PAPER

Technology-Enhanced Personalized Language Learning: Strategies and Challenges

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ABSTRACT

The paper presents the analysis of strategies and challenges of technology-enhanced personalized language learning at technical universities. The authors specify the meaning of the "personalization" concept in terms of language learning and characteristics of technology-enhanced learning. Skills of personalized learning contribute to the development of learner autonomy and equip students with flexibility and adaptability to the changing demands of today's labor market. The empirical study was carried out among 101 students from two universities. The questionnaire was aimed at measuring the level of personalized learning skills and digital resources that promote the personalized learning. Students were suggested three questionnaires: one survey on personalized learning skills was performed before and after the experiment, reflection questionnaire and on digital resources ranking were suggested after the experiment. After the introduction of technology-enhanced personalized learning strategies into the educational process, the level of personalized learning skills increased as well as students' perception of this educational phenomena. There was no significant difference between the results of students from different universities in terms of personalized learning skills. It means that the problem of personalized learning is relevant to the majority of students and requires solutions. The paper provides examples of digital resources' practical application that intensify the personalization with a promising transition to self-improvement and successful professional self-realization.

KEYWORDS

personalized learning, language competence, learner autonomy, digital competence, self-reflection

1   INTRODUCTION

The quality of the modern education system as a formative element of social and professional standards is determined by the new attributes inherent in the information society. Global integration processes, interaction, and interpenetration of cultures, economies, and communities are the key transformations of the modern

world that contribute to the actualization of an education quality issue. Thus, the globalization of education means the gradual transformation of different educational systems into a global one, while maintaining the differences in traditions, culture, and mental features of self-development processes. Globalization of the labor market through increasing social mobility, the problem of inclusion of people with special needs in the educational process, rising social standards, and unification of educational systems have caused the occurrence of new requirements for education quality assessment: openness and mobility. It is also facilitated by the spread of the concept of open-source software (OpenSource), which allows viewing, analyzing, and adapting the curriculum to anyone according to needs and capabilities. The consequence of these transformations is the emergence of the concept of online education, which provides the diversity and variability of multimedia sources, as well as flexibility and adaptability to the educational background and needs of the learner.

The dynamism of the modern world highlights the individual's need for relevant knowledge and skills to respond quickly to social and economic changes. As a result, new educational areas emerge that reflect the attitudes of the individual to the learning process in terms of continuity and personalization. It is obvious, those successful academic achievements are not defined by the level of knowledge, but they imply a particular set of individual features, aptitudes, interests, life experience, sociability, and digital competencies. Therefore, today's educational priority is the personalization of learning that has been transformed from a didactic principle into a holistic didactic system, which determines the goals and objectives of each aspect of the process. Personalization means the formation of the learning environment suitable for the construction of individual educational trajectories, focusing on the personal choice of educational resources, tools, and forms of learning following personal needs.

The core content of autonomous personalized learning is to provide students with an opportunity to create their learning environment, taking into account their personal needs, interests, abilities, and resources. We consider the development of autonomous personalized learning skills and digital competence are crucial for the successful self-realization of the individual in the modern realities of technocratic society. These skills are part of the core abilities list of the 21-st century, a concept that defines the strategic skills needed to meet the demands of the time and society. The key issue for today's teachers is to determine the didactic conditions and strategies for teaching students to design an autonomous personalized learning environment. Moreover, the personalization of education allows teachers to improve students' independent professional decisions-making skills. Future specialists are taught how to recognize and formulate professional problems, to develop a methodology of scientific and practical research, and to find applicable resources. These educational activities should be personally oriented and their quality indicates the level of professional maturity of a university graduate. Technology plays a vital role and demonstrates a multi-perspective potential for language teaching and learning. Today a successful career is determined not only by professional skills but also depends on the ability to establish contacts with representatives of various social and intercultural communities. However, in reality, many graduates of Ukrainian technical universities often experience difficulties in professional communication when they process the information, communicate with native speakers, participate in virtual exchange programs, create international and multicultural communities for the research. The insufficient level of professional foreign language competence is caused by a lack of time for teaching foreign languages at technical universities.

