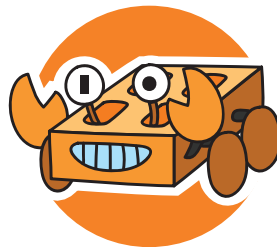
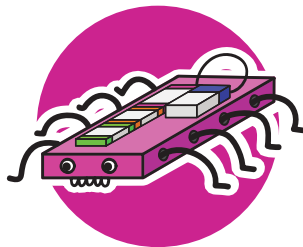


IIM PLAYmaker

PlayMaker aims to inspire children to PLAY and MAKE with tech toys,
sparking imagination and building creative confidence.



FOREWORD

“Young children can be inspired to create with technology, experiment, fail and try again, imbuing them with the confidence to be creative.

Technology is a tool to help children develop these valuable skills, when used in an age- and developmentally- appropriate manner with good pedagogy to facilitate children’s learning.

The PlayMaker resource guide has 40 curated lesson activities covering all the PlayMaker tech toys, and aims to guide educators to integrate technology effectively into their preschool curriculum.”



Acknowledgement

ASPIRATION CHILD CARE CENTRE
BETHANY CHILDCARE CENTRE
CALVARY BAPTIST KINDERGARTEN
CHEN SU LAN METHODIST CHILDREN'S HOME
CHINESE KINDERGARTEN
DAYSTAR CHILD DEVELOPMENT CENTRE (HOLLAND AVE)
DAYSTAR CHILD DEVELOPMENT CENTRE (JURONG WEST)
E-BRIDGE PRESCHOOL (504 YISHUN)
E-BRIDGE PRESCHOOL (615B EDGEFIELD PLAINS)
FAR EASTERN KINDERGARTEN
GLOBAL CHILD DEVELOPMENT CENTRE
GRACE CHILD DEVELOPMENT CENTRE
HEALTHY START CHILD DEVELOPMENT CENTRE
JURONG CHRISTIAN CHURCH KINDERGARTEN
KIDS' KINGDOM CDLC
LITTLE DOLPHINS PLAYSKOOL - CHOA CHU KANG BRANCH
LITTLE DOLPHINS PLAYSKOOL - CLEMENTI BRANCH
MACPHERSON SHENG HONG CHILDCARE CENTRE
MFS ANCHORVALE 2
MFS ANCHORVALE 3
MFS ANG MO KIO
MFS ANG MO KIO 3
MFS BEDOK 1
MFS BEDOK 2
MFS BEDOK 3
MFS BISHAN 2
MFS BISHAN 3
MFS BUKIT BATOK 2
MFS BUKIT PANJANG
MFS CLEMENTI 3
MFS COMPASSVALE 3
MFS COMPASSVALE 4
MFS EAST POINT
MFS GEYLANG EAST
MFS HAIG ROAD
MFS HOLLAND
MFS HOUGANG 1
MFS JURONG WEST 5
MFS JURONG WEST 9
MFS MARINE TERRACE
MFS PASIR RIS 4
MFS PASIR RIS 5
MFS PUNGGOL CENTRAL
MFS PUNGGOL SOUTH
MFS SENJA
MFS SERANGOON 3
MFS STRATHMORE
MFS TANJONG PAGAR
MFS WESTGATE
MFS WOODLANDS CENTRAL
MFS YUNG AN
MOE KINDERGARTEN@ FARRER PARK
MY WORLD @ ADMIRALTY
MY WORLD @ ANG MO KIO
MY WORLD @ KANG CHING
MY WORLD @ SIMEI
MY WORLD @ TAMPINES CENTRAL
MY WORLD @ TIONG BAHRU VIEW
MY WORLD @ UPPER SERANGOON VIEW
MY WORLD @ WOODLANDS
MY WORLD @ YISHUN
NEW LIFE COMMUNITY SERVICES
NOAH'S ARK CHILDCARE AND DEVELOPMENT CENTRE
PCF SPARKLETOTS KCARE CENTRE @ FRONTIER
PCF SPARKLETOTS KCARE CENTRE @ NEE SOON BLK 318A
PCF SPARKLETOTS KCARE CENTRE @ PUNGGOL GREEN
PCF SPARKLETOTS PRESCHOOL @ 88 SENGKANG SOUTH BLK 452
PCF SPARKLETOTS PRESCHOOL @ BISHAN EAST BLK 181
PCF SPARKLETOTS PRESCHOOL @ BOON LAY BLK 627
PCF SPARKLETOTS PRESCHOOL @ BOON LAY BLK 631
PCF SPARKLETOTS PRESCHOOL @ BRADDELL HEIGHTS BLK 335
PCF SPARKLETOTS PRESCHOOL @ BUKIT BATOK EAST BLK 208
PCF SPARKLETOTS PRESCHOOL @ BUKIT BATOK EAST BLK 241
PCF SPARKLETOTS PRESCHOOL @ BUKIT BATOK EAST BLK 271
PCF SPARKLETOTS PRESCHOOL @ BUKIT BATOK EAST BLK 285C
PCF SPARKLETOTS PRESCHOOL @ BUKIT PANJANG BLK 111
PCF SPARKLETOTS PRESCHOOL @ BUKIT PANJANG BLK 226
PCF SPARKLETOTS PRESCHOOL @ BUKIT PANJANG BLK 412
PCF SPARKLETOTS PRESCHOOL @ BUKIT PANJANG BLK 422
PCF SPARKLETOTS PRESCHOOL @ BUKIT TIMAH BLK 12
PCF SPARKLETOTS PRESCHOOL @ CANBERRA BLK 330
PCF SPARKLETOTS PRESCHOOL @ CANBERRA BLK 413
PCF SPARKLETOTS PRESCHOOL @ CASHEW BLK 183
PCF SPARKLETOTS PRESCHOOL @ FENGSHAN BLK 76
PCF SPARKLETOTS PRESCHOOL @ GAMBAS BLK 317
PCF SPARKLETOTS PRESCHOOL @ GEYLANG SERAI BLK 412
PCF SPARKLETOTS PRESCHOOL @ HONG KAH NORTH BLK 276D
PCF SPARKLETOTS PRESCHOOL @ HONG KAH NORTH BLK 319
PCF SPARKLETOTS PRESCHOOL @ HONG KAH NORTH BLK 419
PCF SPARKLETOTS PRESCHOOL @ JALAN KAYU BLK 517
PCF SPARKLETOTS PRESCHOOL @ JURONG SPRING BLK 527
PCF SPARKLETOTS PRESCHOOL @ KAMPONG CHAI CHEE BLK 135
PCF SPARKLETOTS PRESCHOOL @ KAMPONG CHAI CHEE BLK 424
PCF SPARKLETOTS PRESCHOOL @ KEAT HONG BLK 411



PCF SPARKLETOTS PRESCHOOL @ KEBUN BARU BLK 180
PCF SPARKLETOTS PRESCHOOL @ KEMBANGAN CHAI CHEE BLK 32
PCF SPARKLETOTS PRESCHOOL @ LIMBANG BLK 786
PCF SPARKLETOTS PRESCHOOL @ MACPHERSON BLK 31
PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 12
PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 15
PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 302
PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 302
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PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 334
PCF SPARKLETOTS PRESCHOOL @ MARSILING BLK 339
PCF SPARKLETOTS PRESCHOOL @ MOULMEIN-CAIRNHILL BLK 10
PCF SPARKLETOTS PRESCHOOL @ NANYANG BLK 922
PCF SPARKLETOTS PRESCHOOL @ NEE SOON EAST BLK 333D
PCF SPARKLETOTS PRESCHOOL @ NEE SOON EAST BLK 408
PCF SPARKLETOTS PRESCHOOL @ NEE SOON SOUTH BLK 781
PCF SPARKLETOTS PRESCHOOL @ NEE SOUTH BLK 446
PCF SPARKLETOTS PRESCHOOL @ PIONEER BLK 987D
PCF SPARKLETOTS PRESCHOOL @ PUNGGOL CENTRAL BLK 208
PCF SPARKLETOTS PRESCHOOL @ QUEENSTOWN BLK 145
PCF SPARKLETOTS PRESCHOOL @ QUEENSTOWN BLK 54
PCF SPARKLETOTS PRESCHOOL @ SEMBAWANG BLK 504A
PCF SPARKLETOTS PRESCHOOL @ SEMBAWANG BLK 755
PCF SPARKLETOTS PRESCHOOL @ SEMBAWANG BLK 789
PCF SPARKLETOTS PRESCHOOL @ TAMPINES CENTRAL BLK 856
PCF SPARKLETOTS PRESCHOOL @ TAMPINES CENTRAL BLK 868A
PCF SPARKLETOTS PRESCHOOL @ TAMPINES NORTH BLK 443
PCF SPARKLETOTS PRESCHOOL @ TAMPINES WEST BLK 942
PCF SPARKLETOTS PRESCHOOL @ TANJONG PAGAR-TIONG BAHRU BLK 130
PCF SPARKLETOTS PRESCHOOL @ TANJONG PAGAR-TIONG BAHRU BLK 1E
PCF SPARKLETOTS PRESCHOOL @ TECK GHEE BLK 310A
PCF SPARKLETOTS PRESCHOOL @ TECK GHEE BLK 415
PCF SPARKLETOTS PRESCHOOL @ TECK GHEE BLK 466
PCF SPARKLETOTS PRESCHOOL @ TELOK BLANGAH BLK 44
PCF SPARKLETOTS PRESCHOOL @ THOMSON-TOA PAYOH BLK 205
PCF SPARKLETOTS PRESCHOOL @ WEST COAST BLK 702
PCF SPARKLETOTS PRESCHOOL @ WEST COAST BLK 728
PCF SPARKLETOTS PRESCHOOL @ WHAMPOA BLK 105
PCF SPARKLETOTS PRESCHOOL @ WHAMPOA BLK 106
PCF SPARKLETOTS PRESCHOOL @ WOODLANDS BLK 652
PCF SPARKLETOTS PRESCHOOL @ YEW TEE BLK 543
PCF SPARKLETOTS PRESCHOOL @ YEW TEE BLK 567
PCF SPARKLETOTS PRESCHOOL @ YEW TEE BLK 608
PCF SPARKLETOTS PRESCHOOL @ YEW TEE BLK 682
PCF SPARKLETOTS PRESCHOOL @ YEW TEE BLK 690D
PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 108
PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 223A

PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 233
PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 251
PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 264
PCF SPARKLETOTS PRESCHOOL @ YUHUA BLK 317
PCF SPARKLETOTS PRESCHOOL @ ZHENGHUA BLK 528
PU TI CHILD CARE CENTRE
RAMAKRISHNA SARADA MISSION KINDERGARTEN
SASCO CHILDCARE CENTRE (BEDOK)
SASCO CHILDCARE CENTRE (BUKIT PURMEI)
SKOOL4KIDZ SENJA PARC VIEW
SKOOL4KIDZ WOODLANDS CRESCENT
SKOOL4KIDZ WOODLANDS RING
ST. ANDREW'S CATHEDRAL CHILD DEVELOPMENT CENTRE
THE SALVATION ARMY (BUKIT PANJANG CHILD CARE CENTRE)
THE SALVATION ARMY ANG MO KIO CHILD CARE CENTRE
THE SALVATION ARMY BUKIT BATOK EAST CHILD CARE CENTRE
THK CHILD CARE CENTRE @ MACPHERSON
THK CHILD DEVELOPMENT CENTRE @ MEMBINA
THK EDUCARE CENTRE @ AMK



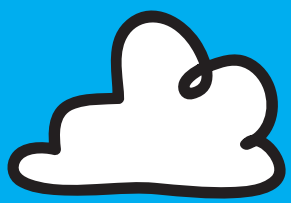
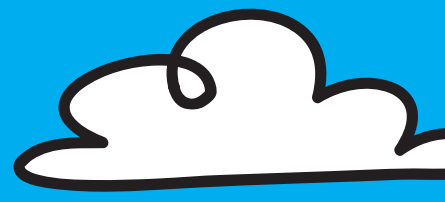
The IMPLAYmaker Story



The PlayMaker pilot programme, launched by the Info-communications Media Development Authority (IMDA) introduced a suite of technology-enabled toys to 160 pre-school centres in 2016 to enrich the learning experience for the children.

In an increasingly technology-rich environment, young children are progressively more exposed to various technological devices for communication, leisure and learning. There is no denial that these digital tools provide much enriched information and experiences to the children. It is thus important for educators to harness technology to provide more positive learning in the preschool classrooms.

The PlayMaker pilot programme offers child-friendly, technology-enabled toys that promote tactile and more kinesthetic experiences. These tech toys extend and increase the complexity of play that requires children to explore and find creative solutions. Guided by adults, children will acquire abilities like logical thinking, reasoning, sequencing, estimation and inventive thinking. The tech toys also encourage small group collaboration which will develop social and communication skills.



Events

PlayMaker was showcased at various events organised by the Early Childhood Development Agency (ECDA) as well as other statutory boards and agencies.

THE STRAITS TIMES

22 OCTOBER 2015

BOTS for TOTS

Yuhua PCF is the first of 160 pre-school centres here to pilot the Playmaker learn-as-you-play programme which aims to nurture logical thinking in kids from young



Pre-school teacher Nabillah Aisyah has been getting plenty of help from some tiny friends lately. Not the little kids that she teaches at Yuhua PCF, but tiny toy-like robots which are helping her to make her lessons come alive with greater interactivity and plenty of hands-on excitement.

With names like Bee Bot and Dash and Dot, these programmable bots are deliberately designed to look cute to appeal to the younger children. But beneath their toy-like appearances, they have huge potential to inculcate logical thinking, sequencing and reasoning skills as well as creativity and innovation abilities in young children.

The Bee Bot, for instance, is a bee-shaped robot with up, down, left and right arrows at the top of its yellow body. The Bee Bot can be placed on a large mat which is broken up into a 5 x 5 grid with numbers ranging from 0 to 25 printed in each square.

"At first, I will ask the child to draw a random number from a bag and then program the Bee Bot to move to that number on the grid," explained Nabillah. The child then has to key in the right sequence of directional buttons before sending the Bee Bot on its way. "If Bee Bot doesn't end up in the right square, we ask the child to try again and think about what he or she might have done wrong earlier," added Nabillah.

It is not as easy as it sounds. To move one square to the right of the Bee Bot, for instance, the child must first hit the right

button followed by the forward button. This is because the Bee Bot only moves forwards and backwards and the left and right buttons are instructing it to twist its body on the spot without actually moving forwards or backwards. Things can get complicated when Bee Bot has to make a series of twirls and turns to get to its destination, but that is exactly what it is designed to do - to encourage children to think about sequencing and logical thinking.

Yuhua PCF is the first pre-school centre here to test out the Playmaker programme. Under this programme, the Infocomm Development Authority (IDA) will invest \$15 million for 160 pre-school centres here to be equipped with the tech toys as well as ongoing tech support and training workshops to help educators integrate the use of the toys into their curriculum.

The Playmaker programme is part of the Singapore Government's Infocomm Media 2025 strategy that aims to keep Singapore at the forefront of the infocomm game and improve the quality of life of Singaporeans by identifying rising trends and adopting

"We are very excited that our Playmaker programme gives children the tools not only to have fun, but also to experiment and problem solve together, building up their confidence and creativity."

STEVE LEONARD
EXECUTIVE DEPUTY CHAIRMAN, IDA

key innovations early over the next 10 years. Equipping young Singaporeans with logical thinking and computational skills is one of the key tenets of Infocomm Media 2025.

Steve Leonard, executive deputy chairman of the IDA said: "As Singapore becomes a Smart Nation, our children will need to be comfortable creating with technology. We are very excited that our Playmaker programme gives children the tools not only to have fun, but also to experiment and problem solve together, building up their confidence and creativity."

As her words got better with Bee Bot, Nabillah ups the ante by asking them to draw strips of paper with Math questions on them, such as "4 and 2 make?" which forces the child to come up with the answer before programming the bot to move to number 6.

