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ARTICLE

Innovations in the Profession-Oriented Training of Would-be Philologists: Eurasian Dimension

Oleksandra Volodymyrivna Popova [1*] **, *Oleksandra Oleksandrivna Morhun*** [2]

[1] *Department of Translation, Theoretical and Applied Linguistic, Faculty of Foreign Languages*

[2] *State Institution "South Ukrainian National Pedagogical University Named after K. D. Ushynsky" , Odesa 65000, Ukraine*

ABSTRACT

The article deals with the issues related to innovations in the profession-oriented training of would-be translators. The purpose of the research is to analyse the innovative set of educational tools enabling the improvement of the learning outcomes within the training of would-be orientalists. The tasks are: 1) to outline the paradigm of innovations in the system of higher education; 2) to specify innovative technologies contributing to the improvement of the methodological basis for training would-be orientalists; 3) to elaborate assessment criteria for would-be orientalists' learning outcomes. Some vectors of innovative tools in the sphere of education have been considered: IT in the system of education (personalization, adaptive learning platform, augmented and virtual reality, etc.); innovative technologies in the practice of training future translators/interpreters and foreign language teachers (artificial intelligence, gamification in language learning, applications for learning foreign languages, etc.). Criteria improvement expectancy while using innovative technologies (personalization, adaptive learning, interactive conversations, gamification) has been presented in two similar questionnaires intended for students and teaching staff. The obtained data confirm that the most and least important issues focused by the students and instructors coincided. The research conducted enabled the author to draw certain conclusions which confirm the fact that the instructors keep to the student-centred approach and understand the necessity of applying innovative (AI-driven) technologies without neglecting the teacher's role in the educational process.

Keywords: Adaptive Learning; Artificial Intelligence; Innovations; English; Chinese; Personification of Education; Virtual

*CORRESPONDING AUTHOR:

Oleksandra Volodymyrivna Popova, Department of Translation, Theoretical and Applied Linguistic, Faculty of Foreign Languages;
Email: alex-popova@ukr.net

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and Augmented Reality

1. Introduction

Ukraine's status quo within the sphere of science and education demonstrates its intention to integrate into Eurasian academic space, which implies aggregation of the world experience. International academic cooperation facilitates the evolvement of the domain under focus in a new updated manner.

The reforming of higher education in Ukraine allows for transforming value orientations, broadening cross-cultural and academic relations both in the European and Asian scales. The teaching/learning platform for educating specialists of the modern format in the era of digitalisation, in particular, needs the involvement of innovative didactic technologies, means, methods, and tools. The training domain intended for would-be translators and teachers of foreign languages requires appropriate equipment, modernised technical appliances and applications.

Therefore, the **relevance** of the study is conditioned by scientific, technical and educational breakthroughs as well as by the urgency to acclimate Ukraine's academic and educational space to the world framework taking into consideration modern needs and achievements.

The knowledge of foreign languages in performing academic activities within exchange programmes, international cooperation with European and Asian partner countries contributes to successful learning acquisitions. It should be noted that any education- and research-based activity is accompanied by concluding corresponding agreements and contracts in two languages, at least English and Ukrainian – for collaborations with European countries, Chinese and Ukrainian – for partnerships with the People's Republic of China, Korean and Ukrainian – for cooperation with the Republic of Korea, Japanese and Ukrainian – for interactions with Japan, and so on. Furthermore, applicants for Asian exchange or academic mobility programmes fill in application forms in one of the Oriental languages and English. Linguistic mastery facilitates effective comprehension of documentation, accurate navigation through financial and legal terms of academic mobility and grant programs; it helps to avoid potential culture-related conflicts.

Therefore, to analyse the innovative set of educational tools enabling the improvement of the learning outcomes within the training of would-be orientalists is **the purpose** of the research. It involves solving the assigned **tasks**:

1) to outline the paradigm of innovations in the system of higher education;

2) to specify innovative technologies contributing to the improvement of the methodological basis for training would-be orientalists;

3) to elaborate assessment criteria for would-be orientalists' learning outcomes.

The modern methodological basis for training is considered in the scientific circles covering diverse vectors of innovative tools in the field of education:

· IT in the system of education (adaptive learning platform, augmented and virtual reality, etc.);

· innovative technologies in the practice of training preservice teachers of foreign languages and translators/interpreters (artificial intelligence, gamification in language learning, applications for teaching/learning foreign languages, etc.).

Let us consider the most popular ones.

Research Questions

The study is structured around the questions as follows.

RQ1. How innovative technologies can contribute to teaching/learning foreign languages?

RQ2. What learning outcomes can students improve under conditions of military actions in Ukraine?

2. Literature Review

2.1. Adaptive Learning

Adaptive learning is a pedagogical technique that leverages data-driven instruction to tailor teaching and learning experiences to meet the unique needs of each student. The systems of adaptive learning can track data related to students' academic progress, their involvement and performance degrees, as well as provide personalized learning experiences.

This approach complements the concept of equitable

education, which acknowledges differences among learners and aims to provide suitable resources and materials based on their academic progress. Adaptive learning, in combination with adaptive teaching and appropriate assessment practices, promotes equity by addressing individual learning needs effectively.

Unlike traditional, one-size-fits-all curricula, adaptive learning aligns closely with interactive learning by offering customized pathways, timely feedback, and additional resources. The key components of adaptive learning software include *adaptive content, sequencing, and assessments*, all designed to enhance the learning experience[1].

Adaptive content is closely interrelated to students' particular replies and provides their feedback (e.g., suggestions, review material on certain competences or upcoming actions) without ruining the chain of the obtained skills.

The technology of adaptive learning means that *adaptive sequence* collects and processes students' outcomes to predict student's next steps or thoughts[2].

Adaptive assessment modifies questions based on student's prior responses. When students answer correctly and confidently, the questions gradually increase in difficulty. Conversely, if students struggle, the questions become simpler, aligning the difficulty with their current level of understanding.

These components work together to provide a seamless, personalized learning journey that adapts in real-time to meet the needs of individual learners.

Adaptive learning software encompasses the above three areas breaking down course material into controllable units in compliance with each learning objective. After that, it instantly supports students providing them with particular funds according to their specific learning needs and pertinent feedback. One should emphasize the role of the teacher who can adapt any instruction by means of immediate data-driven decisions to tailor assignments to each person's needs[3].

American scholars emphasize that assessment-driven learning sectors, developed during the content creation phase, are charted into hierarchical structures to ensure that students master prerequisite skills before advancing to more complex topics[4]. This adaptivity begins with *knowledge determination* – a pre-determined set of questions that gathers information about learners before they engage with the core material.

Cavanagh, Chen, Lahcen, and Paradiso[5] describe the University of Central Florida's (UCF's) adaptive learning design framework, which comprises five key features:

· *objective-based learning bits* – small, focused units tied to specific learning objectives;

· *personalized assessment and content* – customized evaluations and resources tailored to individual learner needs;

· *adaptive learning paths* – flexible pathways that adjust as students make progress;

· *alternative content* – diverse resources to accommodate different learning styles;

· *procedurally generated questions* – dynamically created questions to test understanding and reinforce skills.

This scheme could be enhanced by expanding the scope of subject matter and incorporating more complex assignments.

For example, Associate Instructor Buhagiar[6] from Florida introduced a course objective: "Students will be able to use simple linear regression as indications and trends of business and economic data" . To support this objective, 10 lessons covering relevant concepts or component skills were identified and mapped to evidence-bearing assignments and/or assessments. These were designed to measure individual mastery of the objective, and assessments were developed to ensure students achieved the intended learning outcomes.

As most adaptive systems are assessment-driven[7], personalized assessments are critical. These should leverage data from pretests, posttests, and practical assignments to focus on individual skill development and provide meaningful feedback.

As it can be seen from the pedagogical steps in adaptive learning, the education-related phenomena "student-centred learning" , "personalized learning"[8], "differentiated approach" might be considered synonymous. Any instructor/teacher dealing with personalized learning (adaptive learning software) experiences challenges in deciphering and responding to the students' needs before they complete the final unit/module test[9].

Each student needs an individual approach since students demonstrate different results. It is up to an instructor/teacher to choose a series of improvement tools in compliance with students' gaps, failures or challenges. These educational forms can be provided: interactive mini-lectures,

workshops, small-group discussions, case studies, profession-centred activities. They can facilitate students' academic progress, especially those ones' who have similar difficulties. It would be essential if students observed their success in connection with the starting point as well as teachers could get feedback from students.

Thus, recognizing and acknowledging the extent of the topicality of adaptive learning platforms today, the role of the teacher is not going to be neglected. Furthermore, this is the teacher who still manages innovative educational technologies filling them with relevant content.