Therefore, students often have to learn a foreign language on their own because they understand the importance of this skill for a successful career. From this perspective, an extremely important aspect of teaching should be devoted to the development of student autonomous personalized learning. The relevance of the personalized learning issue is confirmed by the concept of lifelong education. Digital education technologies have already proved their extremely productive and engaging nature for teaching, especially foreign languages. However, technical skills and the ability to find a necessary tool are not enough to become an autonomous successful learner. There is a wide range of skills that should be developed to achieve educational goals: needs assessment, goal settings, self-organization, digital resources assessment and adaptation to personal needs and possibilities, self-assessment, and self-reflection. That is why there is an issue of optimizing the teaching of foreign languages through the strategies of personalized learning and it is crucial for the successful life-long acquisition of foreign communicative competences. The goal of the paper is to demonstrate strategies and challenges of technology-enhanced personalized language learning implementation at university. The hypothesis of the study is that digital technologies contribute to the development of personalized language learning skills.

2   THEORETICAL BACKGROUND

The results of modern research in the field of cognitive psychology contribute to the exploration of new opportunities and approaches to autonomous and personalized learning. The analysis of the scientific sources demonstrates a significant increase in attention to the personalization of the educational process, which is associated not only with the process of mastering professional competencies but also with the need to increase the personal self-efficacy level.

Holec [1] in "Autonomy and the Study of Foreign Languages" first proposed the issue of personalized learning, as an aspect of learner autonomy. According to his definition, learning autonomy is the basic form of self-education. Holec's ideas [1] are reflected in Dam's research [2], who emphasizes that the desire to make one's own choices, understanding of personal needs, and the responsibility for the academic results are important for the effective development of autonomous learning skills. Among the didactic prerequisites for creating a learning environment to facilitate personalization Dam [2], Kristmanson et al. [3] emphasize content flexibility, education materials and resources adaptability, integration of previous learning experience, and cooperation with a student, especially during the initial stage of learning.

To understand the essence of autonomous learning, it is necessary to distinguish the concepts of "self-study" and "learner autonomy". These issues are considered in the research of Stone et al. [4], who notes that successful students' self-study means choosing only methods and technologies for the task performance, while learning autonomy is impossible without self-diagnosis of own educational needs and resources, setting goals, and creation of an individual educational environment. In other words, a student has the freedom to choose learning partners, educational resources, organizational aspects, and a monitoring type. Ryan and Deci [5] also view the difference between the concepts of "self-study" and "learner autonomy". They believe that during self-study a student performs tasks guided externally by a teacher, while autonomy requires activation of own educational capabilities and metacognitive skills: self-determination, self-monitoring, self-analysis, and self-reflection.

Researches of autonomous learning Murray and Lamb [6] propose to consider autonomy from twofold perspective as an organizational model of the educational

process (in which a student deals only with academic activities guided by the teacher), and as student's ability to manage the self-study process (goal setting and self-diagnosis of needs, taking responsibility for the implementation of self-paced learning and outcomes of personalized learning).

Educators Sundqvist and Sylvén [7], who implemented autonomous personalized learning in practice, point out that personalization is the key tool for the development of a flexible education system. It is possible due to the tiered structure of personalization and different levels of its implementation, namely:

– partial personalization of class group work;
– self-study, guided by the teacher in the formal education framework;
– self-paced individual learning, but with a teacher-guided control and assessment of academic performance;
– learner's autonomy as a result of full personalization without guidance and monitoring by the teacher.

All these levels imply a partial or full students' involvement in the learning process, but only learner autonomy means students' management of the learning process and taking the responsibility for personal choice of strategies, resources, and materials. Nevertheless, from the point of view of British researchers, self-paced individual learning is considered as a preparatory for the next stage – the learner autonomy that is the ultimate goal of modern education. Learner autonomy is a crucial aspect of the students' learning process which makes teachers use new teaching techniques to create an innovative learning [8].

Another area that induces scientific interest is students' internal transformations that occur with a change of their role in the learning process from a passive recipient of knowledge to an active designer of personal educational trajectory. Thus, Little, et al. [9] argue that such transformations are possible when students demonstrate the responsibility for learning outcomes; a desire to learn; a sense of self-worth that allows perceiving evaluation not as personal criticism, but as a source of constructive ideas for further development; adaptability and flexibility in the perception of the modern life changing nature; ability to manage personal transformations; strategic approach to learning based on needs and desires identification; independence in finding alternative solutions; ability to interact, negotiate and cooperate.

The student's ability to implement own solutions depends on motivation and behavioral strategies. Several scholars, including Dam [2], who emphasizes that for the effective development of autonomous personalized learning skills, it is important for students to understand why, what, how to learn, and what learning resources and materials are beneficial, support this idea. Students also should demonstrate a willingness to cooperate, a desire to make personal choices, and take responsibility for the results.

