

Development of Sociocultural Competence of Students Based on Cognitive Modeling in the Web Environment

Inna Bachalova^{1,*}, Raisa Magomadova², and Ayshat Meirieva³

¹Kadyrov Chechen State University, Sheripova Street, 32, 364024, Grozny, Russia

²Chechen State Pedagogical University, Subra Kishieva str., 33, 364037, Grozny, Russia

³Ingush State University, Ave. I. Zyazikova, 7, 386001, Magas, Russia

Abstract. The article considers the process of developing the socio-cultural competence of students on the basis of cognitive modeling in the web environment. The problem of cognitive design (the design of electronic educational resources with a focus on the mechanisms of human thinking, that is, on the cognitive processes of students) is relatively new in Russian methodological science, which leads to the existence of a relatively small number of experimental studies aimed directly at studying the problems of using multimedia and adapting web content in the educational process. The process of formation and development of sociocultural competence in this case is no exception, since the boundaries between the levels of formation of sociocultural competence are blurred and, as a result, there is a phenomenon of interpenetration of stages, in which it is possible, for example, to build stereotypes about the culture of the language being studied not only on at the initial level, but also at higher levels of the formation of sociocultural competence.

1 Introduction

An integral part of the modern world is the relentlessly developing process of globalization, one of the results of which is the need to interact with representatives of different cultures, which obviously have a different cultural background. Such a cultural background has great potential, allowing to reduce the percentage of misunderstanding between the subjects of communication, since even with a high level of foreign language proficiency and the absence of a language barrier, the communication process may be unsuccessful due to the lack of sufficient knowledge of one of the interlocutors (or both interlocutors) about cultural background of a partner [1].

S. G. Ter-Minasova notes: "The basis of any communication, that is, the basis of verbal communication, is a "mutual code", mutual knowledge of realities, knowledge of the subject of communication between the participants in communication ..." [2].

This fact determines the importance of the formation and development of the socio-cultural competence of schoolchildren. In addition, the methodologist E. M. Ivanov notes

*Corresponding author: fatima2365@mail.ru

that the formation of sociocultural competence among 70% of students is at a low level, which indicates the contradictions between the requirements of the Federal State Educational Standard and the real results of teaching a foreign language [3]. And it is English, being the language of international communication, that provides an opportunity for the implementation of a dialogue of cultures, which also confirms the importance of including a socio-cultural component in the process of teaching English.

Another distinctive feature of modern society is the pace of life accelerating every year, in connection with which the amount of information that needs to be processed, analyzed and memorized is growing. As a result, our brain adapts to these features by changing the way it processes incoming information: it does not build logical connections between phenomena, instead focusing only on individual facts about the surrounding reality, and, as a result, concrete thinking dominates over abstract. In addition, we are prone to attention disorder syndrome, as well as difficulty in concentration.

The above distinctive features of a modern person are also inherent in adults and, most importantly, in children, since they have a great influence on the cognitive characteristics of the student, and, as a result, on approaches to teaching schoolchildren with a special way of perceiving information that is peculiar only to modern students.

All of the above points to the need to search for new teaching methods, and in relation to foreign languages, new ways of forming and developing sociocultural competence based on taking into account the cognitive characteristics of information perception by modern students.

Based on the analysis of the works of domestic and foreign scientists related to the development of the sociocultural competence of students, as well as cognitive science and modeling of the educational environment, several areas of study of these problems can be distinguished.

One of the founders of the socio-cultural approach to teaching are V. V. Safonova (1992), P. V. Sysoev (2013), N. D. Galskova (2008), S. G. Ter-Minasova (2000) and others. In the foreign methodology of teaching foreign languages, the problems of teaching socio-cultural competence are reflected in the works of M. Bayram (1996), M. Fleming (1998), F. Chan (2001) and others.

All of these authors in their works point out the importance of the formation of sociocultural competence in the process of teaching a foreign language, as well as the importance of the formation and development of a secondary linguistic personality, ready for intercultural communication within the framework of a dialogue of cultures.

The problem of cognitive design (the design of electronic educational resources with a focus on the mechanisms of human thinking, that is, on the cognitive processes of students) is relatively new in Russian methodological science, which leads to the existence of a relatively small number of experimental studies aimed directly at studying the problems of using multimedia and adapting web content. in the educational process.

The task of the teacher in this case is to work on the formation and development of critical thinking among students in order to prepare them for cultural self-determination, and then for autonomous participation in the dialogue of cultures. The conclusions drawn on the basis of experimental-experimental training can be considered: an increase in the number of students with a high level of socio-cultural competence; a quantitative decrease in the proportion of students with an average level of development of socio-cultural competence in relation to the proportion of students with a high level of formation; reduction in the number of students with a low level of socio-cultural competence.

