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## ZASADY PROJEKTOWANIA BIMODALNO-DWUJĘZYCZNEGO ŚRODOWISKA EDUKACYJNEGO DLA OSÓB NIESŁYSZĄCYCH I PÓŁGŁUCHYCH

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**Adnotacja.** W artykule omówiono problem tworzenia bimodalno-dwujęzycznego środowiska edukacyjnego, którego podstawową cechą jest parytetowe wykorzystanie narodowych języków migowych i werbalnych jako środków nauczania, wychowania i rozwoju. Model gestowo-werbalny organizacji środowiska edukacyjnego opiera się na usuwaniu barier komunikacyjnych wynikających z niezgodności warunków uczenia się i edukacji z możliwościami percepcji i produkcji mowy u studentów niesłyszących i półgłuchych. Treść artykułu jest wynikiem teoretycznej analizy problemu wprowadzenia podejścia bimodalno-dwujęzycznego do procesu edukacyjnego studentów niesłyszących i półgłuchych.

W tym artykule opisano podstawowe zasady projektowania bimodalno-dwujęzycznego środowiska edukacyjnego, w szczególności takie jak: zasada funkcjonalności komunikatywnej; zasada indywidualnej kierunkowości komunikatywnej; zasada parytetowości językowej; zasada ciągłości bimodalno-dwujęzycznej; zasada profilaktycznie-promocyjna; zasada separacji językowej; zasada orientowania wyrównawczo-alilitacyjnego; zasada wielości komunikatywnej.

**Słowa kluczowe:** środowisko edukacyjne bez barier, dwujęzyczny bilingw, język migowy, mowa werbalna.

## PRINCIPLES OF DESIGNING BIMODAL-BILINGUAL EDUCATIONAL ENVIRONMENT FOR THE DEAF AND HARD-OF-HEARING LEARNERS

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**Abstract.** The article considers the problem of creating a bimodal-bilingual educational environment, the fundamental characteristic of which is the parity use of national sign and spoken languages as the means of educating, upbringing, and developing. The sign-spoken model of the educational environment organization is based on the elimination of communicative barriers that arise due to the mismatch of educational process and conditions to the ability to perceive and produce speech in deaf and hard-of-hearing learners. The content of the article is the result of a theoretical analysis of the problem of introducing a bimodal-bilingual approach into the educational process of deaf and hard-of-hearing learners.

In this article describes the main principles of designing a bimodal-bilingual educational environment, such as: the principle of communicative functionality; the individual communicative focus principle; the linguistic parity principle; the bimodal-bilingual cross-cutting principle; the prevention-and-promotional principle; the language separation principle; the compensatory-habilitation orientation principle; the communicative plurality principle.

**Key words:** barrier-free educational environment, bimodal bilinguals, sign language, spoken language.

## **ПРИНЦИПИ ПРОЄКТУВАННЯ БІМОДАЛЬНО-БІЛІНГВАЛЬНОГО ОСВІТНЬОГО СЕРЕДОВИЩА ДЛЯ ГЛУХИХ І НАПІВГЛУХИХ ОСІБ**

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**Анотація.** У статті розглянуто проблему створення біомодально-білінгвального освітнього середовища, фундаментальною характеристикою якого є паритетне використання національних жестової та словесної мов як засобів навчання, виховання та розвитку. Жестово-словесна модель організації освітнього середовища ґрунтується на усуненні комунікативних бар'єрів, що виникають внаслідок невідповідності умов навчання та виховання можливостям сприймання і продукування мовлення у глухих і напівглухих здобувачів освіти. Зміст статті є результатом теоретичного аналізу проблеми впровадження біомодально-білінгвального підходу в освітній процес глухих і напівглухих здобувачів освіти.

У цій статті описано основні принципи проєктування біомодально-білінгвального освітнього середовища, такі як: принцип комунікативної функціональності; індивідуальної комунікативної спрямованості; мовної паритетності; біомодально-білінгвальної наскрізності; превентивно-промоційний принцип; принцип мовної сепарації; компенсаторно-абілітаційної орієнтованості; комунікативної множинності.

