is compounded by instructors' professional identities, as many resist assuming responsibility for students' language development (Anđelkov 2022). However, as international and regional evidence suggests, EMI success depends not only on linguistic fluency but also on adopting inclusive, student-centered, and multilingual teaching strategies.

Structural ambiguities also persist. Questions remain about who is responsible for EMI delivery (content vs. language teachers), how assessment is conducted (in L1, L2, or both), and whether instructional materials and outcomes are adjusted to students' English proficiency levels (Janković et al. 2025). These gaps mirror broader challenges in EMI implementation across Europe, where institutional strategies are often driven more by internationalization goals than by pedagogical reform (Costa & Coleman 2013).

Despite increasing interest in digital support, the integration of AI tools – particularly generative AI and chatbots – into EMI courses in Serbia remains undocumented. No peer-reviewed studies to date have explored the use of multilingual or persona-based AI tools in Serbian higher education. This lack of localized empirical evidence points to the importance of the present pilot study, which offers an initial exploration of how chatbots might support EMI delivery in Serbian universities.

3. RESEARCH METHODOLOGY

3.1. Research objectives and hypotheses

The Tesla chatbot is a multilingual, persona-based educational tool developed to simulate human-like dialogue with a virtual representation of Nikola Tesla. Designed for both Serbian and English speakers, it enables integration into English-medium instruction (EMI) environments, particularly in contexts where diverse student populations and non-native English-speaking faculty intersect. The chatbot draws on verified biographical sources to maintain historical accuracy and linguistic authenticity, while its open-ended, text-based dialogue invites users to explore Tesla's legacy through reflective, imaginative, and thematic questions. In addition to Serbian and English, the chatbot is equipped to provide output in Hungarian, French, and German, supporting its use in cross-cultural or multilingual educational settings.

The current version supports the following functionalities: text-based natural language conversation (no voice interaction at this stage), multilingual response generation (Serbian, English, Hungarian, French, German), pre-loaded content modules inspired by Tesla's biography, inventions, and values (e.g., science, innovation, ethics), open-ended Q&A capabilities that support exploratory, student-driven inquiry, and adaptability to informal, curricular, or cross-curricular teaching contexts.

Although the tool is not subject-specific, its flexible architecture enables it to be used across various EMI courses (e.g., business, IT, humanities) to strengthen language-mediated interaction, stimulate student curiosity, and promote innovative pedagogical practice. The chatbot is freely accessible at: https://nikolatesla.live/.

The aim of this study is to examine whether such persona-based AI chatbot, even without direct curricular alignment, can meaningfully support EMI instruction. In particular, the study focuses on teacher perceptions of its technical usability and ease of classroom integration, its potential to enhance student engagement and curiosity, and its capacity to promote pedagogical innovation in university settings.

Although the chatbot references Tesla's life and inventions, the goal is not to assess students' factual knowledge, but rather to examine the broader instructional value of persona-based AI tools in multilingual academic environments. The model is treated as a prototype for potential future development and scaling of culturally embedded educational chatbots.

Based on this objective, the following hypotheses were formulated:

- H1: Teachers perceive the Tesla chatbot as easy to use and effective in supporting classroom communication and instructional flow.
- H2: Teachers consider the chatbot a valuable tool for enhancing students' motivation and engagement.
- H3: Teachers consider the chatbot a valuable tool for introducing pedagogical innovation into EMI instruction, regardless of subject-specific alignment.

3.2. Research Design and Instrument

A quantitative, descriptive research design was adopted. Data were collected using a structured questionnaire composed of two sections. The first section gathered socio-demographic data (gender, age, academic title, years of teaching experience, and academic field). The second section comprised 20 Likert-scale items grouped into five thematic areas: (1) User experience and technical usability, (2) Perceived usefulness in supporting instruction, (3) Observed student motivation and engagement, (4) Pedagogical innovation and openness to AI integration, and (5) Suggestions for improvement and desired chatbot features (e.g., adaptive responses, voice interaction, multimedia support). All items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire was anonymous and used solely for academic research purposes.

3.3. Sample

The sample consisted of ten university teachers (professors and teaching assistants holding doctoral degrees) employed at Singidunum University in Belgrade. All participants were native Serbian speakers currently teaching international students in English as part of the university's "Studies in English" undergraduate programs. The AI-powered Tesla chatbot was introduced during the spring semester of 2025, and participants were invited to use it as a flexible supplementary classroom tool during regular class sessions prior to completing the survey.

