

IMPACT OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION ON THE INCLUSION OF HEARING-IMPAIRED CHILDREN IN MAINSTREAM CLASSROOMS

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Abstract

Background: Inclusive education means giving every student, including those who are deaf, a chance to learn with their classmates. Kids who are deaf may find it hard to communicate, take part in class, and make friends. Tools like captioning, sign language, and devices that help speak can help these students join in with others in regular classrooms.

Objective: To assess the impact of AAC on the inclusion of hearing-impaired children in mainstream classrooms.

Methods: A study was done with 49 speech-language pathologists who had at least six months of experience working with students who are hearing-impaired. The data was gathered through an online questionnaire that included questions about the people's background, the types of augmentative and alternative communication tools they used, and their views on how these tools affected students' participation in class. The results were summarized using basic statistics to show how often certain things happened and the average scores, and chi-square tests were used to see if there was a connection between the gender of the students and how much they were involved in class activities.

Results: Of the participants, 77.6% were female. Captioning or real-time subtitles (40.8%) and sign language (28.6%) were the most frequently used AAC tools. High mean scores were reported for AAC helping students understand lessons (4.57), express themselves (4.49), interact with peers (4.73), participate in class (4.68), and as a necessary support in inclusive classrooms (4.88). Most respondents agreed that AAC improves classroom participation (87.8% agree, 10.2% strongly agree). Chi-square analysis revealed no significant association between gender and perceptions of classroom participation improvement ($\chi^2 = 0.312$, $p = 0.856$).

Conclusion: AAC is a helpful tool that helps hearing-impaired students communicate, join in activities, and interact with others in regular classrooms. Its benefits can be fully used when it is included in the teaching plan, teachers get proper training, and there is good support in the classroom, which helps create an inclusive learning environment and allows students to take part meaningfully.

INTRODUCTION

Inclusive education is now a major focus in education around the world. It aims to give all students, including those with different abilities, the chance to learn in the same classroom as their peers. Children who are deaf or have hearing loss often face special difficulties in communicating, interacting with others, and keeping up with schoolwork. Because they can't hear well, they may struggle to understand what's being said in class, have trouble talking, and find it hard to make friends. Without the right help, these challenges can make it hard for them to fully take part in school (1). Hearing aids and cochlear implants can help children hear better, but many still need extra help with communication to keep up in regular classrooms (2).

Augmentative and Alternative Communication (AAC) has become an important way to help people who have trouble communicating, especially children who are hearing impaired and may have difficulty understanding or using spoken language. AAC includes many different methods like sign language, pictures or symbols, communication boards, gestures, devices that speak for you, and combining different ways to communicate (3). Using AAC in schools is meant to help kids communicate better, do well in school, interact with classmates, and feel like they belong in regular classrooms (4).

Getting a hearing-impaired student into a mainstream school means more than just putting them in a classroom; it also means making sure they can take part in learning, stay involved, and fit in with other students. Studies show that having trouble communicating is one of the main reasons these students struggle academically, feel left out, and don't get to join in classroom activities as much as others (5). AAC interventions help children develop language skills, feel less frustrated, become more independent, and improve how teachers and students communicate. These are key things that help kids succeed in inclusive learning environments (6). How teachers and classmates feel about using AAC is really important, because having a good attitude and proper training can make a big difference in how

well AAC helps include people in the classroom (7).

Even though there is more proof that AAC works, not much is known about how teachers, parents, and students in regular classrooms see AAC, especially in poorer and middle-income countries. It's important to understand these views because they help in making better plans for inclusion, improving how people communicate in class, and creating better school rules. How people think about AAC can affect how willing teachers are to use it, how often it is used, and how well hearing-impaired kids fit into school and social life (8).

This study looks into how the use of AAC affects the inclusion of hearing-impaired children in regular classrooms. It focuses on how well they can communicate, how much they participate in learning activities, how they interact with others, and how well they fit into the classroom environment. The research will find out what helps and what makes it difficult for these children to be included. This information will help create better ways to support inclusive education and make sure all children have fair chances to learn.

