

BUILDING GRAMMATICAL-LEXICAL COMPETENCE IN SPEECH-DISABLED PEOPLE WITH USE OF THE “MÓWik” SPEECH PROSTHESIS

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Abstract: This chapter presents objectives in the process of building grammatical-lexical competencies in prelingual speech-disabled people with use of the “MÓWik” speech prosthesis – a technically and conceptually advanced tool with AAC software. Referring to the logopaedic typology of speech disorders, while also invoking the proposal of dividing the phenomenon of lack of possibility to speak into ‘speech inability’ and ‘non-speaking’, objectives were formulated whose realisation allows the speech-disabled child to be provided with grammatical-lexical competency. We have recognised as its fundamental attributes, according to Polish linguistic and logopaedic tradition, grammaticalness and unconscious knowledge of the vocabulary of a given language.

Keywords: language system, speech inability, speech therapy procedure, AAC

ФОРМИРОВАНИЕ ГРАММАТИКО-ЛЕКСИЧЕСКОЙ КОМПЕТЕНЦИИ У ЛЮДЕЙ С ОГРАНИЧЕННЫМИ ВОЗМОЖНОСТЯМИ РЕЧИ С ИСПОЛЬЗОВАНИЕМ РЕЧЕВОГО ТРЕНАЖЕРА “MÓWik”

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Аннотация: В этой работе представлены задачи в процессе формирования грамматико-лексических компетенций у людей с доязычной речью с ограниченными возможностями с использованием речевого тренажера “MÓWik”— технически и концептуально продвинутого инструмента с программным обеспечением AAC. Ссылаясь на логопедическую типологию речевых расстройств, а также ссылаясь на предложение разделить явление отсутствия возможности говорить на "неспособность к речи" и "не говорение", были сформулированы цели, реализация которых позволяет обеспечить грамматико-лексическую компетентность ребенка с нарушениями речи. Мы признали в качестве его основных атрибутов, в соответствии

с польской лингвистической и логопедической традицией, грамматичность и неосознанное знание словарного запаса данного языка.

Ключевые слова: языковая система, неспособность к речи, логопедическая процедура, ААС.

GRAMMATICAL-LEXICAL COMPETENCIES AND THEIR CONSTRUCTION IN THE MIND

Grammatical-lexical competency, in the spirit of educational linguistics, is defined by Teodozja Rittel and Stefan Jerzy Rittel in categories of communicative skills resulting from mastering a language as a system; i.e. practical knowledge of natural language in its basic functions and variations, with the condition of communicativeness in interactions; it is also subliminal knowledge necessary for constructing and understanding grammatically correct sentences [1, p. 78-79]. From the viewpoint of the undertaken discussion, its two most important components are: knowledge of the vocabulary of a given language and grammaticalness, i.e. formal correctness resulting from knowledge of syntactic rules appearing in the process of sentence building [2, p. 19].

The term *grammatical-lexical competence*, common in Polish literature and speech therapy, is used interchangeably with the more classic term *language competence*. This last term is more frequently recognised in categories of knowledge of implicit, unconscious, biologically given language, allowing language users to continually understand and speak new sentences and to distinguish grammatically correct sentences from those ungrammatical [3; 4]. It is in other words “knowledge biologically given to the ideal speaker – listener, allowing him to create and comprehend grammatical sentences of his own language” [1, p. 34].

From a historical viewpoint, it is worth noting that this term *expressis verbis* appeared in 1965 in the work of Noam Chomsky entitled *Aspects of the theory of grammar* [5, p. 63]. In spite of the considerable definitional agreement regarding terms, we use the first term more often in this work, as it places more emphasis on matters of communicativeness of utterances, which are crucial in the case of the subjects studied, i.e. people lacking the ability to speak and articulate. Another very important issue is that in the Polish linguistic and logopaedic tradition, mastering grammatical-lexical (language) competencies is practically equivalent to mastering the system of a given language [4; 6].

Diverging from the historical perspective, and concentrating on the conceptual range, grammatical-lexical competence means making use of the opportunities of a language system, defined as a phonetic-phonological, morphological, syntactic and semantic platform [1]. It should however be emphasized that even though language competence includes all the levels of description of a language system, considering the subject of discussion, i.e. people lacking the ability to speak, those phenomena connected to phonetics as a feature of natural language will not be considered by us.

A characteristic of many disorders of language communication is that the people affected by them do not possess a language system, that is *de facto* grammatical-lexical competence. This may result from two processes. The first, of a developmental character, results in the child’s inability to acquire grammatical-lexical competencies

due to the non-formation of certain biological, perceptive abilities. The second is characterised by the disintegration of the language system in people who had previously possessed it, most often the result of damage or disease affecting the person's brain. These processes, usually resulting in profound speech disorders, as well as methods of speech therapy mitigating their effects in a systematic manner, were discussed by Stanisław Grabias in his typology of speech disorders [2; 7].

