

## Neurodidactic Aspects of Teaching Adults Foreign Languages

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**Abstract:** *Education is among the many spheres of human life that have been totally computerized in today's society. Computers and digital resources have already become an accepted part of the learning process for all types of educational institutions, from preschools to universities. The article points out the importance of distance learning and Internet platforms as a didactic means of material assimilation, because with their help it is possible for students to independently assimilate the proposed teaching and learning materials within a certain period of time. The manner in which Internet tools are employed should be subjugated to attaining educational objectives and safeguarding the excellence of virtual instruction. In today's information world saturated with different electronic resources, higher education institutions have to withstand tough competition with different educational centres and platforms providing foreign language learning opportunities. This article presents an overview of educational platforms for foreign language learning (in English). The article aims to demonstrate the wide range of options available on various websites designed for adult learners of foreign languages, while exploring neurodidactic approaches to teaching. The sites analyzed in the article have different methodological bases and have a specific learning goal. The practical experience of using a corporate educational platform in teaching is considered.*

**Keywords:** *Information world, electronic resources, Moodle, Duolingo, neurodidactics.*

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## Introduction

Distance learning consists of various information technologies that give students the main volume of studied material, ensure productive interaction between students and teachers in the educational process, as well as grant students the possibility to work independently and master the studied educational material. Distance learning has been created to enable students to pursue secondary and higher education courses from their own homes, supported by secondary, additional and higher education institutions.

Distance learning involves the use of methods such as demonstration, illustration, explanation, story-telling, conversation, exercise, problem-solving, memorizing of educational material, written work and revision.

Distance learning materials include textbooks (either printed or electronic versions), audio recordings, video lessons, computer-based training programmes, online resources and educational games. Workshops conducted at a distance, digital libraries and remote databases are greatly sought after.

At the centre of the distance learning process lies the student's independent cognitive activity, which requires to be taught to independently identify and comprehend knowledge from a range of sources, work with the obtained knowledge and make use of cognitive activity techniques. Initially, students should actively engage in the process of attaining independent knowledge that goes beyond merely searching for information, but also involves its practical application.

Online learning necessitates the use of the latest technologies and programmes to enable students to reach their fullest potential and foster social and personal skills in both individual and group assignments. Distance learning uses the same strategies as traditional education, such as cooperative learning, projects and scientific works.

Establishing and maintaining communication between the student and instructor is critical for distance learning. Interacting with other students is obligatory while participating in cognitive and creative activities, since distance learning is widely employed by those suffering from socializing and communication difficulties.

The use of Internet platforms as a didactic tool in distance learning of a foreign language has become a subject of interest and study of domestic and foreign specialists. Korotun (2018) and Volotivska (2020) have both explored the issue of incorporating distance learning into the educational system, demonstrating that the implementation of Internet-based platforms

in language instruction yields far better results with regards to the students' personal growth, proficiency and speaking ability. Bahji et al. (2015) illustrate that using current Internet platforms throughout the lesson will enable the teacher to manage the educational process and make the most of the class time. Chaudhry et al. (2021) investigate teachers' views on distance learning, as well as the use of online platforms in higher education institutions.

The article aims to achieve several objectives: firstly, to delve into the concept of distance learning and its role in maintaining educational quality; secondly, to evaluate the utilization of distance learning within university settings for foreign language instruction; thirdly, to provide an overview of Internet-based platforms used in foreign language instruction; fourthly, to assess the potential of distance learning platforms in teaching foreign languages and facilitating independent student learning; and finally, to explore the neurodidactic aspects of adult foreign language instruction.

The research methodology encompasses an examination of several key aspects. These include an exploration of the role of distance learning in upholding the quality of education for foreign language instruction, an investigation into how it supports students in addressing didactic challenges through independent work. Additionally, the methodology involves delineating the use of distance learning within university contexts for foreign language instruction and scrutinizing the various Internet platforms employed for language learning.

Achievement of the research objectives is possible using the following methods: critical analysis and synthesis of scientific and methodological sources, system analysis, descriptive and predictive method, method of generalization of the obtained results – induction and deduction, traductive method.