The kids at Yuhua PCF also got to play with circuit stickers, which are copper-plated stickers which they can cut and paste onto paper to design their own circuits, complete with switches, mini-LED lamps and tiny batteries. These are used to create greeting cards which light up when the card is opened up.

These tech toys are placed at a learning corner at the pre-school centre where the children get to visit during their daily experiential learning sessions where the bots and stickers are used to teach the children about Maths, Science and language skills.

Mary Herath, principal of Yuhua PCF, said that the Playmaker tech toys were extremely popular with the children. "They get all excited when it is time for their learning experience lessons. Next year, we will integrate these toys into our curriculum for both the K1 and K2 children," she added.

2025 THE INFOCOMM MEDIA 2025 PLAN

What are the upcoming technologies that Singapore as a nation should adopt to keep its competitive edge? How can these latest technologies be harnessed to help the local population live better, be more productive and lead more fulfilling lives? What skills should Singaporeans focus on to be future-proof in this fast-changing world where the only constant is change?

These are questions that any government in the world will ask to prepare its nation for the future. The Infocomm Media 2025 Plan is the culmination of the Singapore Government's efforts over the last few years to tackle these difficult questions, for which there are no clear answers.

This strategy was developed in tandem with continuous feedback from the industry and many of the initiatives to be rolled out under Infocomm Media 2025 are created ground up after many sharing sessions with the industry. You can call it "betting for the next 10 years" or you can see it as the Government's vision of what it needs to do to keep Singapore and Singaporeans at the forefront of the technology curve over the next decade.

Under the Infocomm Media 2025 Plan, three strategic thrusts have been identified. They are:

- Capitalise on data, advanced communications and computational technologies
- Nurture an infocomm media ecosystem that encourages risk-taking and continuous experimentation
- Connect people through infocomm media

To find out more about Infocomm Media 2025, go to www.mci.gov.sg/infocomm-media-2025

To find out more about the Playmaker programme, go to www.ida.gov.sg/playmaker

学前教育中



"电子毛毛虫"身上的每一截代表不同方向

胡洁梅 报道
ohkm@sph.com.sg

动脑筋思考如何将“电子毛毛虫”从一个地点移至另一个地点，托儿所乐心儿利用科技益智玩具激发孩童的思考能力。

学前教育中心乐心儿 (Skool4Kidz) 过去一个月在13所中心，在课堂时间融入“编码一小时” (Hour of Code) 学习活动。它是本地第一所响应“编码一小时”这项全球运动的学前教育中心。这项运动旨在鼓励各机构推广编码和科技学习活动，提

TODAY



TUESDAY 2 JUNE 2016



STUDY USES TECH-ENABLED TOYS TO INSPIRE THEM TO SOLVE PROBLEMS

Introducing circuitry, robots to pre-schoolers

NG JING YING
jingying@mediacorp.com.sg

SINGAPORE - Given the task of keeping lions away from a cowshed at night with the help of moving lights, pre-schoolers at Temasek Polytechnic's Preschool Learning Academy (PLA)@TP first thought of taping a torch onto their small robot.

But this proved too cumbersome, and the five- and six-year-olds decided to use another robot, which came with a light bulb attached. They brainstormed and programmed different travel patterns for the robot. After several rounds of trial and error, they successfully programmed the robot to move within the confines of a make-believe cowshed.

Their "task" was part of a pilot study using tech-enabled toys to inspire pre-schoolers to solve problems andinker with technology - the first such collaboration between the Infocomm Development Authority of Singapore (IDA) and a pre-school. The IDA had researched the impact of these tech-enabled toys in early childhood settings overseas before embarking on this study.

For 10 weeks between January and March, 35 children from Play@TP, an experimental kindergarten in TP, were exposed to toys and devices that required basic programming and electronics skills.

Mr Ang Teck Hua, director of the centre for child study, led the initiative. He said the aim was to discover

WHAT THE CHILDREN HAD TO DO

- Make Chinese New Year cards with LED stickers and copper strips.
- Connect electrical circuits to power up a light bulb and a mini fan.
- Plan a robot's travel pattern.

how technology could enhance learning experiences in early childhood: "With technology tools in the hands of students, how do they problem-solve and innovate?"

"It's not only about getting (the children) to sit down in front of computer screens and increasing their screen time, but there's also the hands-on element in making things," said Mr Ang. He and his team had documented qualitative observations of the children during the study, and said the findings have been positive.

During the initial weeks of the study, the Kindergarten One and Two children were tasked with making Chinese New Year cards with LED stickers and copper strips. They also learnt how to connect electrical circuits to power up a light bulb and a mini fan.

Subsequently, the children were taught how to plan their robots' travel patterns and introduced to robots that could be programmed to move in various directions via the simple punching of buttons or an iPad programme.

The pre-schoolers also played with more complicated robots that were programmed by scanning barcodes

depicting actions such as moving left, right, or forward.

Elaborating on the findings, researcher Ang Si Hui noted that the pupils were excited to figure out how the toys worked: "We found that (the children) were more keen to problem-solve using the toys and tried to help their friends to find solutions."

She added that at the end of the study, their teachers noticed that the children displayed greater concentration in completing their tasks and could persevere even on difficult challenges.

The plan is to extend the study over the next school term by introducing, say, environmental technological tools such as solar cells and getting the children to solve real-life problems, said Mr Ang. He does not rule out the possibility of expanding the study to more pre-schools, but this will depend on the findings of subsequent studies.

VIDEO AN HOUR WITH STUDENTS AT PLAY@TP

Scan the QR code or you can visit tdy.sg/videoatp2june for the video.



联合早报

联合早报 新加坡

心乐心儿：创意教学新意多



老师的指示，学生须动脑筋想想要如何给予指示，将“电子毛毛虫”从一个点移至另一个点。（邱启聪摄）

对科技的兴趣。乐心儿也获得资讯通信发展局（Info-communications Development Authority, IMDA）的支持，推行 PlayMaker 计划。资讯通信发展局（Infocomm Development Authority, 简称IDA，资讯通信发展局的前身）前年宣布，150万元为学前教育中心提供科技益智玩具，丰富孩童的体验。160所学前教育中心试行了 PlayMaker 计划，通过这类益智

玩具，激发孩童对科技的兴趣。乐心儿总监关燕玲说，“编码一小时”运动与校方提倡的科学、科技、工程、艺术和数学教学法一致。编码活动能激发孩子的想象力与学习兴趣，增进他们的信心。校方也大力支持教师接受相关培训。社会及家庭发展部长兼国家发展部第二部长李智陞昨天走访乐心儿位于义顺的大型托儿所，看学生如何通过科技玩具增进学习。他受访时说，编码与科技能

是未来经济所需的实用技能，学前阶段提供一个好的学习平台，让孩童通过玩乐学习新事物，可让他们认识未来所需的技能。其中一家乐心儿学前教育中心的校长罗宁垣指出，应用科技益智玩具使学习更有趣，学生更主动地发问并积极寻找答案。



扫描QR码
看电子毛毛虫
让学习更有趣

THE STRAITS TIMES

B12 EDUCATION

THE STRAITS TIMES | MONDAY, MARCH 16, 2015



Education Agency children use to make the most of the BeeBot machine at the opening of the PlayMaker Month at GANET on Feb. 16. PHOTO: SCIENCE CENTRE PRESENTS

Tech toys steal the show at school, playtime

Kids have a ball as cool gadgets prime them for Smart Nation

By Nishadha Kulkarni

They're not just toys, but also tools for learning. The Singapore Education Agency (SEA) has introduced a new initiative called PlayMaker Month, which aims to promote the use of technology in education. The initiative involves the use of various educational toys, including the BeeBot, a small robot that can be programmed to move in a specific pattern. The toys are designed to be fun and engaging, while also teaching children basic programming concepts. The initiative is part of the Smart Nation campaign, which aims to prepare Singapore for the future by promoting digital literacy and innovation.



Children can learn programming and other life skills through the use of the BeeBot robot. PHOTO: SCIENCE CENTRE PRESENTS



Children can learn programming and other life skills through the use of the BeeBot robot. PHOTO: SCIENCE CENTRE PRESENTS

The initiative is part of the Smart Nation campaign, which aims to prepare Singapore for the future by promoting digital literacy and innovation. The toys are designed to be fun and engaging, while also teaching children basic programming concepts. The initiative is part of the Smart Nation campaign, which aims to prepare Singapore for the future by promoting digital literacy and innovation.

News & Current Affairs

8 新闻及时事节目 NEWS & CURRENT AFFAIRS

23/09/2015

PlayMaker 计划：科技益智玩具 实践中建立逻辑思维



邱启聪摄

资讯通信发展管理局推出新的 PlayMaker 计划，引进新的科技益智玩具，让儿童在游戏中发挥创意、建立逻辑思维，并学习和同学合作解决问题。新计划明年1月展开，参与的学前教育中心多达160所。

要前进，后退或转弯，只须在小小蜜蜂背上，按下箭头按钮，小蜜蜂就能到达目的地，这个名为“BeeBot”的游戏，能让儿童学习如何规划，以及了解顺序和因果的关系。

至于这套利用铜箔胶带和电池，让LED灯泡发光的游戏，则教导孩童电路的基本原理。新 PlayMaker 计划，首先在裕华区这家学前教育中心推出。而裕华区就位于“智慧国”试验基地之一的裕华湖区里。

也是裕华区议员的总理公署部长傅海燕说：“我们这裕华区就跟一般的政府邻里中心一样的，资源一样，学童也一样。所以用它来作一个示范区，是有它一定的意义，就是这里可以成功的话，我相信新加坡很多地方都可以成功。”

资讯通信发展管理局副主李智陞说：“这不是应用程序，是需要亲身实践的，所以当孩童在学习如何完成程序时，他们看到的是小小蜜蜂在游戏板上跑，就能立刻给予反馈，他们每做一件事都能看到它的效果。”

这一项试验性计划为期一年，之后资讯局将同业界检讨计划的成效，进行必要的调整，希望最终能够将计划推展到全岛所有的学前教育中心，包括非主要业者。

Awards

LEFT & BOTTOM: Contested against 18 nominated projects across 10 ASEAN Member States in the Public Sector Category. IMDA PlayMaker clinched the Gold Award at ASEAN ICT AWARD 2017 on 30 Nov, 2017 at Cambodia.



BOTTOM: IMDA PlayMaker won Bronze at IMS Global Learning Impact Awards 2017 at Denver.



Judges highlighted that PlayMaker was a clear winner in the “Digital Resource, e-Text and Learning App Innovation Project Category” as the use of tech toys in the early childhood sector to create positive learning impact outcomes are evident and significant.

IMDA PlayMaker is also a Gold Recipient for MCI Family Innovation Award 2018 (Innovation Project) and was also awarded Excel Innovation Project at the Public Sector Transformation Awards 2018.



LESSON PLANS

Bee-Bot 16 - 45

- ASPIRATION CHILD CARE CENTRE
- CHINESE KINDERGARTEN
- HEALTHY START
- MFS ANG MO KIO (Bee-Bot & KIBO)
- MFS SERANGOON (Bee-Bot & KIBO)
- PCF SB789
- PCF TAMPINES CENTRAL
- PCF TAMPINES WEST
- RAMAKRISHNA SARADA
- SALVATION ARMY BUKIT BATOK EAST CHILDCARE CENTRE
- SKOOL4KIDZ WOODLANDS CRESCENT

Circuit Stickers 48 - 72

- LITTLE DOLPHINS CLEMENTI
- MFS EAST POINT
- MFS JURONG WEST (Circuit Stickers & Bee-Bot)
- MFS STRATHMORE
- MY WORLD KA CHING
- PCF SPARKLETOTS PRESCHOOL @ BOON LAY
- PCF WEST COAST BLK 702
- PCF YUHUA BLK 317
- THK MEMBINA

KIBO 76 - 103

- DAYSTAR HOLLAND
- E-BRIDGE YISHUN
- MFS JURONG
- MFS YUNG AN BLK 505
- PCF BISHAN EAST THOMSON
- PCF MARSILING
- PCF NEE SOON BLK 781
- PCF PIONEER
- PCF NEE SOON BLK 318A
- PCF YUHUA BLK 223A
- SALVATION ARMY BUKIT PANJANG CHILDCARE CENTRE
- THK EDUCARE CENTRE @ AMK

littleBits 106 - 130

- BETHANY CHILDCARE
- DAYSTAR JURONG
- KIDS KINGDOM
- MFS BEDOK (littleBits & KIBO)
- MFS PUNGGOL CENTRAL
- MFS WEST GATE (littleBits & Bee-Bot)
- MY WORLD TIONG BAHRU VIEW
- PCF BUKIT TIMAH
- PCF WEST COAST (littleBits & Bee-Bot)

Bee-Bot



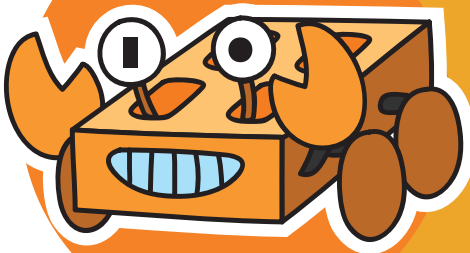
Bee-Bot is a colourful, easy-to-operate and friendly little tech toy that is perfect for teaching young children sequencing, estimation, problem-solving and planning skills. With forward, backward, left and right buttons, the children can program the little bee to where they want it to.

Circuit Stickers



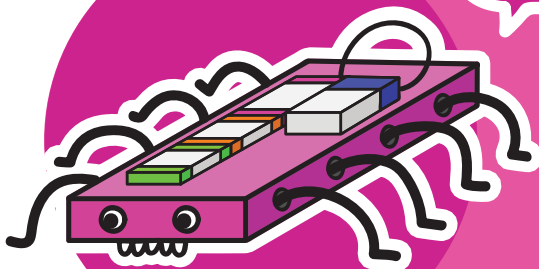
Circuit Stickers are peel-and-stick electronics for crafting circuits. With LED stickers, copper tape and batteries, young children can learn about electricity, simple circuits and LED lights, while having fun adding lights to their art & craft projects.

KIBO



KIBO is a tech toy specifically designed for young children aged 4-7 years old. It allows the child to create a sequence of instructions (a programme) using the wooden KIBO blocks, which he/she then scans the blocks with the KIBO body to tell KIBO what to do.

littleBits



littleBits makes a platform of easy-to-use electronic building modules which snap together easily with small magnets, empowering everyone to create inventions, large and small.

