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**STIMULATING SPEECH DEVELOPMENT THROUGH AUGMENTATIVE AND ALTERNATIVE COMMUNICATION**

Tsymbal-Slatvinska S. V.

*d.p.s., prof.*

ORCID: 0000-0002-2732-5716

Pavlo Tychyna Uman State Pedagogical University,

Uman, Sadova 2, 20301

**Abstract.** *The article focuses on the importance of providing information about the effectiveness of AAC techniques, in particular, Laurie Frost and Andy Bondy's PECS system, as an integral mechanism for socialization and improving the quality of life for children, adolescents, and adults with speech and communication disorders. The key components of the PECS system are highlighted and the specifics of implementing this type of communication for children with speech and communication disorders are described.*

*Training these individuals in AAC techniques would improve their self-esteem, allow them to regain control over their lives, and enable them to become useful members of society.*

**Key words:** *accessible communication, augmentative and alternative communication (AAC), nonverbal communication, development of communication skills, speech and language disorders, socialization.*

**Introduction.**

Early childhood development is key to forming cognitive interests, understanding the process of communicating with partners, and personal development, which will further determine the level of physiological, mental, and social development as a part of society.

The ability to build an accessible communication strategy, to interact, to express one's vision of the world, to share and perceive information is the key to social adaptation processes and a priority in finding innovative educational mechanisms and integrating them into the inclusive space of educational institutions.

The analysis of modern AAC systems and visual techniques and the practical aspect of their use in the speech development of adults and children is the subject of research for M. Chaika, G. Usatenko, O. Kryvonohov (Usatenko & Chaika 2020; Chaika, Usatenko & Kryvonohova 2021); the methodological bases of the picture exchange communication system were studied by G. Lopatina (Lopatina 2014); L. Korgun and A. Greshchenko described the specifics of using alternative communication methods to develop communication skills in children with autism (Korhun & Hreshchenko 2020); T. Yezhova (Yezhova 2011) focused on the use of AAC as an effective means of social rehabilitation of children with special educational needs (SEN); O. Boryak and Y. Kosenko (Boriak & Kosenko 2021) studied the feasibility of using alternative means of communication as an effective tools of speech development in children with complex disorders; A. Savitskiy (Savitskiy 2014) substantiated the use of alternative means of communication in the process of speech development of children with Down syndrome, pointing out the high efficiency of nonverbal communication of such children.



### **Main text.**

At the beginning of 2019, approximately 47,000 children with SEN in Ukraine need support from AAC programs<sup>1</sup>. The innovative platform of social partnership 'Digital Inclusion' in cooperation with the Ministry of Education and Science of Ukraine, the NGO 'Healthy Society' and the social enterprise 'DyvoGra' at the initiative of Huawei Ukraine presented a mobile application for AAC practices, the partners of this platform are the Association of Alternative and Augmentative Communication<sup>2</sup>. Since 2020, the NGO 'AAC Community in Ukraine' has been successfully implementing a project to introduce assistive technologies for communication by alternative means in Ukraine, thanks to which the textbook 'Theory and Practice of Alternative Communication for People with Special Educational Needs' (Chaika, Usatenko & Kryvonohova 2021) was developed and presented in free access for the needs of practitioners and all interested parties. In this book, the authors draw on the practical experience of the gradual introduction of AAC into the educational space, which continues to open up new opportunities for people who use AAC to be heard and accepted, and to improve their quality of life by reducing the level of stress caused by misunderstanding (Savitskiy 2014).

In their guide for educators on the practical use of PECS, Laurie Frost and Andy Bondy state that the use of PECS begins with the creation of an effective educational space, both in the educational institution and in home and in public places, and accordingly, such a system teaches all participants in the communication process: expression, comprehension, transfer and awareness of information, only by ensuring the holistic integration of alternative communication (Usatenko & Chaika 2020).

The practical and conscious choice of AAC was emphasized by linguist and psychologist Stephen von Tetzchner and psychologist Harald Martinsen, who argued that AAC should be understood as an individually directed system based solely on the needs of a particular person. According to scientists, AAC programs improve the quality of life for people with speech disorders, qualitatively changing the communication space and regaining control over their personal lives (Stephen 2002).

Modern researches of scientists-practitioners are focused on the use of nonverbal communication as an additional or alternative means of communication, the technologies of which are aimed at improving the quality of life, stimulating cognitive interests, self-determination and self-awareness, self-identification as a part of society.

PECS is based on the principles of speech acquisition, because the child's own meaningful speech begins with a gesture (pointing gesture – give, look), the first repetition of vowels and vowels with consonants is unconscious, and only from the age of six months the child consciously imitates sounds. It is important for a child to understand the process of communication itself, its characteristics, the need for interdependence of interpersonal interaction and the effectiveness of such communication partnership.

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<sup>1</sup>About Digital Inclusion. Online: <https://dimobi.org.ua/about>

<sup>2</sup>Alternative and Augmentative Communication (AAC) in Ukraine. Assistive Technologies. Online: <https://www.facebook.com/groups/AAC.UA/?mibextid=6NoCDW>



AAC takes into account all the possibilities and limitations related to a person's general condition, allows gradual acquisition of communication skills, improves the process of socialization and significantly improves the quality of life (Yezhova 2011).

According to Laurie Frost and Andy Bondy (Frost & Bondy 2002), AAC consists of six stages of implementation, each of which has its own strategic goals and appropriate conditions that, when implemented, make such a system effective and stimulate speech development. This system of mastering AAC takes into account the behavioral aspect and aims to train crucial skills for speech development: purposeful communication, understanding the social role of the communication process, social interaction, play interaction, concentration and stimulation of cognitive interests.