### **Neurodidactic Aspects of Teaching Adults Foreign Languages**

The adult brain is capable of performing several functions simultaneously when learning a foreign language. It simultaneously collects and decomposes the perceived information, operates with the perceived information, operates with the part and the whole. Analysis and synthesis as highly significant and interrelated processes should be supported by appropriate methods and techniques. In particular, it is advisable to introduce educational material at the lesson in the mode of analysis and synthesis, concretization and generalization, induction.

The brain in learning a foreign language connects experience with a new situation. Its understanding and comprehension is determined by the actualization of existing knowledge and its use in the cognitive process.

Life experience of adults optimizes this process. Another positive point in this category of students is the fixed clichéd act of overcoming intellectual difficulties and establishing patterns. A characteristic feature of the brain is the ability to simultaneously perceive information under conditions of peripheral perception and focused attention. In light of this, enhancing peripheral perception is a constructive element in teaching adults foreign languages.

Simultaneity of conscious and subconscious processes in the brain when teaching a foreign language to a learner leads to the fact that he receives excessive information from the factors of didactic environment (gestures). Didactic environment factors (gestures, facial expressions, plasticity of the learner, atmosphere in the classroom, sound, lighting, etc.). This natural organization of information perception by the brain is aimed at obtaining the maximum amount of information and ensuring its reliability. At the same time, the brain of each learner is individualized in terms of information processing, flexibility of thought processes, and dominant memory. The latter has several systems, in particular, visual-spatial and memory-based. Visual-spatial memory in the form of “bee-hives” is systematically filled with information and quickly restored, but weakens with age. Memorization is rather laborious in memorization and reproduction, but compensates for the age-related weakness of visual-spatial memory.

Specific features of higher mental functions of a foreign language learner have a complex structure (many links, multifaceted nature of interaction), include various structures of functional systems, which are their ontogenetic mechanisms, demonstrate the dynamic nature of brain localization (organization), variability, plasticity and interchangeability of links, revealing direct dependence on lifetime conditions of formation, the possibility of restructuring these systems, reflect age-related changes in the composition of the afferet.

At the same time, age is not the cause of their disorder and learning difficulties. The presence of needs and motivation (aspiration for financial well-being, high status, recognition in the circle of close people and society, etc.) in adult learners when learning a foreign language provides unimpeded interiorization of the external (social) stimulus to competence formation into the internal one.

Sensory and motor processes are transformed into automated thought actions. The latter combine the previously established algorithmic

way of realization of such actions and their restructuring. Automated processes and the drive to learn guarantee its efficacy (Krasulia, 2017).

The stimuli of learning quality are communication, creativity, socially oriented behavior. The latter focuses on family, team, planning the future, education, predicting labor results, art, culture, economy, politics, etc. Learning as an energy-intensive physiological process is dependent on balanced nutrition, scientific organization of work, hygiene.

Anatomical gender features of the brain are different: in women the weight of the corpus callosum (a bundle of fibers between the left and right hemisphere) is greater than in men. In this regard, the exchange of information between the hemispheres is more intense in women. Simultaneous work of both hemispheres in women leads to more successful thought formulation and communication than in men. In the latter for verbal activity is responsible for the left hemisphere, the right is responsible for solving abstract problems. As a result, men's spatial thinking is ahead of women's. Genetic factors and hormones play a significant role in the issue of gender types of thinking.

Age changes lead to shifts in hormonal background: people after 50 years of age begin to think partly as representatives of the opposite sex.

In the issue of lateral features of adult students, we should note the fact that interhemispheric asymmetry of the brain in an adult person varies from complication and improvement of mechanisms of interhemispheric interaction in young and mature age to reduction of interaction in young and mature age to lower indicators. An effective method of development of the right hemisphere of the brain is a training based on a combination of methods of psychological orientation and Eastern philosophical and religious teachings. Psychological trainings of Buddhism, Day Buddhism, Chan Buddhism, Yoga, Taoism are effective in the development of the right hemisphere of the brain. Meditation teaches concentration and relaxation, development of spontaneous thinking and intuition. Mandalas are used to deactivate the left hemisphere, thus avoiding inward focus on oneself.

