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Personalized and Individualized Russian Learning enabled by AI: the Pilot of the *Language Coach*

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Recent developments in Adaptive Learning Technologies (ALTs) and Large Language Models (LLMs) have created unique opportunities to improve teaching and learning processes through adaptive learning materials. This paper presents a pilot project in which an innovative and intelligent learning app called Language Coach*, which allows to personalize learning materials according to the learner's preferences and to individualize feedback to meet the learner's needs was extended to the Russian language*.

Key words: personalized learning, individualized learning, artificial intelligence, Russian

1. Introduction

Due to the considerable diversity in learners' cognitive, motivational, metacognitive, and emotional abilities in learning, teachers are increasingly challenged with the task of providing lessons that are specifically tailored to the individual needs of each student (Kärner et al. 2021). Especially in foreign language learning, learners often come from diverse linguistic backgrounds, speak different mother tongues, and may possess varying levels of proficiency in one or more foreign languages (Chilla & Hamann 2021). In Russian language classrooms, this diversity is particularly pronounced, as learners may include heritage speakers of Russian, heritage speakers of other Slavic languages, and complete beginners with no prior exposure to the language. Teachers are therefore in need of highly differentiated classroom materials (Stavrou & Koutselini 2016) to respond to the increasingly diverse language proficiency levels among learners in language learning classrooms.

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Current developments in technology can provide solutions to this challenge. Findings in machine learning, big data, cloud computing and artificial neural networks have enabled machines that can "perceive, recognize, learn, react and solve problems" (Zhai et al. 2021: 1), thus, imitate human intelligence. Exemplified with the launch of ChatGPT in November 2022, a smart technology in natural language processing was released that has shown to transform the educational sector (Yoon et al. 2023). Based on the functionalities of artificial intelligence (AI), a wide range of different AI-based learning tools (ALTs) have been developed, offering experiences tailored to learners' needs, abilities, and preferences. The *Language Coach* is an ALT specifically developed to train language skills, developed by Pons Langenscheidt GmbH and Titanom Solutions GmbH. In comparison to other language learning ALTs, it stands out as it uses LLMs to personalize learning content based on the learners' interest and needs and to individualize feedback with the aim to improve learners' motivation and thereby, their learning experience. Since its launch in 2024, the *Language Coach* has been available for learning English and German, targeted at adult learners. While English and German language learning ALTs have become rather common, Slavic languages are still rarely represented. The present paper, therefore, describes how in a pilot project of the *Language Coach*, Russian language learning was implemented. Its focus lies on the use of LLMs to generate personalized content and individualized feedback for adult Russian language learners, critically discussing challenges and requirements involved.

1.1. Language Learning with ALTs

The emergence of various large language model (LLM)-based tools such as chatbots, translation tools, and picture generation shows that AI is more than a supportive tool, but rather, it is "a key aspect of reading, writing, and knowledge production in every life, with the stakes especially high for second language learners" (Warschauer & Xu 2024: 2). Particularly in language learning, AI is seen as a transformative force (Patty 2024). In the context of learning and AI, five dimensions have been developed for teaching by Falck (2024): learning despite AI, learning with AI, learning about AI, learning through AI and learning without AI (see Figure 1). When learning a language through an ALT that uses AI, as is the case for the *Language Coach*, the fourth dimension learning through AI applies here. Falck (2024) highlights the enormous potential for both learners and educators in this dimension as AI enables teachers to personalize and individualize learning materials in a time-saving manner, thus allowing them to profoundly differentiate the learning materials to meet students' individual needs and preferences.

