

INTERSECTION OF TECHNOLOGY AND SECOND LANGUAGE ACQUISITION

A. Dadykin¹, I. Tahini²

¹*Belarusian State University of Informatics and Radioelectronics (BSUIR) (BELARUS)*

²*Belarusian State University of Informatics and Radioelectronics (BSUIR) (LEBANON)*

Abstract

Migration and globalization have accelerated the need for a second language. Educational systems, as one of the most conservative systems of society, do not keep pace with scientific and technological progress and social changes, and do not have the capacity and resources to solve the problem of rapid training of a large number of adults in language, social and industrial skills. At the same time, the development of alternative ways of learning leads to the rapid growth of online learning. Such complex interdisciplinary developments require coordinated work of specialists in various fields of knowledge, using different terminology, methodology and models of the subject area. This makes it extremely difficult to work together and leads to the fact that the latest technical systems are implemented outdated techniques, teachers do not use the technical capabilities of modern systems, and methodologists cannot put into practice modern scientific discoveries and developments. To date, the objective prerequisites for the creation of a Learning Management System (LMS), which combines the most effective developments in the field of activity theory, psycholinguistics and information and communication technologies (ICT), have matured. The proposed LMS at the system level has already solved the problem of simultaneous interconnection of both the language system itself and the corresponding ICT tools that ensure the formation of foreign language thinking of adults in the development of professional skills. This approach, in which the set of criteria plays a decisive role, opens up new prospects for the acquisition of not only full professional and communicative competence, but above all, helps to apply new effective integration strategies of systematic and sustainable involvement of migrants, implementing the process of formation of professional skills for the specialty that is most in demand in a particular region. Moreover, training can be started even before arrival in the host country under special programs developed both on the basis of instructions of state bodies and recommendations of local communities.

Keywords: Intersection of Technology, Learning Management System, Migration, Second Language Acquisition

1 INTRODUCTION

The integration of migrants, including refugees, into many member States of the European Union and associated countries has been a challenge for many years, both for public authorities and for local communities. To date, the number of refugees and migrants has increased dramatically and has become a humanitarian disaster. And the most developed countries of the world are not able to solve this problem. Despite the experience and the desire to solve it, the situation is only getting worse and many countries simply refuse to accept refugees and migrants.

So, even during the first wave of emigration, which occurred after the collapse of the Soviet Union in the early 90-ies of the last century, there was a tendency of a sharp increase in the terms of mastering the language of the new Fatherland by adult returnees and the inability of existing institutions to change this process. To everyone's surprise, these people, passing special six-month courses on communicative methods with native teachers and living in the country of the studied language for about a year and a half, not only were not able to speak the new language fluently, but hardly built elementary phrases. Unfortunately, almost nothing has changed since then. The main reason for this situation is not so much in the cultural aspects of the behavior of the arriving people, but in the unwillingness and apparent inability of existing educational systems to change the situation.

According to the authoritative European corporation Education First [1], only the Nordic countries have the necessary potential to implement the tasks of adapting people to new conditions. However, the main migration flows are formed in the countries of southern Europe, which cannot cope with such flows of low-skilled foreigners. For historical reasons, the same situation with the level of foreign language proficiency has developed in the countries of the former Soviet Union (Fig. 1).

