Social Robotics In Education Involving ASD Children: A Collaborative Design Project

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Abstract In a new project we want to develop an educational approach where the art of social robotics is used to enhance the development opportunities for students with a form of autism, which - by joining mainstream education attainment targets - creates a form of 'suitable education' in which pupils and without autism can work targeted forms of researching and designing learning..

Keywords: Robotics, Social Robots, Education, Autism, Collaborative Design

INTRODUCTION

Recently, much work and research has been done on the use of social robotics in special education for autistic children, in the belief that the predictable behavior of robots can help these children to practice social behavior [1, 2]. However, this has not yet resulted in programs that include working with social robotics at schools for special education for children with autism, or for regular schools where children with autism are integrated. Therefore, in the project presented here, we want to establish how design, application, construction and programming of social robots can be used in elementary school programs. In this context, we view social robotics as a means to support the social development of autistic children who are challenged when they need to perceive, recognize, interpret, and thus develop a social and communicative repertoire. We consider this essential, since these children often can only develop to a certain extent related skills by frequent, prolonged literal repetition with a high degree of predictability [3].

APPROACH

One of the underlying assumptions is that the condition of autistic children is not necessarily a disadvantage but possibly a positive starting point. It is typical for autistic children to have a need for clarity on the details of social interactions and expectations. By analyzing these processes and using technology to deploy a social sense of movement and sound production for the robot, autistic children can experience their condition as a deficiency in a learning context, but rather as a functional characteristic for activities focused on technological problems to be solved. The educational approach we aim to develop, bridges the gap between two ambitions that we have to live up to the future: strengthening Science and Technology in the educational curriculum, and appropriate education for all students including those with special needs.

PROJECT GOALS

The project has both an experimental and practical nature. We want to explore the possibilities to achieve the targeted approach using currently available robotics technology and associated structural fundings.

The goals are reflected in the following questions:

- What kind of learning activities and tasks are appropriate?
- What robotic equipment and software is suitable
- What are the established effects?
- What are the relevant differences between students in the respective school context?
- What are the possible forms of cooperation between students in regular education and special structure group and between younger and older students?
- What type of learning 'works' for children at their different levels of development: what appeals to them, when working on their own development in the social and/or technical field?
- What size of a module (in terms of weeks and hours per week) is possible and desirable?

With exploratory experiments, we first aim to establish the determinants of effectiveness with various groups of children; and which additional training for group teachers is needed and feasible. Based on these experiments, we can share a design for the intended educational approach. Subsequently we want to carry out a trial and, with accompanying research (through observation and reflective discussions with the various parties) to evaluate and adjust the approach.

Thus we develop an educational approach in co-creation with all parties, with differentiations, flexible for different learning contexts in schools that wholly or partially focus on teaching children with autism.

REFERENCES

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