Supporting the researcher's reasoning, we believe that the ability to study autonomously depends on a combination of skills (self-organization, self-management, self-planning) and personal psychological readiness to study autonomously (psychological training, desire for self-improvement, motivation, positive attitude to failure). Ma [10] mentions that during the autonomous learning process students can feed back and regulate among self-cognition, emotion and their own behaviours.

According to the results of empirical research on personalized learning assisted with digital technology, this educational phenomenon is viewed from two aspects digital learning and self-development. Sefton-Green [11] states that personalization is the motivated self-learning for "self-creation", and defines it as digital

autodidacticism. The implementation of such training starts by finding teaching aids to develop responsibility for the results of personal learning, which equips students with a sense of self-governance.

Proponents of personalization in education argue that students' autonomy is an important factor in the development of self-determination and independence required for tolerant and sustainable citizenship. From this perspective, more attention is paid to the study of the integration of personalized learning strategies into the field of foreign language learning. After all, knowledge of foreign languages is a key skill for the implementation of intercultural and social coexistence.

The issue of integrating personalized learning and language learning is a separate area of research in foreign pedagogy. Nosratinia, Abbasi, and Zaker [12] conducted an empirical study to examine the impact of self-paced personalized learning on the efficiency of vocabulary learning. According to the study results, researchers offer several recommendations for the implementation of personalized foreign language learning: explain to students the importance of autonomous personalized learning for a successful future career, prove the importance of learning a foreign language, create conditions for individual development and consider students' opinions and choices.

In view of all that has been mentioned so far, we have identified the following reasons for initiating the integration of strategies of autonomous personalized language learning in the educational environment:

1. increasing interest in the didactic principles of adult education (Knowles [13]);
2. integrating the values of a democratic society of freedom and equality into the educational process (Allwright [14]);
3. recognition of the potential of previous experience and critical reflection as a basis for building an individual educational trajectory (Mezirow [15]);
4. improvement of academic achievements and making them more sustainable due to students' active participation, self-directed learning, and student-centered teaching that make the educational process more personal and meaningful for students (Benson & Chik [16]; Holec [1]; Wimch [17]);
5. changing the assessment paradigm from a single method of controlling the level of acquired knowledge to the system of alternative assessment and continuous monitoring (Lavrysh [18]);
6. awareness that new sources of knowledge have emerged and expanding educational opportunities occur with the advent of the Internet and digital educational technologies (Lai et al. [19]; Reinders & White [20]).

3 METHOD

A case-study approach was chosen to conduct this empirical study. To capture the complexities of the phenomenon, we employed a qualitative methodology framework (Creswell [21]) for the research performance. The framework aimed at collection of the information about the level of students' personalized learning skills, challenges and benefits as well as teachers' opinions about the process of personalized learning implementation. We applied reflective questionnaires for students and teachers were suggested an interview with open-ended questions to understand participants' attitude and perception of the issue. The study was conducted at two universities Igor Sikorsky Kyiv Polytechnic Institute (Ukraine) and Jan Kochanowski University of Kielce (Poland).

3.1 Data collection and analysis tools

A system for diagnosing the level of personalized language learning skills development has been designed, which, along with traditional, suggests alternative and innovative assessment methods: peer-assessment and self-assessment, authentic assessment, academic tests, reflection maps, questionnaires, etc. The diagnostics included the following stages: assessment of previous educational experience, needs and cognitive motives (questionnaire); academic testing for language competence and identifying the knowledge gap; audit of personalized learning skills (self-organization, self-monitoring, planning) before and after the experiment; self-assessment of personal learning strategies and outcomes (Likert-scale forms); final academic testing and reflection (questionnaire). In this study we focused on audit of personalized learning skills and self-assessment of educational needs and results. The objectives of the pedagogical experiment were:

1. to diagnose the initial levels of students' language competence and personalized learning skills to compare the results obtained after the experiment.
2. to confirm the hypothesis that digital technologies contribute to the development of personalized language learning skills.
3. to study the impact of digital educational technologies on the development of cognitive and metacognitive skills to ensure the sustainability of personalized language learning skills.

Students were informed about the procedure and the goals of the experiment. Then, we assessed students' level of personalized learning skills before the experiment, interviewed teachers about their attitude and the strategies of personalized learning employed during classes. Before the experiment we organized online workshops and discussions on strategies of personalized learning integration using digital resources. Teachers from both universities (Poland and Ukraine) took part in workshops and together we developed the questionnaires and the procedure of the experiment. Previously teachers did not pay much attention to the development of personalized learning skills and students were suggested some tasks for self-studying if they wanted to upgrade their academic achievements. The experiment lasted 1 term (14 classes). Some classes were peer-observed, also teachers filled self-assessment forms to reflect on their classes. At the end, students were tested again and teachers were interviewed.