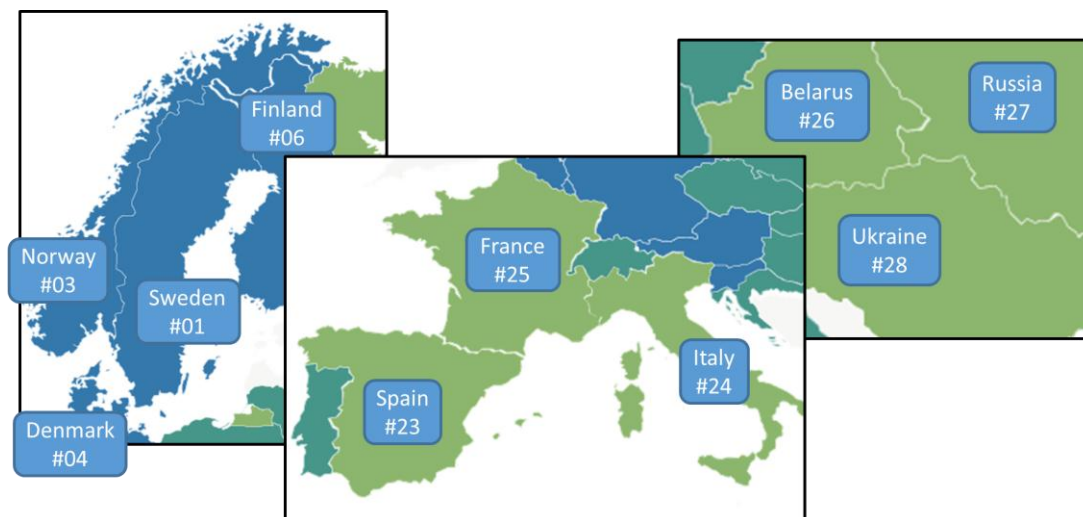


Figure 1. EF English Proficiency Index. Regional Ranking of European Countries 2018.

The ability of foreign language communication most quickly achieved by progressively mastering employment skills while simultaneously developing the whole language system, which very accurately and in a timely manner implement verbal skills new language requires the learner in his every daily activity. Only in this way can foreign language thinking be formed quickly enough, in which the presentation of thoughts takes place in accordance with the norms of the system of the new language acquired for its expression in everyday speech. In addition, the use of modern of information and communication technologies (ICT) together with the use of effective models of obtaining labor and language skills can significantly accelerate learning and improve its success. Current research is interdisciplinary and is at the intersection ICT, systems analysis, psychology, linguistics and activity theory.

2 METHODOLOGY

2.1 Psycholinguistic aspects of language acquisition

The Council of Europe proposed an activity approach and a communicative method as the basis for the criteria for assessing language proficiency. At the same time, any forms of language use and learning have been described in the following terms: "the use of language and its study include human actions, in the course of which he as a subject of social activity develops a number of competencies: General and communicative. They are based on competencies that provide solutions to problems in different settings, taking into account different constraints, and are implemented in activities and processes (actions) aimed at the generation and/or perception of texts, in connection with certain topics and areas of communication and with the application of appropriate strategies. Consideration of these processes by communicants leads to further development and modification of these competencies" [2].

With this formulation, the use of language in the form of internal and external egocentric speech as a tool of thinking falls out of the sphere of language activity and belongs to the sphere of General competence. It turns out a paradoxical situation. Any kind of language activity requires cognitive skills, which in turn require the use of language as a tool for thinking. But the cognitive skills themselves, their classification, methods of acquisition and control are not described. The Council of Europe documents on General skills/competencies, which include cognitive skills, do not contain them at all.

As a result of this structural imbalance, the inner side of the use of language – the cognitive side-was beyond the attention of the documents defining the language policy of the European Union. They lack criteria for its evaluation, respectively, curricula and courses developed in the framework of this methodology. Naturally, this bias leads to the fact that students, especially adults, are forced to develop strategies for harmonizing the cognitive and communicative sides of language systems on their own, often in suboptimal and ineffective ways.

At the initial stage of mastering a foreign language means of cognitive activity in this language is not enough for the level of needs of an adult, so almost all students use the translation strategy. The

planning and organization messages is controlled by the thinking in their native language, and performance – on study. Similarly, a message in the target language is decoded, understood, and analyzed using the native language. Moreover, the choice of such a strategy does not depend on the method of teaching (grammatical, communicative), nor on the language of explanation of vocabulary and grammar (native or studied).

At more advanced levels of language acquisition, this strategy leads to a slowdown, stagnation of the process and the formation of a so-called "plateau" on the learning curve. Trying to change the strategy to wireless leads to the need to retrain and overtraining cognitive strategies and rolling learning curve in the direction of deterioration of existing skills [3].

Such processes lead to the fact that a significant part of students lose motivation and interest in learning and stop attending courses. And the rest, even with considerable effort, often can not pass the final test, even with very low requirements.