Learning Disposition Framework



**Sense of Wonder
and Curiosity**



Inventiveness



Appreciation



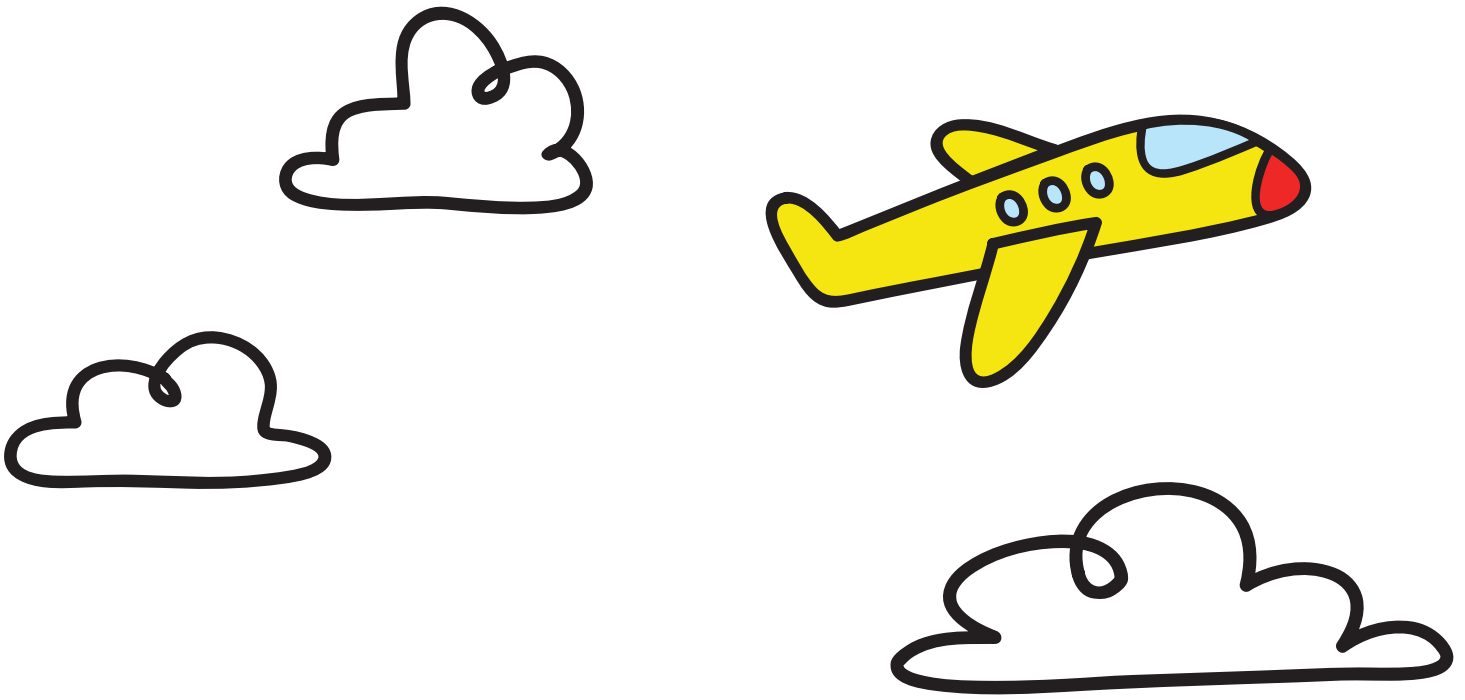
Engagement



Perseverance

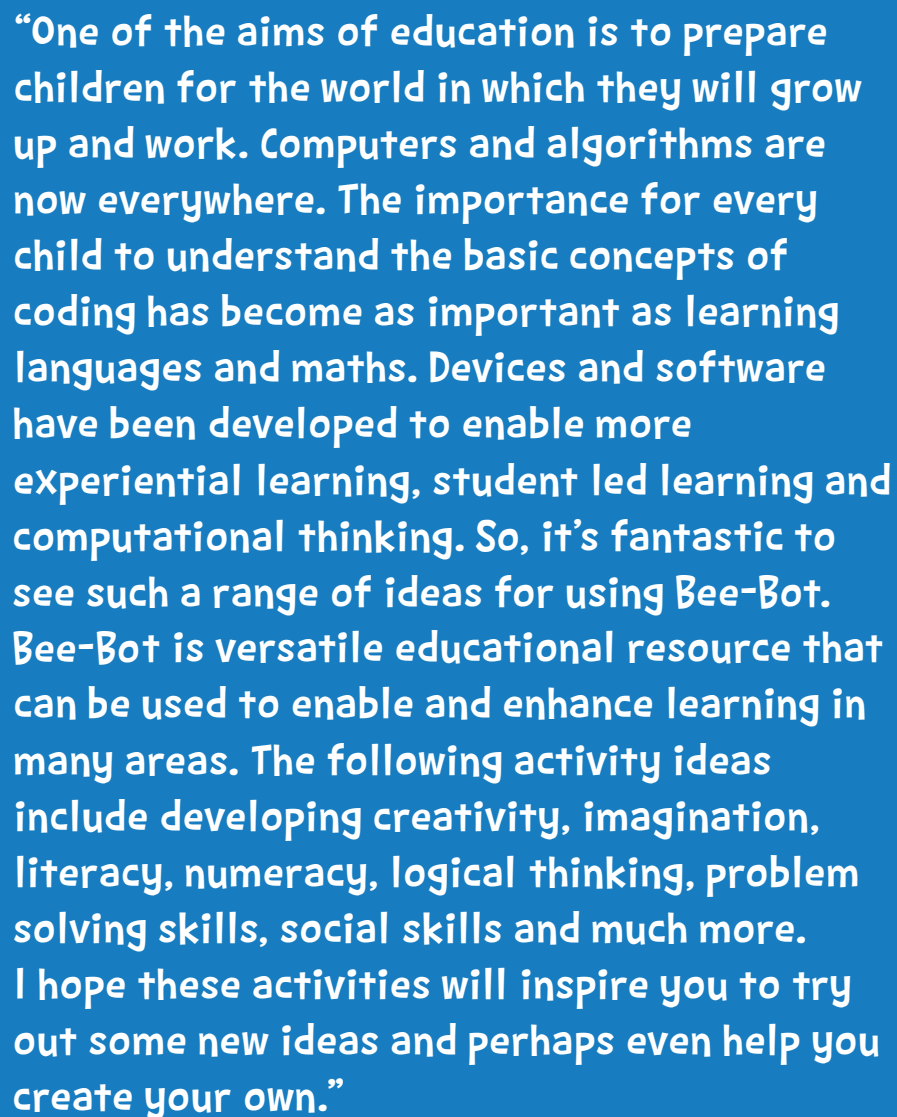


Reflectiveness



LESSON PLANS





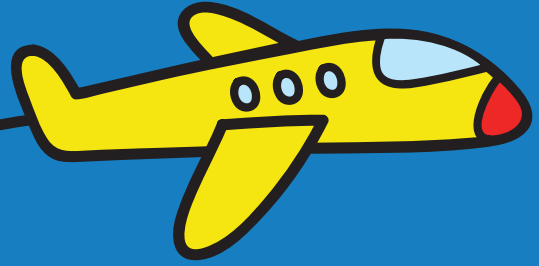
“One of the aims of education is to prepare children for the world in which they will grow up and work. Computers and algorithms are now everywhere. The importance for every child to understand the basic concepts of coding has become as important as learning languages and maths. Devices and software have been developed to enable more experiential learning, student led learning and computational thinking. So, it’s fantastic to see such a range of ideas for using Bee-Bot. Bee-Bot is versatile educational resource that can be used to enable and enhance learning in many areas. The following activity ideas include developing creativity, imagination, literacy, numeracy, logical thinking, problem solving skills, social skills and much more. I hope these activities will inspire you to try out some new ideas and perhaps even help you create your own.”

- Andrew Bush
- TTS Educationalist and Product Developer





Aspiration Child Care Centre



BOT SCOTCH ON THE GO | K1

LEARNING OUTCOMES

Children will be able to:

- Listen to instructions and execute different motor skill movements
- Control, co-ordinate & balance through gross motor activities
- Have self-regulation towards safety guidelines
- Develop a positive self-concept, feeling good about own competence
- Children able to build relationships while playing cooperatively in a group

LESSON INTRODUCTION

Teacher will use the tune “One Little Penguin” and adapt to the following lyrics:

*One little Bee-Bot said to another
Tell your sister, tell your brother
We're gonna do some actions today
Won't you come and play.
Turn left, turn left do some turning
Turn right, turn right do some turning
Move forward, move forward move to the front.
Move backwards, move backwards move to the back.
Everybody pause now.*

LEARNING DISPOSITION



Learning how to make the Bee-Bot moves towards the target



Playing the game to pass the obstacle course

MATERIALS

- 30 pieces toy picture cards (10 cards each group)
- 3 Bee-Bot mats
- 3 Bee-Bots
- 3 Balance beam
- 3 Baskets
- 3 Beanbags
- 24 Hula hoops
- 3 Boxes
- 3 Bee-Bot grid
- 30 pieces action cards



LEARNING DISPOSITION

1. Children will be gathered and lined up at the starting line in 3 groups: Pink 1 to Pink 8, Brown 1 to Brown 8, Purple 1 to Purple 7.
2. On "Go" (whistle), player 1 will pick a coloured token from the box to determine the starting point of the Bee-Bot on the mat. Tokens will be placed inside the red pail at the starting line.
3. Player 1 will go towards the Bee-Bot mat and place the Bee-Bot on its designated starting point depending on the token they picked. (Player will keep the token inside his/her pocket).
4. Player 1 will operate the Bee-Bot towards a picture card. Once Bee-Bot stops at a card, the player will pick a matching picture card from the box placed near the mat (with action words written at the back).
5. Player 1 then runs towards a series of obstacles to reach the ending point.
6. The player will complete the obstacles by hopping and jumping onto the hula hoops, balance themselves across a beam with a beanbag overhead and running in a zig zag line through the cones.
7. Upon reaching the end of the obstacle course, Player 1 will stand in a hoop and do the action scribed on the card they picked. (E.g. jump forward)
8. Once the player has completed the task/movement, the player will place the card on the grid to signify completion and run back towards the obstacle course.
9. The player will also need to put the token on top of the toy picture they matched a while ago so the next player will not repeat or take the same toy picture.
10. First group to complete the 8 cards on the grid will be declared as winners.

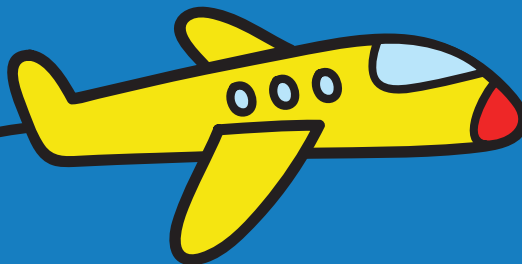
CLOSURE

Children will be asked to share their experience via questions:

- How was your play? What part of the game you find difficult to do?
- Which action you like the most and why?
- Which action you like to do again if you are given a chance to play next time?



Chinese Kindergarten



GO GREEN | N2

LEARNING OUTCOMES

Children will be able to:

- Count reliably from 1 to 10 prior to this activity
- Reuse materials like bottle caps and magazines to decorate Bee-Bot for the dance
- Talk about how to make Bee-Bot dance – by moving to the right, left, forward, backward, stop and in a circle
- Give instructions to Bee-Bot to make it dance to the music of 'Save My World'
- To take turns and work together in groups of 3 or 4 to decorate Bee-Bot, give a group name to their Bee-Bot and have their Bee-Bot dance to the music 'Save My World'

LESSON INTRODUCTION

1. Show children Bee-Bot. Use the Direction Cards to teach the children the use of the different buttons. Revise with children the use of the different buttons on Bee-Bot.
2. The following questions can be asked:
 - How to make Bee-Bot turn to the left? To the right?
 - How to make Bee-Bot move forward 2 steps? Backward 2 steps?
 - How to make Bee-Bot turn in a circle?
 - Tell children that by pressing the buttons, they can make Bee-Bot dance

LEARNING DISPOSITION



To communicate and interact respectfully with others

MATERIALS

- YouTube video: 'Save My World': <https://www.youtube.com/watch?v=s4pIQ238PFc>
- Bee-Bot Direction Cards – Left, Right, Forward, Backward, Pause, Clear
- Bottle caps, small pieces of paper cut out from magazines, scotch tape
- 5 Bee-Bots
- 5 white boards



LESSON STEPS

1. Show the video 'Save My World' to children.
2. Tell children that the song is about what we can do to save our world.
3. Show children some bottle caps and magazines. Ask children if these materials can be reused.
4. Briefly tell children that we can reuse materials around us. The bottle caps and magazines can be reused to decorate our Bee-Bots, so that our Bee-Bots can dance at our 'Save My World' party.
5. Tell children that they will have to work with some of their friends, to reuse the bottle caps and magazine paper to decorate their Bee-Bot.
6. Tell children that they will have to work with their friends to come up with a name for their Bee-Bot.
7. Divide the children in groups of 3 or 4. Give each group a Bee-Bot, some bottle caps, cut-out pieces of magazine and pieces of tape.
8. Teacher should walk about the different groups to assist in decorating and naming of their Bee-Bot. Once each group has named their Bee-Bot, teacher is to write down the name of the Bee-Bot on the small white board and display at the table.
9. Tell children they will have to take turns to give instructions to Bee-Bot to make Bee-Bot move and dance. Each child will need to give at least 8 instructions to Bee-Bot in order for Bee-Bot to dance according to the music.

CLOSURE

- Have each group place their Bee-Bot in the middle of their own working table. Have the children press 'GO' as the music 'Save My World' is played.
- Ask children if the Bee-Bot was able to dance in the way they wanted Bee-Bot to.
- Ask children what can they get Bee-Bot to do besides dancing. Ask if they can use Bee-Bot to do something for them e.g. help them pass a pencil to their friend?



FOLLOW UP ACTIVITY (30 MINS)

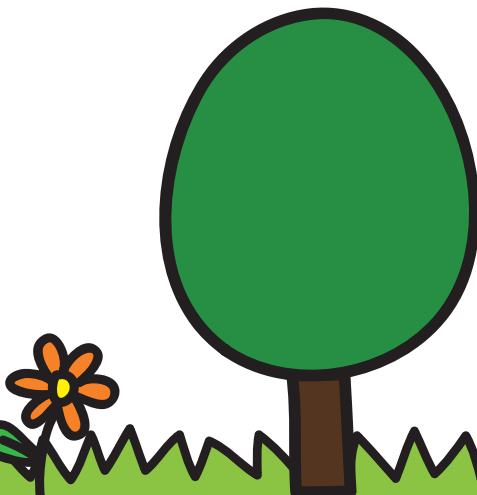
- Areas: Music and Movement, Numeracy, Social and Emotional Development

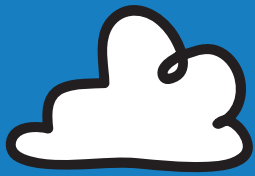
Learning Objectives:

- Children will be able to move their body in an 8-step dance action.
- Children will be able to give instructions to Bee-Bot to dance in the same 8-step dance action.

Process:

1. Ask children how they can dance to the music 'Save My World'. Teacher can suggest some movements to the children e.g. taking 1 step to the left, 1 step to the right, move to the front 1 step, move to the back 1 step and turning in a circle.
2. Write down the steps the children come up with on the Whiteboard. The number of steps should not be more than 8.
3. Have the children move in the 8-steps repetitively to the music 'Save My World'.
4. Ask the children if they can get Bee-Bot to dance using the same steps as them: What instructions should they give Bee-Bot in order to move in the same way?
5. Get the children to work in groups of 3 or 4 to program Bee-Bot.
6. Have Bee-Bot dance together with the children to the music 'Save My World'.

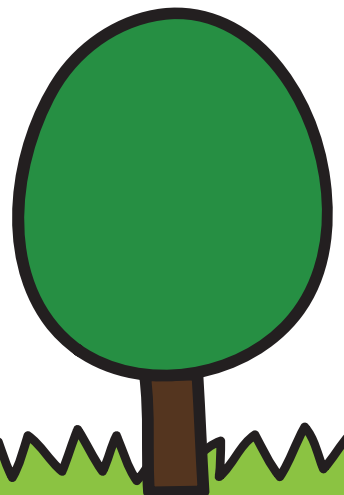
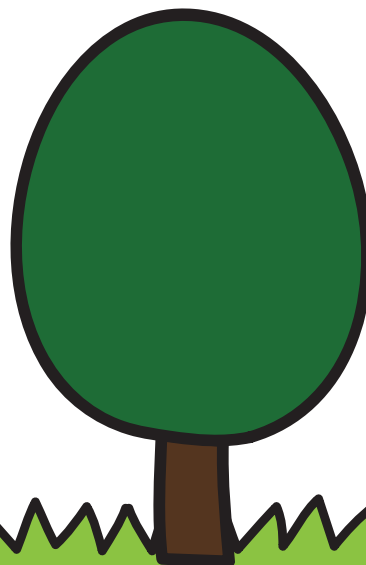




Additional Observations/ Any challenges to look out for?