3.2 Participants

The experiment was conducted at Igor Sikorsky Kyiv Polytechnic Institute among students majoring in engineering (n = 65) and Jan Kochanowski University of Kielce among students majoring in pedagogy (n = 36). The mean age of participants was 22–24 years. The size of the sample was calculated using the resources Sample Size Calculator (https://www.calculator.net/sample-size-calculator.html). The margin of error was 3.09%, the confidence level was 95%. This means 90 or more sample size is needed to have a confidence level of 95% that the real value is within ±3% of the measured value. We involved 101 students.

We engaged students of the fourth year of study, as they were more motivated to improve their language competence before entering the career. They understand that language skills will be necessary in future as well as skills of autonomous personalized learning to become flexible and adaptable specialists. Mostly all

participants had an experience of personalized learning during the pandemic time when students had online learning and in addition chose MOOC courses according to their heeds and abilities. Students' participation was volunteering and reflective questionnaires were anonymous. Students could refuse to participate in the experiment without academic consequences.

3.3 Results

The first set of questions aimed to measure students' level of personalized learning skills for the language learning. The questionnaire included statements on assessment of previous educational experience, needs, metacognitive skills and motivation level. Table 1 presents the results of the questionnaires before and after the experiment. Since Ukrainian and Polish students were taught in the same way and they had previous experience of number of students was 101 (100%), so we counted the percentage of students who gave positive answers before and after the experiment: personalized learning, it was decided not to separate answers into two groups from two universities.

Table 1. Personalized learning skills questionnaire (n=101)

	Statement	Before	After
1	I can determine goals of my language learning	68%	82%
2	I can prioritize my educational goals	54%	67%
3	I can determine my level of the language proficiency	74%	94%
4	I can determine my educational needs	43%	75%
5	I can choose teaching materials and digital resources to satisfy my educational needs	52%	84%
6	I can define strategies for my learning	27%	68%
7	I can assess the results of my learning	66%	92%
8	I know how to organize my own time	77%	88%
9	I can identify what resource I need to complete a task (textbook, dictionary, reference book, video, online tool)	54%	89%
10	I can assess the level of complexity of the task and determine what I need to learn to complete it successfully	66%	92%
11	I know how to make a plan for my own learning	44%	90%
12	I can adapt the study material to my own needs	22%	68%
13	I can create tasks myself for the revision of educational material	26%	57%
14	I can define criteria for my learning outcomes assessment	37%	77%
15	I can analyze the structures and patterns of a foreign language (for example, I observe how the plural is formed or past forms are used).	31%	66%
16	I can analyze communication patterns and compare them with the native language patterns to recognize specific similarities and differences (for example, how to address someone politely)	27%	84%
17	I can determine what prevents achieving my goals	44%	88%
18	I can identify my own strengths and weaknesses	75%	95%
19	I know how to maintain my own motivation to learn	80%	96%

Source: compiled by authors.

The results demonstrate the increased indexes for personalized learning skills that means improvement of the outcomes. Students admitted that they could analyze their possibilities and plan their learning accordingly. Teachers using traditional language tests assessed the academic outcomes and level of students' language competences. After the experiment, we asked students to complete the reflection questionnaire. The results are demonstrated in Table 2.

**Table 2.** Reflection questionnaire (%)

Statement	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
I enjoyed making a choice about my learning	13	31	37	17	2
Choosing the format, content and pace of learning increases motivation to learn a foreign language	17	48	22	9	4
Being able to make a personal choice about the format, content and pace of learning helps to plan my learning	39	43	15	3	0
Identifying my strengths and educational needs helps me understand how to learn better	18	35	42	5	0
I need regular help from a teacher in choosing learning strategies and resources	14	44	39	3	0
Choice of the learning format, content and resources increases my level of foreign language proficiency	17	40	36	7	0
Choice of digital educational technology influences my level of foreign language proficiency	22	48	24	6	0
The ability to make my choice of format, content and pace of learning helped me improve my skills and/or knowledge of:					
grammar	36	51	13	0	0
writing skills	24	46	22	8	
listening skills	17	44	27	12	
speaking skills	5	17	38	27	13
reading skills	9	24	43	20	4

Source: compiled by authors.