The poor quality of the proposed numerous techniques often leads a person to the misconception that he is not capable of mastering foreign languages. In fact, this is far from the case. A foreign language, so necessary for professional and General development of the personality, can be qualitatively and to the extent necessary for the full realization of the personality in a new job, mastered at any age within a few months and it depends mainly on the proposed approach to the formation of a new language zone in the minds of adult learners.

2.2 How to acquire a second language

Both theory and practical observations show that if our goal is to acquire foreign language communicative competence, that is, fluency in oral speech and other types of speech activity, the most effective way to achieve this goal is a comprehensive and interrelated study of language tools in parallel with speech practice. This must necessarily take into account the systemic relationship of the two languages – the studied and native (Fig. 2).

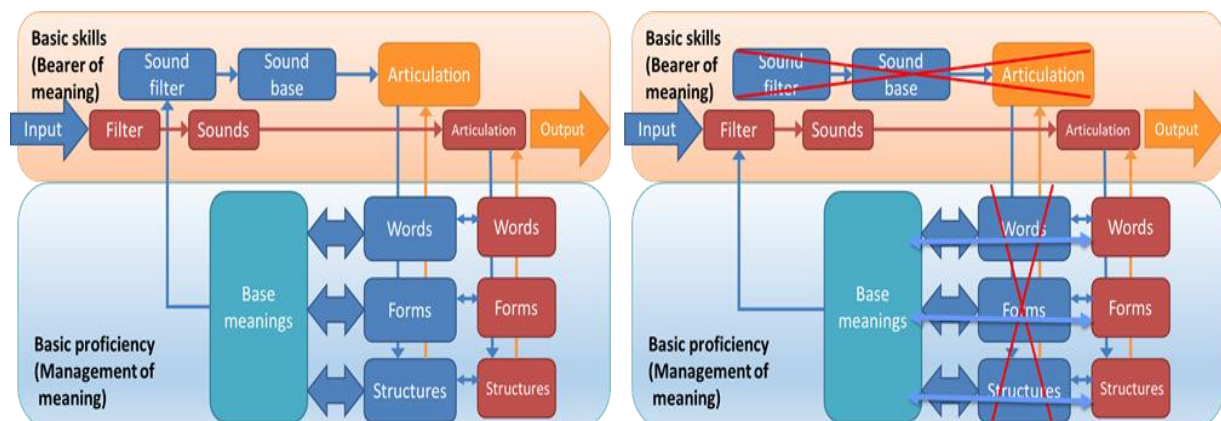


Figure 2. Second language acquisition.

Then it is possible to speak not only about coexistence and contact of old and new language in consciousness of the trained, and about direct influence of experience of the native language on exact perception of reality in other language, about direct interpenetration of naturally acquired and consciously learned language material that is especially important at training of adults. Haphazard mastery of a foreign language, as experience shows, is extremely unproductive.

Building a language as a system is the quickest way to success in learning, because any language is a vast, strictly specific system. To perceive language as a system means to be able to analyze its structure, gradually building a single structure brick by brick. Moreover, the language has huge combinatorial possibilities (grammatical and lexical). The choice of one form of those that collectively represents the system, thus allows you to look at it all at a glance. This choice is nothing more than a private operation, possible with full ownership of the system. If you approach this issue purposefully, the construction of language as a system for individual use is not such a complex process. The General system of language is perfectly amenable to classification, and therefore analysis and synthesis. Moreover, if we talk about the Romano-Germanic languages, each of them is a surprisingly beautiful, geometrically constructed system.

Foreign language acquisition is a structured comprehension of a system in which language units are defined through their mutual relations. At the same time, the use of a systematic approach to the study of language tools and practical activities creates in a short time such a set of knowledge and skills, in which in the minds of students there is a model of parallel thinking, characteristic of native speakers. And the most effective is the direct formation of a new speech zone in the adult's mind.

2.3 Dynamic Grammar

We consider the study of the English language from the point of view of Visual approach. The application of this approach in linguistics consists in the use of graphic means (diagrams, diagrams, drawings) to demonstrate the structure of the English sentence and ways of its construction in various forms with the widespread use of color for coding meanings. This greatly facilitates and accelerates the process of mastering the basic grammatical structures [4].