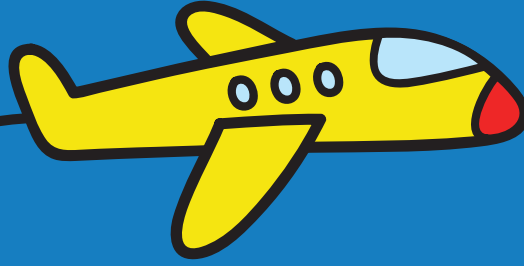
Use the following questions to evaluate the lesson:

- Are the children able to recall the use of the buttons on Bee-Bot?
- Are the children able to use the materials to decorate Bee-Bot?
- Are the children able to give instructions to Bee-Bot to dance?
- Are the children able to work in the small groups to decorate and name their Bee-Bot?
- Are the children able to take turns in their small group to give instructions to the Bee-Bot?
- Follow Up Activity: Are the children able to give instructions to Bee-Bot to have Bee-Bot move in the same dance steps as themselves?





Healthy Start



GOING TO THE STORE | K2

LEARNING OUTCOMES

Children will be able to:

- Read out price labels
- Direct the Bee-Bot from one location to another desired location

LESSON INTRODUCTION

1. Before this activity, children each drew a product (e.g. apple, a toy, colour pencils) and wrote a price for the product on a 15×15 cm square. Along with one square done by the teacher, these were placed into a 4×3 mat and a PVC plastic sheet was laid over the resulting grid.
2. To the tune of “everybody sit down, sit down, sit down”, have the class sing:

*We're going to the market, the market,
the market*

We're going to the market

*To buy some _____ (apples toys, colour
pencils*

LEARNING DISPOSITION

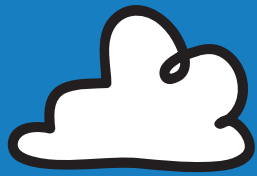


Practising how to read out price labels becomes more fun as the children can bring Bee-Bot shopping.

MATERIALS

- 15×15cm Blank Paper Sheets
- Writing and colouring materials (i.e. markers, colour pencils)
- Bee-Bots
- Blank Grid mat
- PVC Covering





LESSON STEPS

1. Children will take turns choosing what product they wish to buy, singing out in the blank, the child to the left of the child who choose will then say, "It costs ___" before programming the Bee-Bot to move to the relevant square.

CLOSURE

Sitting around the mat, ask the children if they have brought snacks or other things in supermarkets or stores. Discuss the procedure of paying for something (e.g. asking how much, handing over the money, waiting for change etc.) Talk about how they will have to do all of that in primary school when they buy food or stationary. Instruct kids to keep Bee-Bots where they belong.



How did the Tech Toy enhance the Lesson?

It added an element of fun to the lesson, as children had the opportunity to bring the Bee-Bot 'shopping', rather than simply practising how to read out price labels.

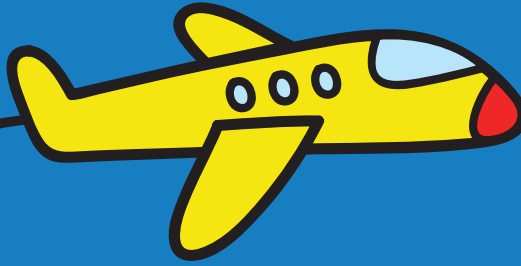
Additional observations / any challenges to look out for?

Depending on the ability of the child who is programming the Bee-Bot, there can be quite a long waiting time and children get bored waiting for their turn. One possible solution would be to photocopy the squares that children draw in order to form 2-3 mats instead. That way, the groups of children can be smaller, resulting in less waiting time.





MFS Ang Mo Kio 3



MONKEY KING ADVENTURES | K2

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Tell a story using KIBO and Bee-Bot
- Use environmentally friendly materials to create the characters in the story
- Encourage daring and creativity
- Learn to understand the environment, volcanoes, oceans and earthquakes
- Learn to understand animals - owls, eagles, sea turtles, dolphins, tigers
- Reading and comprehension

LESSON INTRODUCTION

Introduce how to use Bee Bot to the children, show them how the controls work, let children try using Bee-Bot.

LEARNING DISPOSITION



Children will learn perseverance by overcoming difficulties in the activity through teamwork and use of the Tech-Toys.

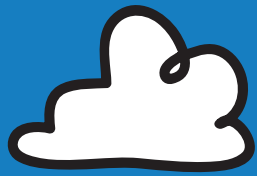


Children will exercise their inventiveness by creating the environment during the activity.

MATERIALS

- Bee-Bot
- Square Grid map
- Animal pictures
- Maps
- Arrow cut-outs
- Different coloured markers





LESSON STEPS

1. Demonstrate to children how to use the Bee-Bot.
2. Insert batteries into Bee-Bot, press the on button, press the instructions and press go.
3. Bee-Bot has 5 control buttons, introduce to children the usage of the 5 buttons.
4. Invite children to try Bee-Bot.
5. Remind children that before using Bee-Bot they need to reset the controls using the X button.
6. Teacher will tell the children, when Monkey king was saving his master, he encountered obstacles like the sea, volcanoes and earthquakes.
7. Ask children to discuss what animals must the monkey king transform into overcome these difficulties and save his master.
8. After discussion, children will use their own language to retell the story.

CLOSURE

Get children to sit down, let them recall the things they need to take note of and how to play with the Bee-Bot. Discuss what they have learned using the Bee-Bot during the lesson.



How did the Tech Toy enhance the Lesson?

Child A said that the Monkey King became an eagle and flew over a volcano to save his master. It shows that the child has exercised their imaginative creativity.

Through learning how to use Bee-Bot, children enjoyed learning the names of animals. Children were able to independently manipulate Bee-Bot, and are able to read many of the nouns, e.g., barriers, volcanoes, ocean, earthquakes, eagles, owls, dolphins, etc. When the children were playing with Bee-Bot, they liked to add in many different obstacles, and enjoyed the challenge of figuring out how to overcome them.



Additional observations / any challenges to look out for?

When the children were playing the game, only two children can control the Bee-Bot at one time. The waiting time was quite long, and some children lost patience and kept asking the teacher when is it their turn. In the second lesson the teacher introduced a map, while the team of two children planned the route on the map, the rest discussed the route of the journey, and this reduced the waiting time.

DAY 2

LESSON INTRODUCTION

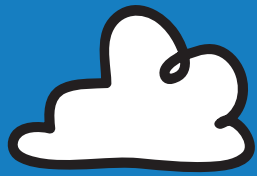
1. Introduce KIBO controls and direction arrow cards.
2. Children to use recyclable materials to make a Monkey King.

MATERIALS

- KIBO
- Some recyclable materials
- String
- Art paper
- Colouring materials

LESSON STEPS

1. Teacher to demonstrate how to assemble and use KIBO, and the things they need to take note off when scanning code.
2. Invite children to assemble and use KIBO.
3. Use recyclable materials to make Monkey King figure.
4. Put the completed Monkey King on the robot, do decorations, divide children into different groups to complete. Encourage children to be creative.
5. Small groups to display their Monkey King together with rhymes and songs learnt before, when using KIBO children to sing the rhyme 'little stone monkey'.



CLOSURE

Discuss the steps about how to use the KIBO and what are the things to pay attention to? What difficulties did they have?



How did the Tech Toy enhance the Lesson?

Teacher was able to teach children how to use KIBO, and the children were excited about learning, and really enjoyed using KIBO. They also enjoyed this activity. They were able to use KIBO, take part in group discussions, and complete and showcase their self-made Monkey King KIBO.

Additional observations / any challenges to look out for?

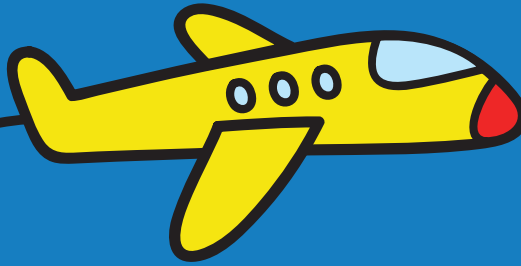
When using the scan, there were some who could not scan properly. Teacher asked the children how to solve the problem, after some thought, when the children tried an up-down movement, they were finally able to scan.

After scanning the code, pressing the buttons, and giving it instructions, KIBO moved according to the commands, children observed its actions to see if it followed their commands, and it did. Initially KIBO did not make any sounds, but they were delighted when it moved and the lights came on.

When asked why KIBO did not work when clapping their hands, some children answered that it was because it was scanned wrongly, or it did not manage to scan, or perhaps it was broken. When asked further, two children responded that they should try again. This time they scanned the code more carefully, input all the commands, and eventually it worked. When the children encounter challenges, they were able to initiate suggestions, discuss problems and repeat the steps until the end of the lesson.



MFS Serangoon


BEGINNING LETTER SOUNDS | K1
DAY 1
LEARNING OUTCOMES

Children will be able to:

- Discuss the story "Gregory, the Terrible Eater"
- Retell key events of stories in the correct sequence using appropriate cues and prompts
- Identify the things Gregory eats by their beginning letter sounds
- Produce correct sounds for initial letters

LESSON INTRODUCTION

1. Circle time routine.
2. Introduce the author, illustrator, title and the cover page of the storybook "Gregory, the Terrible Eater."
3. Read the story.

LEARNING DISPOSITION


Encourages children to participate in discussion of activity.



Allows the children to recall and talk about the sequence of the story.

MATERIALS

- Storybook "Gregory, the Terrible Eater"
- Pictures of food
- Blank Bee-Bot Grid Mat
- Bee-Bot





LESSON STEPS

1. Ask the children questions about the story. Questions for discussions and focus:
 - Who were the characters in the story?
 - What are the different food that is being mentioned?
 - What do you like about the story?
2. Introduce the rules of Bee-Bot.
3. Teacher shows pictures of the food Gregory eats and allows children to match it with beginning letter sounds.
4. Questions for discussions and focus:
 - Tell me what was the picture that you took
 - What is the beginning letter sound of the picture?
5. Children take turns to move the Bee-Bot and say the letter sounds.
6. Teacher encourages children to spell some of the words.

CLOSURE

- Gather the children to share about their experience today.
- Ensure they take turns to share about the activity:
 - What are the food pictures that are being told in the story?
 - What are the letter sounds learnt for the day?
 - Which part did you enjoy?





How did the Tech Toy enhance the Lesson?

Bee-Bot enhances the lesson by making the children more engaged. At the start of the lesson when the storybook was being read to them, they were able to predict that Bee-Bot was going to be used. As such, they were looking forward to moving the Bee-Bot after the story was read to them. Apart from that, during the discussion at the end of the activity, a majority of the children said that moving the Bee-Bot on the mat was their favourite part that they enjoyed the most.

Also, incorporating the use of Bee-Bot allowed the teaching of letter sounds through the food pictures based in the book. It made the lesson enjoyable for them. In this lesson, the children were able to move the Bee-Bot and say the letter sounds. Apart from that, they were also seen to be able to take turns with their peers.

Additional observations / any challenges to look out for?

As the children love listening to stories, I feel that the storybook “Gregory, The Terrible Eater,” was an effective way of introducing the theme “Food” for term 4. Since the book mentioned the different types of food that Gregory eats, it is also a good platform to introduce healthy and unhealthy food.

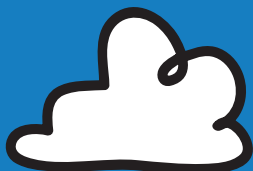
DAY 2

Lesson Introduction

1. Circle Time routine.
2. Recap what the children did in Day 1 with Bee-Bot.

MATERIALS

- Storybook, “Gregory, the Terrible Eater”
- Pictures of food
- KIBO



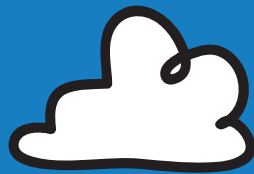
LESSON STEPS

1. Introduce the rules of using the KIBO.
2. Teacher demonstrates the usage of KIBO.
3. Storyteller tells the story while the KIBO user moves the KIBO.
4. Observer/predictor will predict the healthy/unhealthy food in the story.
5. Questions for discussion
 - What do you think are examples of healthy/unhealthy food?
 - What will happen if you eat unhealthy food?
6. Teacher asks if the food is healthy or unhealthy.
7. The Health and Safety Officer (KIBO user) will move according to whether the food is healthy or unhealthy.
8. Story continues till the end.

CLOSURE

- Gather the children to share about their experience today.
- Ensure they take turns to share about the activity.
 - How did you feel when using the KIBO?
 - Talk about your role for the day.
- Have a quiz about healthy and unhealthy food.
- KIBO will either shake or spin depending if the answers are correct or wrong.
- The winning group will receive a healthy milk from KIBO.





How did the Tech Toy enhance the Lesson?

The TechToy used for this lesson is KIBO. I observed that while playing with KIBO the children applied their problem-solving skills in the first part of the lesson when they noticed that KIBO did not light up after putting in the batteries.

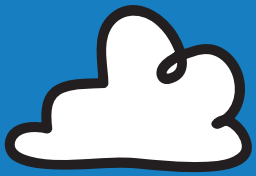
Instead of getting assistance from the teacher, they were able to figure it out together, in their small groups. For instance, one of them said, "Maybe we need to use new batteries then KIBO will light up." As they had gotten hands-on experiences prior to this lesson, they were seen to be able to put the different parts of KIBO together by themselves, independently.

Additional observations / any challenges to look out for?

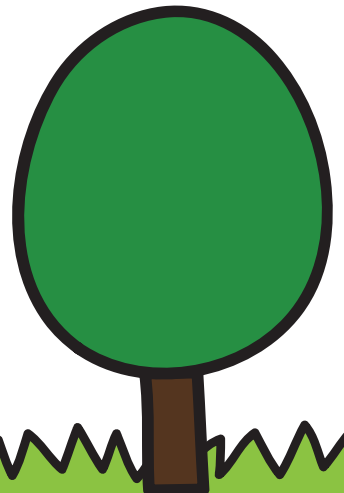
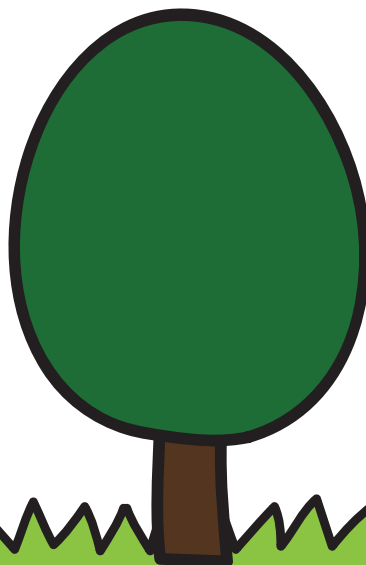
In this lesson, the different roles (storyteller, observer/predictor, KIBO users) that the children took on, allowed them to be more responsible in getting their roles done during the lesson. As the children also had tags for their roles, this also allowed them to keep focused.

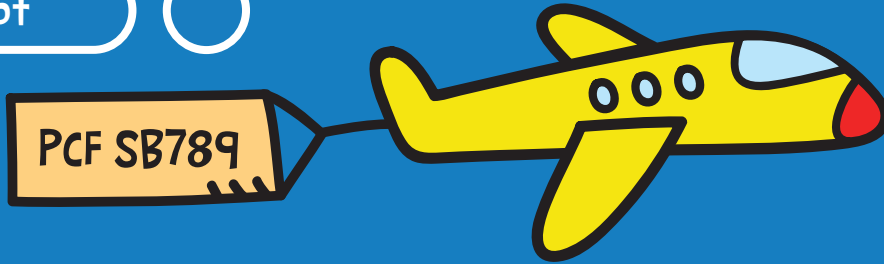
Apart from that, despite the story being read to them the previous day, they still enjoyed when the storyteller read the book to them. In fact, some of them read it together with the storyteller. At the end of the lesson, the majority also mentioned that they liked the role that they played, during the lesson. My role as a teacher in this lesson was mainly to provide guidance to the children when they needed help. The children were mainly involved in this lesson. From what was observed, despite having their own roles, they were still helping their friends when they were in need of help.