2.2. Virtual and Augmented Reality

Another ITs in the system of education to be mentioned are virtual reality (VR) and augmented reality (AR) that may change our perception of screen content creating new and thrilling experiences. A computer-generated world of VR is boundless for teaching/learning purposes. Augmented reality, in turn, can offer digital images and layer them on the real learning situation happening around you by means of either a clear visor or a smartphone.

The VR devices (headsets) are connected to a computer, they have immaculate graphics and perform well. For example, the **Oculus Rift**, the **Vive**, and the **PlayStation VR** connected to the **PlayStation 4 game console** or **Google Cardboard** and the **Gear VR** which can house your smartphone and use its screen as the display (see **Figures 1** and **2**).

Figure 1. VR devices.

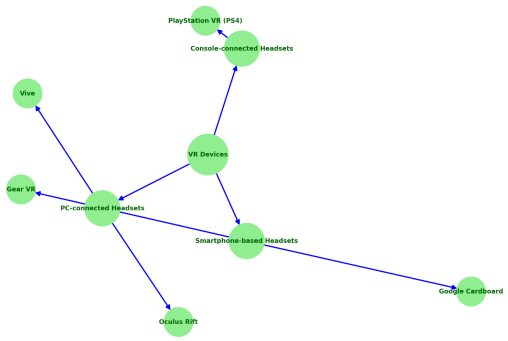

Figure 2. VR devices and their connections.

From our standpoint, VR and AR are perfect means for developing phonological knowledge and skills of pre-service teachers of Chinese/English and would-be translators/interpreters of Chinese/English. Still there is a challenge for learners to lose a sense of the natural world. For Ukrainian students, on the one hand, it is essential not to be hurt psychologically or injured physically under military conditions; on the other hand, they did not chance to have overcome the post COVID-19 syndrome. Some alternatives to eLearning can be seen in the involvement of Artificial Intelligence. The virtual and augmented learning environments are indispensable parts of multi-vector Artificial Intelligence Platforms. They complement the list of innovative Information Technologies in the system of education and facilitate personalization of the learning process.

2.3. Artificial Intelligence

We are living in the AI era. The influence of Artificial Intelligence on teaching/learning and education is obvious; it also comprises the spheres of society, economy and the future of learning and education[10]. Education is one of the domains where it is actively involved, mastering foreign languages in particular. It is an alternative to the traditional teaching/learning methods which can somehow hinder learners from succeeding (embarrassment to speak in front of their groupmates[11], non-student-centred approach, lack of motivation to learn more about linguistic/cultural features of foreign languages they deal with (or new vocabulary), etc. AI-based personalized systems are "student-centred"[12] but we should remember that there are a few menaces which are to be taken into consideration before empowering Artificial Intelligence[13].

This is the AI technology that can improve learners' language acquisition[14]. Due to AI learning programs, students are not bonded to certain locations. They can study anywhere, set their own objectives, and follow personalized curricula/syllabi. At the initial stages, students can be engaged in learning games, quizzes or other language-driven activities created by AI, which can tailor foreign language lessons to learners' interests.

We should mention the assisting role of convenient and effective AI-powered language apps aimed at performing certain functions:

· to give remote access to the content of eLearning

courses;

· to personalize learning (to adapt learning materials and assignments to the individual needs of each student);

· to simulate real communication situations (chatbots and virtual interlocutors allow you to practice speaking in natural environments without any fear of failure);

· to automatically assess assignments (fast and objective assessment of written and oral activities);

· to analyse obtained data (AI can analyse data on student progress and provide feedback to teachers to optimize the teaching/learning process)[15].

Nykon[16] shares his experience regarding essential items of artificial intelligence intended for language learning alongside AI language learning algorithms widely used in EdTech (online learning) (see **Figure 3**).

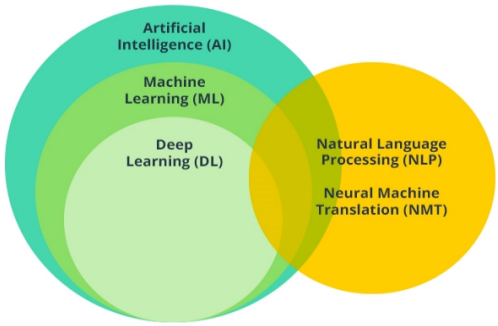

Figure 3. AI language learning algorithms commonly used in EdTech (Retrieved from https://intellias.com/how-ai-helps-crack-a-new-language/).

Machine Learning (**ML**), a branch of artificial intelligence (AI), enables systems to improve their performance and decision-making capabilities over time through experience and data analysis. Deep Learning (**DL**), a subset of ML, employs algorithms modelled after the human brain's neural networks, allowing systems to process large amounts of data and recognize patterns with remarkable accuracy. Each algorithm learns from a vast dataset. A great many dimensionality reduction algorithms function for mastering foreign languages (e.g., the Decision Tree algorithm, the K-Means and Naïve Bayes algorithms).

The experts in AI learning platforms single out these three main algorithms: **NLP** (Natural language processing), **CE** (Collocation Extraction), and **PMI** (Point Mutual Information). NLP allows machines to read, decode, comprehend and generate human language. CE enables computers to find and extract information, classify documents as well as solve language generation problems whereas PMI measures lexical valency[17].

To Ukrainian students majoring in Secondary Education or English Translation Studies, some smart NLP learning apps for Android and iOS (Apple mobile devices iPhone, iPod and iPad + Operating System) can be offered for more effective English language acquisition under modern conditions. One of these apps is the **Alphary app**. As the students learn British English as their major, the dictionary content from Oxford University Press is the right thing for them to practice spelling, grammar, vocabulary (semantics for word choice, neutral and literary vocabulary, business and professional terms, etc.) in the mode of interactive feedback. Spaced repetition provides for long-term vocabulary retention. The **FeeBu app** (Feedback Butterfly) might help learners master vocabulary, grammar, and spelling. Ukrainian learners, having access to an immense collection of English texts, can train their vocabulary in particular contexts alongside experience the feeling as if they were interacting with an English tutor demonstrating corresponding mimics and behaviour. Depending upon students' learning outcomes, "*gap recovery exercises*" (*authors' term*) can be generated for learners. One can give more examples of AI apps facilitating language learning but the problem is that Ukrainian learners have diverse mobile phones and it is a kind of a challenge to choose a common AI app which would suit all of them.

Special attention should be paid to AI chatbots, computer programs that simulate human language with the assistance of a text-based dialogue system through processing natural language[18]. By using interactive salutations and vocatives, Chatbots make one physically feel a present human interlocutor who controls the process of language learning[19] through dialogues and interactions. In our opinion, Chatbots can comfort Ukrainian learners in complicated times for Ukraine – be a friend-interlocutor who can be in constant contact for any conversation in any reachable gadget or appliance[20]. To involve Chatbots in the educational process[21] is beneficial for providing personalized learning content on diverse issues and topics on the basis of learner's speech, interactive conversations held and text complexity.

If using artificial intelligence in foreign language learning environments, both teachers and learners can trace their weak and strong sides, challenges and acquisition, and further

Table 1. AI in language learning: outcomes and solutions.

Innovative Technology	*Features*	*Solutions*	*Criteria Improved*
Personalization	personalized learning experiences based on individual strong and weak points, and learning styles	to adapt content, assignments and challenges to each learner's proficiency level	• phonetic and phonological proficiency (pronunciation of isolated sounds, syllables, words and suprasegmental units; practical mastery in the intonational framework of sentences belonging to different communicative types and functional styles); • awareness and practical use of communicative grammar; • knowledge of a wide range of vocabulary in diverse topics; • ability to learn independently; • ability to correct one's own mistakes instantly
Adaptive learning	AI-suggested next learning steps based on learners' achievements and gaps; motivated continuous and progressive learning	to create content that aligns with individual learning goals; to recommend relevant learning materials based on the learner's progress, interests and objectives.	• linguistic knowledge and skills; • speech-communicative knowledge and skills; • grammatical awareness; • functional and stylistic awareness; • IT skills; • self-development as philologists; • profession-based knowledge and skills as would-be teachers and translators/interpreters of English/Chinese; • creative skills and abilities; • psychological preparedness for performing professional duties; • flexibility for working in foreign companies and education establishments; • adaptability to European and Asian standards; • desire for further self-development
Interactive conversations	AI-powered chatbots	to simulate and stimulate real-life conversations; to provide opportunities for learners to practice listening and speaking within a conversation-driven framework	• abilities to overcome psychological barriers to interact; • abilities to perceive and decipher interlocutor's intonational models in terms of non-modal and emotional-attitudinal semantics; • skills to instantly react to interlocutor's responses (requests, reprimands, suggestions, reproaches, appraisals, encouragement, etc.), questions, exclamations taking into account the intonational framework of his/her statements
Gamification	AI game-based elements for making language learning more interesting and enjoyable	game-like activities based on learner's academic success, a parity between AI-driven challenges and developed skills (abilities)	• awareness of natural and virtual learning environments; • readiness to undertake profession-related actions within game-like learning activities; • skills to creatively solve problems by means of foreign languages; • ability to foresee challenges and program ways of their solution

potential success in studying foreign languages (see **Table 1**) in class and at home[22].