Psycholinguistic studies have shown that the use of grammatical rules for planning and controlling utterance inhibits speech activity [5, 6]. Indeed, it is physiologically very difficult to speak a foreign language at the same time and to reflect on the grammar rule necessary for the construction of a sentence. If the student does not know how to construct the correct English phrase, he will not be able to do it. If he knows the rules of how to do it, thinking about them will create obstacles to speaking. The Visual approach, which replaces complex text rules with corresponding visual structures in the form of schemes and diagrams, allows to get out of this contradiction.

Without basic grammatical skills communicative approach turns into a simple memorization of spoken phrases. Visual structures of English sentence construction allow conscious practice: independent planning of the statement and control of its correctness. It is proposed to first focus on mastering the system of English times and automation skills, and the variety of communicative situations to postpone for subsequent practice. If you work out the basic design on a limited number of vocabulary to full automatism, their use in the future will not cause difficulties and will not require conscious control by the rules. Language acquisition is much faster in the presence of ready-made algorithms by which the language "works" than when trying to independently derive these algorithms from the speech stream and communicative situations.

Fig. 3 shows the stages of development of the elementary action on the example of the verb Do, and the black arrow indicates the direction of development of the elementary process and the flow of time. The figures shown below the arrow indicate what is happening in reality, and above the arrow in the mental plane. Moreover, the dynamics of the development of a particular action is clearly shown from the idea to its completion.

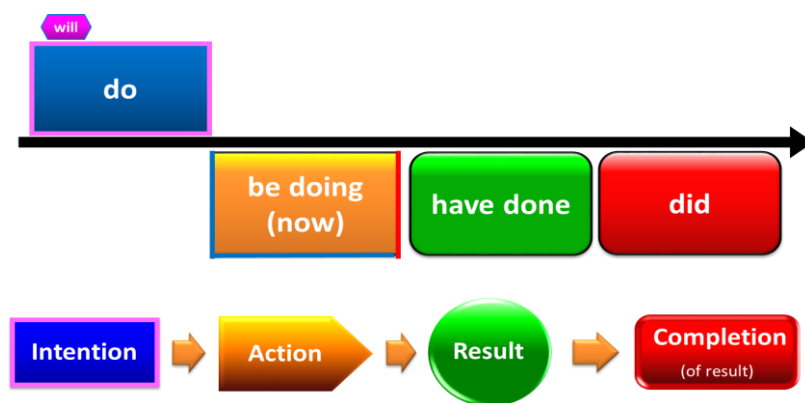


Figure 3. Dynamics of changes of the verb Do.

Further development of this approach is embodied in the creation of visual models and card tables, providing a mode of accelerated formation of grammatical skills (Fig. 4). According to the hypothesis of understandable input, which is in good agreement with the theory of the near zone of Vygotsky's development (the methodological principle of potency), the development of skills and abilities occurs when performing exercises, one step more difficult than the current assimilated level. This excess of the current level can be achieved by increasing the speed and accuracy on the material of the same level of complexity (skill improvement), or the introduction of new material (new knowledge-competence-skill).