Bee-Bot





NUMERACY & LANGUAGE: COUNTING AND POSITIONS | K1

LEARNING OUTCOMES

Children will be able to:

- Use the term 'earlier'
- Listen and speak with understanding
- Understand the position forward and backward
- Recognise spatial concepts and simple patterns

LESSON INTRODUCTION

1. Teach children the song 'Hickory, Dickory, Dock' and encourage them to sing with action.

LESSON STEPS

1. Show a clock to children and bring their attention to the hour hand (the short hand) and the minute hand (the long hand).
2. Help children understand that when the long hand is pointing at 12 and the short hand at 1, it reads 1 o'clock.
3. Repeat step 3 to show the other on-the-hour times and get children to sing the song 'Hickory, Dickory, Dock' by changing the time according to that shown on the teacher's clock face (12 o'clock).
4. Say "It is 12 o'clock now. What time will it be one hour earlier? (earlier for Bee-Bot will be the back arrow).
5. Introduce the idea of 'earlier' using Bee-Bot.

LEARNING DISPOSITION



Think of different ways to execute their plans when the Bee-Bot does not act the way they have in mind.



Explore and figure out how to make the Bee Bot work as they want it to.

MATERIALS

- Clock
- Bee-Bot
- Grid Mat
- Number Cards



Example

- Child A takes a number e.g. 3. The child will have to move forward 3 times. Then another child will give him another number e.g. 2. So child A now has to move backwards 2 times.
- Teacher will show how to use the bee bot. Teacher spreads the mat on the floor and places the Bee-Bot at one end.
- Teacher then takes 1 number and presses the forward button according to the number that she has.
- Let a child take another number and give it to teacher. Teacher explains that she has to move backwards according to the number given and explain to the children that backwards, is 'earlier' for time.

CLOSURE

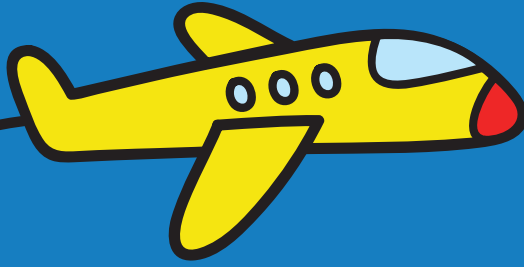
- Ask the children to make a sentence using the word 'earlier'.
- Get children to think about why the Bee-Bot did not move the way they thought it would. As a class, together figure out how the Bee-Bot moves.

How did the Tech Toy enhance the Lesson?

Children now understand the term 'earlier' for time. They were able to relate to Bee-Bot for explaining the idea of an earlier point in time by having Bee-Bot go backwards. The children need to practise for a few times in order to understand the concept. They were able to master it at the end of the lesson.

Additional observations / any challenges to look out for?

Children experienced some challenges while trying out the Tech toy. The toy did not act in the way they had in mind. While exploring in play, only one or two children were able to display the ability to conceptualize how to execute their plans.



EVERY DROP COUNTS | K2

LEARNING OUTCOMES

Children will be able to:

- Learn different ways of saving water
- Learn to read and match the bee bot to the correct pictures
- Able to read number words to match with the numbers
- Read words and numbers with understanding
- Express their thoughts and experiences
- Appreciate the world around them and it's natural resources

LESSON INTRODUCTION

1. Introduce different ways of saving water using picture cards.
2. Ask children when can they apply the methods; for example, in school, home and public places.
3. Get them to share their thoughts with the class how they save water at home and in school.

LEARNING DISPOSITION

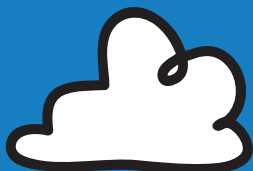
Learn to cooperate with peers



Learn to wait their turn and overcome difficulties.

MATERIALS

- Activity mat (Consists of pictures, sentences and numbers)
- Feely bag
- Number chips
- Bee-Bot



LESSON STEPS

1. Children to pick up a number chip from the feely bag.
2. She/he has to read the sentences aloud.
3. Then, they need to go the correct box by using Bee-Bot.
4. They need to count the appropriate numbers of boxes to turn right or left before reaching the correct answers.
5. Continue the activity with the children until everyone has finished.

CLOSURE

- Ask children how they feel about the game/activity.
- Prompt few questions after the activity (through teacher observations) e.g. do they now know how to save water?

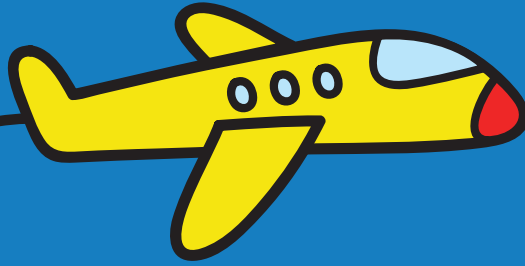
Additional observations / any challenges to look out for?

- During this activity, children seemed not only to learn how to read or move, they were seen doing problem solving, showing confidence and supporting each other when they were unsure. They were very involved and looking forward to the activity. They enjoyed the lesson, had great fun and showed an interest in learning.
- Some children were confused by directions and looked worried to play with Bee-Bot when it was their turn.





PCF Tampines West



COLLECTING NECTAR RACE | K2

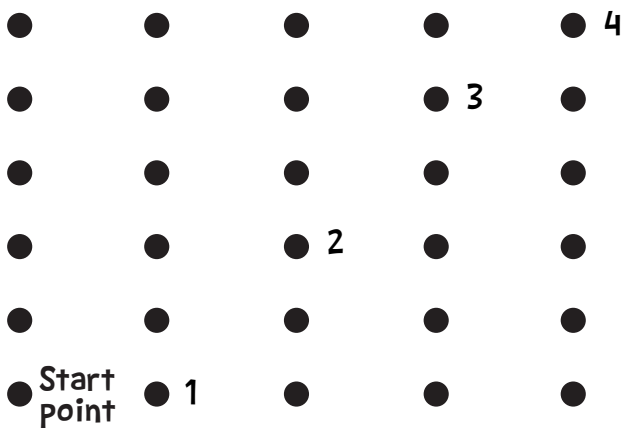
LEARNING OUTCOMES

Children will be able to:

- Communicate and cooperate with their peers
- Recognise spatial concepts and count distances
- Make use of all the commands to plan the route for Bee-Bot
- Execute the commands to move Bee-Bot to the intended locations on the grid mat
- Count on and add the number of points that they got from the activity

LESSON INTRODUCTION

1. Explain the game to the children.



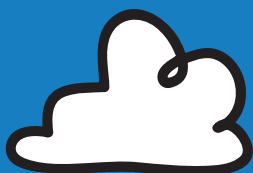
LEARNING DISPOSITION



To be able to successfully complete their challenge, children will have to display a respect for others and their different roles.

MATERIALS

- Laminated paper bee hive (1 per group)
- 4 different coloured laminated paper flowers (1 per group)
- Different coloured paper clips
- 4 different Role bangles: 2 planners, 1 navigator, 1 controller (1 set per group)
- Blank Grid mat (1 per group)
- Gridded Blank Paper for planning (1 per group)
- Writing/Drawing materials



LESSON STEPS

1. Children will pretend Bee-Bot is a bee. It has to move around to collect the 'nectar' which is represented by the paper clips on the flowers. The colour of the paper clips represents the number of points which is indicated on the flower.
2. The mission for this activity is to gain as many points as possible within the given time period.
3. Teacher to place the flower numbers 1 to 4 on the grid mat as shown above.
4. Divide the children into 4 groups.
5. Provide one laminated paper with grid lines and pre-drawn flowers, a marker and 4 bangles for each group.
6. Introduce the different roles of the group members.
7. Each group will have 2 planners (draw out the route on the laminated paper), 1 navigator (give instructions on what commands to press) and 1 controller (press the commands on Bee-Bot).
8. Children in each group will take turns to control the Bee-Bot and collect the paper clips.
9. The controller will move Bee-Bot to any of the flower.
10. When Bee-Bot reaches the flower, the child can take out 1 paper clip from the flower and place it at the back of Bee-Bot.
11. Then Bee-Bot has to move back to the beehive and put the paper clip on the beehive.
12. This will continue for about 10 minutes.
13. After 10 minutes, teacher will write the number of points collected at the white-board for each group. Children have to add up the number of points that each group has collected.

CLOSURE

Get the children to share about their experiences with the Bee-Bot.

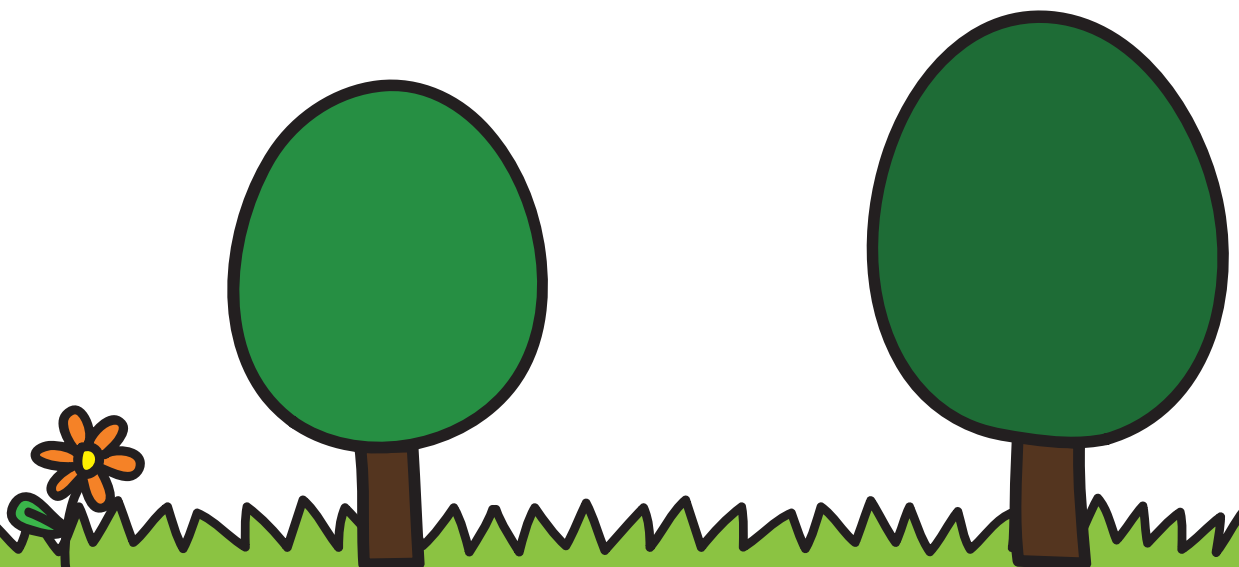


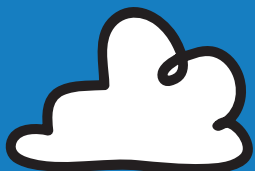
How did the Tech Toy enhance the Lesson?

In this lesson, children learn through play. Bee-Bot not only helps to develop their logical thinking and problem solving skills, it also gives them an opportunity for cooperative play, turn taking and taking up roles and responsibilities. It helps to develop the children holistically. Bee-Bot made the lesson more interesting and meaningful for the children and all the children enjoy playing with it. They will request for more time to play with Bee-Bot.

Additional observations / any challenges to look out for?

- Difficult for 1 teacher to facilitate all the children especially in the beginning when they start to play with Bee-Bot. May need more than 1 teacher in the first few lessons.
- Long waiting time for each child to have their turn to play with Bee-Bot. Have to give task to children who are waiting for their turn.
- Have to practice on using the commands of turn left and right as some children have difficulty understanding. Their Bee-Bot will end up turning round and round instead of turning once and then moving forward.





Reflections

In the first lesson, I introduced only a few commands such as Clear, Forward, Backward and Go to the children and the rules in handling Bee-Bot. I divided the children into small groups, the children were supposed to move the Bee-Bot from 1 child towards the next. I did not use any mat in this lesson. The children were enthusiastic in playing with Bee-Bot. They got excited watching Bee-Bot move and so they tended to press all the commands on Bee-Bot at the same time. This made it more difficult to facilitate the children's learning.

Subsequently, I tried to use a large grid mat for the lessons. I made my own grid mat using a transparent plastic sheet but the grid mat tore easily. Then I purchased another type of transparent plastic sheet which was thicker and more durable.

The waiting time for the children to play with Bee-Bot seemed to be too long so they tended to wander around the class. Hence, to keep all the children occupied, I introduced different roles for the children such as planner (planning out the route), navigator (gives instructions on what commands to press) and controller (presses the commands on Bee-Bot).

For the planners, in the beginning, I just gave them plain piece of paper for them to draw the route. Then I changed to a laminated sheet with grid lines and lastly, I edited the number of grids to be exactly the same as the one on the grid mat.

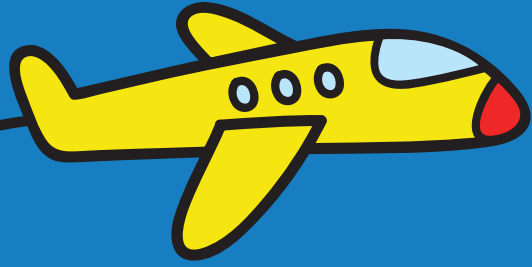
As my centre's niche programme is Lego, we tried to integrate Bee-Bot into our Lego lessons. Now the Lego models became the obstacles on the grid mat and Bee-Bot had to avoid the obstacles to get to the places they need to go. We tried to have a mission in the activity to make it more interesting and meaningful for the children.

The children enjoyed the activity and they would ask when they would have a chance to play again. Some of the children had difficulty planning the route and moving Bee-Bot to the destination. Maybe, I should only introduce Lego into the lesson when all the children had enough practice using the Bee-Bot.

For the next lesson, I will try to group the children based on their capability and this may help in the facilitation and the learning of the children.



Ramakrishna Sarada



COUNTING AND PROBLEM SOLVING WITH BEE-BOT | N1

LEARNING OUTCOMES

Children will be able to:

- Be able to recognise numerals 1-10
- Be able to count and correlate numerals 1-5 to dots
- Be able to count on and count backwards (1-5) in increments of 1
- Be able to listen and problem-solve

LESSON INTRODUCTION

1. Settle children in a circle.
2. Revise numerals 1-10 using the number cards.
3. Sing a number song:
1,2,3,4,5 Once I caught a fish...

LEARNING DISPOSITION



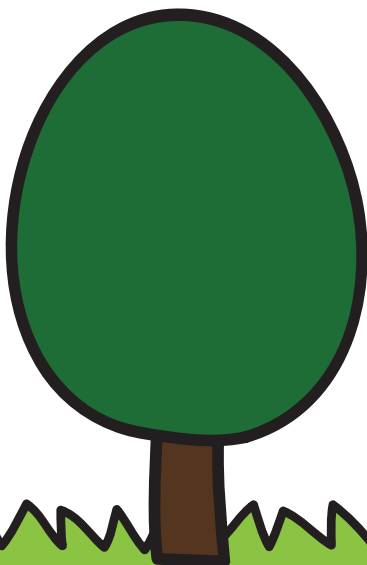
Learn while at play,
and come to enjoy learning.

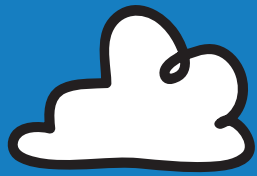


Learn to persevere in
completing the activity, and
to overcome challenges
while completing it.

