

# Supporting face-to-face communication in neurodiverse settings using designed artefacts

Anoek Scholtus, Industrial Design Engineering, University of Twente, The Netherlands

In everyday situations, individuals encounter communication challenges due to several reasons. These communication challenges may stem from the fact that people have different needs and wants with regard to communication. Others may arise due to the fact that people differ in the way that their brains take in and process sensory information from the world. The latter can be explained by the term neurodiversity (Aitken and Fletcher-Watson, 2024). This study evaluated face-to-face communication in neurodiverse settings and proposed design principles that can be used to design artefacts that can support face-to-face communication in neurodiverse settings. This thesis specifically focused on the neurodiverse communication between children with autism and others. The main research question was: what are design principles for designing artefacts that support face-to-face communication in neurodiverse settings based on how the Crdl affects neurodiverse communication of children with autism with other people?

Literature and interviews showed that people often encounter challenges in neurodiverse settings. These challenges arise due to a difference in the needs and expectations of different individuals. When these needs and expectations are not aligned it is hard to be on the same page and communicate without challenges. It is a double empathy problem (Milton, 2012) and needs to be solved from the side of all parties.

To develop design principles that can be used to design artefacts that support neurodiverse face-to-face communication, the Crdl was used in neurodiverse settings at a daycare centre for children. The Crdl was used at this daycare centre on two Fridays with one week in between. The Crdl was used by two groups of children and their supervisors. The first group consisted of six children and three supervisors. This group was a preparatory group for special education. The second group consisted of two children and one supervisor.

The first group of children were observed using the Crdl in a supervisor-child setting during the first session and in a group setting during the second session. The second group of children were observed using the Crdl in a supervisor-child setting both times.

Once the data had been collected, it was analysed and discussed by the researcher and by multiple experts. The experts brought a range of perspectives to the analysis, including neurodiverse expertise, which added a valuable contribution to the study.

The data of the qualitative analysis identified several important insights. Firstly, it revealed that the role of the supervisor plays a significant role in the interaction between the supervisor, the child, and the Crdl. Secondly, it identified the how the Crdl provides contact. By offering a means to lower physical barriers, the Crdl stimulates both physical contact and affectionate touch, thereby fostering emotional contact as well. The insights derived from this study were translated into design principles that focus on the appearance and affordances of the design, the logic versus the room for exploration, the role of the supervisor, and the emotional contact between the supervisor and the child.

However, there was not an equal gender distribution among the participants, which might have influenced the results. Therefore, further research is required with a better gender distribution among the participants. Additionally, a new question arises as to whether the Crdl has altered the everyday interactions between the supervisors and children. To address this question, it is recommended that the Crdl will be employed in the daycare centre on a more regular basis and should be integrated into the daycare settings as a regular object.

Keywords: neurodiversity, communication, autism, Crdl

## References:

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