

EDUCATING DEAF OR HEARING-IMPAIRED CHILDREN WITH AUTISM OR REQUIRING A HIGHLY STRUCTURED EDUCATIONAL SETTING

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ABSTRACT

Introduction

Deaf¹ pupils with autism² often present behavioural problems which impede a continuous progression of learning. As a result they are often placed in classes with deaf peers with intellectual disabilities, despite their cognitive potential. We aimed to get them back on track by placing them in one of two groups (ages 4-8 and 8-13) created especially to address their specific educational needs.

Purpose

To develop an educational approach specifically for deaf children with autism (Szymanski et al., 2012) so that they can reach a level of educational attainment in keeping with their cognitive potential.

Method

Characteristics of the educational approach:

- I. Adapted environment: up to 6 pupils per class; structured physical environment, adapted communication and social emotional approach, adapted teaching methods, limited sensory stimuli and a predictable daily routine
- II. Specially trained teams of teachers and educational therapists
- III. Competence-based staff recruitment
- IV. Adapted learning pathways
- V. Participation in school-wide activities tailored to children's capacity
- VI. A social worker providing home support.

Evidence-based methodologies are used, including (parts of):

Social Competence Model, TEACCH, questionnaires, social skills training, 'Give me 5', dealing with unexplained behaviour, parent-education partnership.

Results

1. Pupils achieved a higher level of educational attainment.
2. 14.3 % of pupils transferred to a higher form of secondary education than projected.
3. Pupils' social-emotional skills improved.
4. Pupils presented significantly fewer behavioural problems.
5. Parents were happy with their children's progress and the educational partnership.

Conclusions

This educational approach for deaf children with autism improved educational attainment and reduced behavioural problems.

¹ The term 'deaf' here also refers to children who are hearing-impaired

² The term 'autism' here also refers to children who require a highly structured educational setting

Introduction

At Signis School, until 2009, deaf children with autism and normal or high intellectual potential would develop severe behavioural problems as a result of being placed in a learning environment that was not adapted to their needs. Unable to learn in a classroom with other deaf children, they would be transferred to a section for deaf children with intellectual disabilities.

Signis set up a separate, highly structured group adapted to these children's communicative limitations and social-emotional level while offering sufficient cognitive challenges.

The results attained with this senior primary class were so successful that, after three years, a junior primary class was also started. So far, a total of 14 pupils have been taught in these classes (n=14).

The Educational approach: What adaptations were made?

The design of our special educational approach was based on current knowledge of autism in deaf children. We used evidence-based materials and followed best practices where possible. We also monitored the situation closely ourselves and involved parents in order to share practical knowledge about a learning environment suited to the children's needs.

In accordance with Van Denterneer-Van der Pasch and Verpoorten (2007) we defined autism as an organic neurological defect that presents as specific impairments in communication, social interaction, imagination and cognitive styles. Most of the adaptations made were intended to accommodate these impairments, and the comorbid condition of deafness/hearing impairment.

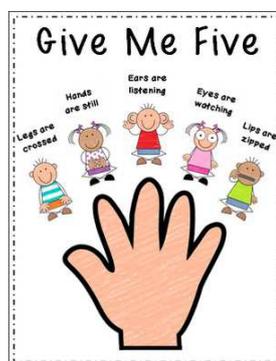
- I. **Structured physical environment, 6 pupils per class, limited sensory stimuli, predictable daily routine.** Our classroom environment was designed in keeping with the findings of Happé (1999) on central cognition. She demonstrated that people with autism tend to focus on local neurological stimuli over more coherent, global perspectives. Children with autism are more focused on details and tend to see fixed connections between an individual/place/time and an action. Despite criticism of the central cognition theory, the findings were confirmed by Noens and Berckelaar-Onnes (2007).