PECS is based on the pyramid principle, which is based on functional teaching goals related to the process of communication and socialization, behavioral aspects, and a motivational system with areas of generalization, development of effective teaching, specification of teaching strategies, and minimization of errors. Functional goals as the main tasks and results of work are aimed at developing independence, while the motivational system in such communication is extremely important and individualized, because the system of incentives and rewards is different for each child. Having established a hierarchy of incentives as key motives, the teacher can offer the child a particular incentive at the beginning of the lesson as a reward that the child will receive as a result of mastering a particular communication partnership skill (Usatenko & Chaika 2020).

Communicative partnership in the AAC system has a purposeful character, which contributes to activating social skills: imitation, conscious communication, taking initiative in the communication process.

According to Laurie Frost and Andy Bondy, when developing effective AAC classes, it is necessary to consider the functional need, follow the 'simple to complex' progression, emphasize stimulus and response factors, and use effective learning strategies with motivation support and progress monitoring (Usatenko & Chaika 2020).

Generalization (making gradual changes in stimulus and response factors as the lesson progresses) is important in learning AAC. In particular, stimulus factors are related to some generalization of skills (can the child use this skill when the subject changes?). For example, if the child has been studying the color green, working with a green cup in the presence of a teacher and the child's mother, can the child distinguish the color green when the cup is replaced with a green plate or a green toy; when the room for the lesson is changed to another room? Would the child use this skill without the teacher's supervision and the mother's help?

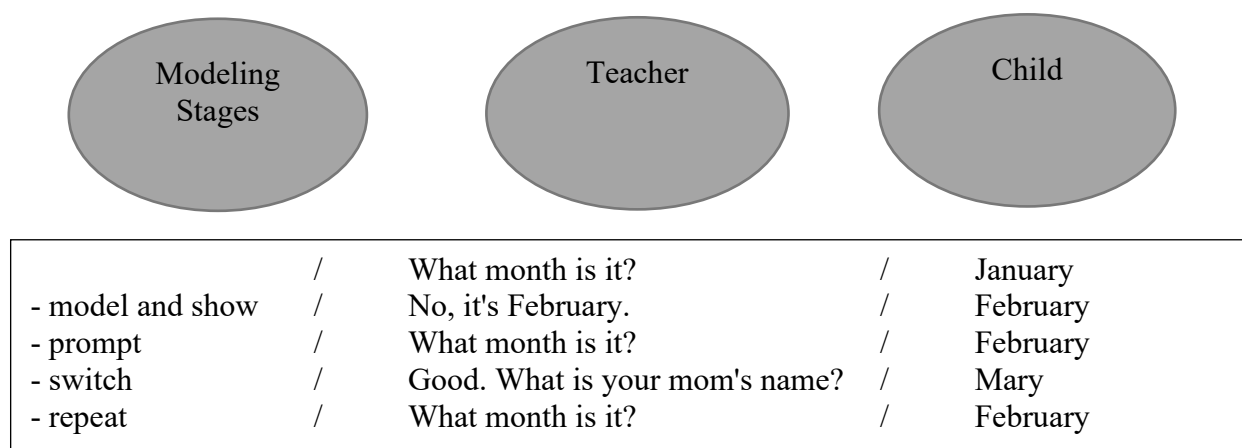
Reaction factors should be distinguished by the number of positive/negative reactions, the percentage of successful attempts, the appropriateness of the actions, the complexity, the accuracy, the duration of the reaction, and the speed of execution. Stimulus factors are considered in terms of five types: the number of people present during the lesson (teacher, assistant, parents, other participants/distance, number of people present during the task); location; time; types of materials; changes in the



external learning environment/equipment (including the child's initiative and reactions). In the development of effective teaching, it is worthwhile to use individual trials, imitation of the teacher's actions by the child in a clear sequence, the child's actions as a response to the teacher's actions, and changes in the stimuli of both objects and the social environment (Usatenko & Chaika 2020).

According to Laurie Fost and Andy Bondy (Frost & Bondy 2002), the mastery of alternative communication involves the use of teaching strategies like cues and signals; therefore, cues (verbal, nonverbal, imitative, physical) are necessary at a particular stage of teaching, and we need to work on reducing their number and replacing them with signals during the implementation of each stage of PECS (the child's action on the 'apple' card).

Researchers suggest several possible actions to make the transition from the cue to the signal model in the classroom: a shaping strategy (using reinforcing stimuli instead of cues); a gradual transition from cues to signals; delaying the cue. PECS (Usatenko & Chaika 2020) includes working with errors made by children in the classroom, which is a stepwise, formulaic transition model: model/prompt/switch/repeat (Figure 1).



**Figure 1 - Error Handling Simulation**

In teaching AAC, statistical work to summarize class evaluation is extremely important, because only by considering previous results can the effectiveness of work be improved. Depending on the lesson type, statistics are provided regarding the speed and accuracy of performing actions, the intensity, complexity and accuracy of performing, and the result of mastering the next communication skill.

The PECS teaching process generally consists of the usual components of a remedial lesson: a reinforcing stimulus (matching the communication skill), a strategy for shaping or prompting, and the selection of appropriate stimuli and motivations, including the behavioral aspect (selecting alternative teaching strategies if necessary).

**Summary and conclusions.**

Communication improves the standard of living, and the motivation to understand the specifics of such communication interactions and the subsequent exchange of information greatly expands educational opportunities. Based on practical functionality, the goals and methods of AAC teaching take into account the



individual developmental characteristics of each person who requires it.

In order to ensure an accessible communication environment that supports personal development and independence, it is necessary to saturate the information space with AAC options because the process of mastering such a communication tool takes time and the support and understanding of family, friends, and the environment becomes extremely important.

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