MATERIALS

- Bee-Bots
- Number mats
- Numeral cards with dots 1-5
- Pebbles
- A box





Lesson Steps

1. Show children the number mat, Bee-Bot and the number cards with dots.
2. Revisit the function buttons on the Bee-Bot.
3. Explain to children that they will be working in pairs.
4. Children will be divided into 5 groups of 2 and each group will have a number mat, Bee-Bot and numeral cards.
5. Teacher will place a numeral card beside each mat.
6. Teacher will ask children to identify the numeral on the numeral card. (To check if children are able to identify the numeral)
7. Children will have to programme the Bee-Bot to move to the corresponding numeral on the mat as shown on the numeral card. Children will raise their hand when they have completed the task.
8. Teacher will change the numeral card to display a different number for the other child to programme the Bee-Bot to move to the corresponding numeral on the mat.
9. Teacher will have to ensure that the numbers on the numeral cards appears in ascending order for the children to move forward.
10. Teacher to emphasize that the Bee-Bot will have to move to the 'square' that shows the same numeral as on the numeral card.
11. Teacher will then use the cards with dots to extend the activity. (1-6)
12. Children will count the dots and programme the Bee-Bot to move to the corresponding numeral on the mat. Children will raise their hand when they have completed the task.
13. Teacher will extend the activity by encouraging children to programme the Bee-Bot to move forward in increments of $\frac{1}{2}$ or move backwards in decrement of 1 by showing another numeral card.

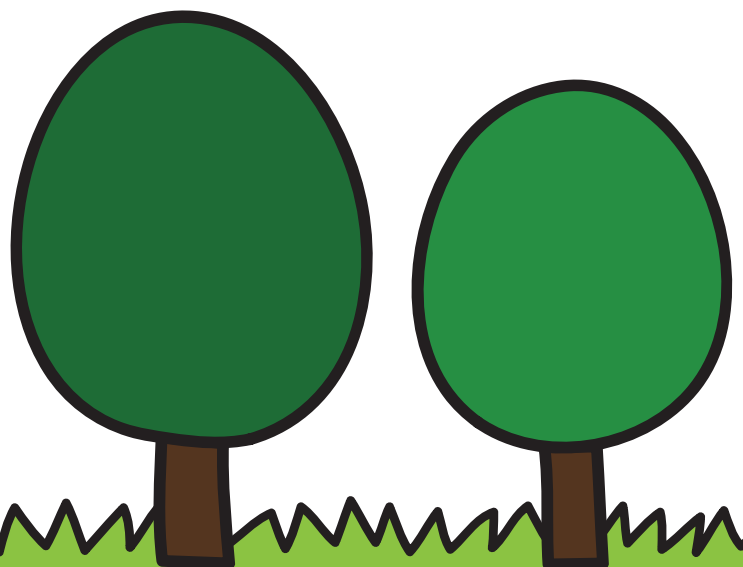


Question by teacher:

- Bee-Bot is at number 5. Bee-Bot wants to go back to number 4. What must you do? (When children are able to programme the Bee-Bot to move forward or backward, teacher can encourage children to programme the Bee-Bot to move back to '0'.)

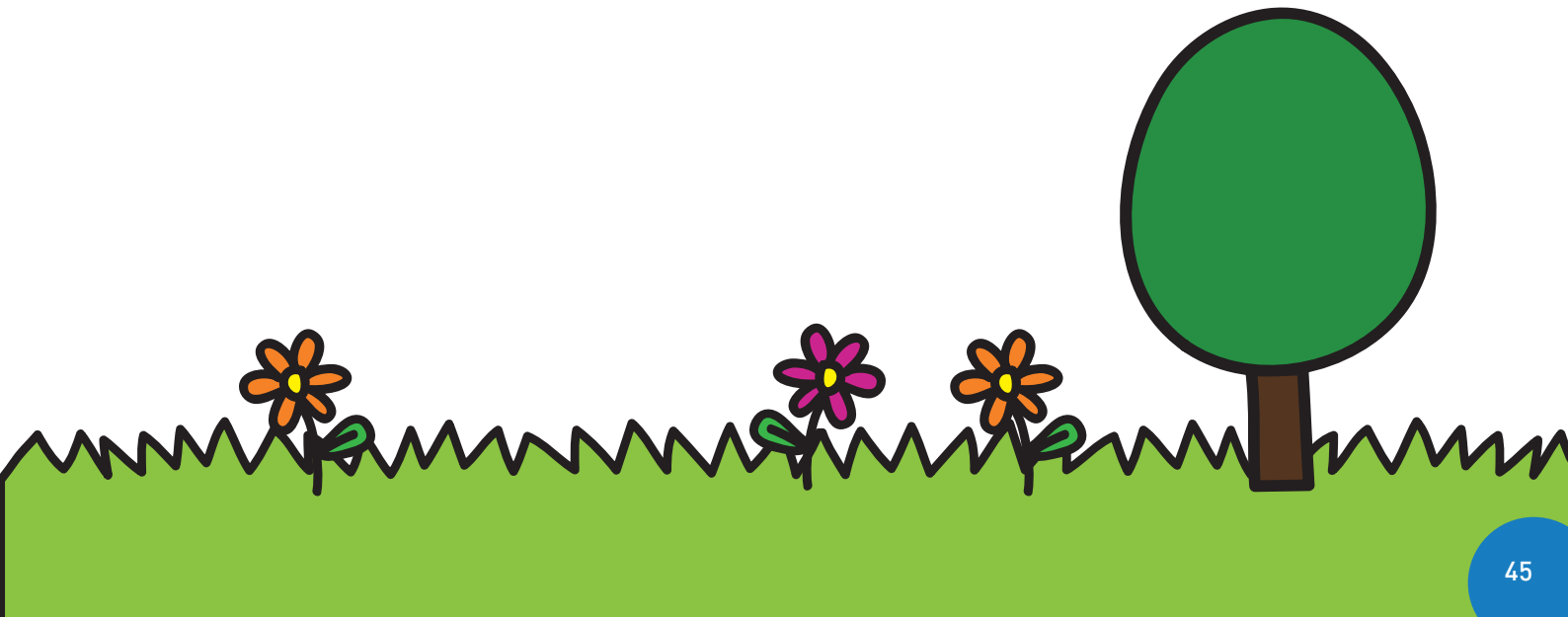
CLOSURE

- Gather children and place their mats beside each other.
- Narrate a story to children using the pebbles and box.
- Example: John likes to collect pebbles. One day, while playing in the park, he saw 2 pebbles. He picked the pebbles and put them in his box. As he was walking home, he saw 2 more pebbles. He took the pebbles and put them in his box. How many pebbles did he have in his box?
- Provide time for children to think about the answer and to programme the Bee-Bot to move to the correct number.
- Teacher to check the answer with the children by counting the number of pebbles in the box together with children.



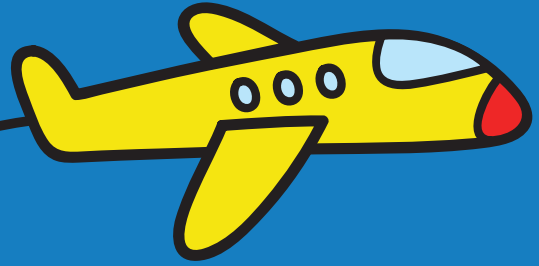


Bee-Bot





Salvation Army Bukit Batok
East Childcare Centre



LET THE BALLERINA DANCE | K1

LEARNING OUTCOMES

Children will be able to:

- Enjoy art and movement
- Gain fine motor and aesthetic development
- Recognise patterns and sequences

LESSON INTRODUCTION

1. Teacher will get the children to discuss what is patterning and show examples of each patterns – (AB, AAB, ABB, ABA, ABC) using magnetic shapes.

LESSON STEPS

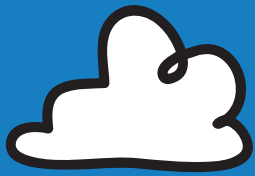
1. Children are divided into groups of four.
2. Each group is given a ballerina to colour. After which, using the circuit stickers each group will decorate the ballerina's tulle.
3. Children will discuss how to do patterning on the Bee-Bot. (e.g. AAB – forward, forward, turn left)
4. Next, children will stick their ballerina on the Bee-Bot.
5. After which, together as a group, they will make the Ballerina “dance” using the different types of patterns.
6. After completing the five different types of patterns, all the four groups' ballerinas will be placed at the starting point. One child from each group will come forward and program the Bee-Bot in the teacher's requested pattern, to make the four ballerinas dance coherently.

LEARNING DISPOSITION



MATERIALS

- Ballerina picture print out
- Colouring materials
- Magnetic shapes
- Circuit stickers
- Bee-Bot



CLOSURE

Children will share with their peers, which activity is their favourite and what they have taken away from the lesson.



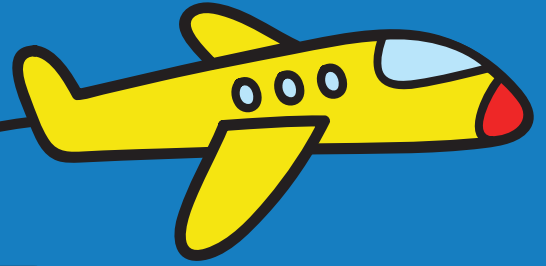
How did the Tech Toy enhance the Lesson?

As Bee-Bot is an aesthetically appealing Tech Toy, the children were easily being drawn to it. Bee-Bot is a user-friendly tool for the children to independently direct their own learning by being able to interact with it and program it themselves. As such, it is evident that children have successfully learnt about sequencing and patterning, as they will be able to program the Bee-Bot in an orderly sequence to demonstrate the various patterns as requested. Using these Tech Toys has successfully further sparked the children's interest in learning.

Additional observations / any challenges to look out for?

- Overall activity was pretty successful and fun. However, getting the children to light up the LED lights was harder than expected.
- As the two wires of the black box has a small exposure area, contact between it and the copper tape might not be consistent, which causes the LED lights to blink. Hence, it might be a challenge to take note of.





LEARNING OUTCOMES

Children will be able to:

- Identify the various planets in the Solar System using the Bee-Bot as a guide
- Enhance in their cognitive and spatial abilities to programme the Bee-Bot to move accordingly
- Work in groups and increase in their social emotional development

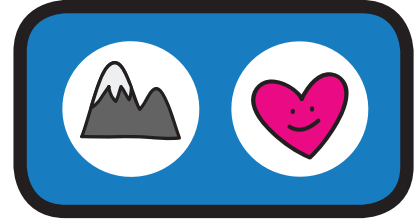
LESSON INTRODUCTION

1. Children are to programme Bee-Bot (for it to move) in search of the planets in the solar system.
2. Teacher will provide task cards / flashcards and place them onto the grid map.

LESSON STEPS

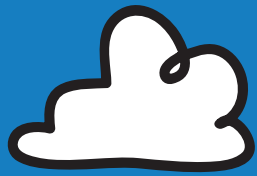
1. Upon selecting a task, (e.g. Which is the largest planet in the Solar System?), children are to programme Bee-Bot according to command buttons on it. This activity not only enables children to learn about the concepts, it also taps into their cognitive ability to programme and widen their spatial abilities. This will enhance their social and emotional development as they work in pairs/groups.
2. Teacher to divide the activity into two parts:
 - Children are to locate the various planets according to the task card(s) chosen with picture and word.
 - Children are to locate the various planets according to the picture card without word OR with word without picture.

LEARNING DISPOSITION



MATERIALS

- Questions related to our Solar System
- Grid mat
- Flash cards of pictures and names of planets
- Bee-Bot



CLOSURE

Discuss with the children on what didn't go well and how they overcame it.

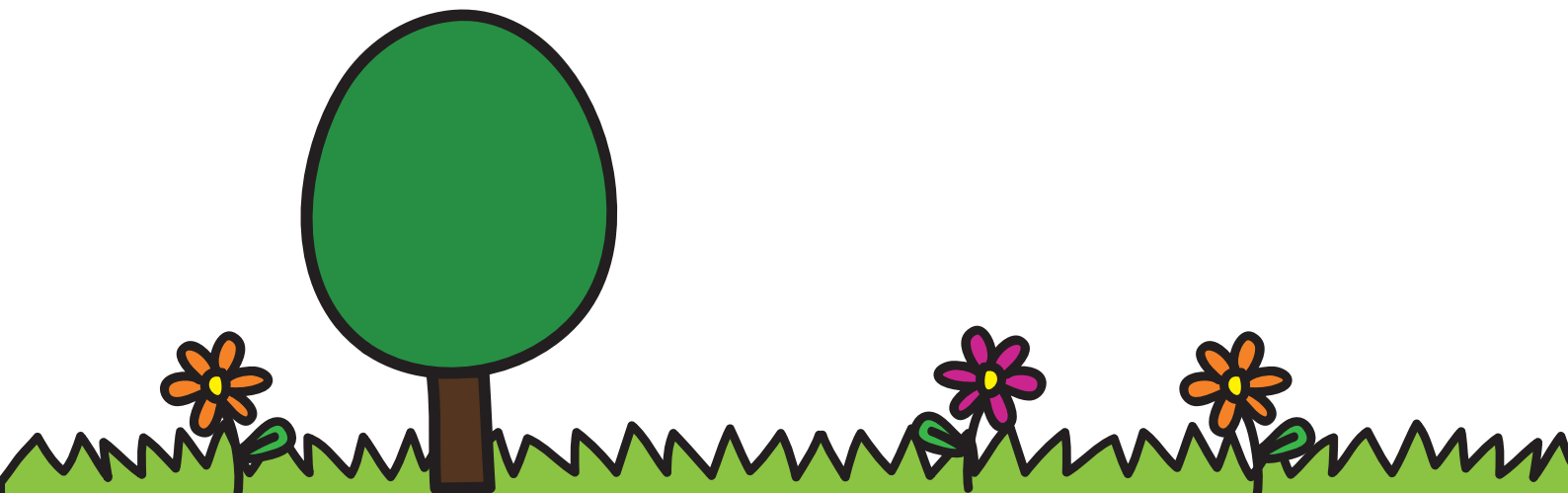


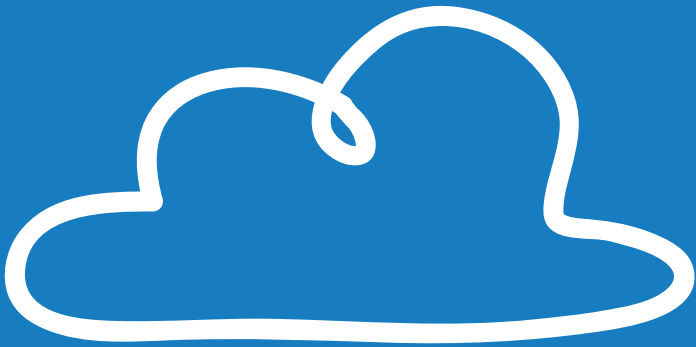
How did the Tech Toy enhance the Lesson?

Children are active and natural learners. They love to explore and love things that move or animate. Therefore, based on this learning disposition, Teacher had planned an activity that not only allows them to have fun with a Techtoy but to integrate learning in a more animated way.

Additional observations / any challenges to look out for?