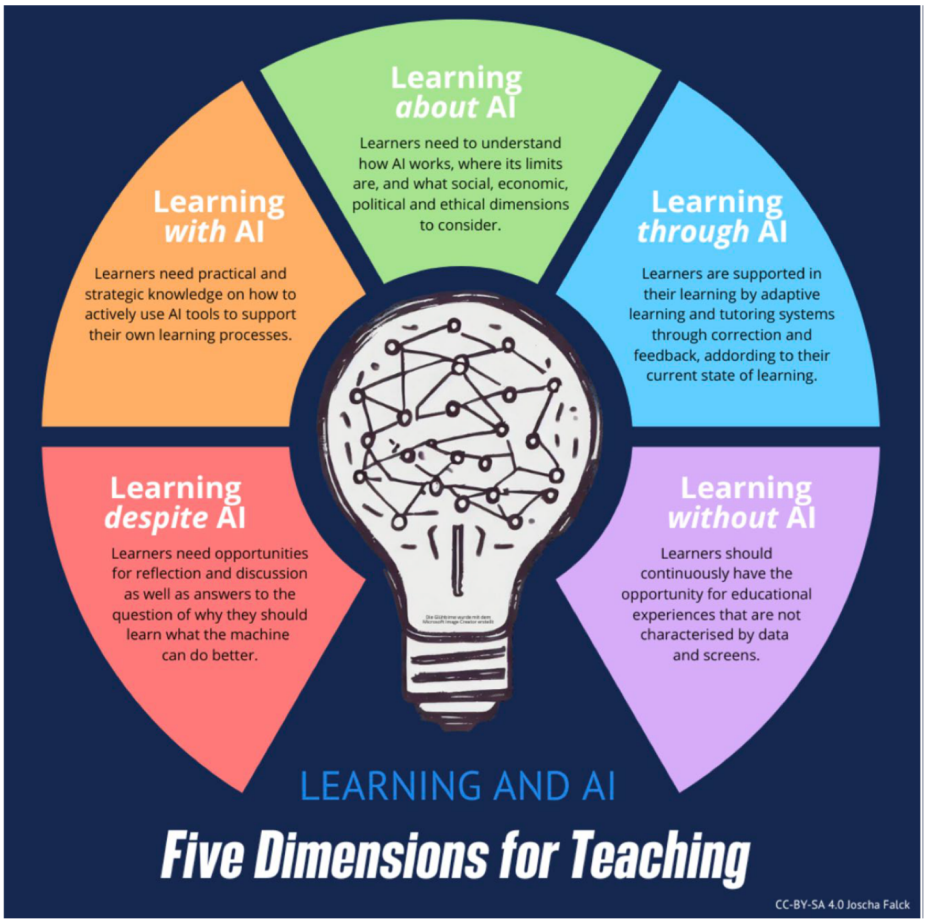

Figure 1. Five Dimensions for Teaching and AI (Falck 2024).

In contrast to traditional language learning in classrooms with a uniform pace, ALTs allow learners to advance at their own speed, focusing on areas that need improvement while skipping over concepts they have already mastered. ALTs can provide adapted learning content and feedback in real-time to fit individual needs and preferences, focusing on areas like pronunciation, fluency, reading and listening skills, grammar and vocabulary (Qin & Zhong, 2024). This indi-vidualization of the learning process leads to an increased performance by improving learners' engagement, knowledge retention and motivation (Gligorea et al. 2023).

An example of an ALT that specifically addresses the improvement of language learning is Duolingo's *BirdBrain,* a learning app which adapts lessons to specific learners by predicting user performance and adjusting difficulty accordingly (Duolingo 2022). Although ALTs are widely used for foreign language learning, most learning apps mainly focus on learning experiences that do not go beyond linear learning paths, basic right-wrong feedback or one-size-fits-all learning approaches (Blume et al. 2017). This is understandable as the development of AI-based language learning environments that adapt to the diverse needs of learners is very complex and

remains in an early stage (Schmidt & Strasser 2022). As globalization and migration continue to shape society, which Chilla and Hamann (2021) identify as two crucial factors to contributing to ethnic, linguistic, and cultural heterogeneity, language heterogeneity will become more present in tomorrow's classrooms. Teachers, however, are not provided with reliable language tests to diagnose language abilities in their classrooms (Chilla & Hamann 2021). As a result, language learning frequently remains structured in two ability groups, providing high and low-achieving learners with learning materials (Chilla & Hamann 2021). Using the potential of AI, learning materials in ALTs can, however, be personalized and individualized, addressing the needs and interests of the individual learner.

The *Language Coach*, which will be presented in this paper, is a state-of-the-art realization of language learning based on the learners' preferences and their individual needs using AI. It is currently used by approximately 1000 active learners per month, has demonstrated great robustness towards learner usage, learner experience and integration into language learning classrooms. It, therefore, shows great potential to be valuable in the Russian language learning context.

1.2 Russian Language Learning in ALTs

With the help of AI, particularly LLMs, texts in various forms can be generated, and existing texts can be easily transferred to other contexts or translated into other languages. However, while AI translations have improved significantly over time, they might not always capture nuances, idiomatic expressions, or cultural context as accurately as a human translator would and thus, are vulnerable to errors. Additionally, AI cannot process all languages equally well as most LLMs are based on the English language (Kannan 2024). An underrepresentation of a language results in lower-quality translations and reduced performance (Pang et al. 2025).

However, there are promising developments to reduce this disparity and to properly cover a wider range of languages. OpenEuroLLM is an approach started in 2025 by European countries and universities to develop LLMs for all EU languages to promote digital inclusion. It is not yet ready to be integrated into learning platforms. Language-specific LLMs, like ruGPT3 or ruBERT for the Russian language, are another attempt to decrease this imbalance in representation, yet do not perform well enough in comparison to large models like those by OpenAI or Anthropic. The Qwen 2.5-Max language model is an open-source LLM that currently supports over 29 languages and has received an extensive training with Russian linguistic data. It shows overall high performance benchmarks (Vellum AI 2025).