Still, there is a thought that artificial intelligence has an impact on human capability to make decisions. It can cause laziness and a feeling of being unsafety in education[23]. Lack of human communication may lead to irritation, dissatisfaction and all-embracing detachment from the sphere of its use and decrease users' trust and loyalty[24].

There has been a lot of research related to the use of AI applications for academic purposes[25]. Generative AI applications, such as ChatGPT, are widely utilized by diverse audiences, including students, on a daily basis[26]. This highlights their substantial role in advancing and enhancing human – computer interaction[27]. Over the past three years, the use of AI applications in higher education has increased significantly[28], which prompts a debate at a higher school level whether to ban AI tools or to critically integrate it into the educational process within a well-defined framework of norms. This framework should encompass the integration of AI in teaching practices, learning strategies, and assessment methods[29]. One of the alternatives to AI applications which enhance learning in higher education is the augMENTOR project[30]. It seeks to establish a new pedagogical framework that fosters foundational skills and 21st-century competencies by leveraging emerging technologies. Lavidas et al.[31] investigated the determinants of Humanities and

Social Sciences Students' intentions to use Artificial Intelligence applications for academic purposes in Greece and came to certain conclusions in this respect. In the authors' opinion, the habitual use of specific applications, coupled with facilitating conditions, significantly influences their actual adoption. When students perceive these applications as habitual, they are more inclined to incorporate them into their academic routines. Similarly, although to a lesser extent, students are more likely to adopt these tools for academic support when they perceive adequate technical support is available. However, no research was dedicated to students' possibilities or non-possibilities to use AI applications under military conditions.

3. Methodology

These **methods** were utilized: *theoretical analysis* of the literature related to the issue under study to specify its essence; *structured qualitative interviewing* students who major in Translation Studies (English/Chinese)/Secondary Education (Chinese/English) and their tutors (questionnaire-based); *classroom observations* which enabled elaboration of profession-related assignments depending on the students' IT-experience; *systematisation method* of perspective vectors in terms of applying innovative technologies contributing to the improvement of the methodological basis for training would-be orientalists in Ukraine under conditions of martial law. The methodology constituents are as follows: research design, participants, research tools, and data interpretation.

3.1. Research Design

The experiment was stipulated by the premise that methodological background which involves innovative technologies based on AI can facilitate the developing Ukrainian university students' linguistic and extra-linguistic academic progress in CFL (Chinese as a foreign language) and EFL (English as a foreign language) under conditions of military actions in Ukraine.

This research is aimed at investigating the potential improvement in learning outcomes while using innovative technologies under focus and implementing appropriate methodological tools.

The experiment encompasses four phases: 1) studying the advantages and disadvantages of implementing innovative technologies into the educational process of Ushynsky University under military actions in Ukraine; 2) providing classroom observations in terms of students' IT and AI awareness for educational purposes; 3) elaborating questionnaires as the basis for the structured qualitative interview intended for students and teaching staff on prospects of implementing innovative technologies into the educational process of Ushynsky University under military actions in Ukraine as well as learners' academic progress expectations while using the studied innovative technologies; 4) interpreting the acquired outcomes.

3.2. Participants

The study sample comprised students from the Faculty of Foreign Languages at Ushynsky University (Odesa, Ukraine) and was conducted during the 2023 – 2024 academic year. The participants included (See **Table 2**):

· one group of first-year students majoring in Chinese Translation Studies (23 students; full-time study);

· one group of first-year students majoring in English Translation Studies (36 students; full-time study);

· one group of second-year students majoring in Chinese Translation Studies (18 students; full-time study);

· one group of second-year students majoring in English Translation Studies (35 students; full-time study);

· one group of first-year students majoring in Secondary Education (prospective teachers of Chinese and English) (9 students; full-time study);

· one group of second-year students majoring in Secondary Education (prospective teachers of Chinese and English) (9 students; full-time study);

· a group of 12 Chinese and English teachers.

The age of the student participants ranged from 17 to 19 years. 98% were female, and 2% were male.

The educational programs for future translators (majoring in English and Chinese Translation Studies) and preservice teachers (of Chinese and English) were designed on a parity basis. Each program allocated approximately 45 – 50% of the curriculum to academic disciplines related to English and Chinese, including: "Theory and Practice of Translation (English)", "Practical Phonetics/Grammar", and "Practice of Oral and Written Speech (English)"; "Theory and Practice of Translation (Chinese)", "Practical Phonetics/Grammar" and "Practice of Oral and Written Speech (Chinese)". This

Table 2. Participants of the experiment at Ushynsky University.

Specialty/Occupation	Year of Study	Number
Learners majoring in Chinese Translation Studies (minoring in English; full-time study)	1st	23
Learners majoring in English Translation Studies (minoring in Chinese; full-time study)	1st	36
Learners majoring in Chinese Translation Studies (minoring in English; full-time study)	2nd	18
Learners majoring in English Translation Studies (minoring in Chinese; full-time study)	2nd	35
Learners majoring in Secondary Education (would-be teachers of Chinese and English; full-time study)	1st	9
Students majoring in Secondary Education (would-be teachers of Chinese and English; full-time study)	2nd	9
Teachers of Chinese		12
Teachers of English		
Total		142

Note: The total sample size was 142.

parity ensured that students had comparable proficiency levels in both languages: B1 level on the CEFR scale (English) and HSK 2 level according to the HSK framework (Chinese).

3.3. Research Tools

The students were offered to participate in self-guided work aimed at testing the innovative technologies under consideration (personalization, adaptive learning, interactive conversations, gamification; AI applications, including virtual and augmented realities); whereas university tutors were involved in the analysis of learners' academic progress expectations while using the studied innovative technologies under conditions of military actions in Ukraine. It was essential to find out if the innovative technologies could facilitate the improvement of the students' learning outcomes. The learners and university tutors were asked to take part in the structured qualitative interview on the basis of the universal questionnaire "*Academic improvement expectancy while using innovative technologies*" (See the **Appendix A**) consisting of 19 questions. Each question contains two answers one of which is to be chosen. The participants grounded their choices. The most popular answers were accumulated in **Table 3**. After being interviewed, the students were invited to fulfil a profession-based assignment based on their AI practical experience.

3.4. Data Analysis

The methods of systemic and content-driven analyses allowed us to examine and generalize the normative foundation for the issues under focus, as well as to systemize the results of the study (challenges to apply the innovative technologies under conditions of military actions in Ukraine, students' and university tutors' expectations of using them as a teaching/learning platform). The students' learning outcomes were interpreted by means of the Pearson test of homogeneity/a chi-squared test (chi-square or $\chi 2$ test).

4. Results and Discussion

4.1. Interviewing

The fact is that most students observe that Ukrainian teachers incorporate modern methods into the educational process, including electronic presentations, internet resources, online services, and video conferencing under military actions [32]. According to Beatty [33], the HyFlex model (hybrid + flexible) is based on five key principles: (a) allowing students to choose how to attend classes; (b) providing equivalent learning activities across all formats; (c) using the same learning objects for all students; (d) equipping students with the technology and skills needed to engage in any format; (e) implementing authentic assessments. Proponents of the HyFlex model argue that it is more student-centred and flexible than traditional mixed-mode classrooms, as it allows students to adapt their learning needs to the course environment. The designated learning format is suitable both for the (post)COVID – 2019 period and the military conditions in Ukraine. We can state that at Ushynsky University the mode of education is adapted to students' living conditions, and place of (non-)temporary residing (migration abroad, internal migration).

We support the idea of Ukrainian scholars [34] regarding the need for students to get a quality education. At the same time, teachers face the challenge of flexibly transforming their teaching methods to maintain a high standard of education. In the context of wartime, assessing the quality of online teaching becomes particularly crucial. This necessitates the development of sensitive feedback tools that are both efficient for processing large volumes of feedback data and effective in optimizing the learning process.