Another method of maintaining interhemispheric interaction is to take into account the sensory-perceptual organization of experience (modality of internal experience). Adults tend to exhibit a certain dominant type of modality: visual, auditory, kinesthetic.

Visual modality, determined by visual memory, contains the internal experience of "visuals" related to memorization, retention and reproduction of visual images during foreign language learning. Such adult learners are the majority. The auditory modality, provided by auditory memory, contains the internal experience of "audials" related to sounds and sounding speech. The

kinesthetic modality, related to movement and touch of “kinesthetic” learners, is determined by motor, tactile, olfactory and gustatory memory. Neurodidactics welcomes a multimodal approach to adult learning, which involves taking into account each dominant modality.

The named approach takes into account not only the dominant modality, but also the type of temperament of adult learners (activity, motor skills, emotionality, impulsiveness), individual dynamics of development of mental processes (thinking, arbitrary mental processes (thinking, arbitrary attention, imagination, memory, speech, freedom, emotions). In their totality they provide cognitive, creative activity of students, their speech, self-regulation, communication.

### **Applying Distance Learning in University Education to Teach Foreign Languages to Adults**

Distance learning involves educational interactions between teachers and students who are geographically separated. The learning process is conducted by means of telecommunication technologies and Internet resources. At the same time, distance learning is defined by the integral elements of the educational process, such as purpose, objectives, content, forms of organization, learning methods, assessment and evaluation of results.

These are the required features of teaching a foreign language via distance education that have been identified:

- openness – interacting with the external environment and other systems facilitates revisions and modifications to the structure and content of courses;
- activity – certain interaction programmes are autonomously supplied by the system;
- innovativeness – it explores new approaches and strategies for tackling issues arising in today’s society and the system itself, concentrating on ongoing improvement and self-growth;
- reflexivity – the capability to frequently examine the system’s status and its place in the environment.

The demand for higher education, combined with the need to improve the qualifications of workers everywhere, is driving the growth of distance learning. Subsequently, many educational institutions are strongly incorporating information and communication technologies into the educational system, providing learners with the opportunity to learn remotely.

Significant emphasis should be placed on the design of the structure of distance platforms, particularly in addressing the verification and control tasks. Unlike traditional learning systems, these tasks involve interactions primarily between the student and the system rather than between the student and the teacher. Notably, the distance learning system supports TeX-like language and wiki markup, which facilitates free communication among instructors and students within the system, expanding their interactions beyond the exchange of tasks and solutions.

The system should enable communication services such as internal email and an internal forum that is open to all students and managed by the teacher, which will permit the teacher to modify the learning activities of each student (Slaouti, 2000).

There has been a surge in popularity for web-based seminars or webinars, and they are often used for distance learning. They imply incorporating two or more classrooms equipped with interactive whiteboards, special screens and other technologies needed for training, including specialized software and online meetings.

Besides, it is essential that it supports and transmits different types of information necessary for the class:

- graphical data shown as printed words, diagrams, equations, illustrations displayed with a particular marker on an interactive whiteboard or tablet;
- text data which can be projected onto an interactive whiteboard or tablet via a virtual keyboard.;
- instructor's and webinar participants' voices, audio recordings, plus other audio materials;
- visual content broadcasted from the instructor's classroom, or all of the classrooms of those taking part in the webinar.

The complex's centralized server is employed to transfer information when teaching a foreign language, thus allowing one to a) hosting multiple webinars concurrently, b) record and manage webinars, c) grant and alter the rights of listeners in reference to the board or exchange of audio and video info whilst the webinar is in progress.

The suggested plan is suitable for webinars in foreign language learning, such as between a university and a branch office. One of the most advantageous aspects of this suggestion is that it works with low bandwidth channels, therefore making it accessible to a broad spectrum of users.