Objective

To Assess the impact of Augmentative and Alternative Communication (AAC) on the inclusion of hearing-impaired children in mainstream classrooms.

Methodology

This study used a quantitative, cross-sectional survey to look at how Speech-Language Pathologists (SLPs) see the effect of Augmentative and Alternative Communication (AAC) on including hearing-impaired children in regular classrooms. The study included 49 participants. SLPs were chosen based on purposeful sampling, meaning they were selected because they had at least six months of experience working with hearing-impaired students and were directly involved in using or supporting AAC tools (7). Those without AAC experience or who didn't work in inclusive settings were not included (9). Data was gathered using a structured online questionnaire that had questions about basic

information and questions about perceptions, using a Likert scale. Before sending out the survey, experts checked its content to make sure it was valid. The study also got ethical approval, and participants were asked for their informed consent. The data was analyzed using SPSS, and both descriptive and inferential statistical methods were used to understand the perceptions and find any connections between professional backgrounds and opinions about how AAC affects classroom inclusion.

RESULTS

A total of 49 people took part in the study. Out of these, 22.4% (11 people) were male and 77.6% (38 people) were female (Table 1). The participants used different types of AAC tools to support hearing-impaired students in regular classrooms. The most commonly used tool was captioning or real-time subtitles (40.8%, 20 people), followed by sign language (28.6%, 14 people), speech-generating devices (18.4%, 9 people), and text-to-speech apps (12.2%, 6 people) (Table 2). When it came to classroom involvement, most of the respondents believed that AAC helps students engage better. 87.8% (43 people) agreed, and 10.2% (5 people) strongly agreed, while just 2.0% (1 person) were neutral (Table 3). The descriptive data also showed

that AAC was seen as very helpful. Respondents gave high scores for AAC helping students understand lessons (Mean = 4.57, Median = 5.00), express themselves better (Mean = 4.49, Median = 5.00), interact with classmates (Mean = 4.73, Median = 5.00), take part in class (Mean = 4.68, Median = 5.00), and be a necessary tool in inclusive settings (Mean = 4.88, Median = 5.00) (Table 4).

A Chi-Square test was used to check if there was a link between gender and how much people thought AAC helped with classroom participation.

Among the male participants, 10 said "Agree" and 1 said "Strongly Agree." From the female participants, 33 said "Agree" and 4 said "Strongly Agree," with only 1 woman saying "Neutral" (Table 5). The Chi-Square results showed no significant link between gender and perception of AAC's impact on participation ($\chi^2 = 0.312$, $df = 2$, $p = 0.856$) (Table 6). This suggests that both men and women had similar views about the benefits of AAC in mainstream classrooms.

Overall, these findings show that AAC is widely used and viewed positively by both men and women. Captioning and sign language are the most commonly used tools, and AAC is seen as effective in helping hearing-impaired students take part in class and interact with their peers.

Table 1 Gender of Respondent

| Gender of Respondent | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------------|-----------|---------|---------------|--------------------|
| Male | 11 | 22.4 | 22.4 | 22.4 |
| Female | 38 | 77.6 | 77.6 | 100.0 |
| Total | 49 | 100.0 | 100.0 | 100.0 |

Table 2: Types of AAC Used

| Types of AAC Used | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------------------------|-----------|---------|---------------|--------------------|
| Text-to-speech apps | 6 | 12.2 | 12.2 | 12.2 |
| Speech-generating devices | 9 | 18.4 | 18.4 | 30.6 |
| Sign Language | 14 | 28.6 | 28.6 | 59.2 |
| Captioning or real-time subtitles | 20 | 40.8 | 40.8 | 100.0 |
| Total | 49 | 100.0 | 100.0 | |