Having considered the advantages and disadvantages of the innovative technologies which facilitate learning English and Chinese by Ukrainian learners, the students and university tutors were asked to answer the questions of the Questionnaire "*Academic improvement expectancy while using innovative technologies*" and comment on their answers if they felt like doing it. Each answer was assessed using a 100%-scale, which enables us to detect the most popular expectations within each category (personalization, adaptive learning, interactive conversations, gamification) as well as to determine whether the tutors' and the students' expectations coincided. These results are reflected in **Table 3**.

The presented data confirm that the most and least important issues focused by the students and instructors coincided – 96% and 98% (skills to self-adjust to different modes of study (online, offline, a mixed (HyFlex) type) under military actions in Ukraine in "*Personalization*"), 85% and 86% (skills to correct one's own and groupmates' mistakes instantly in "*Personalization*"); 98% and 100% (improvement of IT skills as well as creative skills and abilities in "*Adaptive learning*"), 74% and 75% (flexibility for working in foreign companies and education establishments in accordance with European and Asian standards in "*Adaptive learning*"); 98% and 99% (skills to instantly react to interlocutor's responds (requests, reprimands, suggestions, reproaches, appraisals, encouragement, etc.), questions, exclamations taking into account intonational framework of his/her statements in "*Interactive conversations*"), 93% and 92% (skills to avoid and/or neutralise potential conflicts while interacting with military men or women in "*Interactive conversations*"). A one-percent difference can be found in "*Gamification*" : awareness of natural and virtual learning environments and skills to navigate in them (96% and 95%) and skills to creatively solve problems by means of foreign languages and practical experience (95% and 96%). 77% and 80% were fixed in the category "skills to foresee challenges and program ways of their solution" . So, it can be stated that the instructors keep to the student-centred approach and understand the necessity of applying innovative (AI-driven) technologies.

Table 3. Criteria improvement expectancy while using innovative technologies.

№	Learners' Expectations	Data Obtained, %	Tutors' Expectations	Data Obtained, %
		Personalization		
1	Improved phonetic and phonological proficiency, a widened range of vocabulary in diverse topics	91	Students' improved phonetic and phonological proficiency, a widened range of vocabulary in diverse topics	92
2	Mastery in communicative grammar	88	Students' mastery in communicative grammar	86
3	Skills to learn, make research and develop independently	90	Students' skills to learn, make research and develop independently	88
4	Skills to correct one's own and groupmates' mistakes instantly	85	Students' skills to correct one's own and groupmates' mistakes instantly	86
5	Skills to self-adjust to different modes of study (online, offline, a mixed (HyFlex) type) under military actions in Ukraine	96	Students' sills to self-adjust to different modes of study (online, offline, a mixed (HyFlex) type) under military actions in Ukraine	98
		Adaptive learning		
6	Improvement of linguistic knowledge and skills within diverse communicative modes depending on functional styles	95	Improvement of students' linguistic knowledge and skills within diverse communicative modes depending on functional styles	94
7	Improvement of IT skills as well as creative skills and abilities	98	Improvement of students' IT skills as well as creative skills and abilities	100

Table 3. *Cont.*

№	Learners' Expectations	Data Obtained, %	Tutors' Expectations	Data Obtained, %
8	Practical profession-based experience as would-be teachers and translators/interpreters of English/Chinese and intention for further self-development	91	Students' practical profession-based experience as would-be teachers and translators/interpreters of English/Chinese and intention for further self-development	90
9	Flexibility for working in foreign companies and education establishments in accordance with European and Asian standards	74	Students' flexibility for working in foreign companies and education establishments in accordance with European and Asian standards	75
10	Psychological preparedness for performing professional duties under military actions in Ukraine	92	Students' psychological preparedness for performing professional duties under military actions in Ukraine	91
	Interactive conversations			
11	Skills to perceive, decipher and predict interlocutor's intonational models in terms of non-modal and emotional-attitudinal semantics (in spite of noises or interrupted connection)	94	Students' skills to perceive, decipher and predict interlocutor's intonational models in terms of non-modal and emotional-attitudinal semantics (in spite of noises or interrupted connection)	93
12	Skills to instantly react to interlocutor's responds (requests, reprimands, suggestions, reproaches, appraisals, encouragement, etc.), questions, exclamations taking into account intonational framework of his/her statements	98	Students' skills to instantly react to interlocutor's responds (requests, reprimands, suggestions, reproaches, appraisals, encouragement, etc.), questions, exclamations taking into account intonational framework of his/her statements	99
13	Skills to overcome psychological barrier to interact with both males and females	95	Students' skills to overcome psychological barrier to interact with both males and females	96
14	Skills to avoid and/or neutralise potential conflicts while interacting with military men or women	93	Students' skills to avoid and/or neutralise potential conflicts while interacting with military men or women	92
	Gamification			
15	Awareness of natural and virtual learning environments and skills to navigate in them	96	Students' awareness of natural and virtual learning environments and skills to navigate in them	95
16	Preparedness and readiness to undertake profession-related actions within game-like learning activities	92	Students' preparedness and readiness to undertake profession-related actions within game-like learning activities	91
17	Skills to creatively solve problems by means of foreign languages and practical experience	95	Students' skills to creatively solve problems by means of foreign languages and practical experience	96
18	Skills to foresee challenges and program ways of their solution	77	Students' skills to foresee challenges and program ways of their solution	80
19	Practical experience in game-like activities based on learners' academic success involving military learning environment	90	Students' practical experience in game-like activities based on learners' academic success involving military learning environment	88

4.2. Challenges of Applying Innovative (AI-driven) Technologies

The specified positive expectations prove the students' intention to experience innovative (AI-driven) technologies. Their implementation into the educational process of Ushynsky University (Odesa, Ukraine) depends directly on the military actions and the circumstances objectively connected with them. It should be noted that there are general military circumstances and particular regional ones. In the view of the above, there is a range of military circumstances that hinder the application of innovative technologies in the Southern Region of Ukraine. Let us designate them.

1. *Place of residence*. The majority of students and a number of teachers/university instructors left for the EU countries and the UK when the war started. It means that they can not participate in classroom activities together with other students during in-person classes. On average, 4% of students' internal migrations and 20–30% students' migrations abroad can be fixed at the university level.

2. *Mode of study*. When the war started, all educational institutions transformed to the online format for security purposes. The Ukrainian teaching staff and students had already had an experience to teach/learn online (the COVID-2019 epidemy) by that time. The 2023–2024 academic year was characterized by a mixed-mode learning environment:

online classes from the teaching staff residing abroad, offline classes – for those staying in Ukraine. The 2024–2025 academic year can signalize about the transforming to the HyFlex model.

3. *Intensity of air raid attacks/alerts*. Odesa experiences air raid alerts every day. It affects teaching/learning conditions and possibilities, reduces the time intended for teacher-guided learning, increases the time for self-guided work. Only those educational institutions can host students/school children where there are bomb shelters. It needs time and risks getting to bomb shelters when air raid attack is announced. Students'/pupils' inner psychological state worsens, they become nervous, though one can observe some anxiety to have a break. Teachers try to do their best not to interrupt the educational process: they work synchronously and asynchronously, combine traditional teaching tools with innovative ones, master IT technologies together with students, adapt to new assessment techniques, etc.

4. *Consequences of air raids*. After airstrikes, students and teaching staff may suffer from lack of electricity, water, any connection with the outer environment. It means that they have no possibility to join online classes, perform homework assignments in time, utilize IT technologies for teaching/learning purposes.

5. *Difficulty in maintaining psychological stress resistance*. At the beginning of the military actions in Ukraine, it was observed that secondary school pupils and university students demonstrated more difficulty in restoring their psychological and moral stability after air raids. By summer 2023, they had adopted psychologically to the situation in Ukraine and become aware of what to be done under unsafe conditions.

6. *Lack of financial capacity*. The implementation of innovative ITs/AI applications at higher school contingents on institution's financial capacity and presence/lack of qualified personnel. Nowadays, both factors are the pivot ones which determine the vector of universities' digitalization, improvement of IT infrastructure, modernization of their networks, automation of document processing, implementation of VR for educational purposes, etc. At the present days, renovation of material technical bases falls under the competence of each educational establishment. Unfortunately, Ukrainian universities can not spend money on the designated process in full degree.

7. *AI-awareness*. The development of AI-awareness (for specific purposes) can be correlated with person's financial capacity and learning/working requirements. Competency in AI application makes a person competitive at the modern labour market. It should be mentioned that those students who have some experience playing games using VR devices demonstrate academic progress while fulfilling profession-related interactive assignments, though not every Ushynsky University student has an opportunity to buy or rent VR equipment.