A well-trained LLM is an indispensable foundation for any educational software, particularly in the domain of foreign language learning. Although both belong to the Indo-European language family, Slavic languages have a complex grammatical structure that differs fundamentally from English. Key features include rich inflectional morphology, a case system with typically six or seven cases, grammatical gender, and a verb system with aspect and *Aktionsart*. (Nečaeva 2012). Given the complexity inherent in these linguistic features, the development of a well-trained LLM is essential to accurately represent Slavic languages.

Recent advancements in educational applications for learning Russian have integrated AI and LLMs to enhance the learning experience, as seen in platforms such as *Mondly* or *Busuu*. To date however, no comparable tool using personalized learning content and individualized feedback exists for Slavic languages. As Russian is spoken by approximately 255 million people worldwide as a first or second language (Statista, 2024) and continues to serve as a *lingua franca* across much of the former Soviet Union, it was chosen as the first Slavic language to be integrated into the *Language Coach*, thereby offering a personalized and individualized learning experience to adults learning Russian as a foreign language. Personalization and individual-lization as two ways of adapting learning content and the learning process will be explained in the following section.

2. The *Language Coach*

The *Language Coach* is a web-based platform created for adult foreign language learners which uses AI and LLMs to create learning material adapted to the learners' needs and preferences. The exercises are based on standard A1 and A2 level learning goals based on the Common European Framework of Reference for Languages. The learning app is used in addition to traditional foreign language teaching in classrooms to support language learners in periods of individual practice and self-directed learning. It facilitates the revision and reinforcement of vocabulary and grammar, thereby extending the amount of practice time available to students. Likewise, the time spent on these topics in class is reduced, allowing teachers to shift focus towards more advanced topics, such as cultural content or the practical use of language in communicative situations.

2.1. Technological Requirements

Since LLMs are prone to mistakes like misrepresentation, incorrect information, or the portrayal of harmful behavior (Pataranutaporn et al. 2021), it is essential to integrate filtering systems to ensure that inappropriate content is not shown in learning environments. This requires strict automatic quality assurance measures. This pilot project for enabling Russian language learning makes use of the open-source LLM Qwen.

To guarantee the high quality of the AI generated learning materials, a multi-layered content filtering system was implemented in the *Language Coach*, consisting of deterministic and probabilistic filters. The former automatically filters out learning materials that do not meet specific criteria—for example, missing required grammatical structures, exceeding recommended sentence length, or containing harmful or inappropriate content. The latter aims to evaluate the correctness and appropriateness of the material, including grammatical accuracy, while also accounting for the limitations of deterministic filters. For example, it verifies whether the provided sentences effectively target A1-level grammar while maintaining suitable vocabulary. The two metrics landing rate and correctness quantify the effectiveness of these filtering systems. The landing rate describes the number of exercises that pass through the filtering systems in relation to those being generated, showing the equation between quality and efficiency. The correctness depicts the amount of accurately generated content. The evaluations of ten prototypical learning sessions showed that 83% of the AI-generated tasks were considered suitable by human evaluators (landing rate), and 89% were rated as grammatically and contextually correct. Exercises rated lower than 50% in landing rate and correctness combined are excluded from being presented to learners.

2.2. Adaptivity in the *Language Coach*

By means of AI, the *Language Coach* intelligently adapts to the learner and, thus, improves the learning experience for every individual. The innovative technology implemented in the *Language Coach* is based on two components: one, AI-generated media to personalize the learning input and two, AI-based adaptive feedback for a higher degree of individualization in the feedback process (see Figure 2).

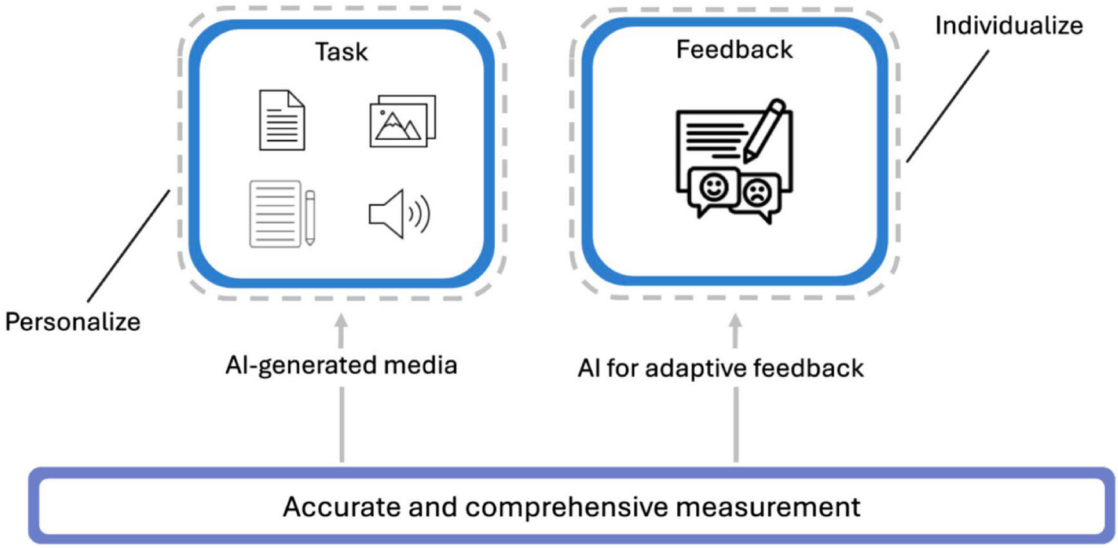

Figure 2.The two elements of adaptivity in the *Language Coach*.