The reflection questionnaire illustrated that students realized the positive changes due to personalized learning and agree that correlation of personal educational needs and relevant personal learning strategy fosters the learning of foreign language.

Another important insight was about the understanding of digital resources educational potential in terms of personalized learning skills development. We asked students to rate ten digital tools or resources from the least to the most meaningful for the personalized learning. And data differentiated between students from Ukraine and Poland. The results are demonstrated in the charts: Figure 1 is for Ukrainian students and Figure 2 is for Polish students:
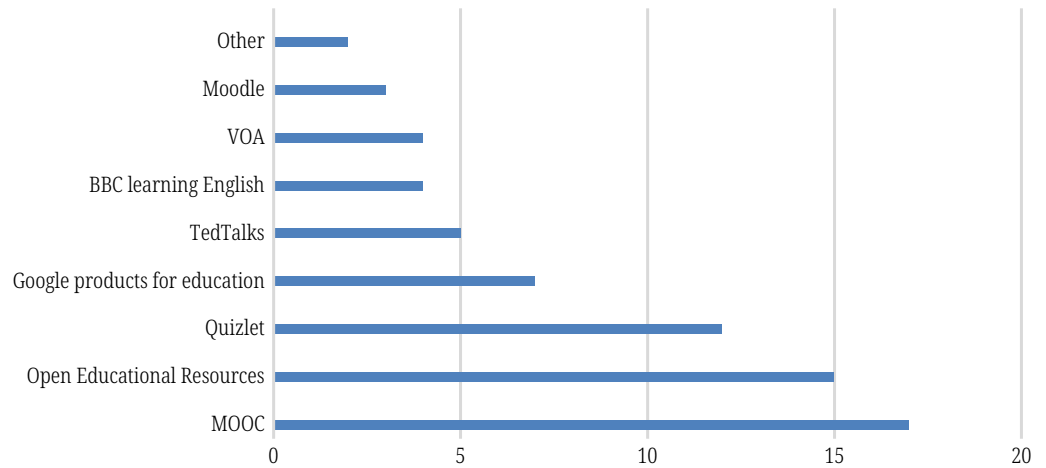
Fig. 1. Digital resources rating from Ukrainian students (n=65)

Source: compiled by authors
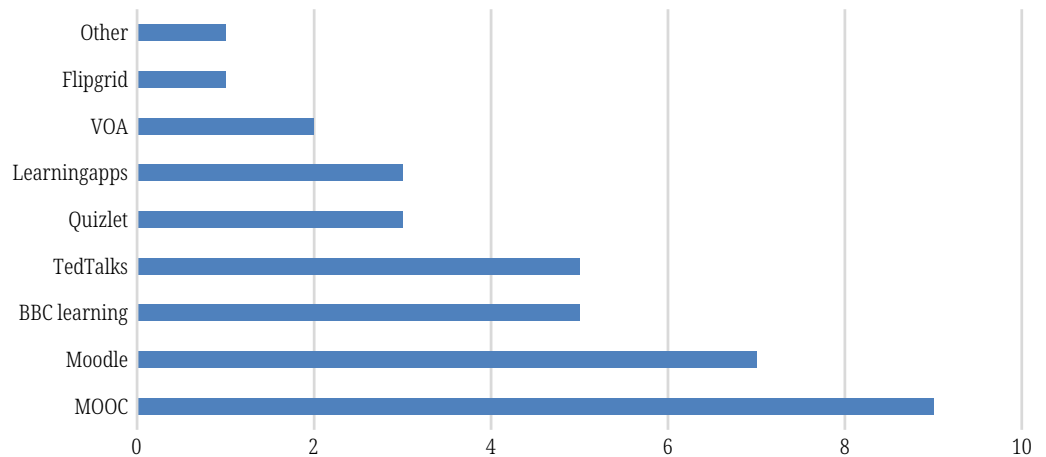
Fig. 2. Digital resources rating from Polish students (n=36)

Source: compiled by authors

Overall, these results indicate that students understood the significance of personalized learning skills development especially for language learning. Due to educational strategies and digital resources, students could improve their level of language competence. The next section, therefore, moves on to discuss these strategies and challenges of personalized learning implementation.

4 DISCUSSION

As the key task of the higher education system is to train specialists adapted to the conditions of functioning in the modern information society, we believe that the strategies and ways of implementation of technically-enhanced personalized language learning is worth studying. In today's information society, we consider the traditional option of conducting classes with the same educational content and resources for all students as unviable. There is an urgent need to find effective educational models that can help solve the problem of choosing the optimal ratio between the current education system's best traditions and modern pedagogical innovations and trends.