2 Research Methodology

Our analysis of the sources indicated that there are relatively few studies on cognitive modeling using the web environment: works are devoted to the methodology of cognitive modeling in general - G. Gorelova (1993), R. Cooper (1996); in different years, the principle of applying CM in the field of medicine was considered - C. A. Espie (2007), T. Bellet (2007); in the field of engineering - W. Gaughran (2002); in the learning process - J. Ren (2019), G. A. Stillman (2015), G. Kaiser (2006), A. Castles (2006) in order to predict learning outcomes, however, the above authors did not consider the web environment as an area in which cognitive modeling is feasible to adapt the educational process to the peculiarities of information perception by modern students.

Supported by the development of modern technologies, the number of external relations is constantly growing, which means that communication and interaction is becoming multicultural. In such conditions, the possession of only speech skills and abilities is not exhaustive for the implementation of communication in a dialogue of cultures: the mutual influence and, consequently, the interaction of culture and language necessitates their co-study: "by studying a language, we study the culture of its speakers." In connection with the foregoing, language proficiency implies not only the ability to communicate, but also the possession of sociocultural knowledge. In other words, language proficiency presupposes the formation of foreign language sociocultural competence among students.

From the foregoing, it follows that the formation, and then the development of sociocultural competence in teaching a foreign language plays an important role.

In order to better understand the essence of the phenomenon under consideration, let us turn to the concept of "competence".

M.A. Kholodnaya considers competence as the ability to apply practice-oriented knowledge in various types of activities (household, social and professional) [4]. In our opinion, this definition is the most accurate, since it combines both the theoretical and practical aspects of the phenomenon under consideration.

Having defined the concept of "competence", let's turn to the concept of "sociocultural competence" in order to identify its essence and specifics.

According to V. V. Safonova, socio-cultural competence is "learners' knowledge of the national and cultural characteristics of the countries of the foreign language being studied, the ability to carry out speech behavior in accordance with this knowledge, as well as the willingness and ability to live and interact in the modern multicultural world" [5].

The formation of socio-cultural competence at the level of secondary general education can be "folded" into the following scheme: "ethnocentrism - cultural self-determination - dialogue of cultures" [ibid.]. This scheme allows you to track the process of students' definition of cultural boundaries, as well as their place in the multicultural world and within the framework of intercultural interaction.

Let us single out one more, the fourth stage of the formation of sociocultural competence, which implies direct participation in the dialogue of cultures outside the educational process. In this regard, another task of foreign language education is not only demonstrating cultural variability to students, but also drawing their attention to the idea of accepting it and constantly applying the acquired knowledge and skills in practice, taking into account this variability.

In the process of working on the formation of sociocultural competence, the teacher may get the impression that each level is separate, independent of the others, however, this idea is far from always true, since it is important to realize that any division of the process into stages, levels and stages is enough. conditionally and is intended only to direct the researcher, observer, teacher in the right direction. In the realities of the learning process, it is practically never uniform and directed exclusively forward or upward. The process of formation and development of sociocultural competence in this case is no exception, since the boundaries between the levels of formation of sociocultural competence are blurred and,

as a result, there is a phenomenon of interpenetration of stages, in which it is possible, for example, to build stereotypes about the culture of the language being studied not only on at the initial level, but also at higher levels of the formation of sociocultural competence. The task of the teacher in this case is to work on the formation and development of critical thinking among students in order to prepare them for cultural self-determination, and then for autonomous participation in the dialogue of cultures.

Changes in the paradigm of information interaction between a teacher and a student, a change in the role of a teacher in the educational process, as well as the rapid development of IR technologies directly affect the change in the social order of society, which determines the content of the learning process and the requirements for learning outcomes, as a result of which the usual learning model is subject to change.

Modern information and communication technologies, due to their didactic potential, contribute to the implementation of such approaches in the lessons of a foreign language as communicative, competence-based, socio-cultural, student-oriented and others.

The result of the transition from traditional forms of education to learning using digital materials is often called the informatization of education by educators and didactics.

To date, the informatization of education has affected all school disciplines, however, teaching a foreign language has its own specifics associated with the need to form students' communication skills.

Speaking about the didactic potential of the Internet, it is important to note that this network includes two components that are important for the process of teaching foreign languages: informative and communicative. Informative resources include resources that contain this or that information to be processed: websites, online libraries, articles, video and audio materials, cloud storage, etc. The communicative component is represented by various communication platforms: e-mail, social networks, instant messengers, communicator programs (Skype, Zoom, etc.), etc.