2.2.1. Personalized Learning enabled by AI

Personalizing learning content seems promising, as research on motivation shows that interest in the learning material can positively influence learning behavior and engagement. Interest is a specific form of motivation that focuses on a particular object (Krapp 2002), such as the content being learned.

Flowerday and Shell (2015) showed that among college students, situational interest had a strong direct and indirect effect on learning performance, engagement and attitude. A recent study by Alamri et al. (2020) in online higher education found that personalized learning can increase intrinsic motivation. The personalization of learning experiences enhances engagement, fosters independence and increases learning outcomes (Pratama et al. 2023).

AI can personalize learning content according to individual interests, which has been shown to enhance motivation. By generating texts, audios, and images tailored to specific tasks, AI can make topics more engaging and spark interest in areas that learners might otherwise find unmotivating. This kind of personalization can trigger situational interest, leading to focused attention and an emotional response in the moment (Hidi & Renninger, 2006; Linnenbrink-Garcia et al., 2010). For example, a person learning a language for travel might focus on mastering everyday conversations, like going on a date or meeting friends. Alternatively, someone relo-

cating for work might prioritize language skills relevant to their job, such as medical terminology.

2.2.2. Implementation of personalized learning content in the *Language Coach*

Realizing personalization in the *Language Coach*, exercises can be created according to the preferences of the learner in each learning round. For this, the learner can choose between suggested topics or enter a subject of interest in the provided field when being asked "In which situation do you want to be able to communicate very well?" (see Figure 3).

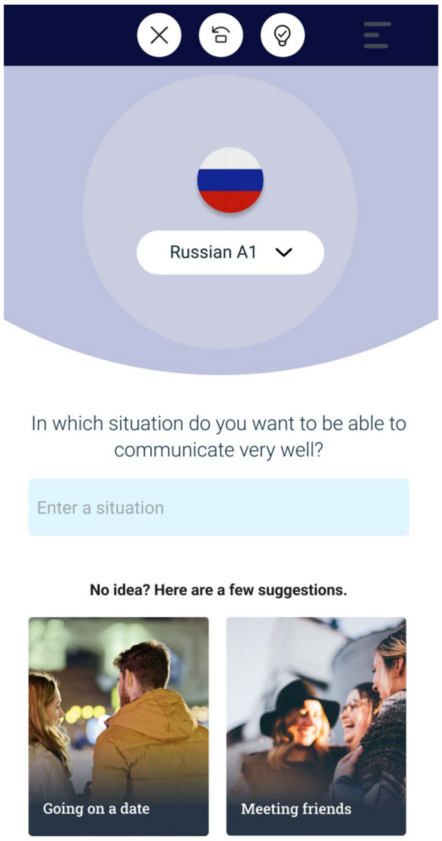

Figure 3. Topic selection in the *Language Coach*.

After entering a topic of interest, as for example "talking about movies", the underlying AI starts generating exercises (see Figure 4). After a short moment, a set of nine personally adapted exercises, such as drag and drop or single choice, are available for the learner. Based on the language level and the topic of interest, exercises are generated using the LLM following an interplay of prompt and software engineering. These exercises teach a mix of vocabulary,

grammar and content covering typical A1-level topics such as introducing oneself, talking about hobbies, or describing simple preferences.

The interface is currently in English, since most learners would not yet be able to follow instructions in Russian. As their skills grow, however, the app gradually shifts into Russian, reflecting their progress step by step.

English was chosen for the pilot phase as it works across international contexts and because today's large language models (LLMs) still perform best in English. Later versions are planned to offer additional interface languages — German, for instance — to make it easier for learners who are less comfortable with English to benefit from the program.