In his taxonomic proposition, Grabias distinguished three large groups of speech disorders: 1. Speech disorders related to the non-formation of perceptive abilities, including: deafness and impaired hearing (audiogenic alalia and dyslalia), alalia and dyslalia, oligophasia, autism (non-intrinsic, delayed speech development resulting from autism), child epilepsy (non-intrinsic, delayed speech development resulting from child epilepsy); a result of these disorders is that in most of them speech cannot develop by itself; 2. Speech disorders related to the lack or insufficient development of performing abilities, including: dysglossia, cluttering, stuttering, dysarthria, anarthria; such patients have linguistic competence (language, communicative, cognitive), however there occur problems with their "externalisation" or realisation; 3. Speech disorders connected to the disintegration of language and communicative competencies, including: aphasia, pragnosia, schizophasia and senility; in such patients, this leads to a break-up of the language system and in effect to the inability of using speech [2, p. 54-57]. It should however be added that from the perspective of the entirety of therapeutic activities, one may distinguish three prognostic (therapeutic) procedures, constituting the basis of logopaedic classifications of speech disorders: I. Building language, communicative and cognitive competencies in the minds of individuals; the obligatory procedure in such communicative and developmental disorders as: deafness and impaired hearing, alalia and dyslalia, oligophasia, autism and various forms of epilepsy. II. Enhancing speech activities alongside acquired competencies in order to mitigate the effects of incomplete use of acquired competencies; it is implemented in the case of: dysglossia, stuttering and cluttering, dysarthria and anarthria. III. Restoring all types of competencies (speech activities and mind functioning) as well as stabilizing the deterioration of linguistic competencies. This is used together with enhancement of speech activities in: aphasia, pragnosia, mental illnesses, senility [2, p. 64-66]. It is interesting to note that building language competence (grammatical-lexical), the core of therapeutic activities for the first group of disorders, can and should be used also in the case of children who as a result of biological deficits are deprived of the ability to speak. In our proposal we call them prelingual speech-disabled people.

PRELINGUAL SPEECH-DISABLED PEOPLE

We recognize that in the world of people not verbally communicating, one may distinguish two groups: 1. Those affected by speech inability, i.e. not possessing speech (in the sense of language) and thus not undertaking the group of activities which a speaking person does with language; therefore not cognising reality at the level of speaking people and not conveying their interpretation to other participants of social life; 2. Those non-speaking, i.e. possessing a language system, but not passing on

information to the receiver, not selecting from the language code the appropriate vocabulary and grammatical structures, not putting in motion the speech organs that would carry out the form of chosen language units, and as a result not sending acoustic waves to the recipient's ear, in whose receptive organs there is no sound reception or mental interpretation.

The term 'speech inability', being the antonym of the compound noun 'speech ability', derives directly from Stanisław Grabias' definition of 'speech' [7], generally accepted in Poland, which states that it is a group of "activities that a person carries out with language, cognising reality and conveying its interpretation to other participants of social life" [7, p. 19]. The lexeme 'speech inability' in itself would be the contradiction of the term 'speech ability' [8, p. 498].

Making use of the classifying tradition of all logopaedic phenomena, we propose the following classification of speech-inability and non-speaking, taking into consideration the time of occurrence of the pathological factor: 1. Prelingual speech inability – a pathogenic factor resulting later in lack of speech and occurring before the mastering of speech, i.e. in the prenatal, perinatal and post-natal period in the child's first year;

2. Inability to speak and perilingual non-speaking – a pathogenic factor resulting in speech inability or non-speaking, occurring during speech development, i.e. between two and six years of age; 3. Speech inability and post-lingual non-speaking – the pathogenic factor occurs after mastering speech, i.e. starting from seven years of age. The occurrence of the pathogenic factor before mastering speech results in prelingual inability to speak, i.e. early lack of speech and therefore not undertaking the group of activities carried out with language by a speaking person, cognising reality and conveying its interpretation to other participants of social life [9].

It is our view, resulting firstly from knowledge on the subject of the role of the language system in a child's life, and secondly – from therapeutic experience, that even in prelingual speech disabled children, grammatical-lexical competence should be built. Indeed, it is an accelerator of mind processes, allowing comprehension of word communications, precisely allowing the child's needs to be expressed; without this the speech-disabled person has no chance to acquire the subcode of natural written language.

Grammatical-lexical competence of speech-disabled people is interiorised with use of alternative communication strategies. Its externalisation in the form of communication, allowing the conveyance of knowledge, also occurs through AAC systems. In defining the field, we assume that alternative and augmentative communication (AAC) refers to a group of research, clinical and educational activities. Trial tests are conducted, and when necessary – compensation of temporary or permanent difficulties, impaired activities, restricted participation in communication of people with serious difficulties in the area of language production and comprehension, both in its spoken and written aspect [9, p. 18].