To optimize the process of teaching foreign languages, Yu. M. Orekhova recommends combining both components of the Internet, however, for a more competent selection of materials in order to form skills and develop skills, it is important to understand that not all materials presented on the network are correct and relevant, due to than there is a need to determine the criteria for the selection of online materials and web resources used in the process of teaching foreign languages.

Both in Western and Russian methodological literature, there are a number of important requirements that must be met by the resources chosen by the teacher.

In foreign methodology, there are not only criteria for selecting educational Internet resources, but also their classification. It is important to note that each individual type is interconnected with the other, and therefore the achievement of the best results in teaching foreign languages is possible only with the correct organization of the educational process and the competent use of all types of web resources during the educational process. The choice of a resource depends, first of all, on the purpose and objectives of the lesson, as well as on the specific educational context.

Thus, the use of web resources in the process of teaching foreign languages has great potential due to the promotion of the formation of universal learning activities (personal, regulatory, cognitive) among students.

When considering web resources for the formation and subsequent development of sociocultural competence among students, it should be noted that at present there are no web resources aimed exclusively at the formation and development of sociocultural competence. However, the socio-cultural component can be found on resource sites that provide authentic texts of articles or fiction, audio and video recordings, as well as on sites aimed at expanding the vocabulary of students.

Effective selection of electronic educational resources and web platforms begins with the definition of selection criteria. In Multimedia Learning, R. Mayer, a pioneer in the study of the experimental use of text and images in multimedia learning, defines twelve principles for web resource design, which are the Cognitive Theory of Multimedia Learning, or CTML).

In the last decade, at the level of school education, the share of ICT use both in the classroom and in extracurricular activities has been steadily increasing. The use of these technologies is justified, since they contain the potential for optimizing the use of class time, increasing the learning motivation of students, the formation and development of universal learning activities among students, and also have a number of other advantages over the “traditional” forms of presenting information in the classroom using non-technical teaching aids. In a foreign language lesson, the use of ICT and technical teaching aids is even more relevant due to the need to use authentic materials in the course of the educational process, however, as pedagogical practice shows, in most cases the educational process is organized and controlled exclusively by the teacher, goal setting is also carried out by the teacher, in while students practically do not take part in building their educational trajectory. Nevertheless, active work on the organization of their learning process on the part of schoolchildren contributes to the development of personal and meta-subject UNIVERSAL LEARNING ACTIONS. In addition, this type of work has an impact on the development of the ability to plan, which means it allows you to level the consequences of clipping thinking.

Development of the Internet, active implementation of web 2.0, web 3.0 technologies. and web 4.0 makes our interaction with ICT more and more dense, taking root in almost all spheres of human life, including the educational process. As you know, today, thanks to ICT, we can not only perform calculations, but also find almost any information, store and exchange data, interact with people from different parts of the world on work, educational and personal issues, receive relevant news in a matter of minutes, and much more. other.

The process of perception of information stops, as a rule, when it enters iconic memory, sometimes turning into short-term memory. Thus, the student does not have the opportunity to devote sufficient time and attention to the study of incoming pieces of information, which leads to the development of a habit of lightning-fast perception of information, the creation of separate short-term and unstable images (visual or auditory) of phenomena and objects and, as a result, the inability to perceive long texts, large flows of homogeneous information, and subsequently - to difficulties in forming logical, consistent statements and expressing one's own thoughts.

In the context of digitalization and digitalization, which every year covers more and more areas of human life, and especially work and business, the principle of cognitive modeling is gaining popularity. Cognitive modeling in a narrower sense is the ability to create an algorithm for achieving the goal. Cognitive modeling “occurs in stages, begins with the development of a cognitive model, ends with an explanation of the phenomena in the system under study or the development of recommendations for its improvement” [6].

The technology of cognitive modeling is a complex system based on cognitively structured knowledge about an object or phenomenon, as well as its environment.

Cognitive modeling is also used in the educational process - here it helps in planning approximate learning outcomes and predicting likely difficulties on the way to achieving them. It is known that when ICT is introduced into the educational process, it becomes possible to form universal learning activities (meta-subject - skills of working with information, developing critical thinking, personal - developing self-awareness, self-regulation and self-control skills), however, only the directed use of ICT contributes to the development of all types of universal educational activities. actions, including substantive ones [7].

3 Results and Discussions

To achieve the goals set, the technology of cognitive modeling is best suited, since cognitive modeling is the promotion and testing of hypotheses about the functional structure of the observed phenomenon. In linguistics, cognitive modeling consists in creating a hypothetical model and then testing it on the linguistic material.

