



Early Stage Development

with

QTROBOT

Curriculum Description:

This curriculum focuses on teaching skills related to the early age development of children in an engaging and step by step manner.

The curriculum is organized around **4 main levels**, based on **Developmental Milestones** defined by CDC covering the developmental age of **up to 48 months**.

Each level is broken down into several units covering a variety of skills related to **social, cognitive and language development**.

In each unit, QTrobot practices a new skill across a variety of stimuli and provides the learner with multiple trials to support skill mastery. The skills are then repeated in subsequent units to support the maintenance of the learnt skills.

In addition, QTrobot also actively involves the educator or parents in the sessions to facilitate the **generalization** of the skills and support the development of social interaction and collaborative play between the child and the trainer.

Who Can Benefit from Our Early Stage Development Curriculum?

The application of this curriculum is not limited for the learners on the autism spectrum. Individuals with other neurodevelopmental disorders and learning difficulties can also benefit from it.

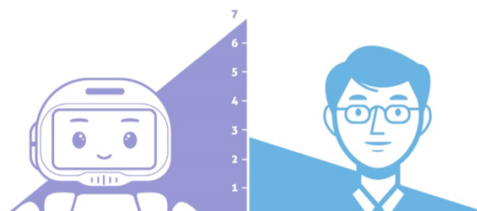
The curriculum can be used for the learners in the pre-school, primary or secondary school age as long as their developmental age and current learning objectives match this curriculum.

This curriculum can be used at home and in special needs education settings, as well as in mainstream schools to boost learning and help learners master social, cognitive and communication skills.

Science Behind the Curriculum:

Our Early Stage Development curriculum combines a variety of **Evidence-Based Practices**, shown to be effective in improving the skills of learners on autism spectrum disorder:

- QRobot uses **Modelling, Social Skills Training** and **Social Narratives** in teaching new skills to learners.
- It also uses **Verbal and Visual Prompting** to support the learners. Prompts are gradually faded out to support learners' independence.
- Stronger **Reinforcement** (verbal reinforcement combined with facial expression and physical movement) is provided to the learner upon showing progress in learning new skills. Reinforcement is faded over time when practising the skills to increase independence and natural responding
- Advanced units built upon and continue practicing the skills taught in earlier units to facilitate the **Maintenance of the learnt skills**.
- A core objective of the training is **Generalization**. The curriculum uses a variety of stimuli to facilitate generalization. In addition, the sessions include active involvement of the trainer where QRobot diverts the attention of the learner to the trainer and asks the learner to practice the skills with the human partner.
- QRobot as a **Technology Aided Instruction** facilitates the special need education by providing simplicity and frequent repetition. QRobot has been scientifically validated to improve the attention and engagement of learners with autism. Therefore, QRobot can improve the effectiveness of the training sessions.



More Than 2 Times Attention and Engagement*

* Costa et al, More Attention and Less Repetitive and Stereotyped Behaviors using a Robot with Children with Autism, Ro-Man 2018

Early Stage Development Curriculum Outline

Level 1: Developmental age of 0-18 months

Social

- Unit 1 Joint attention
- Unit 2 Gross motor imitation
- Unit 3 Imitation of one step action on objects
- Unit 4 Imitation of facial movements
- Unit 5 Imitation of sounds

Receptive Language

- Unit 1 Identification of common objects
- Unit 2 Identification of colors
- Unit 3 Identification of shapes
- Unit 4 Identification of animals

Cognitive

- Unit 1 Matching identical common objects
- Unit 2 Matching colors
- Unit 3 Matching shapes
- Unit 4 Matching animals



Early Stage Development Curriculum Outline

Level 2: Developmental age of 18-24 months

Social	Unit 1	Multi-step imitation in dance moves
	Unit 2	Imitation of animal sounds
	Unit 3	Respond to greeting by waving and saying hi
	Unit 4	Pretend play on self
	Unit 5	Pretend play on objects
	Unit 6	Simple turn taking and sharing
	Unit 7	Following one step directions
	Unit 8	Understanding stop and wait signs
Receptive Language	Unit 1	Identification of body parts
	Unit 2	Identification of food
	Unit 3	Identification of kitchen tools
	Unit 4	Identification of toys
	Unit 5	Answering Yes/No questions for common items
	Unit 6	Identification based on sounds
Expressive Language	Unit 1	Naming and labelling colors
	Unit 2	Naming and labelling shapes
	Unit 3	Naming and labeling animals
Cognitive	Unit 1	Matching by color
	Unit 2	Matching by shape
	Unit 3	Matching by size
	Unit 4	Sorting to similar
	Unit 5	Counting 1 to 3
	Unit 6	Matching by quantity of 1 to 3

