UNLOCKING POTENTIAL: A STUDY ON THE POSITIVE IMPACTS OF ROBOTICS AND CODING PROGRAMS FOR NEURODIVERSE CHILDREN – INSIGHTS FROM AN EDUCATIONAL INTERVENTION

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Abstract

Children with neurodiverse diagnoses, such as autism spectrum disorder and ADHD, frequently encounter specific problems in cognitive and social development. In a world where neurodiverse children frequently confront unique developmental problems, using robots and coding to unlock their amazing potential can pave the way for a more inclusive and innovative future. This research seek insights into the potential benefits of integrating robotics and coding into the educational programs of neurodiverse children. A study was done in collaboration with Kids Innovative Africa in Cape Town, with a diverse sample of 30 participants, aged 7 to

18 years, to assess the impact of a robotics and coding enducational intervention on cognitive and social development in this very specific and often underserved demographic. The Positive Technological Development framework was used as the main theoretical framework. The performance on a variety of abilities was assessed before, during and after the intervention. The research combines quantitative data analysis, such as descriptive statistics, correlational analysis, t-tests, and ANOVA, with qualitative data gathered from in-depth interviews with coaches.The quantitative study demonstrates that the participants' cognitive and social abilities have improved significantly. Effective communication, collaborative skills, presentation skills, problem solving, confidence, and technical areas such as artificial intelligence, mechanical engineering, and programming show substantial growth. Correlational research reveals complex correlations between various abilities, offering information on their interconnections. The qualitative study emphasises the development of problem-solving and critical thinking skills, as well as improved peer interactions and the development of one's own creativity. Participants reported enhanced self-esteem, confidence, emotional well-being, and improved communication skills.The findings highlight the significant benefits of robotics and coding in promoting cognitive and social development in neurodiverse children. This study contributes to a better understanding of the benefits of using these technologies into educational programmes, perhaps opening up new paths for fair development and inclusive learning settings. Future research can build on these findings to better customise therapies for neurodiverse children and help them grow more fully.