The above given challenges stipulated further assignments within the framework of innovative teaching/learning technologies under military actions in Ukraine.

4.3. Assessment of Students' Academic Progress

The detected expectations from using innovative technologies enabled formulating tasks and assignments aimed at improving students' profession-related AI-driven skills and abilities. The students majoring in English proposed to explore and experience **Assassin's Creed Nexus VR** independently before performing profession-related assignments. Taking into consideration the proficiency levels of the first-year and second-year students, the sophomore students consented to fulfil the offered assignments, the first-year students did not mind testing the VR game. In the students' opinion, this game gives an opportunity to immerse in the world of assassins with new mechanics and experiences specific to virtual reality, to interact with the game characters in English. The game features various historical eras (e.g., the Renaissance or Ancient Egypt), retains many core mechanics adopted from the series and allows players to physically interact with the world: using weapons, climbing walls, parkouring through urban landscapes, taking cover, performing stealth operations and hand-to-hand combating. Players can also actively use their hands to shoot a bow, throw daggers and even attack from above. The possibility to see the world from a first-person perspective adds novelty and depth to the traditional universe.

The students majoring in Chinese suggested that they should test **Half-Life: Alyx (半衰期：爱莉克斯)** (a game that unfolds the struggle against a brutal alien race known as the Combine). The learners appraised the benefit of playing this game because gamers, as the organizers of the nascent

resistance, can conduct vital research and create tools for those few who dare to challenge the Combine. This game is aimed at vivid interacting with the environment in Chinese, solving puzzles, exploring the world and instinctive combat. The gamer can learn to aim through a broken wall or dodge a barnacle and make an incredible shot, hack alien interfaces with a variety of tools. The game enables players to create new levels, allowing anyone to design new worlds and share them with the community through the Half-Life: Alyx Workshop on Steam by means of the Chinese language.

The students believed that these very games could provide them with the required experience and assist in acquiring significant profession-related qualities (quick wittedness, flexibility, lack of fear to interact with people in English/Chinese, social software, stress resistance, adaptability to complicated circumstances, bravery, historic awareness, etc.).

Thus, the students were ready to fulfil the Exercise "*Getting a job*" / "*就业 (jiùyè)*" after dealing with the VR game (see **Table 4**). Teachers of English/Chinese were interviewers. They were to ask students tricky questions about their potential job. For example,

1. Why have you decided to get this job?

2. Why do you think you are a worthy candidate for this position?

3. How are you going to cope with the profession-related difficulties?

4. What are your plans for further self-development?

5. How can you contribute in the development of our company/institution?

6. Are you digitally aware? Which AI-driven applications have you utilized? What was the purpose?

7. How could you assist in protecting our company/institution if it encountered dangerous situations?

8. Do you possess soft skills? How would they characterize yourself as a team player?

9. Are ready to work in multicultural team? How would you build effective cross-cultural communication within your team?

10. Have got any experience in processing documents? What kind of documents?

Table 4. Assessment Criteria for Exercise "Getting a job" / "就业 (jiùyè)" [35].

№	Criteria	Indices
1	Phonostylistic	· fundamental knowledge of practical phonetics within the working languages; · knowledge of perception units, features of syntagmatic segmentation of Chinese/English speech continuum; · knowledge of the intonation framework peculiarities of the Chinese/English speech continuum and its implicit attitudinal and evaluative meaning; · skills to perceive interlocutor's intention and decode his/her intonational framework in accordance with a situation
2	Lexical-grammatical	· knowledge of the lexical minimum, phraseology within the working languages; · fundamental knowledge of normative theoretical and practical grammar, communicative grammar within the working languages; · skills to use situation-related vocabulary; · skills to use stylistically appropriate grammatical framework for the vocabulary used
3	Compositional-stylistic	· knowledge of the basic patterns of text construction; · knowledge of the linguistic expressive means, various types of modality; communication means at the suprasegmental level; · skills to generate texts in compliance with the normative text-structures and style-based linguistic framework
4	Dialogical	· integrative knowledge of the functional classification of dialogues, composition and linguistic design of dialogues (dialogue-suggestion, dialogue-interrogation, dialogue-impetus to action, dialogue-exchange of ideas, interview, etc.); · knowledge of linguistic and structural features of spontaneous dialogical speech within the working languages; · skills to identify and apply an appropriate model of speech conduct in typical communication situations; · skills to use oratory techniques
5	Socio-anticipating	· knowledge of speech etiquette: social aspect; · abilities to predict semantic, lexical and syntactic framework; · skills to internally program communication, to build a spatial-conceptual scheme of one's own statement; · skills to formulate a thesis as a developed communicative intention
6	Official-documentary	· textual-compositional awareness of job application forms, CVs, resumés; · lexical and grammatical mastery in making up job application forms, CVs, resumés; · skills to demonstrate beneficial qualifications when applying for a job

The students (both majoring in Chinese/English Translation Studies and Secondary Education (Chinese/English and Foreign Literature) were divided into two groups (all in all – 62 full-time students): EG (experienced group – 20 learners) and OG (ordinary group – 42 learners). The EG was presented by those who had tested VR devices (including Assassin's Creed Nexus VR/Half-Life: Alyx (半衰期：爱莉克斯)), the OG students had not tested them. The learners majoring in Chinese fulfilled the tasks in Chinese, learners majoring in English did it in English.

Exercise "*Getting a job*" / "*就业 (jiùyè)*"

Task*: *A. Enter the recruiting bureau. Find out in English/Chinese if you can undergo an interview to get a job. Mind that you are to demonstrate your beneficial qualifications.

B. Write a chronological/functional resumé in English/Chinese. Mind its framework.

It should be noted that the exercise given above is good for training both would-be interpreters and preservice teachers of Chinese/English. It is aimed at teaching them to identify phonostylistic correlates of the compositional-stylistic and lexical-grammatical framework of Chinese/English artistic discourse, to phonetically correctly represent authentic texts, taking into account the emotional-attitudinal or emotionally-neutral components.

The students' learning outcomes are shown in **Table 5**.

The respondents' learners' outcomes were assessed according to the assessment scale for all types of speech activities (see **Table 6**).

As it is clearly seen from the assessment results, the learners representing the EG showed better outcomes in comparison with the OG (the high proficiency level – 22,8% (EG) and 13.63% (OG); the sufficient proficiency level – 54.88% (EG) and 41.91% (OG); the satisfactory proficiency level – 19.85% (EG) and 37.9% (OG); the low proficiency level – 2.47% (EG) and 6.56% (OG).

The EG learners expressed their opinion regarding how their VR experience contributed in academic progress in compliance with the phonostylistic, lexical-grammatical, dialogical and socio-anticipating criteria. They felt it easy to perceive the interviewer's intention and decipher it by the intonational model (phonostylistic criterion); to build extended answers (grammatically correct) using the vocabulary in adherence with the situation (lexical-grammatical criterion); to initiate and maintain different types of dialogues as well as to apply an appropriate model of speech conduct depending on a communicative situation (dialogical criteria); to predict semantic, lexical and syntactic framework of an interview and program their own statements keeping to the norms of speech etiquette (socio-anticipating criterion).

The OG students encountered certain difficulty perceiving authentic speech continuum in terms of its segmentation and modality of intonation. They were not familiar with some phraseological units and communicative grammar within their professional sphere. The students were breaking text-structure from time to time returning to their previous statements and lacked some linguistic expressive means. Some OG learners failed to demonstrate oratory techniques in presenting their beneficial qualities, to maintain spontaneous dialogues or to predict the interlocutor's communicative intention.

As for the official-documentary criterion, the students representing both the EG and OG demonstrated similar learning outcomes (the high proficiency level – 20.9% (EG) and 19.98% (OG); the sufficient proficiency level – 54.46% (EG) and 54.12 (OG); the satisfactory proficiency level – 21.74% (EG) and 22.8% (OG); the low proficiency level – 2.9% (EG) and 3.1% (OG)). It can be proved by the fact that they had not undergone any specific training in the official documentary domain dealing with translating or making up personal documents. They showed their ordinary skills in creating job application forms, CVs, and resumés acquired during their compulsory and/or elective classes at the university.

The results of the experimental work were mathematically processed in order to establish the difference in the final state of the students' proficiency levels to perform profession-related assignments after dealing with virtual reality devices (games) in the EG and OG using the Pearson homogeneity criterion (chi-square).