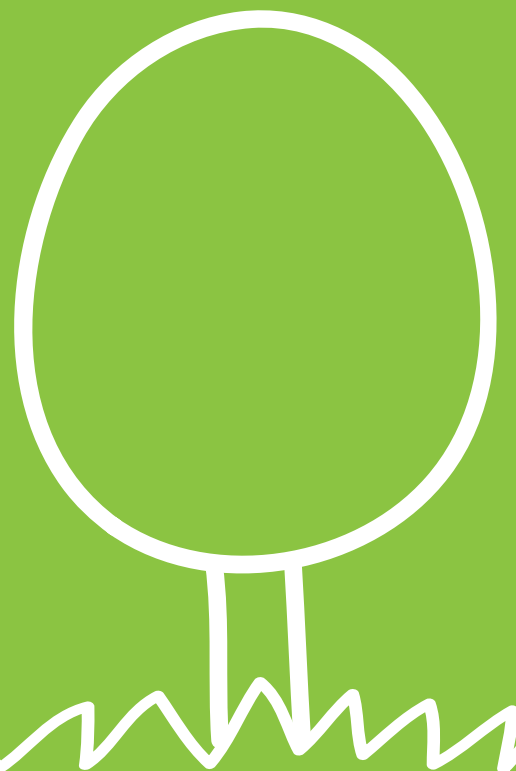
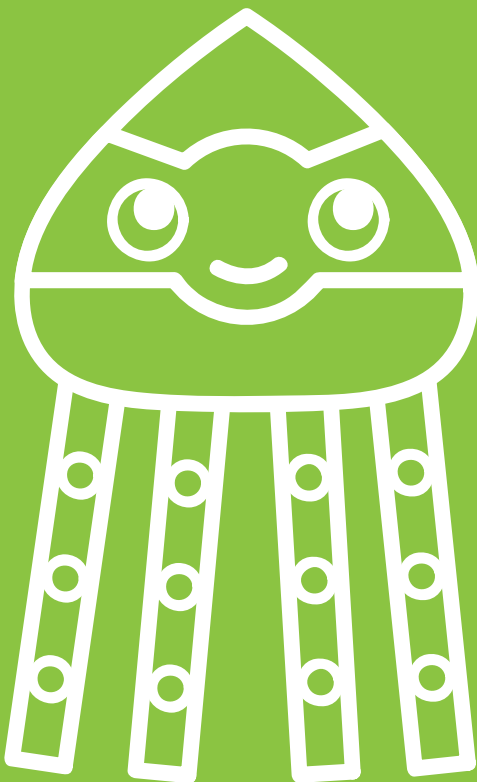
Children were observed to be excited and engaged throughout the entire activity. They practised turn taking and were very patient with the Bee-Bot as it moved slowly to one per square grid to another at a time. They also cheered on as Bee-Bot moved along the grids. For every wrong programming of Bee-Bot, they did not give up and tried to reach to their targeted " planet with the right programming.





“For young children, coding really isn’t just about learning how the gadget works or memorizing a specific set of codes per se but it really is about the HOT (Higher Order Thinking) skills behind coding - the idea of algorithms; it’s about playing while learning to think logically, sequentially, critically, and yet creatively to arrive at innovative solutions to a problem or challenge. This guide shows teachers how.”

- ∴ Jane Ching-Kwan, Ph.D.
- ∴ Curriculum Founder and Director, Skool4Kidz





Little Dolphins Clementi

CREATING A POSTER: NATURE & THE 3Rs | K2

LEARNING OUTCOMES

Children will be able to:

- Incorporate Circuit Stickers into their posters
- Create their own poster using their imagination
- Work collaboratively in a team

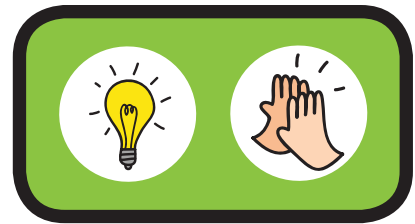
LESSON INTRODUCTION

The children are currently learning about the 3Rs – Reduce, Reuse and Recycle. This is an extension to their lesson on deforestation. They will be able to understand further after watching the movie “The Lorax” and a book titled “Captain Green and the Race against Waste” by the NEA (National Environment Agency). Discussion and sharing sessions are often used in relation to the above resources.

Prior to this lesson, the children have been instructed on using circuit stickers. However, the amount of time each child was exposed to the circuit stickers differs, some of them might still be at the awareness or exploration stage. They will be using these stickers to make posters to create awareness on the above topic – 3Rs.

The children will be invited to sit in a circle. They will recap and review on the previous lessons involving the 3Rs. The teacher will then introduce the main lesson to them by showing them a sample poster. The teacher will then go on to give the following instructions:

LEARNING DISPOSITION



MATERIALS

- Copper Tapes
- LEDs
- Batteries
- Scissors
- A3 Drawing Blocks
- Stationeries (markers, pencils)
- Decorative Materials (depends on children)
- Glue (white glue and glue stick)



Part 1: Drawing

1. Fold the paper according to your preference – landscape or portrait.
2. Draw and write messages on your poster.

Part 2: Identify LED lights

3. Once their drawing is done, use a red marker to mark their LEDs.
4. Make a hole using the pen given – may require assistance.
5. Turn the page. Draw your circuit and identify the following: Battery – circle, LEDs – triangle, Copper tape – lines.
6. Place the materials accordingly except for the batteries. Use teacher's batteries to check for lights.

Part 3: Decorate your Poster.

7. Before starting the main activity, the teacher will review the raw materials for the Circuit Stickers to refresh their memories.
8. The Circuits Stickers materials include LEDs, batteries and copper tapes .

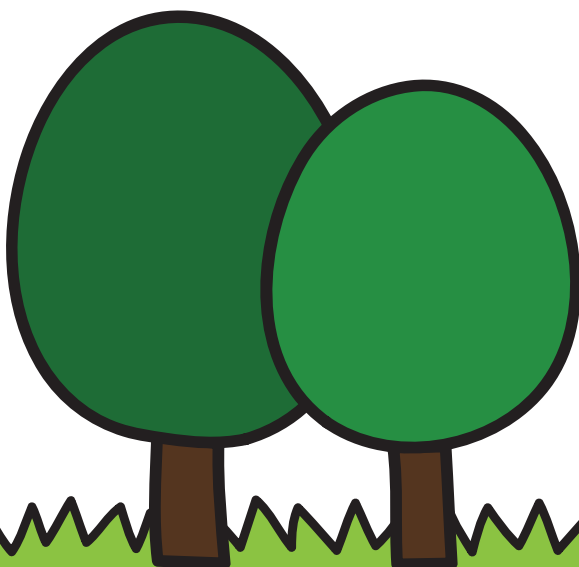
Teachers to remind children of the following:

- +ve and -ve should not be touching
- LEDs should be away from the border to have sufficient room for the copper tape and battery
- The LEDs should be facing in one direction
- Always turn off the battery (Teacher's battery holder) when not in used
- The children will come up with their own headings for the posters and the teacher will record them on a piece of paper to be used later



Questions to help encourage children in thinking about conservation:

- What are the 3Rs?
- Who are Captain Green's new friends? What do they do?
- Pulp reminds us about trees. Trees are one of nature's treasure. List down the importance of trees.
- What are the messages you wish to deliver/tell to others? Based on water, trees, 3Rs.





LESSON STEPS

1. After introducing the lesson, the teacher will get the children to sit around the table with stationeries placed in the centre.
2. The messages provided by the children will be placed near the table for them to copy.

Teacher will facilitate the activity by asking the following questions to provoke their thoughts:

3. Your message is about _____, what do you think you should draw?
4. Have you thought where your LEDs going to be? Will it be around the border or the centre of the poster?
5. Do you think the length of the copper tape give is enough? Do you need more?
6. Did you align the LEDs correctly? Have you test it out?
7. Once the children are done with Part 1 and 2, they are encouraged to decorate the poster using other materials besides the stationeries provided.
8. Now that your LEDs are working, you may start to decorate. Do you need other materials besides the stationeries? (encourage using other materials such as googly eyes, etc.)
9. What do you think you can use to make your poster more special?

CLOSURE

The teacher will invite the children to share their poster with the class and let them choose where they want to display the poster.



MFS East Point

LIGHT UP SHIRT | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Explore a variety of ways to design the shirts
- Experiment with a variety of techniques (e.g. crayon etching, cotton-bud painting splatter painting)
- Express their ideas through art
- Express and represent ideas, experiences and feelings (e.g. personal experiences field trips) through art
- Experiment with the Tech Toys and learn about using lights
- Recognise the way technology can influence our lives

LEARNING DISPOSITION



Practice perseverance in creating their T-shirt until it is finished

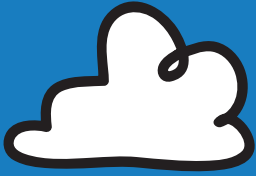


Curiosity and excitement about electricity and circuits when the shirt lights up



Create personal unique designs





MATERIALS

- Batteries
- Cotton T-shirts
- Circuit Stickers of various colours
- Copper Tape
- Corrugated board (measured to be able to fit on one side of the shirt)
- Photos of sample light-up shirts
- Paper
- Paint
- Permanent Markers
- Small stickers
- PVC sheet (measured to shirt size)
- Tape

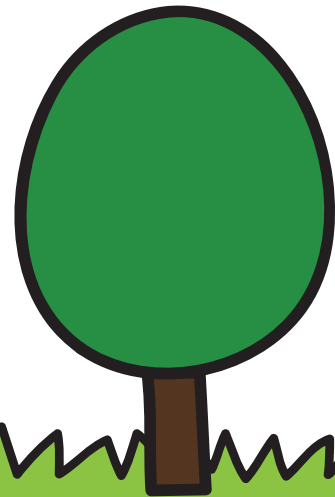
LESSON INTRODUCTION

Circle time routine:

- Introduce the Circuit Stickers and materials to the children.
- Have the children to explore the materials.

Questions for discussion and focus:

- What are circuit stickers?
- How do we make the Circuit Stickers light up?
- Why do they produce a different colour when it is lighted up?
- Show pictures of sample T-shirts that light up and get children to share their thoughts.
- Inform the children that they are going to create their very own T-shirt that lights up.





LESSON STEPS

1. Divide the children into two groups and distribute the materials accordingly.
2. Get children to plan and draft their personalized T-shirt design on a drawing paper.
3. Allow sufficient time for children to discuss and design.
4. Place the PVC plastic sheet over the drawn paper; tape both the paper and PVC plastic sheet down onto a flat surface.
5. Provide the children with permanent markers for them to transfer the design onto the PVC sheet by tracing the design.
6. When they are done, engage the children in a discussion about where they want their lights to show up on the T-shirt.
7. Guide the children in sticking the stickers onto desired placements of stickers onto the PVC sheet.
8. Remove the PVC sheet from the flat surface and place the corrugated board underneath the PVC sheet.
9. Guide the children in creating both the simple and parallel circuits onto the corrugated board using the copper tape and batteries. This step will take some time and trouble shooting.
10. After the circuits are done, have the children to select the colours of the Circuit Stickers that they would like to use and place them onto the corrugated board.
11. Troubleshoot with the children if the Circuit Stickers do not light up.

CLOSURE

- Gather the children and have them to share about the circuit they have created as a group using the Circuit Stickers.
- Have them to share about the shirt they have created as a group.
- Display the T-shirt at the Creative Arts Corner and have the children to document the process of them designing the T-shirt.

How did the Tech Toy enhance the Lesson?

The Tech Toy was an alternative way to introduce children to the concept of technology. Not only were the children able to explore the concept of electricity; they even created art work using the Circuit Stickers.

Prior to this lesson, there was a girl in the class who will occasionally put on her lighted up T-shirt after shower time. This sparked an interest in the children and they began to question on the possibility of creating a similar T-shirt. Thus, it led us to this project. Using the circuit stickers, the children were able to make and design their own shirts. The end result was amazing. The children's faces literally lit up when they saw how the shirts turned out.

From looking at photos, watching videos about how light travels, to creating their own circuits and even selecting different colours, this Tech toy brought out the creativity in the children.

Additional observations / any challenges to look out for?

Initially, the lesson was supposed to be a little different but when it came to doing the shirt with the children, I made some changes to better suit this project and to also make it a little more manageable for the children.

It was my first time creating a lighted up shirt. It was amazing to see how a group of children can cooperate with one another to create a shirt. Although the children had different ideas on the final design of their T-shirt, they were able to negotiate and problem-solve their disagreements. I observed that the outcome of the design was created from the group of children.

Once we placed the batteries, the T-shirt lit up. The children created the T-shirt from scratch; with the guidance from the teachers and consultant. The children were all very amazed with the end result, despite it being very challenging and time consuming. I felt that it was a memorable experience.

It was an amazing journey to be able to be part of this project where the children really saw and experienced for themselves how technology can be more than just iPads, iPhones, computers and TV. Technology also allows many opportunities for ideas, for designs and for dreams to become a reality, like how our lighted up T-shirt became a reality.



DAY 2

LESSON INTRODUCTION

Circle Time routine:

- Reinforce the knowledge of simple and parallel circuits by showing them the different circuits and also how both circuits are present in our everyday lives. (e.g. street lamp, school ceiling lights, light bulbs)

LESSON STEPS

1. Gather the children in their respective groups.
2. Have the children to decide how the design on the shirt should be like and place the corrugated on the inner side of the shirt so that the design placed at the front of the shirt are aligned.
3. After which, attach the PVC onto the front of the shirt using tape.
4. Attach the corrugated board with the Circuit Stickers facing the inner side of the shirt using Velcro. This is done so that the corrugated board can be removed easily if troubleshooting is required.
5. Have the group to share with the rest of the class their completed shirt through a show-and-tell session.

MATERIALS

- Cotton shirt that light can shine through
- Completed circuit taped onto the corrugated board. (From day 1)
- Drawing paper
- Drawing materials
- Velcro





CLOSURE

Display the T-shirt at the Creative Arts Corner and have the children to document the process of them designing the T-shirt.

How did the Tech Toy enhance the Lesson?

If we were to create a T-shirt without the circuit stickers, it will be a shirt with embellishments, paints and maybe using other mediums to create their very own T-shirt. However, when we brought in the Circuit Stickers for them to use it on a shirt, I think it enhances the children's thinking. It allows them to think and imagine way beyond their abilities. The circuit stickers further enhance their creativity.

Additional observations / any challenges to look out for?

In my opinion, this lesson brought lots of positive outcomes. I can see the children learnt to work together, persevered when faced with challenges and they put in a lot of effort to produce a great outcome. The facilitation from the teachers played an important role in encouraging the children to experiment, experience working in groups and having a common goal.





MFS Jurong West

LET'S DELIVER! | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Name, describe and interpret relative positions in space
- Name, describe and interpret direction and distance in space
- Demonstrate understanding that numbers can be used to indicate order (e.g. 1st, 2nd, 3rd)
- Count with one-to-one correspondence up to 10 or more
- Combine 2 sets of objects and indicate how many there are altogether

LESSON INTRODUCTION

1. Circle time routine.
2. Get children to share about what they know about food delivery.
3. Introduce the different cultural houses and food.
4. Allow children to match the food to the house.

LEARNING DISPOSITION



Develop curiosity by learning about different cultures and cuisines



Solve problems by persevering and working together with their peers

MATERIALS

- Bee-Bot
- Circuit Stickers
- Puzzles of different cultures' food (Indian, Malay, Chinese and Peranakan) (Annex 1A)
- Task cards stating number of lights for circuit stickers (Annex 1B)
- Different houses (Indian, Malay, Chinese and Peranakan) (Annex 1C)



LESSON STEPS

1. Children will be split into 2 groups of 4 and one group will be assigned as the deliveryman and the other group will be assigned as customers who ordered the food.
2. Teacher must demonstrate the activity to the children based on their roles.
3. There will be a feely box filled with puzzle pieces of different type of ethnic food for Indian, Malay, Chinese and Peranakan.
4. Teacher will have to brief the 2 different groups of their roles.

Roles of a Delivery Man:

- Pick up the puzzle pieces of different ethnic group and identify the different food match with the ethnic group.
- Attached the puzzle on the Bee-Bot.
- Program the Bee-Bot to take the correct steps to the ethnic house.

Questions for discussion:

- How can we move the Bee-Bot to get to the house?
- How many steps must you take to move forward/backward/right/left?
- What is the next button we should press?
- How many more steps do we need to take to reach the house?

Roles of a Customer:

- Each customer will choose a task card to complete a circuit.
- Customers will need to use the lights to connect on the Circuit Stickers and batteries.
- Customers will need to count and verbalize the number of lights altogether e.g. There are 5 lights altogether.