The concept of our study signifies the interpretation of personalization from two sides of minimum (guided self-study) and maximum (autonomous personalized learning) performance with the gradual growth of autonomy levels. Students' self-study under the guidance of a teacher is associated with a minimal personalization level and partial autonomy, as the academic content, tools and methods of assessment are determined by teachers. Autonomous personalized learning provides an independent choice of the educational content based on individual characteristics of its perception, means of interaction with it and assessment of the quality of educational activities. Such kind of learning demonstrates the highest level of personalization and promotes self-determination as well as personal development for successful professional self-realization. Therefore, autonomous personalized learning is considered as a system of tools and strategies that helps students become aware of their strengths and weaknesses in learning, supports their independence while choosing learning tools and paths.

Although, online learning offers a high level of freedom, it also requires a high level of self-organizing skills. Despite all technological benefits, we have to admit that technology fosters personalized language learning, but does not teach the language automatically. As the results of the questionnaire showed, students need to be taught strategies for working with digital resources, to analyze the relevance of content, topics and selected digital resources according to individual cognitive abilities in order to improve the skills of foreign language communication.

The results of our research are in a line with recent research on learning a foreign language with digital resources (Sundqvist, Sylvén [7]; Chik, Ho [22]; Lee, [23]); Han [24]) which state that language learning becomes autonomous and personalized if students find multimedia sources that meet their capabilities and interests (e.g. pop music, entertainment videos, social media, blogs, social communities for individual communication – tandem learning). These activities may not be related to learning at first sight, but seem more like an entertainment or socialization. Yet, even with using technology for entertainment, students gradually realize that learning also can be done through online activities. This, in turn, requires more focused attention to the development of specific skills for language competence, which occur together with the transformations of inner motivation from initially leisure-oriented to a sustainable and more learning-oriented.

While the organization of the technically enhanced personalized language learning, we considered the following tasks:

1. organization of the holistic didactic system of personalized learning which main trigger mechanisms are self-knowledge, self-development, and self-reflection;
2. development of critical media literacy skills;

3. providing students with the opportunity to realize their self-education potential while planning their educational trajectory and constructing their learning environment;
4. improvement of foreign language competence through the modeling of the authentic linguistic and cultural environment employing digital technologies;
5. stimulating the processes of self-determination and self-organization.

Regarding the key skills of personalized learning, we identified planning, monitoring, and evaluation of academic performance. We propose to develop these skills with the use of digital educational technologies that ensure the realization of the objectives of technology-enhanced personalized language learning. Digital resources contribute to the language learning as they bring authenticity to the classroom. Through educational digital technologies, it is possible to differentiate the content of training according to the individual needs and possibilities of students. A great variety of online educational platforms make learning flexible and allow students to determine the pace, time, duration, and sequence of learning.

Personalized learning through digital technology is not the digitization of traditional learning. Technology is a tool that makes personalized learning easier and more effective. Having studied Grant and Base [25] works and analyzed our personal experience, we have identified characteristics of effective technology-enhanced learning:

1. digital technologies are integrated into the educational process in accordance with the pedagogical ideas, objectives, experience, and competencies of teachers and students;
2. educational materials are authentic and include authentic tasks and assessment that contributes to the development of critical and creative thinking;
3. teachers play the role of facilitators who guide and support the aspiration of students;
4. students take part in the monitoring of the educational process to achieve the goal, increase self-efficacy and self-assessment skills applying digital resources for assessment and monitoring;
5. students are allowed to choose the educational content, methods, and means of its perception, which contributes to the understanding of their unique features and needs.

By implementing personalized learning, which is becoming more accessible due to the technology and capabilities of the Internet, teachers stimulate the sharing of responsibility for academic outcomes with students. Personalization turns the educational environment into a platform for collaboration with dynamic communities of students united by interests or educational needs. Adapting education to the capabilities and abilities of students through digital educational technologies is an important process, as all academic subjects' content and complexity level can be differentiated, thus, increasing motivation to learn. Students with different needs receive extra time and possibilities as technological tools give them unprecedented access to resources. Gifted students can move at their pace to achieve the necessary skills to work on interdisciplinary research projects without waiting for the rest of students.