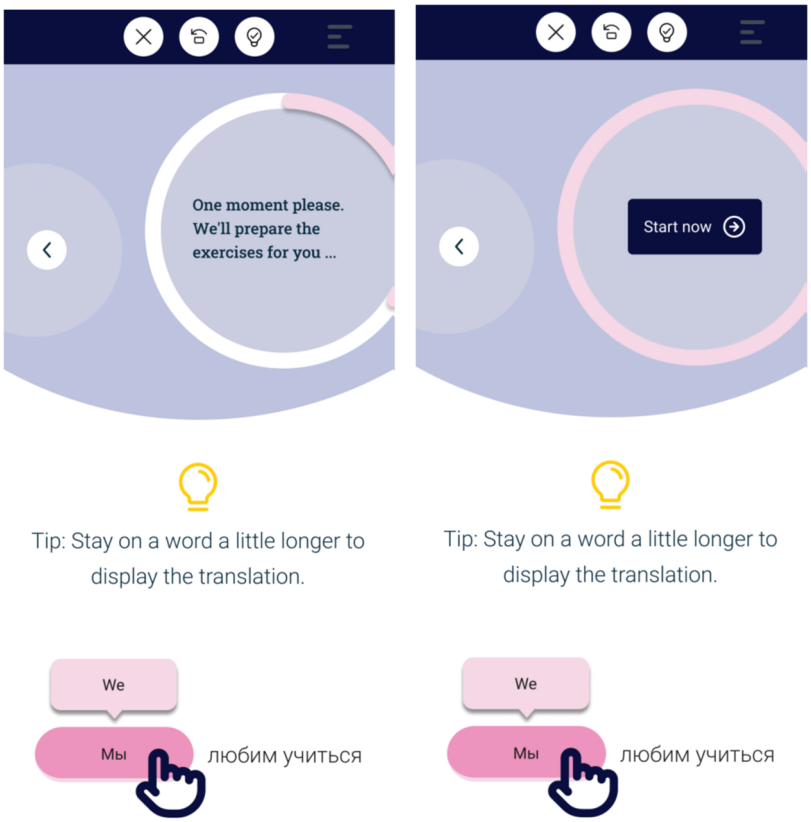

Figure 4. AI-based content generation.

This allows for more efficient differentiation without changing the underlying topic. For example, both groups may work on exercises related to "talking about movies," but the linguistic focus and the level of support are adjusted accordingly. Heritage speakers may have difficulty with differentiating between *не* and *ни* as well as the correct use of quantifiers such as *много, многие* and *несколько*, but can handle more complex vocabulary, which is reflected in their personalized exercises for "talking about movies" (see Figure 5).

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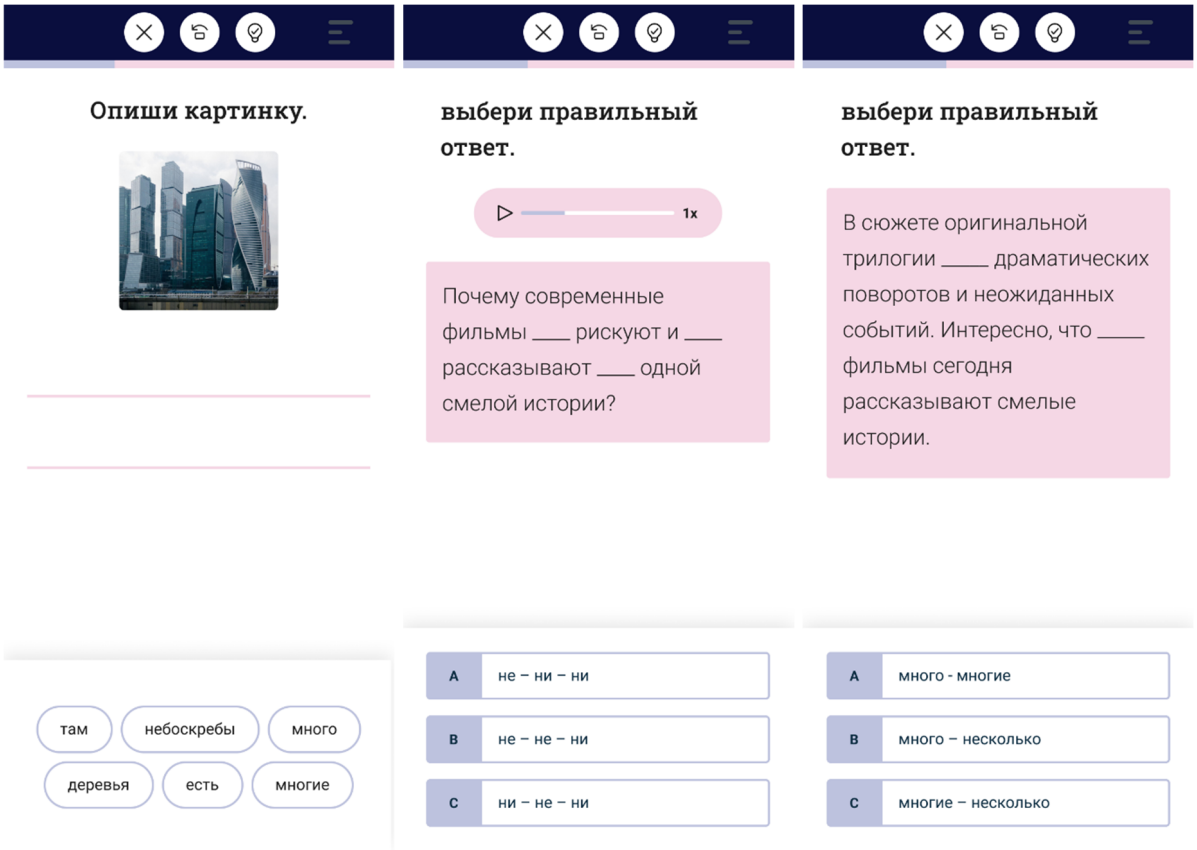

Figure 5. Personalized exercises for "talking about movies", designed for heritage speakers.