**Ключові слова:** безбар'єрне освітнє середовище, біомодальні білінгви, жестова мова, словесна мова.

**Introduction.** In recent years, the Ukrainian educational policy on the language of education of deaf and hard-of-hearing learners was reviewed (laws of Ukraine "On Education", "On ensuring the functioning of the Ukrainian language as the official language", etc.). Such changes of the requirements of the modern educational policy of Ukraine are consistent with the provisions of regulations of the international level (UN Convention on the Rights of Persons with Disabilities, a number of recommendations and resolutions of the Council of Europe and the European Union) and the national level of several countries in Western Europe, North America and others. The content of modern standards of education policy of the deaf and hard-of-hearing learners is that national sign languages, including Ukrainian, acquire the status of the language of instruction along with appropriate spoken languages. We are talking about the implementation of a bimodal-bilingual approach to the design of the educational environment, which is now considered the most accessible model of conditions for obtaining quality education for deaf and hard-of-hearing learners.

Note that the development of the bimodal-bilingual approach took place mainly in the practical area of the educational systems of the United States, Canada, Sweden, Denmark, Austria, and others. Each of these countries has developed its own educational programs and technologies of bimodal-bilingual education. However, the results of theoretical analysis of a number of works of a generalizing nature on this problem (Audeoud et al., 2020: 16; Marschark, Spencer, 2003: 168; Swanwick, 2016: 24, etc.) shows that there is still no formulation of the basic principles of designing a bimodal-bilingual educational environment. Common to the educational traditions of different countries is that one of the tasks of education is the formation of deaf and hard-of-hearing as competent bimodal bilinguals (Lillo-Martin et al., 2016: 732).

At the same time, it is important to note that in the concept of bimodal bilingualism sign and spoken languages have equal status, and neither of them is more or less preferred, as both of these languages are necessary for life and self-realization of deaf and hard-of-hearing people (Audeoud et al., 2020: 2; Swanwick, 2016: 32).

Given that this category of students in the bimodal-bilingual educational approach is considered through the specifics of their communicational needs, regardless of the level of their hearing impairment (Adamiuk et al., 2018: 125).

In addition, the realization of bimodal-bilingual education in the classroom is a big challenge for any educational system, as it requires not only well-trained educators in sign language, bimodal bilingualism, and bimodal bilingual teaching technics, but also developed bilingual educating programs and textbooks, etc. (Marschark, Lee, 2014: 218).

In Ukraine, the stage of transition to a new educational policy on the implementation of bimodal-bilingual philosophy in the education of the deaf and hard-of-hearing took place not so long ago. Thus in fact in the country, there are not yet available training programs for teachers in this area, as well as appropriate training guides for the practical implementation of this approach (Drobot et al., 2017: 41).

At the same time, it is necessary to develop universal principles for designing the bimodal-bilingual educational environment, which should be the basis for implementing the preparing programs in higher education institutions to train teachers in this area and developing appropriate training aids for courses that they will be taught in schools.

**Research methods:** theoretical analysis of the problem of the article, generalization, and classification of the principles of designing a bimodal-bilingual educational environment for the deaf and hard-of-hearing learners.

**Main part.** The problem of designing a full-fledged bimodal-bilingual educational environment is extremely complex and multifaceted. Because creating a bilingual educational environment is much more difficult than providing bimodal-bilingual teaching of a certain subject. The educational environment in this context includes the processes of learning, upbringing, and development and is not limited to the educational institution, but includes family environment and non-formal education institutions, etc.

According to the results of the research of N. Adamyik, O. Drobot, A. Zamsha the number of principles of designing a bimodal-bilingual educational environment were outlined. Among such principles are the following: the principle of communicative functionality; the individual communicative focus principle; the linguistic parity principle; the bimodal-bilingual cross-cutting principle; the preventional-and-promotional principle; the language separation principle; the compensatory-habilitation orientation principle; the communicative plurality principle. Each of these principles is an integral part of creating a sign-spoken educational environment. Further, we will reveal their content.

The *principle of communicative functionality*, which consists of the use as a means of educating, upbringing, and developing those types of speech of both languages (sign and spoken) the production and perception of which are based solely on the preserved functionality of deaf and hard-of-hearing learners. This principle refers to the peculiarities of the organization of a bimodal-bilingual educational environment, which should be free from communication barriers and accessible at the same time for different categories of deaf and hard-of-hearing learners. This is not about the content of “remedial-and-developmental work” with each deaf and hard-of-hearing learner. This principle applies to the entire educational environment in which deaf and hard-of-hearing learners educating, upbringing, and developing.