Although not tied to specific course content, the chatbot was primarily used in real time during instruction, typically in segments dedicated to discussion or review. Instructors encouraged students to interact with the chatbot either individually or in pairs, and its integration was left to the discretion of each teacher. This ensured organic use aligned with each instructor's teaching style, while also

allowing for observation of student engagement and interaction in a low-pressure context.

Among the participants, six were female and four were male. Seven held professorial positions, while three were teaching assistants who held doctoral degrees. The age distribution included four participants aged 30–39, four aged 40–49, and two aged 50 or older. In terms of teaching experience, three participants had 5–10 years, five had and 20 years, and two had more than 20 years of experience. As for institutional tenure, four had worked at their current university for 1–5 years, four for 6–10 years, and two for over 10 years. The participants taught within the following areas: Business Economics (2 participants), Tourism (2), Information Technology (2), Environment and Sustainable Development (1), Software and Data Engineering (1), and Applied Artificial Intelligence (2).

3.4. Data Analysis

Descriptive statistics were used to analyze the survey data. Percentages, means, medians, modes, and standard deviations were calculated to summarize teacher responses across the five key thematic areas. Full Likert-scale distributions (e.g., "strongly agree," "somewhat agree," "neutral," etc.) were presented for all areas to ensure comparability and transparency.

For thematic areas 1–3 responses were primarily analyzed using percentage breakdowns, as these sections address more concrete evaluative judgments related to user experience, perceived usefulness, and observed student engagement. Thematic areas 4 and 5 were examined using a more statistical approach, including measures of central tendency (means, medians, modes) and dispersion (standard deviations). This choice was driven by the exploratory and forward-looking nature of these two areas, which closely align with H3, focusing on pedagogical innovation beyond immediate utility or motivation. Since these sections explored abstract, developmental, or speculative aspects of AI integration (e.g., openness to future chatbot features such as adaptive responses or voice interaction), capturing the spread and central tendencies of responses offered deeper insight into teacher preferences, variability, and potential areas of consensus or divergence.

All results were interpreted in relation to the stated hypotheses and used to assess the broader applicability and educational potential of the chatbot across diverse EMI contexts and subject domains.

4. INTERPRETATION OF RESULTS

The results across the first three thematic areas – usability, instructional support, and student engagement – demonstrate overwhelmingly positive perceptions of the Tesla chatbot among university teachers in EMI courses. Under Theme 1 (usability), 50% of respondents strongly agreed and 40% somewhat agreed that the chatbot was easy to use. Similarly, 50% somewhat agreed and 30% strongly agreed that its responses were accurate and relevant. The tool was seen as technically stable and time-saving: 40% somewhat agreed and 30 % strongly agreed that it facilitated faster responses to student questions and supported the explanation of Tesla-related content.

In Theme 2 (pedagogical support), 40% of participants strongly agreed and 40% somewhat agreed that the chatbot enhanced students' understanding of Tesla's life and inventions, even in non-STEM contexts. A large majority (50% strongly agreed, 30% somewhat agreed) affirmed that it enabled informal learning by offering supplementary educational materials, while 30% strongly agreed and 40% somewhat agreed that it facilitated a more personalized teaching approach – especially valuable in multilingual EMI classrooms.

Theme 3 (student engagement and motivation) yielded similarly strong results. A full of 80% of teachers (50% strongly agreed, 30% somewhat agreed) observed increased student interest in using the chatbot. Moreover, 40% strongly agreed and 40% somewhat agreed that the chatbot enhanced classroom engagement and improved peer collaboration. Regarding content-specific interest, 40% strongly agreed and 40% somewhat agreed that the chatbot heightened students' interest in Tesla's life and work, while 30% strongly agreed and 50% somewhat agreed that it encouraged critical thinking beyond surface-level interaction.

These findings offer strong support for Hypothesis 1 and Hypothesis 2, confirming that the Tesla chatbot was perceived by teachers as both easy to use and effective in facilitating classroom communication, and as a valuable tool for enhancing student motivation and engagement. A summary of key descriptive statistics is presented in Table 1.