2.2.3. Individualized Learning enabled by AI

Individualizing feedback appears to be of great value, as feedback is considered one of the most powerful tools for improving student learning (Hattie & Timperly 2007). Hattie and Timperly (2007: 81) defined feedback as "information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding". Feedback can be categorized as internal or external (Winne & Hadwin 1998). External feedback, on the one hand, refers to regulatory mechanisms that assist learners in monitoring their learning progress by offering information about their process. It shows the gap between learners' current performance and their intended goals, guiding them to adjust their learning in order to minimize these discrepancies (Devolder et al. 2012; Hattie & Timperley 2007). Internal feedback, on the other hand, is generated by the learners themselves during the external feedback process (Nicol & Macfarlane-Dick 2006); thus, learners are expected to convert external feedback into internal feedback and apply it effectively, which is often seen as a dialogic process (Carless &

Winstone 2020). This metacognitive process helps learners regulate their learning strategies and goals, knowledge and beliefs (Hattie & Timperly 2007).

Although the importance of comprehensive and personalized feedback has been widely recognized, its scalability in contemporary educational environments has remained constrained (Matcha et al. 2019). A promising way of delivering personalized and timely feedback is through adaptive learning technologies (Martin et al. 2020; Xie et al. 2019). Bimba et al. (2017) report on a wide range of different implementations in learning technologies. They highlight that students' knowledge level is most frequently used to guide the content of the adaptive feedback. Studies investigating the effects of feedback on learning outcomes have suggested that feedback on a leaner's response to a task can confirm or reconstruct the current information in memory and thereby influence present knowledge and strategies (Van der Kleij et al. 2015).

2.2.4. Implementation of individualized feedback in the *Language Coach*

Language learning can be demanding for students due to the number of rules and exceptions that need to be followed to produce correctly formed sentences. By means of AI, elaborated feedback, adaptive to the learners' mistakes, can be created and therefore individualize their learning experience. In Figure 6, an example from the *Language Coach* is shown, illustrating how a learner practices verbal aspect in an A1-level Russian exercise. Feedback is once again in English, as the explanation in Russian would still be too complicated at this level for learners without a Slavic background. The real-time feedback that follows the learner's response includes, firstly, a validation showing that the answer is not yet correct, and that the learner can try again. Secondly, the AI provides a detailed elaboration on the mistake made including an explanation of how the incorrectly chosen word can be appropriately used in other contexts.