## **Internet Platforms for Foreign Language Learning**

Moodle (n.d.) is an integration platform for foreign language learning: it is quite stable, scalable (there are installations with more than 1 million users), and modularity and support for open integration protocols were initially a priority for the developers. Furthermore, the level of support for a wide range of educational activities that can be accomplished with the technologies employed is rather adequate (Chaudhry et al., 2021).

Moodle courses are not limited to lectures and exercises since the system provides a vast variety of educational elements and resources. A Moodle course created by an experienced teacher appears to be a structure composed of diverse components, each with its own type and purpose. Lectures, assignments and tests make up the fundamentals of learning, while Moodle's glossaries, wikis, blogs, forums and workshops provide further diversity to the educational process. It is also noteworthy to mention the sophisticated Moodle communication system. On the forum, one can have conversations about groups, assess posts and add files of any type. Additionally, private messages and comments can be used to discuss any specific problem directly with the teacher. The dialogue occurs in real time. Importantly, Moodle is available as open-source code, so if the current resources are insufficient, it can be modified to match the particular requirements of any educational project.

The Moodle system provides a convenient means of controlling students' progress when teaching a foreign language. Moodle creates and saves each student's portfolio: all works submitted, teacher's marks and comments, forum posts. This feature enables the teacher to manage student attendance and the duration of their online studies. Thus, the teacher makes more productive use of their time. They can compile statistics about students: viewed lecture materials, completed homework, performance on tests, etc. Thus, it is easy to understand how much the students have understood about the topic and, taking this into account, to suggest material for further study.

This system has been implemented in over 60,000 locations across over 100 nations and is available in dozens of languages. By joining the Moodle user network, one can gain insight into the system from other users and benefit from their experience (John, 2015).

A distinctive feature of the Moodle platform is also the fact that it can be used to organize mass online courses, one of the new trends in e-learning in foreign language teaching.



1. All the resources on the MOODLE learning platform are gathered into a single whole. The system has the property of creating and storing learning materials in electronic form and determining their sequence of study. Since the platform is accessed via the Internet, students are not dependent on a specific location and can access the platform from anywhere in the world, mastering the material according to their own pace.

2. Electronic format enables not only textual, but also interactive teaching materials of any type, from a scientific site article to a YouTube video clip, to be used. All course material is stored in the system and can be structured with the addition of links, tags and labels.

3. Collaborative problem solving. The Moodle platform provides the opportunity to work together. For this purpose, the system provides many tools, such as: glossary, forums, blogs, workshops. In addition, you can not only teach each student individually, at your own pace, but also organize group work, online lectures and seminars.

4. The system allows the sharing of any type of file between the instructor and the student, as well as between the students themselves.

5. The teacher is in contact with the students. One of the strongest advantages of the Moodle platform is its communication features. The system forums allow for group discussion and messaging, attaching files in different formats, as well as private correspondence and the ability to personally discuss any issues with the teacher. There is also a chat room.

6. The quality of teaching is under control.

7. The instructor can do mailings to inform all participants of the course or group on issues related to the training. There is nothing to waste time in writing a message to each student, which makes the instructor's job much easier. The platform creates a profile of each student, within which all his/her educational activities are stored: completed work, grades, instructor's comments and recommendations, messages and correspondence. This allows to control the assessment of students' activity, their work in the course. The teacher will be able to plan the freed-up time in the most effective way. The system determines the presence of plagiarism in the work, its source, reflects the fulfillment of students' current assignments and tests with assessment results. The teacher can more easily identify the gaps in students' expertise and, based on this assessment, present material for instruction and extra study (Duhaney, 2004).

The opportunities that Moodle provides to users when teaching a foreign language can be grouped into roles:

1. Learners: a) learning anytime, anywhere, at their own pace; b) spending more time to study interesting topics in depth, the best possible assimilation of knowledge.

2. Instructors: a) staying current with the course; b) modifying the sequence and fashion of delivery based on the team's work; c) investing more time in creative projects and career advancement, as the system can handle the mundane tasks; d) supporting feedback from students.

