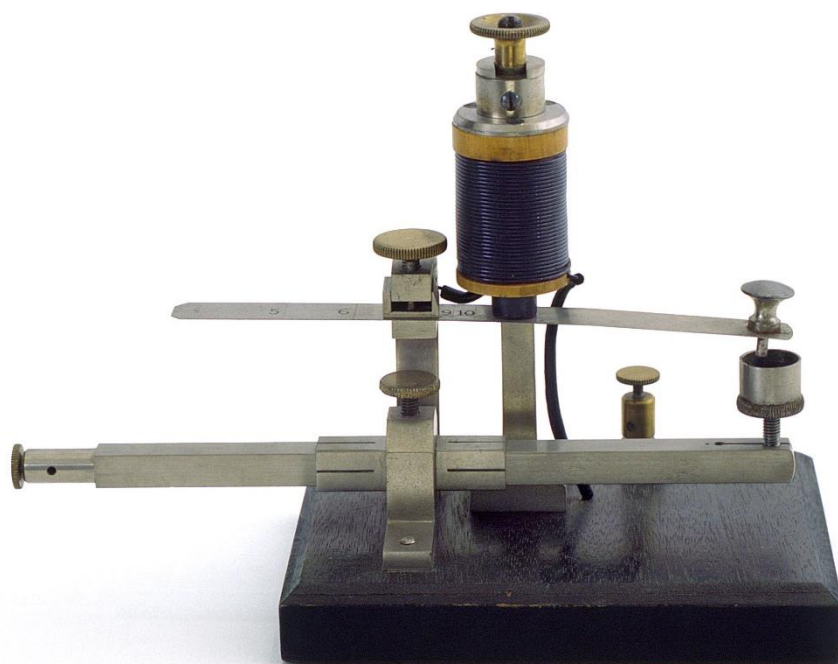


PROCEEDINGS OF THE
XXVIII SCIENTIFIC
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EMPIRICAL STUDIES IN PSYCHOLOGY

31st MARCH – 3rd APRIL, 2022

FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE



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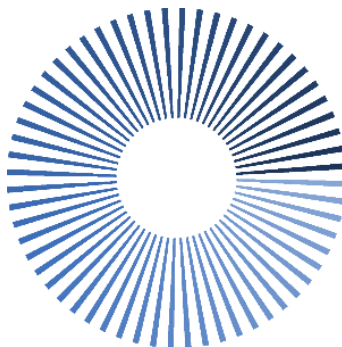
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Belgrade, 2022

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Factors influencing collaboration in assistive technology use in preschool and school institutions: involvement of educators¹

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Abstract

C-board is a web Augmentative and Alternative Communication (AAC) application meant for persons not able to effectively use speech or writing. Adapted to the Serbian language, it is available in open access and is recommended for the promotion of communication, education, and inclusion of children with complex communication disabilities in regular school. This qualitative exploratory study is a formative evaluation of the C-board implementation with special attention to transfer to educational institutions. A semi-structured focus group discussion included a moderator, note-taker, and 6 practitioners working with the C-board: special education teachers, professional associates, and language therapists. The participants discussed their viewpoints, barriers, and facilitators regarding the C-board use, and educators' involvement in the partnership. The data were analyzed by inductive content analysis. The research suggests that partnership is the major obstacle to developing adequate support in the educational context. The findings reveal that educators' involvement is dependent on several groups of determinants: a. parent-related factors b. educator-related factors, c. partnership in process management, and d. institutional support.

Keywords: communication difficulties; C-board; Augmentative and Alternative Communication; inclusive education; educational institutions; involvement of educators

Introduction

Children naturally become competent communicators without any explicit instruction. This is severely hindered in children with complex difficulties in communication (autism, cerebral palsy, severe speech and language disorders, intellectual impairments, and acquired conditions). These can cause ineffective interaction with people and risks for development. Without early support to remediate developmental delay, children's participation in society is harshly limited.