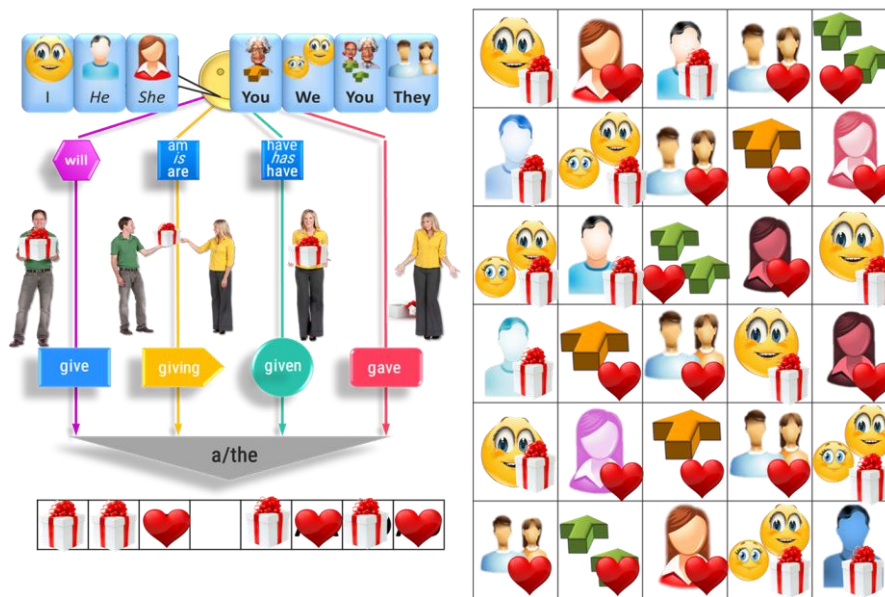


Figure 4. A visual model combined with a card table.

Since the curves of learning (knowledge acquisition) and skill training (skill acquisition) have significantly different forms and numerical parameters, the unjustified transfer of methodological techniques from one sphere of application to another leads to unreasonably slow progress or its complete absence. The choice of the optimal mode of skill training in the field of grammatical skills is complicated by the lack of mathematical description of the regularities of this process, almost complete lack of accurate data and available tools to obtain them. This is due to the extreme complexity and multilevel structure of the language, which is a fractal system with a huge number of interrelated variables, mathematically not strict and ambiguous.

It is proposed to select from this system a very simplified model, formalize it with the help of system analysis tools and obtain statistical data within this model. Such data will allow to reveal the necessary regularities and to carry out their analysis, and to use the received data for increase of efficiency of trainings and expansion of initial model to the level necessary in concrete cases.

Two modes are necessary for successful conscious training: Linear demonstration of regularities for their realization; Random workout for full automation of the skill. The first mode shows the linear change of one parameter when the other variables are fixed. When using the second mode, it is possible to combine linear and random changes in these parameters to create unpredictable situations that require real thinking with the use of language to perform the task.

3 RESULTS

Fig. 5 shows the structure of the top-level abstraction electronic skill acquisition management system (e-AMS). The main properties of e-AMS were repeatedly discussed at high-level conferences held by such organizations as IATED, IEEE, IEDRC and received positive feedback [7, 8, 9, 10].

The conceptual solution is based on the use of mechanisms of system analysis and unification of scientific concepts of representatives of the Soviet school and scientists of Western countries against the background of the technological leap of the second decade of the 21st century.

The use of modern ICT, together with the use of effective models of skills acquisition, accelerates learning and increases its success by transferring the synergetic effect to all stages of language skills formation, especially to the “barriers overcome” to accelerate the return to the expected competence curve.

During the work of the system, a detailed statistical analysis of the results is carried out, dynamic learning curves of each adult learner are displayed, tables of coefficients are substantiated and indicators of the speed of speech skills formation are specified, levels of speaking from primary to spontaneous speaking are determined in accordance with the scale of CEFR [11, 12]. All that was said above, the authors tried to display in one Figure 6.

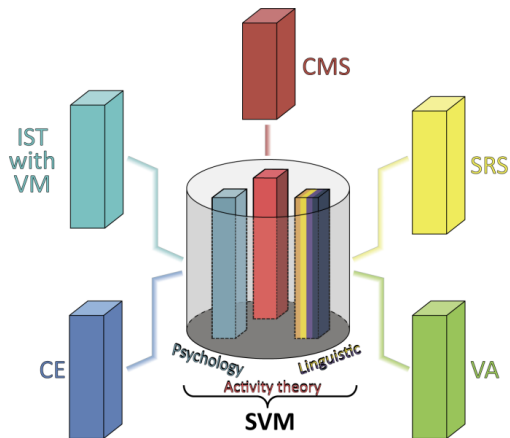


Figure 5. E-AMS generalized structure.