According to this criterion, we have an ordinal scale ($L = 4$) with different levels – "high level" , "sufficient level" , "satisfactory level" and "low level" . For the EG students, their level vector is $n = (n1, n2, n3, n4)$, where is their percentage; they achieved a k-level, $k = 1, 2, 3, 4$. For the OG, their levels vector is $m = (m1, m2, m3, m4)$, where m_k is their percentage; they achieved a k-level, $k = 1, 2, 3, 4$.

The empirical value of the criterion is calculated by the formula:

Table 5. The students' learning outcomes (proficiency levels) (in %).

Groups	Levels / Indices	High	Sufficient	Satisfactory	Low
EG	Phonostylistic	22.77	56.12	18.1	3.01
	Lexical-grammatical	23.87	55.6	18.43	2.1
	Compositional-stylistic	18.98	58.09	20.23	2.7
	Dialogical	25.34	52.69	19.67	2.3
	Socio-anticipating	24.96	52.33	20.91	1.8
	Official-documentary	20.9	54.46	21.74	2.9
	Average scores (EG)	**22.8**	**54.88**	**19.85**	**2.47**
OG	Phonostylistic	11.35	33.08	48.22	7.35
	Lexical-grammatical	13.35	38.11	40.5	8.04
	Compositional-stylistic	11.02	40.65	41.45	6.88
	Dialogical	12.9	44.23	35.77	7.1
	Socio-anticipating	13.2	41.29	38.61	6.9
	Official-documentary	19.98	54.12	22.8	3.1
	Average scores (OG)	**13.63**	**41.91**	**37.9**	**6.56**

Table 6. Assessment scale for all types of activities in accordance with the proficiency levels.

Proficiency Levels	Total Scores for All Types of Learning Activities	ECTS	Grades According to the National Scale
High	90–100	A	Excellent (very good)
Sufficient	82–89	B	Good
	74–81	C	Sufficient
Satisfactory	64–73	D	Satisfactory
	60–63	E	Low satisfactory
Low	35–59	FX	Low (there is an option to re-fulfil the assigned tasks)
	0–34	F	Full failure (unsatisfactory performance requiring a mandatory course retake)

$$\chi^2_{e\,\text{м}\,n} = N \cdot M \cdot \sum_{i=1}^{L} \frac{\left(\frac{n_i}{N} - \frac{m_i}{M}\right)^2}{n_i + m_i},$$

where $N = 100$, $M = 100$, $L = 4$, $n = (22{,}8;\ 54{,}88;\ 19{,}85;\ 2{,}47)$, $m = (13{,}63;\ 41{,}91;\ 37{,}9;\ 6{,}56)$.

The critical value for the significance level of 0.05 at different gradations of the L scale (in our case $L = 4$ – four levels) is determined from the statistical table of critical values of statistical criteria for different significance levels and different gradations of the ratio scale.

The empirical value of the criterion χ^2 for comparing the experimental and ordinary groups at the final stage of the experimental work is 11.54, which is greater than the critical value of 7.82. Consequently, the reliability of the differences in the characteristics of the ordinary and experimental groups regarding the students' proficiency levels to fulfil profession-related assignments after dealing with virtual reality devices (games) is indicated.

Therefore, with a 95% probability, it can be stated that the changes that occurred within the EG students' proficiency levels while performing profession-related tasks after dealing with virtual reality devices (games) are statistically significant and reliable.

In view of the above, we can state that VR practices positively influence students' motivation to study foreign languages as the basis for their would-be profession. The implementation of innovative teaching/learning technologies contributes to the improvement of the educational process at higher schools. Some methodological recommendations can be given in this respect.

4.4. Methodological Recommendations for Implementing Innovative Technologies in the Educational Process of Higher School

The framework of the study covers the issues related to the implementation of AI applications in the educational

process of a higher education institution.

Adaptive learning

To transform the adaptive learning platform into the sphere of training would-be translators (and teachers of foreign languages), some assignments can be offered in this respect. We would like to share our experience introducing the platform of the State institution "South Ukrainian National Pedagogical University (Ushynsky University) considering the academic results of the students majoring in Philology. Translation Studies (English/Chinese). For example, within the academic discipline "Translation of official documents" (**Figure 4**), the smallest learning bits might be associated with certain topics constituting the course subject matters (documentary discourse, substyles of official business style, features common to official business style, classification of documents, common features of documents, requisites of documents, etc.). One of the relevant objections can sound "Students will freely navigate in genre style actualization of documentary discourse" .

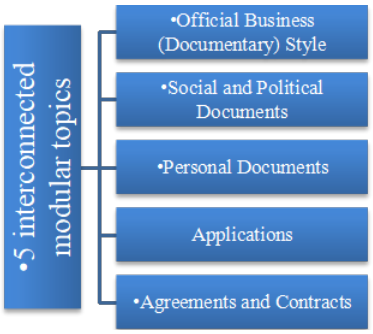

Figure 4. Modular topics within the academic discipline "Translation of official documents" .

The discipline contains 5 interconnected modular topics: Module I. Official Business (Documentary) Style; Module II. Social and Political Documents; Module III. Personal Documents; Module IV. Applications; Module V. Agreements and Contracts (**Figure 1**).

The *assignments* are to be fulfilled by would-be translators majoring in Philology. Translation Studies (English) within Module 1 can comprise the tasks given below[35].

Posttests (some samples):

1. Choose the most suitable word combination for **"** *начальник відділу* **" :**

a) Master of the faculty

b) Head of the department

c) Chair of the sector

2. What is the English for the word combination **"** *фізична особа* **" ?**

a) natural person c) juridical person

b) natural personality d) natural/physical personality

3. What is the most appropriate word combination for **"** *непередбачені або надзвичайні витрати* **" ?**

a) extraordinary and unforeseen items c) expenses

b) deferred charges d) contingency costs

4. The sentence **"***This Agreement shall come into force after it has been signed by the representatives of each Party; it is valid for five (5) years and shall be automatically extended for the same period and under the same conditions.***" *** ***belongs to the ….***

a) academic style b) official documentary style c) socio-political style

5. What is the meaning of the expression **"***unpaid leave***" ?**

c) a period of suspension of work, study, or other activity, usually used for rest, recreation, or travel; recess or holiday

b) time off from work during which an employee retains their job, but does not receive a salary

a) time away from work or school because of illness

The practical assignments[36]*:*

Exercise 1. Define the substyle of the abstracts given below. Mind, all of them refer to the official documentary style.

a) A convention to propose amendments to the United States Constitution, also referred to as an Article V Convention, state convention, or amendatory convention is one of two methods authorized by Article Five of the United States Constitution whereby amendments to the United States Constitution may be proposed: on the Application of two thirds

of the State legislatures (that is, 34 of the 50) the Congress shall call a convention for proposing amendments, which become law only after ratification by three-fourths of the states (38 of the 50)….

b) Cognizance is the first step in the initiation of judicial proceedings. It marks the point at which the court becomes aware of the alleged offense and decides to proceed with the case. The requirement of cognizance acts as a safeguard to ensure fairness and due process in criminal proceedings. It prevents arbitrary action and ensures that the legal process is initiated only when there is a prima facie case….

c) We hereby confirm that the payments to the state bodies, institutions or companies owned or controlled by the state, are performed by a bank transfer on the basis of agreements and/ or statutory rates….

d) Issuance of the permanent residence permit for foreigners and stateless persons, who have immigrated to Ukraine for permanent residence

The Procedures for processing, issuing, exchanging, withdrawing, invalidating, and annulling of the permanent residence permit, approved by the Resolution of the Cabinet of Ministers of Ukraine from 25 of April 2018 № 321, does not foresee the necessity of exchanging of the blank form of the permanent residence permit without contactless electronic media for the permanent residence permit of the new kind (with contactless electronic media). The exceptive list of grounds for exchanging of permanent residence permit is provided by point 7 of the abovementioned Procedures…

e) The past year was characterized by reasonable growth. While trends within various sectors of the consumer product division were mixed, net sales increased an average of 5 percent, following a relatively strong economy and increased consumer demand. Under the circumstances, the division's operating income increased approximately 2 percent, despite manufacturing cost pressures related to rising energy and commodity prices…

Exercise 2. Define the classification signs (*name, origin, place of issue, purpose, direction, form, period of exercise, degree of publicity, stages of composing, complication (quantity of issues), period of keeping, production techniques, information carrier/medium*) and groups of the above given documents (*office and personal; internal and external; organizing, instructive, informational, regular, inquiry-informational, accounting-financial, economic-contractual; in-coming and out-coming; standard and individual (non-standard); ordinary (without time-limit), urgent, top-urgent; for common use, for office use, secret, top-secret; bills, originals, copies; simple, complex; for temporary (within 10 years), long-term (over 10 years), permanent keeping; paper, disk, photo film, magnetic tape, punched tape, diskette, software*).

