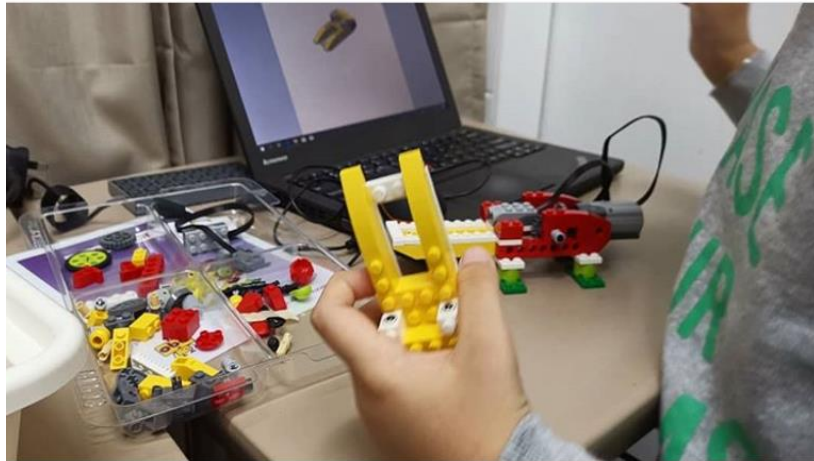# How Will My Preschooler Understand Coding?
Is There Any Benefits of Coding Education for Preschoolers?

We often get queries from parents about our Preschool Coding classes (catering to children age 4-6). Two common concerns from parents is whether their preschooler is able to understand or retain the Coding knowledge that they were to learn in class, and if there is any relevance of learning Coding towards the development of their child. Allow us to address these two major concerns here.

At this prime stage of their development, preschoolers soak up knowledge and stimuli quickly to gain an understanding of the world around them. They ask questions, they listen and process the information, and most of all, they are very willing to experiment with new things. This disposition towards learning makes Preschool an important age to start various learning areas, including Coding.

"How will my preschooler understand Coding?"

Allow us to share a few tips:

1. Close Guidance
At a preschool level, we understand that most children would not have interacted with a computer before. Our coaches would guide the preschooler through each and every step of the learning process, with a maximum class size ratio of 1 coach to 5 children, and each child having their own computer for learning. From being patiently shown the basic functions of a computer, to learning how to build a model using a visual step-by-step approach, to understanding the Coding language, the preschooler will be able to learn at his/ her own pace with close guidance.

2. Practice and Regular Attendance
A skill often takes regular practice, trial and error and most of all - patience, to master. This concept applies to coding too, especially for very young children. From our observations, for those small group of children who have forgotten what was taught in the previous lesson, it is often attributed to irregular class attendance and lack of practice.

3. Spiral Knowledge to Build on Skills Learnt
Our teaching framework introduces the basics of coding to beginners first before allowing them to embark on more interesting and challenging models. It starts the child on easier models to progressively difficult ones. This requires the child to remember his or her past knowledge learnt in order to help overcome more complex Coding situations. We find that this spiral knowledge motivates the child to retain whatever they have learnt in previous lessons, and helps to develop a keen passion to learn new things and embrace new challenges.

"Is there any benefits of Coding education for preschoolers?"

There have been numerous articles written about the benefits of learning Coding, and we herein summarise the points from this recent article [1]"Why Children Should Learn to Code" published online on 28 Feb 2019.

Learning to Code can help our children in (at least) the following ways:

1. Becoming an Epistemologist
An epistemologist is someone who studies how we know things and how we think. Coding can provide students with new ways of learning, thinking, and growing, both cognitively and emotionally. Through teaching the computer how to think, the student would begin to consider how they themselves think.

2. Becoming Computational Thinkers
Computational Thinking (CT) includes the "thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can be effectively carried out by an information-processing agent." (Wing, 2011). Wing believed that to "reading, writing, and arithmetic, we should add computational thinking to every child's analytical ability" (Wing, 2006, p. 33).

3. Becoming Experimental and Exploratory Learners
It means that coding can be used as a tool, integrated into a wide variety of subject areas, in an effort to help students experiment with and learn about a wide variety of concepts.

4. <u>Becoming Creative Participants in a Digital World</u>

As our students develop as computational thinkers, coding also provides a context in which they can develop as computational creators. As explained by Mitch Resnick, a researcher at MIT and the lead developer of the children's programming language Scratch,

"In today's society, digital technologies are a symbol of possibility and progress.
When children learn to use digital technologies to express themselves and share their ideas through coding,
they begin to see themselves in new ways. They begin to see the possibility for contributing actively to society.
They begin to see themselves as part of the future" (Resnick, 2017, p. 50-51).

5. <u>Becoming Employed</u>

Just about every field of work is being impacted by software and computer programming technologies. As a result, knowledge of coding practices may help all of our students in their careers, even those who enter non-ICT fields.

Our government agencies like the Ministry of Education (MOE), Infocomm Media Development Authority (IMDA), and the National Institute of Education (NIE) have acknowledged the importance and supported the introduction of computational thinking to students. [2]As quoted from Prof Looi, Head of Learning Sciences Lab, NIE,

"… what is urgent now for every education stakeholder is to start the learning journey – be it big or small ways – to prepare Singaporeans for the opportunities in the digital century."

In conclusion, coding can provide students with new ways of learning, thinking, and growing, both cognitively and emotionally. It is the training of the mind, and there is no better time to start than at the age when preschoolers' minds are like sponges. Not only will Coding provide your preschooler with a fun experience now, it is an authentic, powerful and rich context that can help meet a variety of educational objectives.

Article written by Gummy Code ® June 2019

References:
1. Why Children Should Learn to Code (https://www.teachontario.ca/docs/DOC-10734) 28 Feb 2019

2. Teaching – and learning – computational thinking is the key to preparing Singaporeans for the digital century (https://www.imda.gov.sg/infocomm-and-media-news/viewpoint/2017/11/computational-thinking-for-every-student) 30 Jan 2019