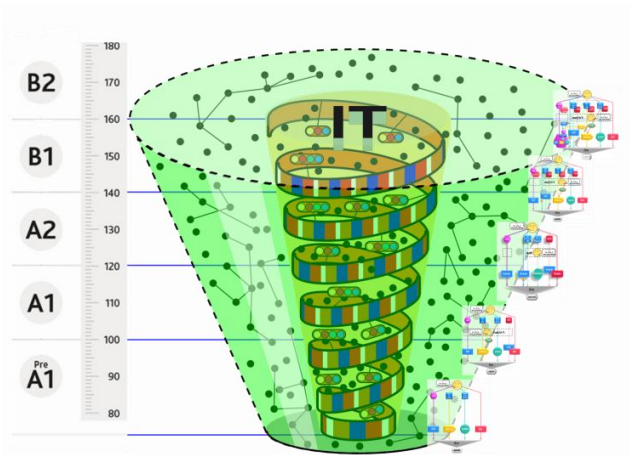


Figure 6. Visual representation e-AMS.

Today's website <http://trainer.filolingvia.com> successfully operates and created the first versions of simulators based on the Android operating system (Figure 7). By the end of the year, the line of simulators based on IOS should start working.

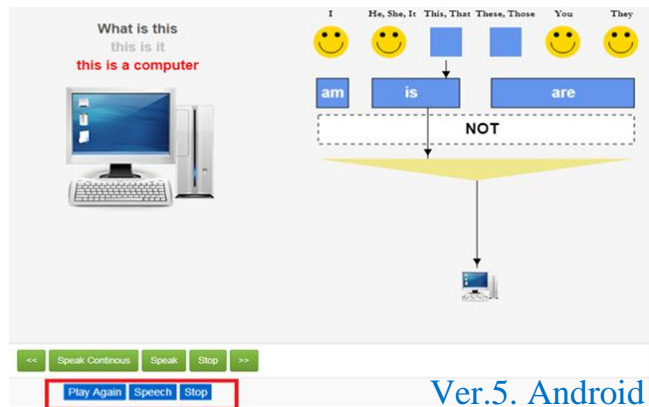
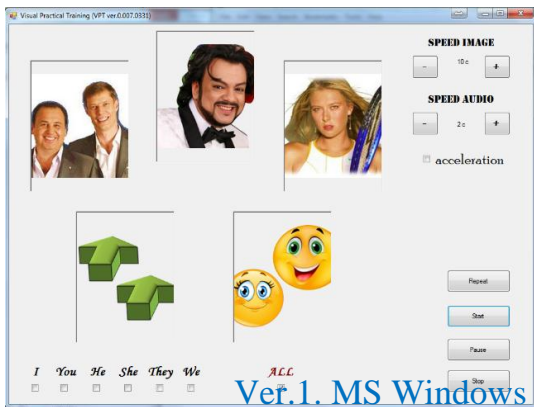


Figure 7. Interactive Speech Trainers prototypes.

4 CONCLUSIONS

E-AMS is a unique science-intensive high-tech product. Its use will lead to a synergistic effect in the learning process and, as a consequence, the accelerated creation of a new language zone in the minds of adult learners. The system provides a process of controlled formation of professional and speech skills that allows you to move from learning a language to its improvement in the process of use. It is created on a modular basis, so each element of the system can be effectively developed and used separately. At the same time, the effect of the joint use of all elements of the system and the integration of additional developments can significantly exceed the capabilities of existing analogues and will help to solve very important social problems.

In the European Union, the Horizon 2020 programme carried out a preliminary assessment of material and time resources for the creation of such a system, combined with the necessary infrastructure to implement the task of training professional skills and language adaptation of refugees and migrants. Such costs amount to approximately 5 million euros, which should be disbursed within 2 years, provided that the necessary work is parallelized between 5-6 institutions or organizations.

Within the framework of the next Horizon 2027 program, the amount of allocated resources will certainly be increased, since, apparently, the EU leadership does not have a constructive understanding of how to turn the existing migration crisis from a state of humanitarian catastrophe into a process of managed migration. The consistent emergence of even separate components of ems will contribute to improving the quality of the educational process in the field of acquisition of foreign languages and the expansion of international relations.

This project is a joint project of researchers from the United States, Japan, Ukraine, Lebanon and Belarus. The authors of the project emphasize that it does not contradict the existing system of assessment of language competencies in Europe, but rather contributes to their importance. The location of the proposed e-AMS is shown in Figure 8.

