

## Investigating The Use Of Socially Assistive Robots To Support Learner Engagement For Students With Learning Disabilities In One-to-one Instructional Settings

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**Abstract :** Children with diagnosed or suspected learning disabilities frequently experience significant skill gaps in foundational learning areas such as reading, writing, and math. Remedial one-to-one instruction is a highly effective means of supporting children with learning differences in building these foundational skills and closing the learning gap between them and their same-age peers. However, due to the learning challenges children with learning disabilities face, and ensuing challenges with self-confidence, many children with learning differences struggle with motivation and self-regulation within remedial one-to-one learning environments - despite the benefits of these sessions. Socially Assistive Robots (SARs) are an innovative educational technology tool that has been trialled in a range of educational settings to support diverse learning needs. Yet, little is known about the impact of SARs on the learning of children with learning differences in a one-to-one remedial instructional setting. This study sought to explore the impact of SARs on the engagement of children (n=9) with learning differences attending one-to-one remedial instruction sessions at a non-profit remedial education provider. The study used a mixed-methods design to explore learner engagement during learning tasks both with and without the use of a SAR to investigate how the use of SARs impacts student learning. The study took place over five weeks, with each session within the study followed the same procedure with the SAR acting as a teaching assistant when in use. Data from the study included analysis of time-sample video segments of the instructional sessions, instructor recorded information about the student's progress towards their session learning goal and student self-reported mood and energy levels before and after the session. Analysis of the findings indicates that the use of SARs resulted in fewer instances of off-task behaviour and less need for instructor re-direction during learning tasks, allowing students to work in more sustained ways towards their learning goals. This initial research indicates that the use of SARs does have a material and measurable impact on learner engagement for children with learning differences and that further exploration of the impact of SARs during one-to-one remedial instruction is warranted.

**Keywords :** engagement, learning differences, learning disabilities, instruction, social robotics.

**Conference Title :** ICTE 2022 : International Conference on Teacher Education

**Conference Location :** Toronto, Canada

**Conference Dates :** June 16-17, 2022