Item/Statement	Strongly disagree (%)	Somewhat disagree (%)	Neutral (%)	Somewhat Agree (%)	Strongly agree (%)
Tesla's chatbot was easy to use in the classroom			10	50	40
The chatbot provided accurate and relevant responses			20	50	30
It expedited addressing students' questions		10	20	40	30
It helped explain Tesla-related content			20	40	40
The chatbot improved understanding of Tesla's life and work		10	20	30	40
It provided additional educational material		10	10	30	50
It supported a personalized approach to teaching		10	20	40	30
Students showed clear interest in using the chatbot		10	10	30	50
It enhanced student engagement		10	10	40	40
It improved student collaboration		10	10	40	40
It increased student interest in Tesla's work		10	10	40	40
It encouraged critical thinking		10	10	50	30

Table 1. Summary of teachers' responses (thematic areas 1-3)

Findings from Theme 4 indicate strong support among instructors for integrating Tesla's chatbot into instructional practice, particularly in EMI contexts. Despite being non-native English speakers, participants expressed a general openness to adopting AI tools in their teaching. This affirms the potential of AI to enrich higher education environments even where linguistic and technological barriers may exist. For EMI instructors who are not native speakers of English, adopting new digital tools can introduce additional challenges, such as interpreting chatbot responses, handling technical terminology, or feeling confident in

classroom AI use. The fact that participants expressed enthusiasm rather than hesitation suggests a notable level of digital resilience and openness to innovation, reinforcing the feasibility of AI-supported instruction in linguistically diverse academic settings.

When asked whether *"I believe I can easily integrate a chatbot like Tesla's into my curriculum,"* 70% of participants strongly agreed, 20% somewhat agreed, and 10% remained neutral. Notably, none disagreed. The corresponding descriptive statistics (Table 2) show some degree of variability, with a mean of 2.47 and a relatively high standard deviation (2.18). The mode of 5.0 aligns with the most frequent response category, confirming that the dominant sentiment was strong agreement. The median value of 3.0 suggests some variation in perceived ease, possibly due to different levels of confidence or institutional readiness.

Statistical indicator	Value
Mean	2.47
Median	3.00
Mode	5.00
Standard deviation	2.18

Table 2. Statistical overview of responses on chatbot integration ease

These findings provide clear support for Hypothesis 3, which posited that instructors would perceive the Tesla chatbot as a feasible and valuable tool for pedagogical innovation in EMI instruction – even when not directly tied to course-specific content. The absence of negative responses further points to a high level of general acceptance and readiness to experiment with AI-based methodologies.

Support for instructional enrichment was even more consistent. All participants agreed with the statement *"Using a chatbot like Tesla's would enrich my teaching methods,"* with 70% selecting "somewhat agree" and 30% "strongly agree." Participants saw the chatbot as a practical ally in making their classrooms more engaging, bridging linguistic gaps and encouraging a more participatory learning experience.

Quantitative indicators further validate this trend: the mean response was 4.30, with both the median and mode at 4.0, and a low standard deviation of 0.48, indicating strong agreement with minimal variability (Table 3). These results reinforce the idea that Tesla's chatbot is not only accepted in EMI settings but is actively seen as a catalyst for innovative pedagogical approaches.

Statistical indicator	Value
Mean	4.30
Median	4.00
Mode	4.00
Standard deviation	0.48

Table 3. Perceptions of chatbot's contribution to enriching teaching

When asked about combining chatbots with traditional teaching, responses revealed cautious optimism. To the statement *"I would prefer to combine a chatbot with traditional teaching methods rather than rely solely on traditional methods,"* 20% of teachers strongly agreed, 40% somewhat agreed, and the remaining 40% remained neutral. No respondents disagreed, but the relatively high rate of neutral responses may reflect a lack of prior experience with AI-supported blended learning or institutional hesitation. The statistical overview confirms a moderate level of agreement: mean = 3.80, median = 4.0, mode = 3.0, and standard deviation = 0.79, showing some variation in confidence and preference (Table 4).