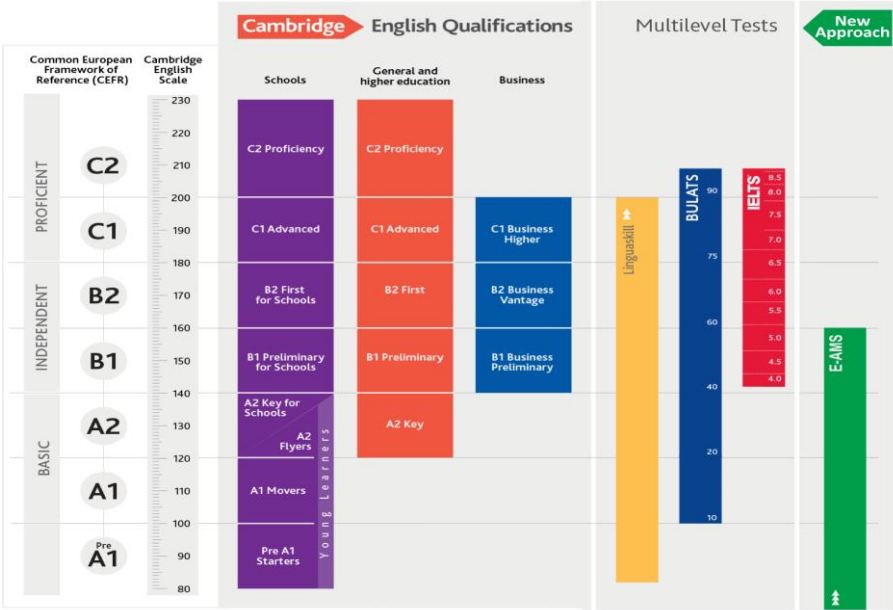


Figure 8. Location of the proposed e-AMS.

The system is planned to be implemented in Belarus as part of the it-country project (Figure 9).

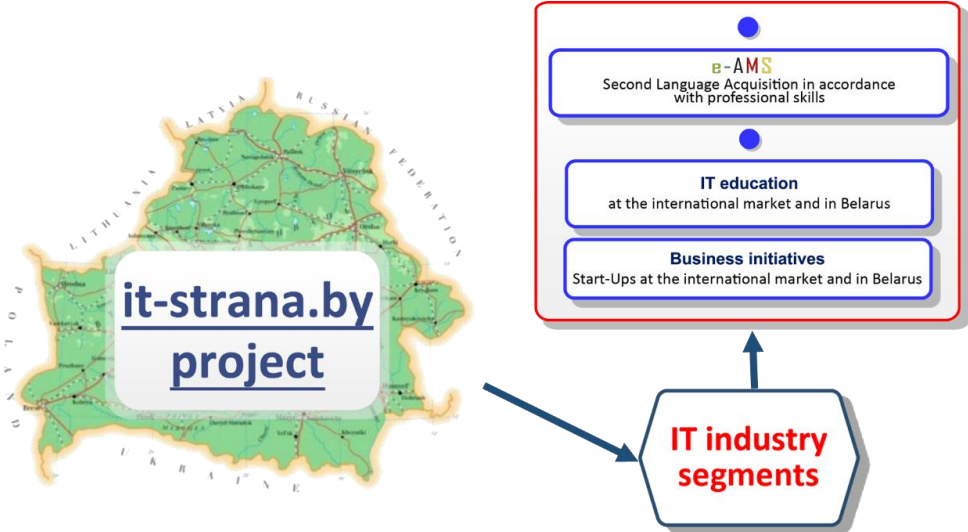


Figure 9. Implementation of e-AMS in the IT country project.

This project is of particular importance for refugees and migrants. In a relatively short time (3-6 months) they will be able to get not only all the necessary information about their new profession, but also to gain sustainable language skills of the new homeland. And it will be held remotely, without the work of the teacher directly in the classroom face to face with the students, and the classes themselves can be carried out at any point where there is Internet. The resulting solutions and tools will actively contribute to the efforts of public administrations to manage the integration of migrants at the national and local levels. They will also facilitate communication with migrants and their access to services such as language training, vocational training, employment, education and social security in host communities.

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