The *individual communicative focus principle* provides for the adaptation of the educational environment to the individual communication limitations, needs, and capabilities of each deaf and hard-of-hearing individual. The significance of this principle is due to the fact, that deaf and hard-of-hearing people are a rather heterogeneous group.

In particular, they differ in the degree of hearing impairment, and hence access to the perception of oral speech of others in natural conditions. Deaf and hard-of-hearing children are born in families that differ per the language of the family communication. A certain percentage of such children are born in families where Ukrainian sign language (USL) is used for communication, and in most cases – in families that use spoken language only. However, the spoken language, as the family language, is not necessarily is the Ukrainian spoken language. Other spoken languages, including Russian, are quite common. As a result, children brought up in a Russian-speaking family environment begin to learn the Ukrainian spoken language only from deaf educators and speech therapists or in a preschool or even later at school. Under these circumstances, to form in the child a clear understanding of the language norms of each of the spoken and sign languages – a serious challenge for the teacher. Significant variability to individual communicative needs of this category of learners is added by the fact that in Ukraine is not available the newborn hearing screening, and therefore the fact that a child has hearing impairment is usually revealed at 2–3 years. The late start of early intervention for such children causes a significant delay in their mastering of the spoken languages. All this together, causes significant individual variations in the communicative needs of this category, which should be taken into account in designing the language-accessible educational environment.

The *linguistic parity principle* is realized in the strong personal attitude of all members of the educational process to sign and spoken languages as equivalent and equal means of teaching, upbringing, and developing of deaf and hard-of-hearing learners. Firstly, this principle presupposes a change in the worldviews of teachers on

the significance of Ukrainian sign language. In particular, the parity of the two languages is that the Ukrainian sign language is recognized as a full-fledged language with all its richness of ways of expressing different meanings. Any of the participants in the educational process can't express or treat sign language as an "auxiliary" means of learning or determine that this language is unnecessary in the current or future life of a deaf or hard-of-hearing person.

The *bimodal-bilingual cross-cutting principle* of the educational environment foresees for the use of two languages (Ukrainian spoken and sign languages) in all components of this environment – both in the educational institution and outside it (in the context of family or non-formal education institutions). An important element in the implementation of this principle in educational institutions is also that the bimodal-bilingual approach should be implemented at all stages of lifelong learning, from early education, preschool, school, professional, higher, and postgraduate education. Only under these circumstances will a bilingual approach give noticeable and stable positive results to deaf and hard-of-hearing learners. If bimodal bilingualism is ignored in one of the levels of education, it will inevitably have a negative impact on the learning outcomes of students, as the educational process will not correspond to the level of communicative training and the characteristics of such learners.

The *preventional-and-promotional principle* of the organization of the educational environment provides a consistent solution to the problems of communicative development of deaf and hard-of-hearing students. The sequence is based on the following logic. Initially, educational influences on such learners, especially on children of early and preschool ages, should be focused on the prevention of the syndrome of language deprivation (Wheeler, 1968: 203, etc.). Because this category of students belongs to those people who progress in conditions of the language barriers to communication with others. On the one hand, they have impaired access to spoken language due to hearing impairments (especially in the form of oral speech). It is clear that with a slight hearing impairment, language deprivation in spoken language is less pronounced compared to deaf students. On the other hand, children with hearing impairments from hearing families do not have access to sign language due to a lack of signer adults in their near environment. Also, less pronounced language deprivation is found in deaf children of deaf parents who communicate with each other in sign language, but their mastery of spoken language in the traditional way for hearing is much more difficult. The issue of avoiding the language deprivation syndrome of deaf and hard-of-hearing children is the most serious challenge for families and educational institutions. Because this syndrome is formed fairly quickly, that's why elimination or minimization after its formation becomes quite difficult. After avoiding speech deprivation syndrome risk, which is manifested in significant disorders of speech and language development in both languages (sign and spoken), all educational influences focus on the formation of bimodal bilingualism competency, and the range of competencies provided by the educational program through of using the sign and spoken languages as a means of educating, upbringing, and developing deaf and hard-of-hearing. This determines the sequence of changes in the priorities of educational influences under favorable conditions, in particular, with the timely detection of hearing impairment and the provision of early intervention services, which is based on the bimodal-bilingual approach. At the same time, if this does not happen and the child with hearing impairments has already developed a syndrome of language deprivation, then the primary task of educational influences is to reduce and eliminate the manifestations of this syndrome. Then the emphasis should be on the formation of a child with hearing impairments as a competent bimodal bilingual, on the basis of this competence is further mastering by deaf or hard-of-hearing knowledge of the relevant educational program. Thus, prevention presupposes the avoidance of immaturity in deaf and hard-of-hearing learners of competence of the languages and its types of speech (writing, signing, oral speech, etc.). The promotion envisages the intensification of the process of mastering the content of the relevant educational programs on the strong foundation of the learners' bimodal-bilingual competence.