Statistical indicator	Value
Mean	3.80
Median	4.00
Mode	3.00
Standard deviation	0.79

Table 4**.** Preferences for blending chatbots with traditional instruction

Tesla's chatbot also appeared to serve as a pedagogical catalyst. In response to *"Using the chatbot inspired me to explore new ways of integrating artificial intelligence into teaching,"* 40% strongly agreed, 20% somewhat agreed, and 20% remained neutral. No one disagreed. These results suggest that, beyond practical utility, the chatbot encouraged educators to reflect on AI integration as part of their long-term instructional strategy. The mean score was 4.20, with a median and mode of 4.0, and a standard deviation of 0.79, indicating generally high but slightly varied enthusiasm (Table 5).

Statistical indicator	Value
Mean	4.20
Median	4.00
Mode	4.00
Standard deviation	0.79

Table 5. Statistical overview of chatbot-inspired AI innovation in teaching

These results offer robust support for Hypothesis 3, confirming that the Tesla chatbot was perceived not only as a practical classroom tool, but also as a driver of innovation and professional growth in EMI contexts.

In EMI environments, where both conceptual clarity and linguistic accessibility are critical, teachers identified several desirable improvements to enhance the chatbot's educational potential (Theme 5). Three key areas were identified: adaptive response capability, voice interaction, and multimedia support.

Regarding adaptivity, 80% of respondents expressed a positive attitude toward having the chatbot tailor its responses to students' knowledge levels – 30% somewhat agreed and 50% strongly agreed. The remaining 20% expressed neutrality, which may stem from limited familiarity with adaptive AI systems or uncertainty about their practical classroom integration. This feedback aligns with inclusive pedagogy goals and highlights the importance of differentiated instruction in international classrooms. The statistical results support this strong consensus: mean = 4.30, median = 4.50, mode = 5.0, and standard deviation = 0.82 (Table 6).

Statistical indicator	Value
Mean	4.30
Median	4.50
Mode	5.00
Standard deviation	0.82

Table 6. Preferences for chatbot response adjustment according to students' knowledge level

Voice interaction also received favorable responses. While 30% of participants remained neutral – perhaps due to unfamiliarity with voice-enabled technology in academic settings – 20% somewhat agreed and 50% strongly agreed that voice communication would facilitate learning. This hesitancy may also reflect infrastructural limitations or a lack of institutional support for voice-enabled tools, suggesting a need for further professional development in this area. The results also indicate that speech-enabled AI could increase accessibility and comfort, especially for international students operating in a second language. Mean = 4.20, median = 4.5, mode = 5.0, and standard deviation = 0.92 reflect solid, if slightly more varied, endorsement (Table 7).

Statistical indicator	Value
Mean	4.20
Median	4.50
Mode	5.00
Standard deviation	0.92

Table 7. Attitudes toward voice interaction as a tool for facilitating learning

The most enthusiastically supported enhancement was multimedia integration. All respondents agreed that *"Multimedia content (videos, animations, graphics) in the chatbot's responses would help with understanding complex concepts,"* with 40% selecting "somewhat agree" and 60% "strongly agree." Such feedback highlights that EMI instructors prioritize visual scaffolding as a way to bridge linguistic gaps and facilitate content comprehension. The statistical indicators confirm a strong consensus: mean = 4.60, median and mode = 5.0, and a very low standard deviation of 0.50 (Table 8).

Statistical indicator	Value
Mean	4.60
Median	5.00
Mode	5.00
Standard deviation	0.50

Table 8. Attitudes toward the use of multimedia content in chatbot responses

These results reflect a clear pedagogical vision: EMI instructors seek chatbots that are adaptive, interactive, and multimodal – features essential for addressing the linguistic, cultural, and academic diversity typical of EMI classrooms. Their preferences also suggest that instructors do not view AI chatbots as static tools, but rather as evolving pedagogical partners – capable of responding to diverse learner needs, supporting inclusive strategies, and enabling interactive, multimodal learning experiences. Future iterations of Tesla's chatbot, or similar AI tools, should integrate these enhancements to support deeper engagement, broader accessibility, and more effective instructional outcomes.

5. TOWARDS A CONCLUSION: LIMITATIONS, CONTRIBUTIONS, AND FUTURE DIRECTIONS

The findings of this study provide strong empirical support for all three proposed hypotheses. First, EMI instructors perceived the Tesla chatbot as technically reliable, easy to use, and effective in supporting classroom communication and instructional flow (H1). Teachers consistently reported that the

tool helped them manage class interaction, answer student questions, and supplement EMI instruction with clear and relevant explanations, particularly around Tesla-related content.