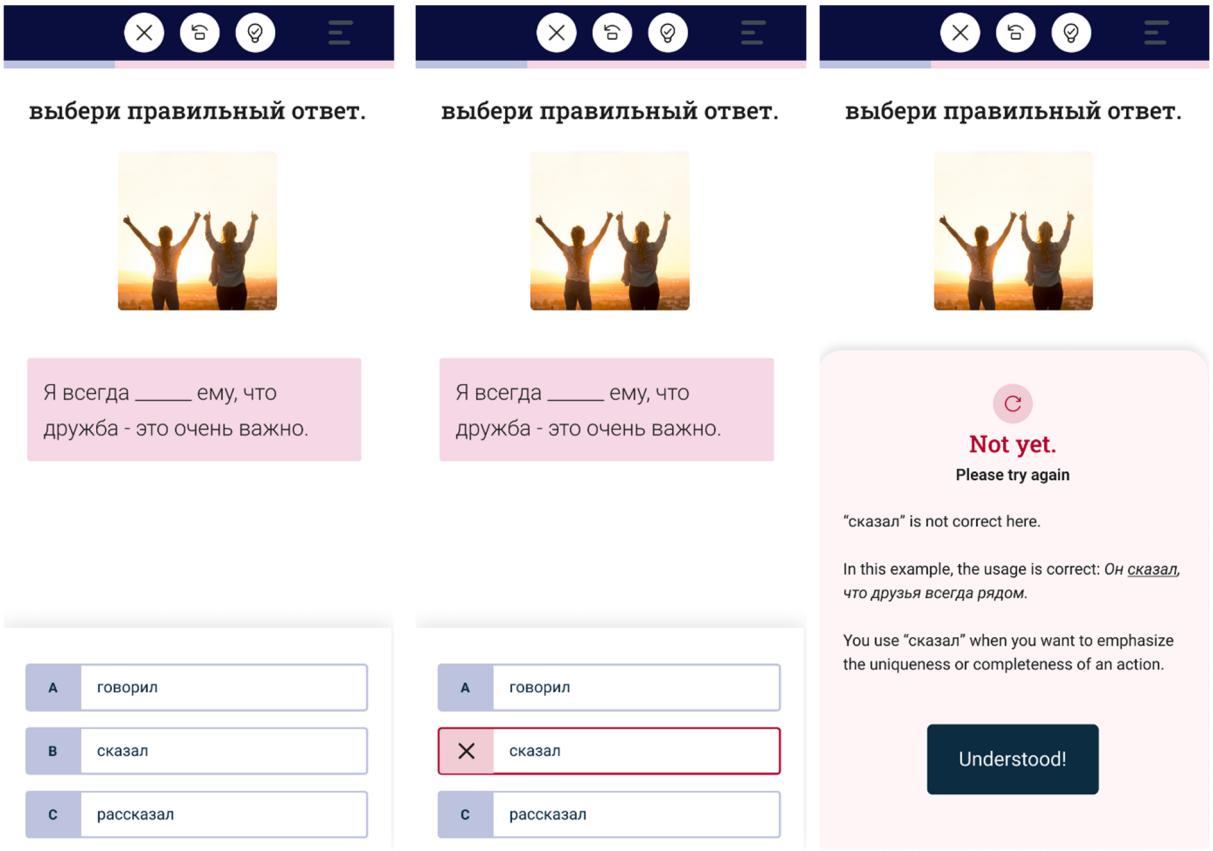

Figure 6. Individualized feedback on the incorrect answer.

Subsequently, another try is given, and when the learner clicks on the correct answer (Figure 7), the learner receives additional information on the correct solution and is provided with the option of receiving more information on the relevant grammar rule. In this way, learners not only practice the language through exercises but also receive targeted feedback on their mistakes and can revisit relevant grammar rules through the adaptive feedback system.

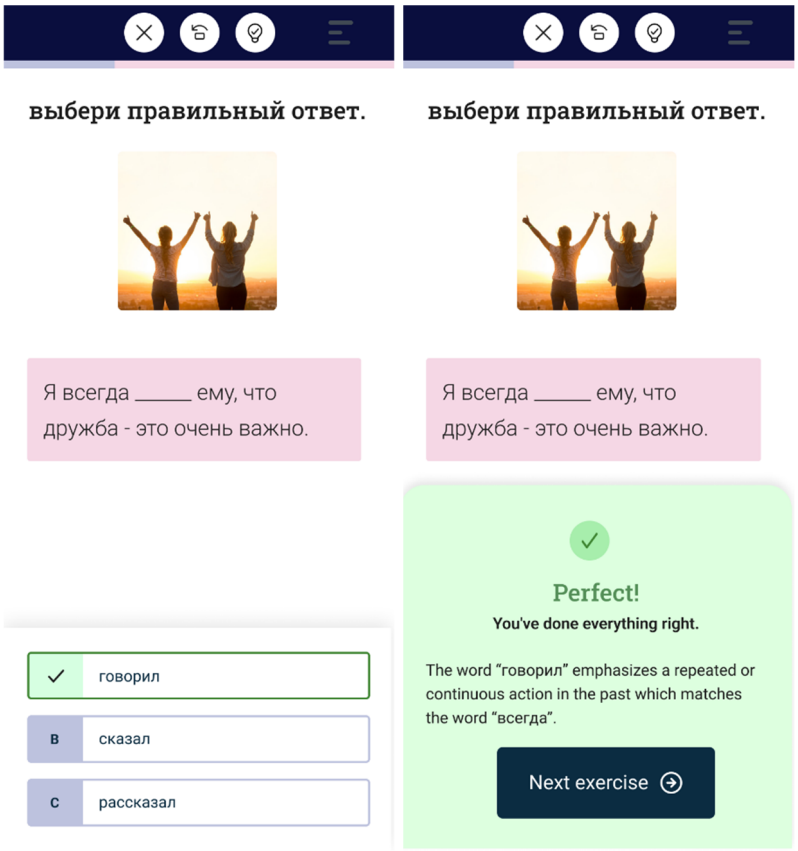

Figure 7. Individualized Feedback on the correct answer with English explanation.

3. Challenges and Requirements

Despite the advantages and the enormous potential of AI in education and language learning, the ethical risks and challenges inherent with the usage of these technologies must be considered (Ortega & Orozco 2024). These considerations include, as stated by Mohamed (2024: 1), "privacy and data security, potential biases and hidden ideologies in the output, transparency and accountability, dependency and autonomy, digital divide, job displacement and professional development". While these issues are broadly relevant to the use of AI in education, some are particularly critical in the context of AI-based language learning.