The objective of therapy with the use of AAC is to continually enhance communication with the aid of increasingly precise language means, which are provided by grammatical-lexical competence.

In the framework of theory on grammatical-lexical competencies of speech-disabled people, key attributes include grammaticalness and assistance in communicativeness [1].

Considering the gradual, staged character of the process of building grammatical-lexical competencies in the speech-disabled child with use of AAC, it should be assumed that initially alternative communication fulfils the role of tool, “speech prosthesis”, while over time, as a goal, it may become something more – a sort of entity co-organising grammatical-lexical, cognitive, communicative and interactive processes [10]. Indeed, such potential is contained in the “MÓWik” speech prosthesis.

THE “MÓWIK” SPEECH PROSTHESIS IN THE PROCESS OF BUILDING GRAMMATICAL-LEXICAL COMPETENCE IN PRELINGUAL SPEECH-DISABLED PEOPLE

The “MÓWik” tool and software, often called a speech prosthesis, appears to be the most advanced instrument serving on the one hand building the grammatical-lexical competence of prelingual speech-disabled people, while on the other hand – its restoration in adults who have lost it. Of course it is also helpful in the case of enhancing the communicative system of non-speaking people, i.e. those possessing a language system, but not being able to realise phonic sequences. It is a program based on graphic symbols – similarly as in *Pictogram Ideogram Communication* or *Picture Communication Symbols* (PCS). Considering the processes of globalisation and technological development, it is used via devices and software serving communication – tablets and smartphones with a touch screen, equipped with the Android system. The program’s initiators, including Ewa Przebinda, a Krakow speech therapist, pursued two objectives: availability and functionality. The former involves creating a method of alternative communication which would be based on computer technology, though using it would not require computer-technological skills. The latter is related to attempts to overcome the language restrictions of available devices for alternative and augmentative communication produced in English-speaking countries. In fact, users who normally speak an inflected language (e.g. Polish, Russian) regret that they are not equipped with tables in their languages. These purposes guided the main principles of the program’s operations, basing on two factors: first the user selects symbols visible on the screen, then the device, thanks to its built-in speech synthesizer, expresses aloud the content of the indicated symbols. Even greater functionality has been achieved in the second version, introducing the following amenities: the program is ready to work with a disabled person immediately after switching on and installing it in the device. It does not require creation of tables, as they are already available; the tables can be added and expanded according to the user’s needs. The speed of mastering the equipment depends on the communication and cognitive capabilities of the disabled person. The program allows the addition of one’s own symbols, pictures and photos which may enhance communication; the software enables one to add in place of the *MÓWik tables*

symbols of other communication systems, e.g. Makaton, PCS, pictograms or even the Bliss system, and thanks to its virtual keypad, persons able to write may do so. *MÓWik* in this version enables the creation of grammatically correct utterances to a considerable degree. In fact, this feature is of key importance in the case of its use in building grammatical-lexical competencies of prelingual speech-disabled people. Each word presented with the aid of a symbol can be saved in a maximum of two to five steps (depending on the part of speech) and read out by the speech synthesizer in – we must emphasize – its appropriate grammatical form. The tables have two to five levels of grammar (noun – three, verb – four, adjective – five, and adverb – two) depending on the user's level of language awareness. Thus, one can make use of such grammatical categories as: case, number, person, tense, and gender, in a functional manner and fully appropriate to the Polish language system. Word inflexions are carried out on the basis of semantic algorithms, motor planning and listener feedback. The built-in so-called word prediction suggest those that are most frequently written. The suggestion is visible in the form of notes as well as images. The saved word can be immediately read aloud with the aid of the speech synthesizer, while its correctness is automatically checked. What is also interesting from the viewpoint of building lexical competencies, the structure of starting tables takes consideration of the distinction between core vocabulary and fringe vocabulary. The range of lexeme-symbols (ca. 12 thousand signs) can be enriched with one's own symbols and signs downloaded directly from the internet. The symbols reflect concepts originating from all parts of speech, thus allowing the creation of constructions in sentence form, i.e. building syntactic competence. They also contain ready expressions, colloquial expressions, etc., allowing the most natural communication with one's surroundings [11].

CONCLUSION

The presented tool and its software constitute a system of generative character, with rules for creating further symbols and their sequences, allowing clear indication of sentence groups with the aid of grammatical rules. Its internal cohesion facilitates the distinction and acquisition of new symbols and contributes to the user's notice of rules. The system of symbols, in order to constitute a tool for realising grammatical-lexical competence, should represent various parts of speech as well as wide ranges of vocabulary, not being limited to concrete concepts, but also enabling the expression of abstract concepts. We are convinced that the "MÓWik" speech prosthesis constitutes a functional bridge which will allow speech-disabled children to become nearly fully-fledged users of natural language – its grammar and vocabulary.

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