Second, the chatbot was seen as an engagement-driven, motivational aid that stimulated student interest and encouraged collaborative learning (H2). Most participants observed a noticeable rise in student curiosity and classroom interaction. Importantly, this enthusiasm extended beyond content-specific engagement, suggesting the chatbot's ability to serve as a broader cognitive and social stimulus in EMI classrooms.

Third, results strongly support Hypothesis 3. The majority of instructors expressed a clear willingness to integrate chatbots into their long-term instructional strategies, with several affirming that using the Tesla chatbot had already inspired them to rethink how artificial intelligence could enrich their teaching. This openness is particularly significant in the EMI context, where both technological experimentation and linguistic clarity are essential. These results emphasize the chatbot's dual role: a responsive classroom assistant and a catalyst for AI-informed pedagogical change.

The study represents the first empirical investigation of an AI-powered chatbot in EMI courses within the Serbian higher education system. Although EMI programs are gradually expanding in Serbia, there has been little to no documented research on the use of chatbots or similar generative AI tools in these contexts. The Tesla chatbot was not designed to teach subject-specific content about Nikola Tesla, but rather to serve as a pedagogical prototype – a starting point for evaluating how multilingual, persona-based AI tools could support classroom innovation, interaction, and student motivation in internationalized academic environments. Its function in this pilot was therefore exploratory, laying the groundwork for future discipline-specific chatbot development tailored to the needs of particular study programs.

Several limitations of the study must be acknowledged. First, the study was small-scale and institution-specific, involving only ten university teachers from a single Serbian university. This limited scope constrains the generalizability of the findings. Second, the study focused solely on teacher perspectives, without triangulation through student feedback, classroom observations, or performance metrics. Prior research emphasized the importance of capturing both teacher and student experiences to comprehensively assess chatbot impact (Winkler & Söllner 2018; Wollny et al. 2021). Third, the Tesla chatbot's design – centered on a single

historical persona – may limit its applicability across diverse disciplinary contexts, where other topics and figures might be more relevant.

Despite these constraints, the study makes several contributions to the emerging literature on AI in EMI instruction. It reinforces the idea that chatbots can serve not just as knowledge-delivery tools but also as catalysts for engagement, motivation, and higher-order thinking in multilingual classrooms. In line with Smutny and Schreiberova (2020), participants described the chatbot as easy to use and beneficial for individualized learning and real-time classroom communication. Its persona-based format appeared especially compatible with internationalized, interdisciplinary teaching settings, offering a culturally and linguistically inclusive interface (Zawacki-Richter et al. 2019).

This is further supported by recent research from Xu et al. (2025) who found that chatbots were most effective when intentionally embedded into structured course activities aligned with learning objectives – mirroring the present study's finding that instructional framing is critical to success. Xu et al. (2025) also observed greater chatbot engagement in the humanities and social sciences compared to STEM, reinforcing the idea that chatbot utility may be discipline-dependent.

The findings also align with Kikuchi's (2024a, 2024b) work, which stresses the importance of integrating AI tools like ChatGPT into EMI environments with attention to academic integrity, digital literacy, and pedagogical relevance. Participants in this study echoed similar concerns, while also expressing a strong demand for adaptive, multimodal, and personalized chatbot features. These are harmonized with broader trends in conversational agent development, including those identified by Belpaeme et al. (2018) and Winkler and Söllner (2018), who emphasize the importance of personalization, affective responsiveness, and voice and visual capabilities.

Future research should adopt mixed-methods or longitudinal designs to assess both teacher and student outcomes over time. Larger and more diverse samples, including multiple institutions and disciplines, would allow for broader generalization and exploration of context-specific needs. Comparative studies evaluating general-purpose versus persona-based chatbots could also provide insight into how narrative framing and cultural embodiment influence learning. Experimental designs exploring the integration of chatbots into full curricula, not only as supplements, would further clarify their long-term pedagogical value.

Though preliminary in nature, this pilot study offers a solid foundation for future inquiry into chatbot-supported EMI instruction. It highlights the importance

of contextualized, Serbia-specific research in understanding how generative AI tools can be ethically and effectively embedded in multilingual university teaching. It also invites researchers, educators, and developers to co-create AI-enhanced tools that are not only technologically advanced but also pedagogically grounded and responsive to the evolving needs of international higher education.