Early Stage Development Curriculum Outline

Level 3: Developmental age of 25-36 months

Social	Unit 1	Answering basic social questions
	Unit 2	Advanced pretend play
Receptive Language	Unit 1	Identification of clothes
	Unit 2	Identification of bathroom items
	Unit 3	Identification of school supply
	Unit 4	Identification of spatial concept propositions (in-on)
	Unit 5	Identification of action verbs
	Unit 6	Discrimination of single/pleural
	Unit 7	Answering WHAT questions based on sounds
	Unit 8	Answering WHAT questions based on function
	Unit 9	Discrimination of size
	Unit 10	Identification based on combination of 2 adjectives (shape&color)
Expressive Language	Unit 1	Naming and labelling body parts
	Unit 2	Naming and labelling food
	Unit 3	Naming and labeling kitchen items
	Unit 4	Naming and labelling toys
	Unit 5	Yes/No answer to simple questions
	Unit 6	Naming and labelling in response to sounds
Cognitive	Unit 1	Matching letters
	Unit 2	Matching number signs
	Unit 3	Counting to 5
	Unit 4	Sorting to function groups
	Unit 5	Basic sequencing

Early Stage Development Curriculum Outline

Level 4: Developmental age of 37-48 months

Social	Unit 1	Basic greeting
	Unit 2	Personal distance
	Unit 3	Non-verbal greeting postures
	Unit 4	Alternative greetings
	Unit 5	Turn-taking in choosing a game
	Unit 6	Answering social questions
	Unit 7	Following directions in drawing and tracing
Receptive Language	Unit 1	Identification and discrimination of hot/cold
	Unit 2	Identification and discrimination of tall/short
	Unit 3	Identification and discrimination of wet/dry
	Unit 4	Identification and discrimination of long/short
	Unit 5	Identification and discrimination of heavy/light
	Unit 6	Identification based on two attributes (Size&Color)
	Unit 7	Identification and discrimination of gender
	Unit 8	Identification and discrimination of few/many
	Unit 9	Comparative (understanding -er)
	Unit 10	Understanding negative concept (not+verb)
	Unit 11	Spatial concept propositions (in front/behind)
	Unit 12	Answering simple WHAT questions based on story
	Unit 13	Answering simple WHO questions based on story
	Unit 14	Identification and discrimination of same/different
	Unit 15	Identification based on features of the items
	Unit 16	Identification and discrimination of fast/slow
	Unit 17	Answering WHAT questions for basic needs

Early Stage Development Curriculum Outline

Level 4: Developmental age of 37-48 months

Expressive Language	Unit 1	Naming and labelling clothes
	Unit 2	Naming and labelling bathroom items
	Unit 3	Naming and labelling school supply
	Unit 4	Naming and labelling action verbs
	Unit 5	Answering WHAT questions based on sounds
	Unit 6	Answering WHAT questions based on function
	Unit 7	Labeling spatial concepts (in-on)
Cognitive	Unit 1	Sorting to function groups
	Unit 2	Counting to 10
	Unit 3	Choosing based on quantity of 1-10
	Unit 4	reading universal signs

Best Practice Training and Repetition Intervals:

QTrobot and the educational curriculum are designed specifically for children with special need education and similar to any education materials for children with SEN, they are only effective when used consistently and frequently. In this manner, children can have enough practice to develop and master a new skill.

We recommend 4-5 lessons per week. Learners will benefit from frequent practice, and having QTrobot as part of a predictable routine may increase motivation and engagement for learners with ASD.

The duration of the sessions with QTrobot can vary from learner to learner. For example, in younger learners with less advanced skills, a session can be limited only to a few minutes and one unit at the time. But in older and more advanced learners each session may include practising several units at a time. The idea of using QTrobot for special needs education is to make learning fun and engaging. Therefore we recommend keeping sessions to a duration the child will enjoy and tolerates easily. It is advised to end a session early, and on a positive note where possible, if you feel frustration or anxiety may interfere with the session.

It is important to start the educational lessons from a level that matches the developmental age of learners. That's why we have developed an assessment quiz that can help parents and educators to estimate the best starting point in the curriculum.