Table 3. AAC Improves Classroom Participation

| AAC Improves Classroom Participation | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------------------------|-----------|---------|---------------|--------------------|
| Strongly agree | 5 | 10.2 | 10.2 | 10.2 |

| | | | |
|---------|----|-------|-------|
| Agree | 43 | 87.8 | 87.8 |
| Neutral | 1 | 2.0 | 2.0 |
| Total | 49 | 100.0 | 100.0 |

Table 4. Descriptive Statistics for AAC Statements

| Descriptive Statistics | | | | | | | |
|-------------------------------|----|---------|------|--------|------|-------|--|
| | N | Missing | Mean | Median | Mode | Range | |
| AAC helps students understand | | | | | | | |
| classroom content | 49 | 0 | 4.57 | 5.00 | 5 | 3 | |
| AAC helps students express | | | | | | | |
| themselves better | 49 | 0 | 4.49 | 5.00 | 5 | 3 | |
| AAC promotes peer interaction | 49 | 0 | 4.73 | 5.00 | 5 | 3 | |
| AAC improves classroom | | | | | | | |
| participation | 49 | 0 | 4.68 | 5.00 | 5 | 3 | |
| AAC should be a mandatory | | | | | | | |
| support tool in inclusive | 49 | 0 | 4.88 | 5.00 | 5 | 3 | |

Table 5: Association Between Gender and Improvement in Classroom Participation Due to AAC

| Gender | Strongly Agree | Agree | Neutral | Total |
|--------|----------------|-------|---------|-------|
| Male | 1 | 10 | 0 | 11 |
| Female | 4 | 33 | 1 | 38 |
| Total | 5 | 43 | 1 | 49 |

Table 6 Chi-Square Tests

| Test | Value | df | Asymptotic Significance (2-sided) |
|------------------------------|-------|----|-----------------------------------|
| Pearson Chi-Square | 0.312 | 2 | 0.856 |
| Likelihood Ratio | 0.326 | 2 | 0.849 |
| Linear-by-Linear Association | 0.000 | 1 | 0.998 |
| N of Valid Cases | 49 | | |

Discussion

The study shows that who work with hearing-impaired students in regular classrooms have very positive views about AAC. They gave high scores for how AAC helps students understand things (4.57), express themselves (4.49), interact with classmates (4.73), take part in class activities (4.68), and see AAC as something essential that must be used (4.88) (7). These results align with previous studies showing that AAC can greatly improve communication and social interaction for students who have complex communication needs (10).

Peer interaction was highlighted as a major advantage of using AAC. When peers are involved in structured activities, it helps more students communicate and take part in group activities in inclusive classrooms (11). This matches with what we found, showing that AAC helps students feel included in social situations, not just support communication.

Even though many people see AAC in a positive light, there are still challenges in using it well. Studies show that teachers often face problems like not getting enough training, not having enough time to prepare, and not using AAC consistently across different teachers (12). It's important for teachers to be ready and confident

to use AAC. Research shows that many teachers feel they aren't trained well enough to use these tools, because they don't get enough hands-on experience or training (13).

Putting AAC into the regular school lessons is still not happening much. A review of existing studies found that AAC is not well included in standard school subjects, and it's often used outside of regular classroom activities (13). These gaps might make it hard to keep using AAC effectively, even if teachers know it's important.

Overall, while the positive views from this study are good news, real results need more support. Teachers need better training, AAC should be part of the regular curriculum, and schools should work together to make sure AAC is used in the right way. These steps are important to turn positive attitudes into real success in inclusive education (14).

CONCLUSION

This study shows that AAC is a helpful tool for helping hearing-impaired students understand better, express themselves, interact with classmates, and take part in classroom activities. Captioning and sign language were the most common ways used. There were no major differences in how people viewed AAC based on gender. The results show that although AAC is very important, it being included in the school curriculum, and having ongoing support in the classroom. Taking care of these areas can help make AAC even more useful in creating an inclusive school environment where hearing-impaired students can fully take part.

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