In this context, one of the most important skills that students need to develop is a critical ability to distinguish between the reliable, relevant and the irrelevant content. It requires carefully planned and thoughtful action from the teacher. To master

the skill of digital tools content assessment teachers should pay attention to the level of the technology integration, identified by Lai et al. [19]:

– basic – the use of the Internet as an asynchronous source of additional supporting materials to provide students with educational texts to read or listen to;
– intermediate – organization, and creation of teaching material by teachers on online platforms and providing access to students.

Under such conditions, teachers retain some control over what material students have access to, however, students are still given a wide range of choices about the specific texts or materials they want to work with. Having the examples of designed educational materials; students will search for similar content in cyberspace.

In addition to creation of specific learning conditions, we have identified the main tasks that a teacher should perform for the successful personalized learning implementation:

– to teach students to set goals, plan and monitor their learning;
– provide students with information about resources options, how to assess their credibility, relevance, and educational potential;
– to simulate the processes of personalized learning in the classroom;
– to be acknowledged about students' skills and experience while teaching a new topic;
– to learn how to correlate the personal educational goals with the academic purpose defined by the teacher or educational institution in terms of professional training;
– explain and give examples of learning strategies for mastering certain topics or developing particular skills;
– teach the basics of self-monitoring and self-evaluation.

These changes should be reflected in the curriculum, which regulates the content and sequence of the teaching process of the discipline. We offer several elements and principles that should be considered in the development of curricula: to agree on the purpose of the course with students, to introduce theoretical and practical classes on mastering learning strategies for individual learning; to give students a choice and space to create alternative tasks and instructions; tasks for teaching, and to train the skills of self-reflection and self-evaluation.

However, accepting the educational potential of digital resources, students try to use them and encounter a number of challenges. According to the results of our questionnaire about the personalized learning with digital tools, students mentioned that they could not clearly see the educational potential of a resource, could not find the most suitable resource in the diversity of technological resources and students would like to gain some experience and help with the effective use of technological resources in classes. Thus, from the students' point of view, the support, which teachers can provide in promoting self-learning strategies and technologies, should be focused on sharing information about resources, teaching how to match a resource with a learning goal, and how to plan the process of learning. The results of the study allow us to state that it is important not only to focus on what teachers can do with technology in the classroom but also to explore how maximize the potential of learning technologies applied during the self-study. It implies that teaching strategies of technically – enhanced personalized learning should be set up and mastered during classes. From teachers' perspective, students needed more support with the

development of sustained inner motivation and responsibility. Students should take responsibility for their academic outcomes in terms of language needs and for the way of personal learning by a chosen digital resource. The first case implies students' awareness of their needs in language learning and skills of goals settings. It can be facilitated by previous language learning experience and the ability to self-assess the level of personal language competence. A student can diagnose educational needs independently or with teachers' support. Students often perceive the need to learn new phrases or words to understand the words of the song, or instructions for the game. However, these are situational needs, the satisfaction of which does not increase the level of language competence. To identify real educational needs, it is necessary to determine the general level of language proficiency with the help of language diagnostic digital tests developed by language teaching experts. The test results determine the need either to improve the overall level or to improve knowledge on a particular topic. If students clearly see the connection between needs, goals, self-organization, and outcome, the results will be satisfactory. The second challenge requires a high level of digital competence, including the ability to assess the quality of digital sources content, and materials for learning languages hosted in cyberspace.

With this in mind, it is important to help students identify needs and gaps. To facilitate this process, the strategy of "flipped" asynchronous classes should be used, when students at home study the material independently, and in the classroom discuss and train practical skills. To perform it, teachers can use tools such as Jing and VoiceThread to record videos for presentations. We suggest using online learning portals such as Tutorial45, Codecademy, and TedTalks to study the facts in detail, find more information or find clues to solve problems. In the process of "flipped" learning, students also take responsibility for analyzing and understanding their shortcomings. Here are the resources that can be used as a means of supporting the motivation of autonomous personalized learning:

1. Flipped class:
    – Jing: http://www.techsmith.com/jing.html
    – VoiceThread: http://VoiceThread.com/
2. Training platforms:
    – Tutorial45: https://tutorial45.com/computer-engineering-vs-computer-science/
    – Ted Talks: https://www.ted.com/
    – Learnlogy: http://www.learnlogy.com/index.php
3. Tools for creating tests and questionnaires:
    – Hot Potatoes: http://hotpot.uvic.ca/
    – Google Forms: http://www.google.com/drive/apps.html
    – Learningapps: https://learningapps.org/
    – Quizlett: http://www.quizlett.com/