The *language separation principle* provides for the differentiated use of sign and spoken languages that are communication systems with different lexical and grammatical structures and rules. Only with the separate use of these languages, it is possible to achieve differentiation of those languages in the minds of a deaf or hard-of-hearing person, which will form the learner as a competent bimodal bilingual. This will protect against the manifestations of the phenomenon of interference due to the mixing of language norms inherent in one and the other language. Language separation should be given special attention at the stages of early education, preschool, and school education, within which the formation of knowledge about the language and mastering all types of speech available to deaf and hard-of-hearing children. The most successful way to combine national sign and spoken languages in the educational environment are two techniques. The first method is translation. It means that the same content of the educational program is first taught in one language and then translated into another language. The second method is semantically. It means that certain content in an expanded form is presented in one language, and the generalization of this content is presented in another language. At the same time, given that deaf and hard-of-hearing people have sensory barriers in the perception of oral speech; this type of speech should either not be used or used only with visual accompaniment. For example, this type of accompaniment might be a manual articulation (such as Cued Speech) or in some cases with Manually Code System support.

The *compensatory-habilitation orientation principle* of the educational process is completely opposite in content to the principle of the remedial orientation of education, which dominates today and is traditional in Ukrainian special educational institutions for deaf and hard-of-hearing children. The remedial orientation of the educational process focuses on constant all-around work with impaired function and secondary disorders of oral speech. In other words, on the development of the remnants of hearing and auditory perception, as well as the formation of the correct pronunciation of sounds (even in deaf children) and oral speech production. In contrast, the compensatory-habilitation orientation of the educational process actualizes the issues of strong sides and resources for the progress of deaf and hard-of-hearing learners based on preserved health functionalities. Thus, the development of all types of spoken language is based on special means of visual and manual support. In particular, the acquisition of oral speech must be

processed through the use of manual support for this speech (Cued Speech), and the development of written speech is based on fingerspelling support. Thus, for self-check-in, a child with hearing impairments is formed, not sound stereotypes and images of words, but manual stereotypes and images of words of spoken language. Muscular memory during fingerspelling processing or manual support of oral articulation of the words makes it possible to memorize words and wording constructions per the capabilities of the learner with hearing impairments in a natural way.

The selection of the communicative plurality principle of the organization of the educational process was the result of a new understanding of the features of distance learning, which was urgently implemented in the context of the coronavirus pandemic. Because providing an individual approach to classroom learning is a difficult task, but it can really be solved. Instead, in terms of implementing a remote format, especially online, it is almost impossible to implement an individual approach to each student's special educational needs. In view of this, in the conditions of distance learning of deaf and hard-of-hearing students, it is necessary to give preference to the asynchronous type of e-learning, namely preparation of e-content, to which students are given appropriate access. Communicative plurality involves the simultaneous presentation of the same content in several types of speech in two languages: translation into the national sign language or explanation of the material in natural sign language, with subtitles (as a type of written speech of the spoken language) and oral speech (or voiced speech as the translation of what is presented by means of natural sign language). Only if the educational content is presented simultaneously in several types of language and speech design gives the applicant the opportunity to freely choose the communicative form that is most relevant to his/her needs and capabilities.

**Conclusions.** Summarizing the above, we briefly sum-up the main theses of the article:

– designing a bimodal-bilingual educational environment involves the all-around observance of a number of mandatory principles both for the educational institution and within upbringing in the family in order to create a full educational environment for deaf and semi-deaf people;

– indicated the following principles of designing a bimodal-bilingual educational environment: the principle of communicative functionality; the individual communicative focus principle; the linguistic parity principle; the bimodal-bilingual cross-cutting principle; the preventional-and-promotional principle; the language separation principle; the compensatory-habilitation orientation principle; the communicative plurality principle.

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