In a general sense, cognitive modeling “is able to detect hidden characteristics of learners to predict their learning outcomes.”

In order to ensure the possibility of independent planning of the educational process by students under the supervision of a teacher, we have adapted the basic principles for conducting cognitive modeling. The following steps are suggested:

- definition of the problem area (implies the conduct of the necessary type of research);
- building a model of learning outcomes (in the terminology of the Federal State Educational Standard - planned learning outcomes);
- building a model of a learning situation using ICT and web resources;
- modeling the learning situation from the position of a targeted, deductive approach (conducting a lesson using ICT and digital linguistic educational web resources and conducting intermediate control);
- analysis and interpretation of learning outcomes and final control.

At the first stage, students were asked to pass an entrance control aimed at determining the level of formation of socio-cultural competence. The resource Google Forms was used for input control. The choice of a resource is determined, first of all, by a convenient and understandable interface and the ease of collecting and uploading analytical data.

The test consists of 30 questions divided into 7 sections: General Information, Transport, Geography & History, Housing, Traditions and Cuisine (Traditions & Cuisine), Public Holidays, Education. All 7 sections cover the main regional study material necessary for mastering at the level of secondary general education, set out in the Exemplary Educational Program in the English Language. The electronic version of the test is located on the Google Forms website. At the same stage, students have the opportunity to determine which components of sociocultural competence they have the best and worst knowledge, on the basis of which the teacher can draw a conclusion about the need to study a particular topic.

At the second stage, students, in cooperation with the teacher, build their individual educational trajectory based on the results of the entrance test. This stage also involves defining the goals and objectives of training and compiling a hotlist with the web resources necessary to achieve the desired results. In the process of working at this stage, under the supervision of a teacher, students carry out planning, or modeling, in a web environment that will contribute to the implementation of the set educational goals, because, as M. Crosslin and C. Sgouropoulou note, the design of an individual educational environment and trajectory, which involves cognitive modeling and work with non-linear representation of information, already at the learning stage, prepares a person for life and successful professional activity in the conditions of a “variable future” [8].

The third stage is the planning of classes by the teacher. At this stage, the teacher is developing an individually directed component of the lesson, which includes a variety of material that students can find in the course of working with their own hotlists.

The fourth stage is the direct conduct of classes. The lesson provides for two blocks - the main one, containing materials and tasks prepared in advance by the teacher, and individually directed, performed by students, taking into account the information obtained in the course of working with the materials of the web environment they have modeled.

At the fifth stage, students are invited to take a final test, which repeats the input test in its content. The teacher, together with the students, analyzes the results, comparing the indicators of the input and final tests.

The peculiarity of the third stage, as can be seen from the description of the technology, is the need for its partial implementation before the start of training using cognitive modeling in the web environment.

Each module contains 4 sections, the first of which is Warm up (corresponding to the organizational stage of the GEF lesson), the last is Developing Ideas, during which the teacher organizes activities with different forms of work (individual, pair, group) and which may include an individual component material content. At the Developing Ideas stage, we recommend performing analytical tasks, in which students will be able to compare their native culture and the culture of the country of the language being studied. Also, at the final stage of the lesson or as homework, students can be offered tasks of the Capstone Project type.

The process of working with the use of cognitive modeling technology in the web environment can be represented as a diagram (Figure 1)

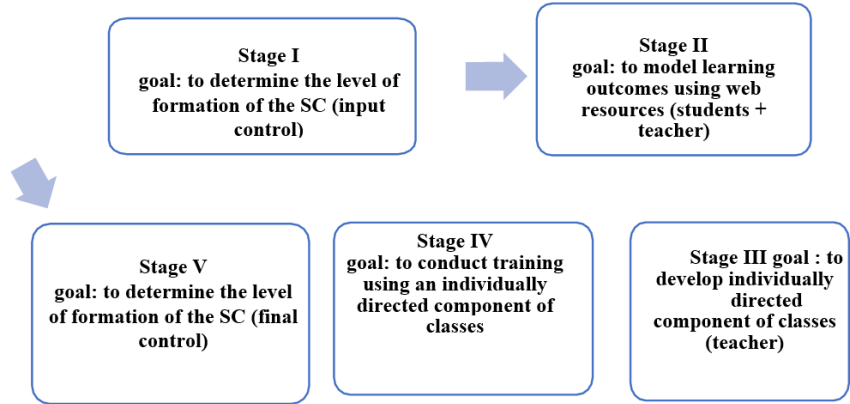


Fig. 1. The process of working with an online course using cognitive modeling technology in a web environment

To implement the above stages, we have developed a digital product aimed at developing sociocultural competence in students with a clip type of thinking. The created product is an online training course “We and the World” for grades 10-11 and contains materials to complement the main content of the lesson with a sociocultural focus.