The C-board is a tablet or smartphone **Alternative and Augmentative Communication (AAC)** application to enhance or replace speech or writing for children with impairments in spoken or written language (Aldabas, 2021). It is a speech-generating device based on graphic symbols that allow words and text to be turned into speech for communication. It enables simple and complex sentence production, arouses interaction, and helps a child to overcome language disorder through new experiences and learning. It extends and enriches the content of communication and improves communicative skills from an early age, enabling the accessibility of quality education for vulnerable groups.



Figure 1. C-board

Fifty C-board devices with the Serbian language application were distributed to children/families from different cities (Sremska Mitrovica, Novi Sad, Belgrade)². According to the **Early Intervention Framework** (Kovač Cerović, T., Pavlović Babić, D. Jovanović, O., Jovanović, V., Jokić, T., Rajović, V., Baucal, I., 2014) this project promoted support for communication, education, and social inclusion of young children with severe communicative disabilities.

C-board implementation is based on features matching the developmental needs of a child. The **Individual Education Plan** meets the present levels of the child's educational performance and provides specialized instruction and services.

Instead of mostly relying on expert decisions, a close, reliable, and coherent **Partnership Model** between stakeholders (child, parents, speech and language therapists, teachers, and institutions) is necessary to meet the continuously changing special education needs of a child.

The issue of generalization

Perhaps the most significant issue about the effectiveness of AAC is the question of its **generalization to a wider real-life context** beyond therapy sessions. **The symbol-rich environment** is crucial for a child to establish **meaningful communication with different collocutors in different social circumstances** throughout the day (Chung & Douglas, 2014). This is naturally present in school since it is a place where a child can permanently practice and improve new communicative skills and share complex conceptual knowledge (Andzik, Chung, Doneski-Nicol, Dollarhide, 2019).

¹ The study supported by: UNICEF Regional Office for Europe and Central Asia; UNICEF Innovation Fund and Country Offices in Serbia, Croatia and Montenegro.

² The UNICEF project *For every child, a Voice* in Serbia (2019-2020)

The typically developing child will have been exposed to oral language for approximately 4,380 waking hours by the time he begins speaking at about 18 months of age. If someone is using a different symbol set and only has exposure to it two times a week, for 20 – 30 minutes each, it will take 84 years to have the same experience with his symbols that the typically developing child has with the spoken word in first 18 months.

Jane Korsten, OTR, QIAT ListServe, 4/4/2011

Aims of the study

After the first evaluation of the C-board implementation in Serbia (Golubović and Glumbić, 2020) it was necessary to evaluate the generalization of its usage, and the stakeholders' partnership as essential conditions for its success. **The focus was on the educational context as crucial for the generalization of new communicational skills to new interaction in a wide society.** The study aimed to:

- explore the barriers and facilitators for the C-board implementation in a wider social context;
- explore the partnership and collaboration
- overcome one-sided, black-and-white estimation of the C-board implementation;
- formulate recommendations for future steps.

Method

We conducted a **semi-structured online focus group** discussion with practitioners using the C-board and made a formative evaluation, in the form of **qualitative inductive content analysis**.

Participants. Six practitioners: 2 speech and language therapists, 2 teachers in special education primary schools, and 2 professional associates in preschool institutions in Belgrade and Novi Sad. The conversation was moderated and prepared by a moderator and note-taker.

Results

BARRIERS. The following barriers to C-board implementation were pointed out.

The COVID-19 pandemic. The C-board implementation was mostly restricted to the online sessions between the SLT and a child which greatly confined educators' and peers' participation in its implementation.

Low parental involvement. Parents as the most concerned and sensible partners **feared that C-board use would discourage their child to use oral language.** They worried about how to understand their child communicating through the C-board, and about **negative social stigma**.

The parents met **SLTs with conflicting views on the effects of C-board usage.** While some recommended its implementation, others argued that children and parents should have direct communication not be mediated by any kind of device.

Ineffective partnership. A parent might decide not to carry the C-board to school or SLT sessions regularly, or to leave the C-board at school, not using it at home. It revealed fluctuations in parental motivation and created difficulties in the child's progress.

