

## Annex A

### **MEDIA FACTSHEET** ***Robots for Early Childhood Education***

#### **Background**

In the Infocomm Media 2025 plan, Advanced Robotics was identified as a key sector for development. Social robots, with their human-like appearance and multi-modal interactions (i.e. the ability for children to interact with the robot through different senses such as sight, touch, speech and listening), have great potential to be used in education to support the learning process. As we lay the foundation for Smart Nation, IDA envisions a future education setting where robots complement teachers as the children's learning companion, adding elements of imagination to learning and play for children in preschools. Hence, there is scope to explore the potential of using robots to augment teaching and learning.

#### **Past Works on Robots in Pre-school Learning**

Several studies have been done on robots in pre-school learning. One of the earlier studies was in 2009 by the University of California, San Diego, where the prototype social robot "Rubi" was used. The study showed that pre-schoolers were able to interact with the robots, and showed improvement in their vocabulary.



Another more recent example is KindSAR: Kindergarten Social Assistive Robot: A Tool for Constructive Learning in Preschool Education (2014) by Ariel University, Israel. The study demonstrated that a robot, NAO, could assist teachers in storytelling, new concept introduction and motor skills development.



In late February this year (29 Feb to 2 March 16), some 2,000 children from over 50 preschools in Singapore who visited the “The Future of Us” Exhibition had a chance to dance and interact with Pepper at the Learning Pod Showcase, organised by Early Childhood Development Agency (ECDA), in collaboration with IDA. The pre-schoolers interacted very enthusiastically with the robot, and these positive responses helped to shape the pilot study that IDA is currently conducting on robots for early childhood education.



## **Robots for Early Childhood Education Pilot Study**

IDA is currently conducting a pilot study on the use of social robots in early childhood education. The objectives of the pilot study are to:

- a. Test the impact of social robots on early childhood education, in particular in the areas of:

- i. Collaborative Play and
- ii. Interactive Storytelling.
- b. Develop relevant lesson plans, as well as gather good practices, for the use of social robots in preschools.

### **Benefits to Preschools**

Social robots can complement traditional teaching methods, and encourages collaboration and social interaction among young children. Children tend to be curious about robots, feel less intimidated around them, and would want to interact with them. Even quieter children have been observed to initiate interactions with robots. Understanding how children respond to and interact with robots could support the lesson designs of future learning technologies.

### **Pilot Study**

The pilot study is conducted at 2 pre-school centres; My First Skool Jurong Point and MY World @ Bukit Panjang, in partnership with Softbank Telecom Singapore and NTU Robotics Research Centre. It explores the use of social robots to complement teaching and learning in the pre-school setting. The 7-month pilot will test usage in the areas of collaborative play and interactive storytelling. Two social robots will be used, Pepper for My First Skool Jurong Point and NAO for MY World @ Bukit Panjang.



**Pepper**

**Nao**

During the pilot study, use cases, robot applications and lesson plans will be developed. Teachers will be trained to facilitate the lessons with the use of robots throughout the trial period. There will be observations and interviews done on the interactions between the robots, pre-schoolers and teachers. A report documenting the usage scenarios, challenges and considerations, as well as the benefits for pre-schoolers and teachers will be produced. This will provide insights on how we can extend and scale the use of robots to more pre-schools in the future.

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