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PERSPEKTIVE UNIVERZITETSKIH NASTAVNIKA O UPOTREBI TESLINOG ČETBOTA U IZVOĐENJU NASTAVE NA ENGLESKOM JEZIKU: STUDIJA SLUČAJA UNIVERZITETA SINGIDUNUM

Sažetak

Kako izvođenje nastave na engleskom jeziku postaje sve zastupljenije u visokom obrazovanju u Srbiji, posebno u programima namenjenim studentima kojima ni srpski ni engleski nisu maternji jezici, nastavnici se suočavaju sa izazovom da predavanja učine i jezički dostupnim i intelektualno podsticajnim. Podučavanje složenih akademskih sadržaja na engleskom jeziku u multikulturalnom okruženju zahteva nove pristupe koji podstiču razumevanje, motivaciju i interakciju.

Kao odgovor na te izazove, autori su pokrenuli pilot istraživanje sa ciljem da ispitaju potencijal alata zasnovanih na veštačkoj inteligenciji u obrazovnom kontekstu u okviru kojeg se nastava izvodi na engleskom jeziku. Razvijen je višejezični četbot zasnovan na ličnosti Nikole Tesle, osmišljen da podstakne neformalnu konverzaciju na engleskom jeziku i omogući interaktivniji pristup nastavnim sadržajima. Cilj nije bio specifično učenje o Tesli, već testiranje njegove vrednosti kao pedagoškog alata u nastavi na engleskom jeziku.

Četbot je primenjen u okviru studija na engleskom jeziku na Univerzitetu Singidunum. Kvantitativno istraživanje obuhvatilo je deset nastavnika koji su koristili alat tokom nastave. Rezultati pokazuju visok stepen prihvatanja: 90% ispitanika ocenilo je četbot kao jednostavan za upotrebu, 80% kao koristan za objašnjavanje sadržaja, dok je 80–85% uočilo veću motivaciju i angažovanje studenata. Ispitanici su iskazali i spremnost da uvedu alate zasnovane na veštačkoj inteligenciji (VI) u šire nastavne tokove i izrazili interesovanje za dalji razvoj četbota. Posebno su naglašeni zahtevi za unapređenje funkcionalnosti, uključujući odgovore prilagođene kontekstu, mogućnost glasovne interakcije i integraciju multimedijalnog sadržaja. Nalazi ukazuju na potrebu za razvojem rešenja usklađenih sa specifičnim zahtevima nastavnih oblasti i jezika podučavanja.

Ovo istraživanje predstavlja prvi dokumentovani primer primene četbota u okviru kurseva i programa na kojima se nastava izvodi na engleskom jeziku u Srbiji i otvara prostor za dalja istraživanja usmerena ka razvoju alata zasnovanih na veštačkoj inteligenciji, prilagođenih različitim akademskim disciplinama. Studija ne nameće upotrebu obrazovnog četbota kao univerzalno rešenje, već ima za cilj da podstakne širu raspravu o ulozi manjih, niskobudžetnih alata zasnovanih na VI u visokom obrazovanju. Autori zastupaju stav da takvi alati mogu pružiti značajnu podršku i studentima i nastavnicima, posebno u kontekstima koji su do sada bili nedovoljno istraženi.

S obzirom na to da u Srbiji do sada nije sprovedeno nijedno empirijsko istraživanje o primeni četbotova u kursevima i programima u okviru kojih se nastava izvodi na engleskom jeziku, ovaj rad predstavlja pionirski doprinos razumevanju njihove upotrebe i potencijala u lokalnom obrazovnom kontekstu. Dobijeni nalazi upućuju na potrebu za

daljim interdisciplinarnim i institucionalno raznovrsnim istraživanjima, kako bi se razvili alati zasnovani na VI koji ne samo da obogaćuju nastavni proces, već i odgovaraju na konkretne pedagoške zahteve različitih studijskih programa.

Ključne reči: alati veštačke inteligencije, obrazovni četbotovi, Teslin četbot, kursevi na engleskom kao jeziku visokoškolske nastave, visoko obrazovanje, perspektive nastavnika, inovacije u nastavi.

Received: 4 August 2025
Accepted: 2 October 2025