3. Administration: a) distributing instructors' duties; b) assessing educational achievements; c) lowering the expense of administering the learning process.

Moodle provides a comprehensive set of tools for the management of foreign language learning. If there is no ready solution or it is imperfect, it is possible to expand the functionality of the platform system.

At the same time, there are numerous online sources and apps that are popular for foreign language instruction. Here are some of the more effective ones:

*Duolingo* (n.d.) offers courses in multiple languages and provides enjoyable lessons through game-based instruction.

*Rosetta Stone* (n.d.) is renowned for its immersive and interactive language learning program.

*Babbel's* (n.d.) lessons focus on everyday conversational exchanges to enable learners to communicate in a foreign language.

Using spaced repetition and mnemonic strategies, *Memrise* (helps users to recall vocabulary and phrases (Memrise: Speak a New Language, n.d.)

*FluentU* (n.d.) utilises real-world videos to make language learning immersive and captivating.

*Italki* (n.d.) facilitates virtual language lessons between language learners and native speakers.

*Tandem* (n.d.) is a language exchange app which links people with native speakers in order to engage in language exchange conversations.

*Busuu* (n.d.) also provides language courses and an opportunity to interact with native speakers.

Certified teachers are available via *Lingoda* (n.d.) for live online language classes, allowing learners to receive structured education.

*Pimsleur* (n.d.) specializes in audio-based language education, aiding learners in honing their listening and speaking skills.

*Mango Languages* (n.d.) provides instruction in more than 70 languages, with an emphasis on conversational abilities.

Thus, these platforms vary in terms of language offerings, teaching methods, and pricing structures, so one may wish to explore a few to find the one that best suits one's needs and preferences. Many of them offer free trials or free basic versions, allowing one to test them out before committing to a subscription.

## Conclusions

The significance of this article is evident in its examination of several key areas. Firstly, it delves into the core concept of distance learning and its role in upholding educational quality. Secondly, it provides insight into how distance learning is applied within university settings, particularly in the context of foreign language instruction. Additionally, it offers a characterization of Internet-based platforms utilized for foreign language education. Lastly, the article conducts an analysis of the potential of distance learning platforms in the teaching of foreign languages and in facilitating independent student work.

The study analyzes the effectiveness of using online platforms, analyzing the main difference between platforms: accessibility, the possibility of choosing the teacher, the form of the lesson, types of exercises, different consequences of agreeing or refusing to learn, different degrees of user autonomy. Moreover, an important factor is the student's dedication. The student does not find studying to be a source of enjoyment. When a person selects the free options on a business website, they are, firstly, being entertained by these activities during their free time and secondly, they are content with getting something with no cost. At the same time, those who purchase content attempt to validate the expenditure and take advantage of what is on offer. Such a person understands that he/she is paying for a service and can influence the learning process to a certain extent. It is imperative to grant the teacher and the student a possibility to organize the learning process, the student – to grasp the material needed by the programme, the teacher – to measure the student's knowledge. Undoubtedly, support of interest in learning, introduction of new forms, including the expansion of opportunities – this is the future of educational platforms. Through collaboration, foreign language teachers and information specialists can achieve many things. For this purpose, didactic, technical, legal desires and capabilities are necessary.

Achievement of the research objectives became possible through the use of such teaching methods: methods of critical analysis and synthesis of scientific and methodological sources, system analysis, descriptive and predictive method, method of generalization of the obtained results – induction and deduction, traductive method.

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Author 1 made a significant contribution to the concept of the research paper; presented a study of the essence of distance learning in ensuring the quality of education.

Author 2 concluded the project and characterized the application of distance learning in university education in foreign language teaching.

Author 3 finalized the versions for publication and characterized the Internet platforms for foreign language teaching.

Author 4 made an analysis of the potential of the distance education platform Moodle in teaching foreign languages and organizing students' independent work.

Author 5 analyzed the potential of the most popular distance learning platforms (Babbel, Busuu, Duolingo and others) in teaching foreign languages and organizing students' independent work.

Author 6 analyzed the neurodidactic aspects of teaching foreign language to adults.

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