Exercise 3. Make research on the Topic "*Official business discourse: a contrastive linguistic analysis of the manifestation of the English/Chinese official business discourse*" as part of a team.

Exercise 4. Analyze, evaluate and interpret the linguistic, informational and referential sources on the Topic "*Diplomatic documents: genres and spheres of actualization, linguistic markers of the English/Chinese diplomatic documents and their reproduction means into Ukrainian*" .

It should be noted that similar assignments can be given to the students majoring in Philology. Translation Studies (Chinese).

To adequately process the data obtained (the results of students' answers), there should be clearly set criteria. We can provide these assessment criteria for determining the relevant adaptive learning pathway (**Figure 2**):

1. Mastery/knowledge of the theoretical material (thorough knowledge of the structure and lexical-grammatical features of English/Chinese official documents and speeches, interviews, reports, etc.; awareness of the trends in the development of the word-building systems and their linguistic mechanisms of realization; awareness of the sociolinguistic features of neologisms and word combinations within official discourse; awareness of the general linguistic foundations for the translation of texts belonging to the official style).

2. Practical skills to apply the acquired knowledge (to correctly convey the content of the original text; to quickly and correctly distinguish keywords, i.e., specific terminology; to freely analyze the structural and semantic components of texts belonging to various genres of official documentary style; to be able to evaluate the results of one's own practical activity).

3. Proficiency level in using translation tools (to be able to fully reproduce particular segments of an authentic text in the target language; to reasonably choose a rational way of performing assignments; to use relevant translation strategies, tactics and operations).

4. Personal qualities to express thoughts, make grounded conclusions, review other students' answers.

5. Capabilities to carry out academic work as part of a team (resultativeness, conflict-free co-work).

6. Abilities to perform self-guided (autonomous) work and individual research (to independently analyze, evaluate and interpret the linguistic, informational, referential and other relevant sources within the proposed subject matters).

7. Skills to use innovative information technologies, translation/interpretation-related software, electronic and printed lexicographical sources to supplement their own knowledge.

8. Sociopolitical awareness within the countries representing the source and target languages.

9. Creative potential to master academic profession-related material.

10. Psychological preparedness and readiness to perform profession-related activities.

Virtual and Augmented Reality

There can be an elaborated series of assignments aimed at mastering speaking, listening, and use of vocabulary. When placed in virtual learning environments, students get immersed in the native speaking atmosphere which facilitates their foreign language skills acquisition. We can offer some types of exercises in this respect.

Exercise 1. "*At the job market*" /"*人才市场 (réncái shìchǎng)*"

Task*: *A. Find the room where *Job Fair* is taking place. Listen to the reporters presenting different professions. Give annotated interpretation of the most popular ones to your groupmates.

B. Choose the one you would like to get. Ground your choice.

Criteria for assessment (Popova, 2016):

- knowledge of normative grammar and lexical minimum within the working languages;
- knowledge of precision words;
- knowledge of the features of the logical and syntactic sentence/text structure within the working languages;
- knowledge of the interpreter's note-making system;
- knowledge of lexical (including phraseological) and syntactic equivalents within the working languages;
- abilities to use interpretation transformations;
- abilities to compress texts and make annotated notes;
- abilities to switch from one language to another;
- abilities to reproduce a VR/audio text, supplementing the interpreted text with missing elements, to program the interpreted text.
- skills to distinguish between the subject and the predicate in an oral message;
- skills to distinguish communicative quanta;
- skills to identify words that contain dominant information;
- skills to grasp and memorize or present in writing a structural plan of the subject and semantic load of the authentic message;
- skills to interpret the source text from memory using various types of interpretation/translation.

These assessment criteria for determining the relevant adaptive learning pathway can be singled out (see **Figure 5**):

Figure 5. Assessment criteria for determining the relevant adaptive learning pathway.

After processing the students' learning outcomes, university instructors elaborate on *the learning adaptive pathway* aimed at their improvement:

- *Criterion 1* and *Criterion 2* – to widen a range of genres constituting the official documentary style; to cover international and borrowed vocabulary for world-building analysis; to practise translating written and audio texts on a widened range of genres.

- *Criterion 3* – to train students in full translation and profound translation analysis.
- *Criterion 4* – to make conditions (case studies) for free thought expression, evaluative and grounded conclusions.
- *Criterion 5* and *Criterion 6* – to provide social and/or cultural diversion of groupmates while fulfilling teamwork; to organize conferences, plenary sessions, and workshops for students to demonstrate and prove research outcomes of their self-guided (autonomous) work.
- *Criterion 7* – to involve more information technologies and software as well as dictionaries of various types (thesauri, special idiomatic, explanatory, etymological, spelling, mono- and multilingual dictionaries; dictionaries of synonyms, antonyms, homonyms, foreignisms, abbreviations, Personal nouns, etc.).
- *Criterion 8* – to provide more information about sociopolitical fundamentals within the world framework.
- *Criterion 9* and *Criterion 10* – to involve students into profession-centred activities (context approach) allowing their creative self-realization and stimulating their desire to perform profession-related activities.

Exercise 2. "*At the Theatre*" / "*在剧院 (zài jùyuàn)*"

A. Pretext assignments

1. Visit the VR performance "猴子捞月亮" / "*Romeo and Juliet*" .

2. Identify stylistic devices and expressive means in the texts and comment on their semantics.

B. Listening comprehension

1. Listen to the main characters' speech once again.

2. Correlate the semantics of the stylistic devices and expressive means with the intonational framework of the performers' speech. Comment on the denotative and connotative semantics of the intonational framework of the main performers' speech and the peculiarities of the performers' pronunciation of certain sounds/syllables.

C. Reproduction

1. Imitate the audio abstracts you have listened to restoring the phonetic framework.

D. Creative voice acting

1. Choose audio abstracts from the VR performance "猴子捞月亮" / "*Romeo and Juliet*" , and listen to them.

2. Read the abstract strengthening the emotional-evaluative attitude to certain situational aspects by means of intonation (Group A).

3. Listen to the role playing performed by the first group of students. Decipher the emotional intention of the "actors" and ground your opinion (Group B).

4. Swap your roles.

There can be suggested these *criteria for assessment* [37] interpreted by means of acquired knowledge, awareness and skills:

- knowledge of linguistic units of foreign and Ukrainian (native) languages (i.e. working languages): phonological (knowledge of syllable structure and minimal phonetic units; knowledge of syllable types in Chinese (initial, final, medial, sub-final, central, terminal), English (closed, open, conditionally open) and Ukrainian (state/native) languages; knowledge of the peculiarities of the use of tone in Chinese; knowledge of the sound structure of working languages; knowledge of all types of stress in languages; knowledge of the peculiarities of the intonational framework of statements and their components; knowledge of the rules of graphics and transcription);
- functional-stylistic (knowledge of functional styles and genres of language; the essence of stylistic devices and expressive means; means of creating emphasis; means aimed at conveying emotional and evaluative meaning at the lexical and syntactic levels);
- knowledge of the rules of spelling, orthoepy and hieroglyphics;
- phonetic knowledge of the features of the prosodic system of working languages and intonation-syntactic structures of statements belonging to various communicative types; regularities of intonation framework of a phrase within the working languages; intonation and structure identifiers of syntagma and phrase boundaries; communicative functions of exclamations; functional words and intonational means of implementing inter-phrase communication; compositional and linguistic forms of statements, their structure and features of speech framework; knowledge of transcription and intonation rules;
- phonostylistic awareness;
- skills to understand the main ideas, general content

and details while listening to dialogic, monologic and polylogic speech when processing various genres of audio material;
- skills to correctly use the rules of spelling, orthoepy and hieroglyphics;
- skills to understand the communicative intention of the interlocutor (regardless of gender, his/her social status, age);
- skills to retain the information received in working memory;
- skills to single out the keynote idea and correctly perceive the essential details of the source text (within an academic and professional environment);
- skills to record in writing the supports that allow you to restore the information received by ear.

Artificial Intelligence

Since Ushynsky University has a significant number of students majoring in Chinese Translation Studies and Secondary Education (Chinese Language and Literature), it is essential to create a technological platform that provides access to modern linguistic models developed in China. To promote the consolidation of innovative technologies into the educational process of Ushynsky University and improve the quality of education would be effective for its further development and students' academic success.

The creation of the Super-Host **ARTLINE P99v67Win** as a platform for the use of the independent local and powerful language models such as **QWEN** and **Baidu ERNIE** in training Ukrainian would-be translators and teachers of the Chinese language and Literature seems to be the most effective one. Implementing an AI translation system can facilitate remote lectures involving Chinese scholars. This will allow expanding academic connections through joint research projects and contribute to the integration of Chinese linguistic achievements into the educational process of Ushynsky University.