We also used best practices such as the TEACCH programme developed in the United States (<http://teacch.com/>). TEACCH offers good ideas about physically structuring the school environment, such as an ordered work system in which a pupil's work for each day is kept in separate drawers. TEACCH also uses visual aids to provide pupils with clear expectations of the day's programme (picture 1).



Picture 1 TEACCH: The structured class environment and the work in separate drawers

Other useful materials were supplied by *Geef me de Vijf* (2009) ('Give me five'), a highly successful programme for children with autism developed in the Netherlands. It emphasises clearly communicating five key situational aspects – WHO, WHAT, WHERE, HOW AND WHEN – which provide children with autism the structure they need, but which they do not automatically pick up on themselves (picture 2).



Picture 2 Give me five: A puzzle is used to explain situations and a card describes the things you must do if the teacher wants you to listen

Adapted communication. There is much debate in the literature about the extent to which children with autism learn to use language as a means of communication (Happé and Frith, 1996), and to what extent this influences the development of Theory of Mind (ToM). According to Bogdashina (2005), the native language of children with autism is a visual language. Based on research by Isarin, Rikken and Verpoorten (2009) into the impact of autism on understanding and using signs and sign language, we elected to use Dutch Sign Language or Signed supported Dutch as the language of instruction for the children in this study, embedded in the practical methods *Total Communication* (TC) (Oskam and Scheres, 2005) (picture 3) and *Concept-Facilitated Communication* (COC) (Isarin and Brouwer, 2014).



Picture 3 Individual activity programs

Adapted social emotional approach & teaching methods. The literature about impaired information processing, (social) cognition and communicative development clearly establishes that children with autism have a different pattern of social-emotional learning. This difference is further accentuated in deaf and hearing-impaired children who cannot pick up auditory stimuli. This is apparent from research by, for instance, Peterson (2000) who showed that deaf and hearing-impaired children with autism have a less-developed Theory of Mind (ToM). Executive functions

are also less developed in children with autism (Happé and Frith, 1996), so that they have more difficulty organising, monitoring and adjusting their behaviour.

In view of the fact that many deaf and severely hearing-impaired children suffer increasing language disadvantage with age, Knoors and Marschalk (2014) proposed that they may also experience disparate development of executive functions. Unfortunately, schools tend to provide a more loosely structured learning environment for older children, which increases the importance of efficient executive functioning. Children are increasingly expected to use their internal skills, executive control and organisation. However, it is known that deaf and severely hearing impaired children often grow up in excessively structured environments, at home and at school, and receive more external support to solve problems than their hearing peers, regardless of whether they actually need that support.

In view of the above, we chose a concrete method for teaching social-emotional skills: the Social Competence Model. Situations that children can confront are broken down into tasks, with specific, associated skills to be learned. We offered psycho-education for obtaining information, teaching children in a cognitive manner about appropriate behaviours for specific situations. A visual method that was well suited to our study was 'Hoe ik ben' ('The way I am') and 'Hoe ik denk en voel' ('How I think and feel') (<http://www.viahulp.com>).

We also made changes to our teaching methods in view of the insights discussed above regarding differences in information processing styles. For instance, the teacher adapted her teaching materials and lessons to take account of children's difficulties with working memory, organising, planning, anticipating, adjusting and inhibitory control. See also point III.

While implementing this study, colleagues at Royal Kentalis conducted a sound study into the most effective treatment for children with autism. The results were published in an e-book last year (*Op eigen wijze samen*, Isarin, 2014). The book describes a method entitled *Ortho-Communicatieve Behandeling* (Remedial-Communicative Treatment) and confirms that we are on the right track in the present study. The book also offered new insights to further develop our programme.

II Specially trained teams of teachers and educational therapists

A multidisciplinary team worked with the class. The team was made up of a special education teacher, a speech therapist, an educational supervisor and a psychologist. Additional assistance was sometimes provided by an educational therapist, classroom assistant (trained in assisting children with autism) or social worker. The entire team cooperated closely with the children's parents and the social worker also provided home support if necessary (see point V).