The online training course was developed on the edvibe platform, which we chose to work on the basis of the analysis of web platforms and digital resources. With a variety of task templates available on the platform, we have created a course that has a socio-cultural focus and is suitable for students who face difficulties in concentration, long-term focus, as well as complexities associated with the need for complex information processing.

The structure of the course includes the sections “Acquaintance”, “General Information”, “Transport”, “Geography”, “Housing”, “Public Holidays” and “Education”, correlated with the requirements for the development of an educational program in a foreign language by schoolchildren at the COO level.

Each section consists of three parts reflecting the main stages of the lesson: from the warm-up, the main part (pre-viewing, viewing and post-viewing sub-stages), and the stage of developing ideas.

During the warm-up phase, students answer questions related to the topic of the lesson, describe pictures or watch videos. Based on the results of completing simple tasks at this

stage, students express their assumptions about how the topic of the lesson sounds, and also prepare for work in the lesson and communication in English.

The linguistic platform we have chosen provides for automatic checking of answers to tasks with closed-type questions and to questions with a short answer. In addition, the correct answers are visible to the teacher, which can help the teacher during the lesson.

The main stage of the lesson is represented by a variety of tasks organized on the basis of working mainly with videos from YouTube video hosting. Depending on the complexity of the video being watched, sometimes the pre-viewing stage can be skipped and/or replaced by the teacher's remarks, designed to preserve the logic of the transition between the stages of the lesson.

At the third stage, the stage of ideas development, work is carried out using web resources from the personal hotlists of schoolchildren. In other words, the third stage will always be variable and individual for each student. The objectives of this stage are, on the one hand, the further development of the SC, and on the other hand, the formation of linear thinking in students as opposed to clip, non-linear thinking. web resources. Thus, schoolchildren study individually selected foreign and Russian sites and web resources, watch additional videos on the topic in order to deepen their knowledge. The selection of web resources is based on the results of the input control of each student.

At the end of the work on the section, students in pairs or groups work on creating a common project or product of activity (shoot a video, create a school menu and prepare a story about it for foreign students, prepare a report on the impact on climate, create house designs for families from Russia and Great Britain, etc.).

Since the course is developed on an online platform, it can be used in online learning or learning in a traditional classroom format using individual tablets or laptops for students. However, most of the tasks can only be completed using an interactive whiteboard and / or a projector, which makes the developed online course applicable and implemented in various conditions.

4 Conclusions

Thus, the main conclusions drawn on the basis of experiential learning can be considered: an increase in the number of students with a high level of sociocultural competence; a quantitative decrease in the proportion of students with an average level of development of socio-cultural competence in relation to the proportion of students with a high level of formation; reduction in the number of students with a low level of socio-cultural competence. It is also important to note that a closer study of the results of input and output control shows that 2% of students with a low level of sociocultural competence by the time the course began showed a high level of competence by the time it ended.

References

1. S. E. Polyakova, The concept and causes of communicative failures, **1**, 389 (2012).
2. S. G. Ter-Minasova, *Language and intercultural communication: textbook, Manual for students, graduate students and applicants for special*, 152-158 (2000).
3. E. M. Ivanov, Development of sociocultural competence of students in foreign language lessons in secondary school, **5**, 198-211 (2017).
4. E. P. Nepochatykh, Development of ideas about the concepts of "competence" and "competence", **20(163)**, 214 (2013).
5. V. V. Safonova, Problems of social and cultural education in language pedagogy.

- Cultural aspects of language education, 256 (1998).
6. G. V. Gorelova, Study of the problems of the education system, **3**, 115 (2018).
 7. R. R. Alieva, Kh. E. Mamalova, Z. M. Akhmadova, Formation of managerial competencies among students in the process of professional training, 1025-1028 (2018).
 8. M. Crosslin, Exploring self-regulated learning choices in a customizable learning pathway MOOC, 125 (2018).
 9. J. D. Hoffmann, R. Baumsteiger, J. Seibyl, E. Hills, C. Bradley, C. Cipriano, M. A. Brackett, Building useful, web-based educational assessment tools for students, with students: a demonstration with the school climate walkthrough. *Assessment in Education: Principles, Policy & Practice*, 29, 95-120 (2022).
 10. J. Pullumy, R. Huddleston, *The Cambridge Grammar of the English Language*, 189-193 (2002).