The designated super-host is sure to smoothly integrate modern technologies into the university's educational programs and research projects. Using artificial intelligence models within laboratory work, workshops, profession-centred role playing, self-guided work will provide students with the opportunity to work with advanced tools, which is crucially significant for training specialists in AI and linguistics. This will also ensure full autonomy in conducting scientific research, data confidentiality, and a possibility for independent training and testing of models, enhancing the competences of both tutors and students.

This super-host might become the main computing platform, supplying students with access to local AI models through a secure web interface. The access can be provided via university accounts, allowing easy use of models for learning. The web interface should include interactive functions, educational materials, and capabilities for visualizing results.

The Module for Connecting an External Graphics Card **AORUS RTX 4090** is empowered to expand the computing capabilities of the AI laboratory, providing additional power for existing workstations.

The **Groq LPU** (Language Processing Unit) is a high-performance processor designed to accelerate LLMs (large language models) such as QWEN, Llama, and Mistral. Applying the Groq LPU enables participants of the educational process to notably decrease the time intended for training models providing students with access to advanced technologies in Artificial Intelligence. The module introduced by the startup Groq in February 2024 stands out for its high energy efficiency and performance.

The Super-Host under focus possesses all technical capacities to equip the university students and researchers with modern tools for learning and research in the fields of artificial intelligence and linguistics, fostering the further development of the institution's scientific potential.

The suggested solutions are advisory in nature. At present, the implementation of innovative technologies in the educational process of Ukrainian establishments of higher education requires much effort and financial support. This is also closely linked to the ongoing military actions in Ukraine and the profound challenges faced by Ukrainians during this time.

5. Conclusions

The conducted research allowed us to come to these conclusions:

- Implementing AI-driven applications in the educational process widens the teaching/learning experience in educational institutions. Their utilization is restricted in Ukraine under current military actions now.

Overcoming challenges (place of residence, mode of study, intensity of air raid attacks/alerts, consequences of air raids, difficulty in maintaining psychological stress resistance, lack of financial capacity, AI-awareness) contributes to students' academic success.

- Artificial Intelligence performs an essential role in advancing language acquisition as well as implementing the most effective solutions under teacher's thorough monitoring, though Ukrainian institutions of higher education cannot provide sustainable use of innovative technologies and their monitoring due to frequent electricity outages, a shortage of qualified teaching staff, and the migration of students abroad.
- Chatbots, machine-assisted translation and adaptive learning can assist teachers but not substitute them.
- Personalized learning content and instant feedback (chatbots, interactive conversations) help students improve their language skills.
- Virtual and augmented realities alongside gamification of job-related assignments facilitate students' involvement in their profession (teachers and translators/interpreters of Chinese/English. Practical profession-related assignments preceded by the VR experience can improve students' academic progress according to the criteria as follows: phonostylistic, lexical-grammatical, compositional-stylistic, dialogical and socio-anticipating.

In conclusion, this paper lays the groundwork for the further development of a system of profession-related activities and assignments by integrating innovative technologies, particularly AI-driven applications, for long-term use. It would be expedient to explore the long-term impact of innovative tools on students' academic success. This approach, tailored to the modern conditions in Ukraine, aims to enhance students' knowledge, skills, and abilities effectively and sustainably.

Author Contributions

Conceptualization, O.V.P.; methodology, O.V.P.; software, O.O.M.; validation, O.V.P.; formal analysis, O.V.P.; investigation, O.V.P. & O.O.M.; resources, O.V.P. & O.O.M.; data curation, O.O.M.; writing—original draft preparation O.V.P.; writing—review and editing, O.V.P. & O.O.M.; supervision, O.V.P.; project administration, O.V.P. The authors have read and agreed to the published version of the manuscript.

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The data will be provided via the email alexpopova@ukr.net and sent to those interested if they request it. Some samples of the assignments can be found via the link http://dspace.pdpu.edu.ua/bitstream/123456789/128/1/%d0%9f%d0%be%d0%bf%d0%be%d0%b2%d0%b0%20%d0%bc%d0%be%d0%bd%d0%be%d0%b3%d1%80%d0%b0%d1%84%d1%96%d1%8f%20%d0%9f%d1%80%d0%be%d1%84-%d0%bc%d0%be%d0%b2%d0%bb%20%d0%bf%d1%96%d0%b4%d0%b3%d0%be%d1%82%20%d0%9c%d0%9f%d0%9a%d0%9c.pdf.

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Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Questionnaire for the structured qualitative interview

"Academic improvement expectancy while using innovative technologies"

Personalization

1. Personalization of education presupposes:

A. Improved phonetic and phonological proficiency, a widened range of vocabulary in diverse topics

B. A widened range of vocabulary in diverse topics

2. At the grammatical level, personalization of education is aimed at:

A. Mastery in syntactical structures of sentences

B. Mastery in communicative grammar

3. The research vector of personalized education covers:

A. Skills to learn, make research and develop independently

B. Abilities to learn and make research with teacher's assistance and guardianship

4. The groupwork at the platform of personalized education manifests itself in:

A. Skills to correct one's own and groupmates' mistakes instantly

B. Abilities to identify one's own and groupmates' mistakes

5. Under military actions in Ukraine, these students' skills to self-adjust are crucial:

A. Skills to self-adjust to different modes of study (online, offline, a mixed (HyFlex) type)

B. Skills to self-adjust to the online mode of study

Adaptive learning

6. At the linguistic level, adaptive learning is manifested in:

A. Improvement of linguistic knowledge and skills within diverse communicative modes depending on functional styles

B. Improvement of lexical and grammatical knowledge and skills within diverse communicative modes

7. At the creative IT level, adaptive learning is actualised in:

A. Improvement of IT skills and imaginative abilities

B. Improvement of IT skills as well as creative skills and abilities

8. What kind of practical experience can would-be teachers and translators/interpreters of English/Chinese obtain due to adaptive learning?

A. Practical academic mobility-based experience as would-be teachers and translators/interpreters of English/Chinese and intention for further career

B. Practical profession-based experience as would-be teachers and translators/interpreters of English/Chinese and intention for further self-development

9. What kind of quality could would-be teachers and translators/interpreters of English/Chinese excel in the context of working abroad due to adaptive learning?

A. Endurance for working in foreign companies and education establishments in accordance with European and Asian standards

B. Flexibility for working in foreign companies and education establishments in accordance with European and Asian standards

10. One of the main prerequisites for performing professional duties under military actions in Ukraine is:

A. Psychological preparedness

B. Desire

Interactive conversations

11. Interactive conversations contribute to the development of:

A. Skills to perceive, decipher and predict interlocutor's intonational models in terms of non-modal and emotional-attitudinal semantics (in spite of noises or interrupted connection)

B. Skills to perceive and decipher interlocutor's intonational models in terms of denotative semantics (in spite of noises or interrupted connection)

12. Dialogical competency developed due to interactive conversations comprises:

A. Skills to instantly react to interlocutor's responds (requests, reprimands, suggestions, reproaches, appraisals, encouragement, etc.), questions, exclamations taking into account intonational framework of his/her statements

B. Abilities to react to interlocutor's responds (requests, suggestions), including questions

13. Interactive conversations contribute to the development of these psychological skills:

A. Skills to predict psychological barrier to interact with both children and grown-ups

B. Skills to overcome psychological barrier to interact with both males and females

14. Interactive conversations assist in developing these interactive skills under the wartime in Ukraine:

A. Skills to solve conflicts while interacting with military men

B. Skills to avoid and/or neutralise potential conflicts while interacting with military men or women

Gamification

15. Gamification for learning purposes covers:

A. Awareness of natural and virtual learning environments and skills to navigate in them

B. Awareness of virtual learning environment and skills to navigate in it

16. Within the context-based approach, gamification allows students to demonstrate:

A. Preparedness to undertake practical actions within game-like learning activities

B. Preparedness and readiness to undertake profession-related actions within game-like learning activities

17. Gamification contributes to the development of these practical skills:

A. Skills to solve problems in a standardized way by means of foreign languages and gaming experience

B. Skills to creatively solve problems by means of foreign languages and practical experience

18. In the framework of programming, gamification facilitates developing:

A. Skills to foresee challenges and program ways of their solution

B. Skills to program ways of challenge solution

19. Gamification enables developing a complex practical experience:

A. Practical experience in game-like activities based on learners' motivation

B. Practical experience in game-like activities based on learners' academic success involving military learning environment

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