The multidisciplinary team had been trained in:

- educating deaf and hearing-impaired children with autism, and applying the adapted programme as described above;
- all the methods used, as developed or adapted for this programme:
 - o Social Competence Model: SCM
 - o Method: Dealing with behaviour which is difficult to understand: OMVG
 - o Promoting Alternative Thinking Strategies: PATHS
 - o Social skills and anti-bullying programme: *Kanjer Training*
 - o Recording children's progress in the adapted pupil monitoring system (see IV)
 - o Using a behaviour alert system that describes behaviour at different stages of stress as well as ways of dealing with behaviours, called *Individual behavioural observation and recording scale*.

In addition, the psychologist also provided individual support by appointment so that the optimum approach for each child could be determined.

III Competence-based staff recruitment

Besides having the requisite knowledge of and experience in teaching deaf and hearing-impaired children with autism, team members had to have specific competencies in the following areas:

- Communication and interaction: using the chosen languages (NGT/NmG) and relevant components of the Comprehensive Communication (TC) and Concept-Facilitated Communication (COC) methods;
- Classroom management: provide clear structure in terms of the physical environment, time, classroom organisation and activities. Be able to maintain this structure consistently over time;
- Didactics:
 - o Take account of problems in establishing coherence and generalising the knowledge taught. Take account of disparate executive functioning.
 - o Take account of individual information about observation and information processing.

IV: Adapted learning pathways

In order to offer subjects at a level in keeping with the cognitive capacity of pupils in this group, teaching was organised in accordance with the regular primary school attainment targets for deaf children as much as possible. The attainment targets were in the following subject areas: Dutch Sign Language, Dutch language, reading, arithmetic, social-emotional development and learning skills. Within the learning pathways leading to attainment of these targets, the teacher in consultation with the psychologist and educational supervisor determined what targets were attainable for each individual pupil with autism and what targets were not. They could, for instance, decide to abandon a particular target within the social-emotional development pathway in favour of spending more time on other targets in the pathway. This ensured the most effective use of teaching time in the case of that individual pupil.

The attainment targets were rated in the pupil monitoring system as follows: target attained in succession (+), does not have to attain target (x), has attained next target following skipped target (+), is still working on next target (0) (table 1).

Table 1

Sample item in the S Pupil Monitoring System	
6. Social emotional development (pathway)	
6.6 Shares experiences	
<ul style="list-style-type: none"> • Indicates whether he/she likes/enjoys something or thinks something is interesting/pretty (taste/preferences) • Shares his thoughts about the school day (at the end of show-and-tell) • Takes leave in different situations (see you later, happy holidays) • Shares similar experiences with others (I've been there too) 	<p style="text-align: right;">+</p> <p style="text-align: right;">x</p> <p style="text-align: right;">+</p> <p style="text-align: right;">0</p>

V: Participation in school-wide activities tailored to children's capacity

As Knoors and Marshalk (2014) stated, children are increasingly expected to use their internal skills, executive control and organisation as they grow older. At the same time, severely hearing impaired and deaf children often grow up in excessively structured environments, at home and at school, and receive more external support to solve problems than their hearing peers, regardless of whether they actually

need that support. In our study, children were only admitted to a structured class if they were unable to learn in a regular classroom setting (Health Council of the Netherlands, 2009) to avoid them learning in an overly structured environment. Two or three times a day the children played outside with other children of their age who did not have autism. The team prepared children with autism as well as possible for special occasions, such as a school-wide assembly or celebration. The extent to which they participated in such larger scale events sometimes had to be adjusted to what they could handle. Occasionally, a child could be excused from an activity. In these cases, an alternative activity would be offered. Children were gradually led to participate in activities with larger groups of pupils if it was clear that they would benefit from these activities, were attaining their targets as expected (social-emotional skills improved), did not have to skip targets, and by and large presented significantly fewer behavioural problems. Once children had adapted to this setting they stayed in the larger group for all their lessons.