Regarding the results of the digital resources rating (Charts 3 and 4), it is worth mentioning that in Poland teachers use Moodle as a Learning Management System that satisfies students' needs and demonstrates their results. In Ukraine G-Suit products are more spread, so students indicated this platform as a tool for learning and reflection. The easiest and more organized way to study online is MOOC and students confirmed this idea. Another great source for personalized learning is Open Educational Resources (OER), mentioned by Ukrainian students. OER provide learners with endless resources of a high quality and free of charge. However, as we could see, students from both countries chose other credible resources for the material studying (BBC, VOA) and test their skills. Students from Ukraine preferred interactive

assessment platforms (Quizlet, Learningapps) with immediate feedback to learning platforms with self-assessment or peer-assessment through the forum. Polish students also admitted the resource for the learning results demonstration (Flipgrid).

However, the use of technology alone does not make learning personalized. The formula for successful personalized learning is a regulated, individualized pace combined with a well-structured, managed, differentiated and reflective approach to learning that takes into account interests and abilities of students. Through educational technology, students receive timely feedback when a resource or platform points out mistakes or traces progress. Personalized learning integrated with educational technologies creates a dynamic environment for active learning, where students make choice, perform experiments, and learn about their capabilities. Assessment services help students understand mistakes and give teachers instant feedback on student progress. In order to reflect on learning outcomes, we suggest using Kahoot, Socrative or Anketa Everywhere questionnaires. Some videoconferencing tools (ZOOM, Skype) have the option for creation of questionnaires immediately on the platform. This is important because not all students can adequately assess the quality of their work. Reflective journals or diaries play a special role in the practice of reflection, in which students describe what they have learned, what was easy for them, what was difficult and what they need to do better. A useful tool for keeping an online journal is Penzu, or Blogger. However, certain challenges have limited the implementation of this approach. Teachers experienced such challenges such as organizational (time, number of students in a group, resources, educational policy of the institution) and individual barriers (resistance of students, their cultural differences, language level and insecurity).

Online questionnaires and quizzes help students to identify gaps in learning and to plan further actions. The tools of the G-Suit service (Google Disk, GoogleClass) allow creating collaborative documents with mutual evaluation, in which students can track the history of comments and corrections. Digital tools such as Microsoft Project provide students with a simple planning interface, and Gantter charts, which can be created in Microsoft Excel or Google Spreadsheets, are another tool for tracking project progress and monitoring or improving plans. An additional advantage is the chat, which facilitates social interaction between teachers, students and peers, which can be used as a means of supporting peer-assessment and monitoring student progress. Social learning networks such as Edmodo or Schoology support these skills mastering, as these systems enable teachers to create both individual and shared spaces to post comments, tasks, and works or use synchronous chat for discussions.

5   CONCLUSIONS

The use of digital technology for students' motivation for foreign language learning requires a high level of digital competence, as well as understanding of academic needs, the causes of negative feelings and failures. Among the most effective tools for measuring the level of personalized learning skills are self-assessment, interactive, sustainable and authentic assessment, reflective narratives, questionnaires, portfolio; self-assessment sheets, educational audit of skills and experience, reflective maps. Systematic use of self-assessment promotes the development of responsibility for learning outcomes.

University teachers pay much attention to learner autonomy and offer students activities for self-study. Nevertheless, learner autonomy is often guided by a teacher, assessed by a teacher and does not always correspond to learner's needs. In our

opinion, the correlation of autonomous and personalized learning fosters academic achievement due to taking into account the individual characteristics of content perception and means of interaction with it. The introduction of the concept of personalized learning with elements of autonomy transforms a traditional learning environment into a set of individual educational trajectories. Such approach allows us to shift the focus of learning outcomes assessment from the average indicators of a group to the personalized indicators with the focus on individual positive dynamics of academic success.

Having analyzed the results of the study, we defined the competence of personalized language learning as a functional structure that combines the following abilities: critically comprehend learning experience, shift personal learning activities towards personalization, determine the quality of personal knowledge of a foreign language according to established standards, implement effective learning strategies, reasonably choose digital resources, assess learning outcomes, analyze the compliance of the obtained learning outcomes with set objectives, design further autonomous personalized educational activities. The key pedagogical knowledge and skills for the development of personalized language learning are awareness of teaching principles for effective selection of personalized learning strategies, digital education competence, self-reflection on personal capabilities, experience and resources, implementation of collaborative learning with students' active involvement. A further study could assess the long-term effects of personalized learning in terms of self-realization and self-efficacy.

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