Potential biases can be demographic, cultural, linguistic, temporal, confirmatory, ideological and political and can emerge through factors like data set training, labeling, annotation, and algorithms (Mohamed 2024). They can occur in all generated media such as texts, videos, pictures or audios. Hence, proper training of LLMs and the implementation of filtering systems for AI-generated content is fundamental to reduce these biases. This applies particularly to Russian, as most LLMs do not disclose their training data, making it likely that state-influenced or propagandistic texts were included in the training corpus. In longer AI-generated texts used

for writing tasks, such bias may be more deeply embedded in narrative framing or argumentation and therefore hard to identify. In shorter texts, by contrast, ideological influence can manifest in other, equally subtle ways — for example through word choice, tone, or preferred collocations. A seemingly neutral vocabulary exercise might, for instance, present government-related terms in consistently positive contexts while omitting or downplaying alternative viewpoints. Another example could be in exercises on geography or history, where place names or historical events are framed according to one national narrative while excluding others (compare the overview by Birzer & Steinbach 2025 on the basis of Solopova et al. 2023: 9-10).

Furthermore, the impact on the role of the teacher in AI-based learning environments must be considered. As human interaction is crucial for successful language learning, job displacement among educators is highly improbable (Schmit & Strasser 2022; Pratama et al. 2023). Teachers are irreplaceable as they offer guidance, foster relationships, inspire creativity and are indispensable in shaping an educated and ethically responsible generation (Pratama et al. 2023). AI is inherently limited in fully addressing certain aspects of language learning, such as cultural nuances, authentic pronunciation and intonation, as well as the subtleties of irony and humor (Zaghlool & Khasawneh 2023). These limitations are particularly pronounced when teaching Russian. Due to its complex grammatical system — including aspect pairs, case usage, and mobile stress — learners benefit greatly from nuanced explanations and tailored scaffolding that AI systems still struggle to provide. While first promising steps have been taken, tools like the *Language Coach* still require extensive training and refinement to handle the specific challenges of Russian. This includes not only linguistic accuracy, but also the ability to differentiate between learner types—such as heritage speakers and complete beginners—and to respond flexibly to their varying needs.

Against this backdrop, teachers need to gain proficiency in handling ALTs, as a lack of teachers' digital proficiency can impede the successful integration of AI tools into language learning environments. One of the biggest challenges is not only the mere combination of technology and teacher interaction but also an effective integration of ALTs into traditional learning environments. (Patty 2024) Given effective teacher-ALT interaction, AI can be seen as a tool to enhance the teachers' opportunities to support increasingly heterogenous language learner groups – especially in complex language learning contexts like Russian.

4. Conclusion

The need for adaptive learning technologies that provide learning opportunities for every individual learner can no longer be overlooked. With the help of personalized and individualized learning elements, if implemented effectively, learners are expected not only to increase their motivation and engagement, but also to improve their learning outcomes. The present paper provided an insight into developments in AI and ALTs focusing on the pilot project of the *Language Coach* for Russian - a project where AI-generated media and adaptive feedback mechanisms create learning materials tailored to the individual preferences and needs of learners.

Three aspects must be considered when using ALTs in language learning situations. Firstly, to avoid the risk of inappropriate AI learning experiences, the inclusion of filtering systems for the evaluation of the quality of AI generated content is essential. The technological realization of the *Language Coach* presents an initial approach to evaluate AI-generated learning content. However, large-scale tests are still required in the future. Secondly, integrating ALTs into traditional classrooms requires a reconceptualization of learning, avoiding a "mere addition of a piece of technology" (Shapiro, 1995: 67). The *Language Coach* aims to be distributed among Russian language teachers in adult language schools. Workshops and collaborative sessions as well as informational support will be available to explain the usage of the *Language Coach* and collaboratively develop ways to integrate this ALT into classroom teaching. And lastly, although previous findings on motivational and academic factors are promising, further investigations are needed to evaluate the effects of ALTs, comparing different methods and their integration in classroom learning situations.

Despite these challenges, ALTs provide educators with digital solutions to better support each learner based on their needs and preferences, thereby creating new learning spaces. This is particularly relevant for Russian, where a high degree of grammatical complexity and learner diversity calls for differentiated and adaptive support. ALTs like the *Language Coach* have the potential to address such variation through individualized feedback and flexible content pathways. Yet, the current performance of such tools in Russian still reveals room for improvement: aspects like grammatical precision, contextual appropriateness, and the handling of learner-specific difficulties — such as aspect choice or double negation — remain challenging. However, the *Language Coach* already demonstrates promising potential to address these issues through targeted feedback and adaptive learning paths, especially when compared to the scarcity of high-quality digital tools for Russian to date.

For effective language learning with AI, further insights from classroom implementations and evaluations are needed, especially in languages with fewer digital learning resources like Russian. This requires not only continued technological refinement, but also the involvement of educators who are trained to assess and shape AI output for their specific learner groups. Research in learning and instruction should therefore focus more explicitly on less commonly taught languages in the AI context, ensuring that advancements in educational technology benefit a broad spectrum of language learners.

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