VI: A social worker provides home support

In the home setting, deaf and hearing-impaired children with autism also present different childrearing challenges. Their development does not follow the expected course (Isarin and Brouwer 2014, Knoors and Marschalk, 2014). Parents often need extra support. Kentalis sees parents as equal partners – an approach referred to as educational partnership (Isarin, 2013) – who are full members of the multidisciplinary team. Parents have regular consultations with the other team members, on an equal footing, so that they can share their knowledge and expertise with the school. This also enables us to implement relevant programme components in the home setting. If parents wish, they can be supported in this by the team’s social worker.

Results and Conclusions

1. Pupils achieved a higher level of educational attainment.
79% of pupils in this early intervention transferred to a learning pathway in line with their cognitive and intellectual capabilities (tables 2 and 3).

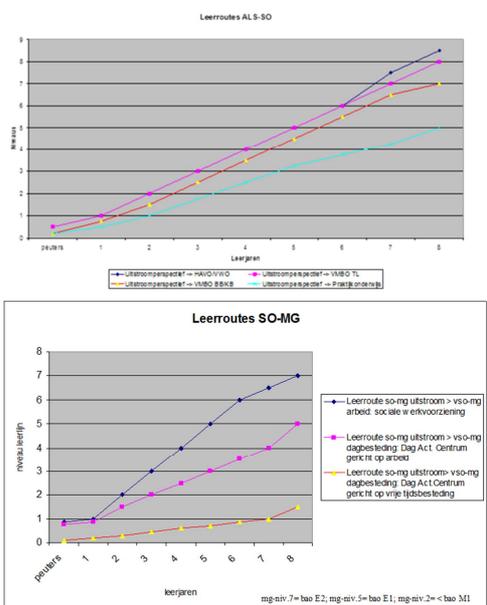


Table 2 and 3

Leerroute = Developmental pathways

Arbeid: sociale werkvoorziening = Labour market activities: sheltered workplace

Dagbesteding: DAC = daily activity pathway: daily activity centre

- Focus on work activities
- Focus on leisure activities

2. Because of the higher level of educational attainment, thanks to the structured setting, 50% could be successfully placed in a regular class for deaf children in line with their cognitive and intellectual capabilities. Special or additional structure no longer needed to be provided for them. In the pathway leading to further education 14,3% of pupils transferred to a higher form of secondary education than projected.
Despite the additional structure offered, 21% transferred to a lower form of secondary education than expected on the basis of their cognitive and intellectual capabilities. This is mainly due to persistent language delay, including in expressive communication skills, from a very young age.
3. Pupils' social-emotional skills improved.
An analysis of individual attainment goals in remedial and therapy plans in qualitative N=1 studies showed that the majority of pupils attained higher levels of social-emotional and executive functioning. These results also revealed scope for further improvement.
4. Pupils presented significantly fewer behavioural problems.
Analyses of reported incidents using the Individual behavioural observation and recording scale showed a decline in the incidence of externalising behaviours and situations in which behaviour was difficult to understand.
5. Positive results in parent participation.
Qualitative N=1 studies of the parent interviews and regular consultations with parents showed that, compared to the situation before the intervention, nearly all parents felt more involved in their child's educational process and reported being satisfied with their child's progress and with the educational partnership.

Conclusions 3 and 5 are based solely on screening results. It is recommended that these subjects are investigated more extensively in follow-up research.

Conclusion

The purpose of this program was to develop an educational approach specifically for deaf children with autism so that they can reach a level of educational attainment in keeping with their cognitive potential.

This educational approach for deaf children with autism improved educational attainment and reduced behavioural problems, in addition to improving children's social-emotional development and participation by parents in the educational process. The results reported here are based on quantitative and qualitative analyses. It is recommended that pupils' social-emotional development and parent participation are investigated more extensively in follow-up research.

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