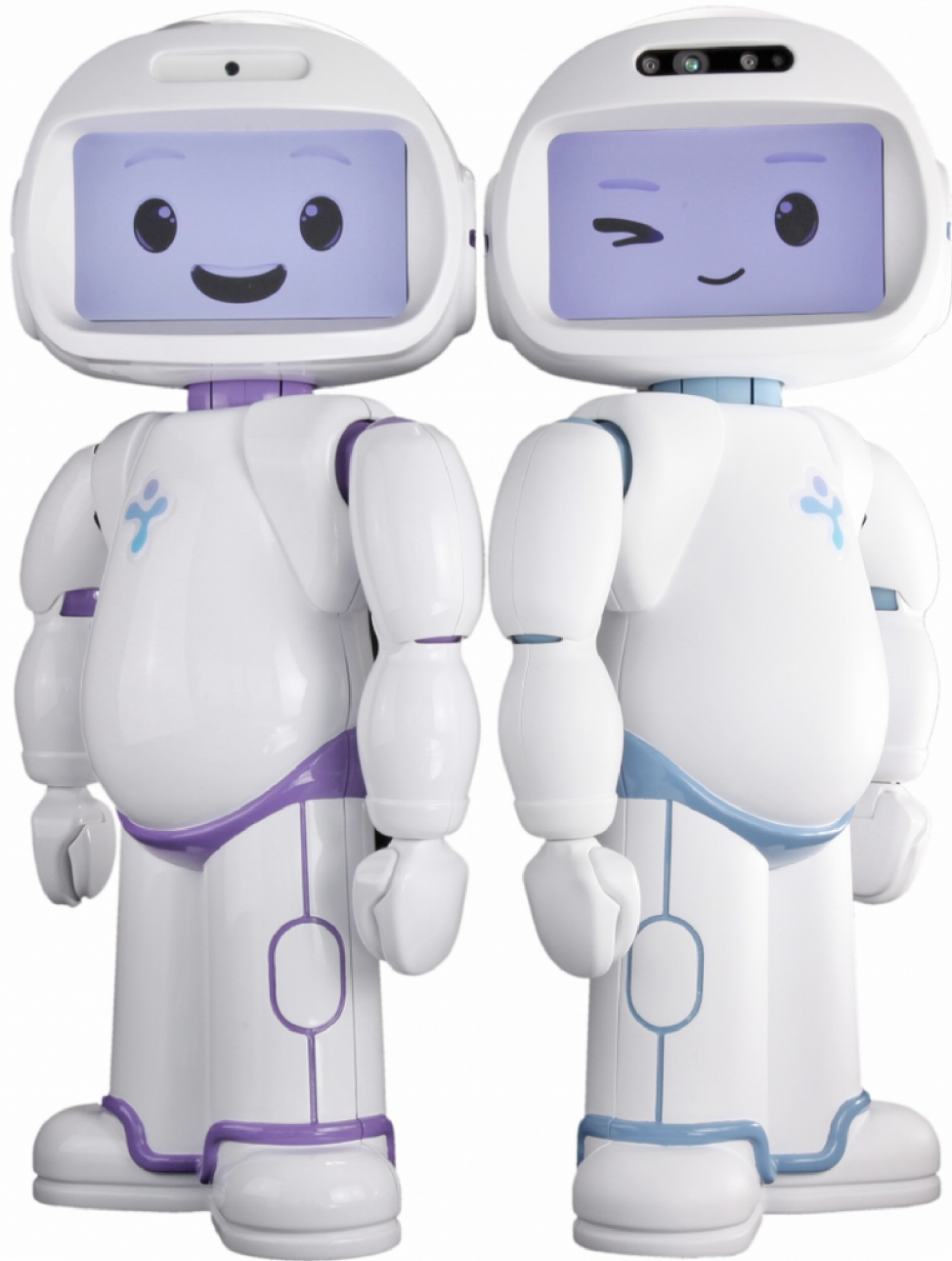
We expect the learners to show progress after a few times of practising each session. For example, we expect learners to be able to give an increasing number of correct responses when each unit is repeated and be able to respond more independently and with less support from their parents or educators. If a learner is not showing any progress after 3-5 times of practising a single unit and the score in the reporting is not increasing, then the learner and the learning environment should be re-evaluated, to find out about the possible reasons and the barriers. The reasons may include the learner not having the prerequisites and needing to focus on these first, or it can be that the prompting procedure from the educator or the parent is not effective and need to be improved. If the progress is not optimal, our team can support you to find and remove the potential barriers and modify the learning plan to address the challenge.

We propose to continue the educational units until the learner can respond correctly and independently to more than 90 % of the questions, in 3 subsequent sessions. In this case, we can consider the skill to be mastered.

When a skill is mastered, it is advised to practise the skill again in 1-2 weeks and repeat this at later times to help the learner maintain the learnt skill.

QTROBOT

Engaging, Reliable & Easy to Use



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