Different dynamics in the motivation of parents and educators were reported, probably caused by a deficiency in parents' knowledge and their black-and-white expectations of the C-board.

When a child makes progress and starts to speak, the educator's motivation increases and he/she starts to use C-board in the classroom. On the contrary, parental motivation in such situations decreases and he/she tends to discard the C-board.

Kindergarten professional associate

The educators-related factors. The excellent collaboration between SLTs and parents was insufficient to ensure a steady transfer of C-board usage to an educational setting if the educator's motivation was low due to the **unfavourable working context:** work in large groups of children (20-30); C-board tablet perceived by peers as a gaming device; low educators' expectations of the effectiveness of AAC practice; low educators' knowledge about the importance of AAC and potential developmental benefits for children; lack of C-board training programs for educators.

Institutional factors. Maybe the most influential factor in educators' motivation is the **absence of institutional support and the lack of a clear definition of liability** for the C-board use in kindergartens and schools. Moreover, there was **no legal support for the intersectoral cooperation** between educational, health, and social institutions. Creating and implementing the IEP for a child with communication disabilities implies a high degree of cooperation, while institutional professional associates are rarely trained for C-board implementation.

FACILITATORS. Factors facilitating the C-board use and generalization of the acquired skills to new social situations.

Support for parents. Continuous collaboration with SLT nourished the sustaining of C-board use in different circumstances: setting achievable goals with an expert, defining steps and techniques motivating both child and parents, and reliable technical support.

Support for educators from a trained expert. Networking with other colleagues implementing the C-board and sharing the AAC experiences from the classroom.

Permanent collaboration and partnership between stakeholders was the most important factor of progress. Although it was not possible to establish continuous and equal support from all, every step in building collaboration was significant for the improvement.

TWO APPROACHES in the C-board implementation were taken by practitioners.

First, the C-board is considered a **tool for symbolic communication** to lay the ground for language, conceptual thinking, and social interaction (Vygotsky, 1980). Effective AAC usage requires evidence-based design and scaffolding to meet the actual communicative needs of a child.

In the second approach, C-board is considered a **didactic tool** typically used with primary school children. Even though it increases knowledge in specific domains (e.g. vegetables in naming tasks), it does not contribute **to the development of complex language expressions for highly functional communication**.

I want to learn more on the complex use of communicators in the coming period – for children not only to show what they need at a moment but also to produce more complex sentences for highly functional communication.

Speech and language therapist

Discussion and Recommendations

The C-board implementation in Serbia suffered from low coordination and partnership between stakeholders, and low integration in educational setting, and wider social context. Literature suggests that despite the great developmental benefit the AAC can trigger, a significant number of children and families discard or underuse AAC (Berenguer, Martínez, De Stasio, and Baixauli, 2022; Moorcroft, Scarinci, & Meyer, 2019).

The parent is the most exposed and sensitive participant in the chain of support for a child with communicative impairments. **Improvement of parental knowledge of the child's developmental potential is crucial.**

Acquainting educators with the developmental benefits of AAC for a child is necessary as well as theoretical knowledge and implementation skills. Implementing IEP based on AAC requires **trained expert supervision** and sharing experience with other educators using it. The stakeholders should operate permanently in a **synchronized and coordinated partnership**.

A **supportive institutional environment** includes: the improvement of education culture around its use, and supportive beliefs, values and attitudes in regard to AAC and

expected outcomes; improving information and communication technology (ICT) and didactic conditions to create, store, transmit and share materials, and tools when necessary; clear institutional definition of liability for using the C-board; **intersectional cooperation** between health, education and social institutions.

Conclusion

AAC enables children to develop their full communicative potential in a truly natural context in which they learn and play. The study suggests that weak collaboration between stakeholders is the main obstacle to establishing and developing AAC implementation in a wide social context for children with communicational disabilities in Serbia. The involvement of educators and educational institutions is a critical point of transfer from home and therapy sessions to a wide variety of environmental settings.

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