Questions for discussion:

- How many more lights do you need?
 - Where can we place these lights?
 - How many LED lights are there all together?
 - How many more lights do you need to make 5?
5. As the deliverymen completes his delivery of food, children will have to notice and name the order of the Bee-Bot that reaches the house. E.g. First Position: Indian House, Second Position: Chinese House. Third Position: Malay House. Fourth Position: Peranakan House.

CLOSURE

Gather the children and discuss about their learning experience through the delivery game.

- I did...
- I learnt that...
- I found it challenging when...



How did the Tech Toy enhance the Lesson?

When the lessons were integrated with Tech Toys, the children were more excited and attentive. An increase in positive social interaction was also seen between peers as they share and take turns to be in the different roles. The children also had a lot of discussions and they were seen solving and giving solutions when problem arises themselves. The TechToys also enhanced children's quality of learning experience, where they discover and be an active participant in their own learning, allowing them to construct their own knowledge. Lastly, the children also showed perseverance during the process, where they trial-and-error when the Bee-Bot was not programmed correctly.



Additional observations / any challenges to look out for?

When the – Tech Toys were introduced, the children took more ownership in their own learning. The children were empowered to problem solve by themselves when they were faced with difficulties or got stuck at any point of the lesson. During the process, I also found myself learning more about the Tech Toys from them. It was a two way street where, not only did they get to explore and construct knowledge, I was able to as well.

However, I could have made the food delivery more realistic for the children by giving them telephones to make phone calls for their delivery. Furthermore, I could have created a few paths for them to go to the different houses, allowing children to think and choose which way they want to go. It will help them to enhance their problem solving skills and make it more challenging for them.

DAY 2

LESSON INTRODUCTION

1. Circle Time routine.
2. Recap what the children did in Day 1.

MATERIALS

- Selected learning centre tie-in activities

LESSON STEPS

1. Introduce the selected learning centre tie-in activities.
2. Explain what is to be achieved.
3. Divide the whole group into 2 or 3 groups and direct them to the activities.
4. Move around to facilitate each activity and support children's positive learning dispositions.



Closure

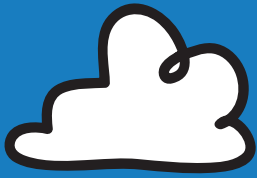
- Gather the children to share what they did today.
- Have at least one person to speak of each activity:
 - What did you do?
 - Who did you work with?
 - What did you like doing?
 - Let's take a look at what you did.

How did the Tech Toy enhance the Lesson?

When the Tech Toys were placed in the learning centres, the children were seen going to play with it more often. They also gained more confidence in using the Tech Toys and also mastered the directional words that were introduced to them during the lesson. They were now able to use the words in their daily conversations with their peers and teachers.

In addition, the children were also able to identify and differentiate the aspects of the different cultures. They were able to associate certain design and features present in different houses and match them to a particular culture.

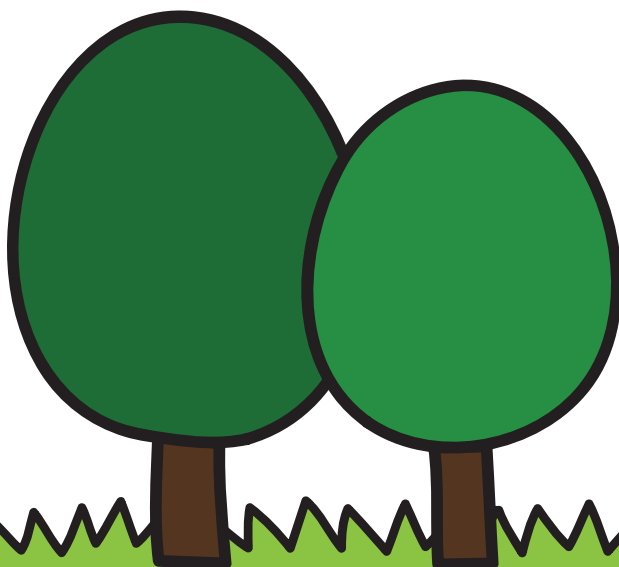




Additional observations / any challenges to look out for?

The children who were less keen in playing at the learning centre were seen volunteering themselves. They were capable in the exploration of the Tech Toys, where they displayed curiosity and enthusiasm during the process. Moreover, little facilitation was needed as children carried out their own self-discovery to achieve the outcomes.

I could have gotten the children to create their own cultural houses and use it on the mat, allowing me to gauge their understanding regarding the different cultures. Also, more houses could have been placed on the mat to allow children to have more options as to which way they want to go and to further challenge their thinking skills.





MFS Strathmore

PREDICTING PATTERNS | K1

LEARNING OUTCOMES

Children will be able to:

- Recognize and complete AB patterning using the Circuit Stickers
- Recognise, predict and complete simple patterns (e.g. AB)
- Create simple patterns (e.g. AB)
- Design and create an accessory using the Circuit Sticker
- Experiment with a variety of media (e.g. marker, crayon, paint, chalk, playdough)
- Experiment with a variety of tools (e.g. hands/fingers/feet, roller, sponge, paint brush for drawing, printing and painting)

LESSON INTRODUCTION

1. Circle time routine
2. Discuss and recall what they know about “Energy” and record the information on mahjong paper. (Note: Teacher may introduce “Energy” to children prior to the lesson)

LEARNING DISPOSITION



Curiosity and excitement about electricity and circuits when the shirt lights up

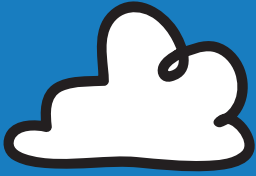


Practice perseverance in finishing their task.

MATERIALS

- Coloured cards
- Circuit Stickers
- Copper tape
- Coin Cell Battery
- Binder Clip
- Paper
- Markers
- Crayons
- Colour pencils





LESSON STEPS

1. Introduce to the children AB patterning and get them to predict and complete the pattern.
2. Get two volunteers to stand and hold one coloured card each of a different colour to represent the AB pattern.
3. Give the other children coloured cards at random and allow them to find their way to stand beside the two volunteers in order to complete the pattern appropriately. Repeat several times using different colours to ensure they understand the concept.
4. Inform the children that they are going to use coloured lights to represent the AB pattern. To make the light work, it needs energy and we use energy from a battery.
5. Teach them how to identify the coloured LED by looking at the letters labelled on the light.
6. Demonstrate and explain to children how to set up a simple/loop circuit to make the LED stickers light up. Explain to them that the purpose of the circuit is to help energy pass through it.
7. Children will be allowed to set up their own circuit and use the coloured LED sticker to complete AB pattern on the circuit.
8. Children will be designing and creating an accessory out of the circuit they have made. (For example, bracelet, ring, wristband, crown, etc.)

CLOSURE

- Encourage children to share with their friends the object that they have designed and created. Allow them to talk about their experience using the Circuit Stickers.



How did the Tech Toy enhance the Lesson?

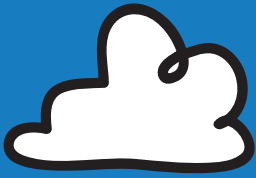
It's a creative way of getting the children to learn about and explore patterning. Children are more engaged and interested when the Tech Toys are used. It was a very different exposure and experience for them.

Additional observations / any challenges to look out for?

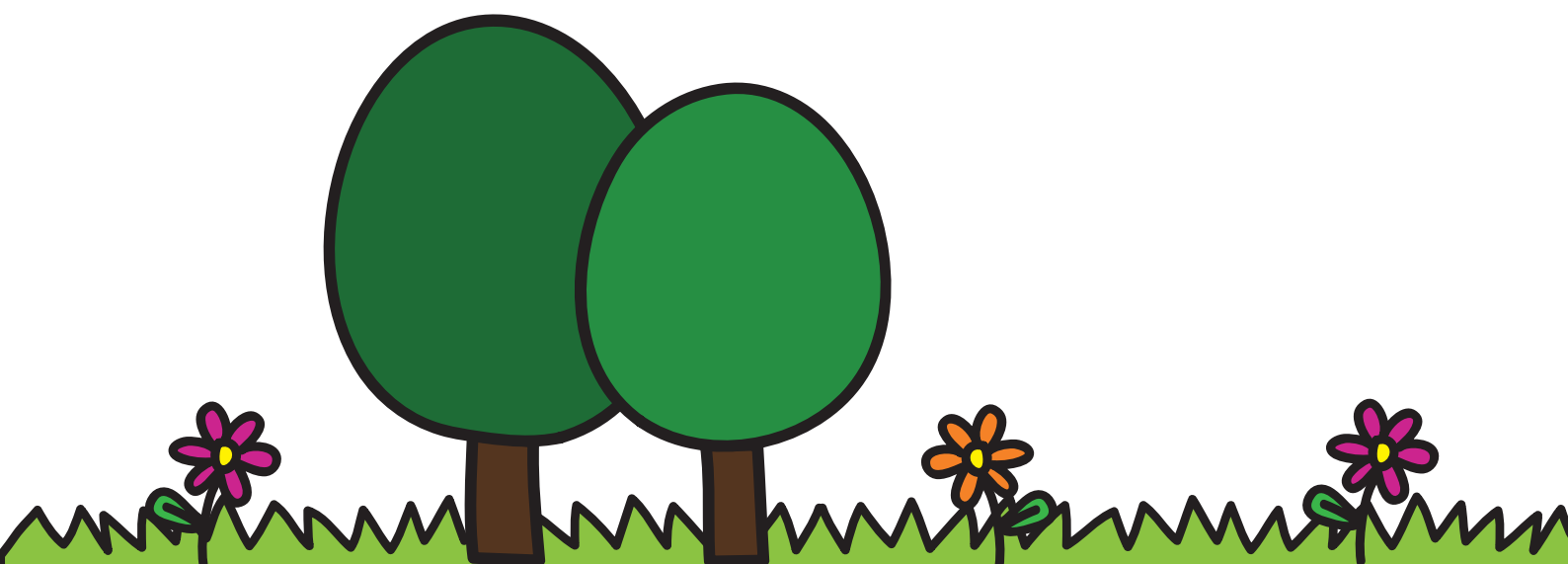
Generally, I feel that the teachers' interest in using these Circuit Stickers play a very important role. As this is very different from past lessons that children experienced, they were very engaged and excited. However, to ensure that the lesson is conducted effectively, it must be in a small group setting. I have created templates for the different kind of circuits in order to facilitate the children setting up the circuit independently. We progressed from simple to complex circuits and lastly parallel circuits. It has been a fruitful and interesting experience for me.

Strategies to successful implementation:

- Visual instructions and signs are key to success. Examples include positive (+) signs, negative (-) signs, copper tape location, battery location and LED light locations on the printed circuit templates. They provide a clear direction for children to know where things are supposed to belong, so as to execute their tasks smoothly.
- The teacher did background research on the topic of electricity and circuits, before presenting the information to the children in a developmentally-appropriate manner.
- Templates are provided to guide beginners on the steps to completing their tasks.
- Activities are conducted in small groups for more effective explanation and facilitation.
- Additional assistance was provided for children who are less competent in the area of fine motor skills.



- The teacher communicated the technicalities involved to the children clearly i.e. One strip of copper tape has to be in contact with the top (+ve) part of battery and another strip in contact with the bottom (-ve) part to create a closed circuit. The strips of copper tape have to be as flat (not crumpled) as possible to increase effectiveness of electrical flow. The two strips of copper tapes should also not be in contact with each other in any way.
- The +ve and -ve ends of the triangular LED lights have to be placed accurately on the respective strips of copper tape.





MY World Kan Ching

WONDER-DISCOVER-LEARN: HOW OUR WORLD WORKS | N2

LEARNING OUTCOMES

Children will be able to:

- Apply the understanding of number concepts and their relationships to object quantities and to symbols
- Participate in arts activities – Listen to and be engaged in a repertoire of recitations, songs and instrumental music, expressing through 2D and 3D artworks, performing (body movement, instrumental play, dance, dramatise) and creating/improvising with a variety of materials and equipment/tools

LESSON INTRODUCTION

Teacher asks:

- What are the parts of a plant?
- How many flower/leaves do we have?
- What do we call the things that light up?
- What will happen to the plant if there are no roots?

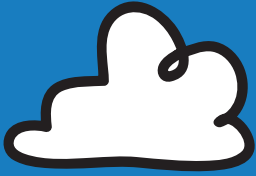
LEARNING DISPOSITION



MATERIALS

- Copper tape
- LED lights
- Coin battery
- Plant template (Annex 1)
- Model plant
- Cut-outs of petals and leaves





LESSON STEPS

1. Plant Parts

Teacher will recap the lesson about plant parts, then show the model plant to the children and ask the following questions:

- How many parts does the plant have? (Refer to model plant)
- Why are the stem/roots/leaves important to a plant?
- What would happen if there are no roots?
- What does the plant look like if one of its parts are missing?

2. Similarity of Circuit Stickers and plant parts

Teacher will discuss the different functions of each part (Flower, Stem, Leaves, Roots).

- Teacher will introduce the numbers from 1-3, using the model plant, let the children count the number of petals and leaves for each plant.
- Show the Circuit Stickers to children, let them name the stickers, let them manipulate the stickers.
- Teacher will explain the similarity between plant parts and Circuit Stickers.

Plants:

- The roots take in water and minerals from the soil.
- The stem is like a 'straw' it transports water through the plant and raises the height of flowers and leaves.
- The flower produces seeds that form new plant.

Circuit Stickers

- Coin Battery is like the roots, provides electricity for energy.
- Copper tape is like the stem, it transports energy to the LED.
- LED is like the flower, it gives colour and beautifies the surroundings.



3. Creating plants using Circuit Stickers

Teacher will provide the template to the children for the activity.

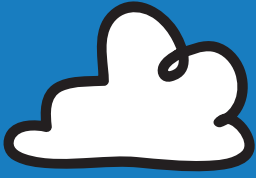
- Children will do the activity in pairs.
- Teacher will distribute nine petals and leaves, they will paste three petals and leaves in each stem.
- Children will attach Circuit Stickers to plants.

CLOSURE

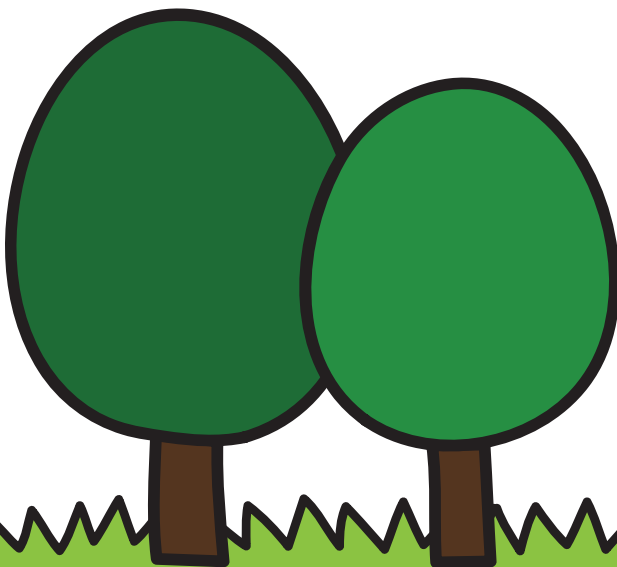
Children will show their classmates their plants created with Circuit Stickers.

Teacher will discuss with children about what was difficult about making the plant, and talk about how real plants need care too.





Circuit Stickers





PCF Sparkletots Preschool @ Boon Lay

DEEPAVALI: RANGOLI MAKING | K2

LEARNING OUTCOMES

Children will be able to:

- Understand about Deepavali and Rangoli
- Children will be able to practice their fine motor skills as well as their eye-hand co-ordination skills when pasting the copper tape and attaching the LED stickers

LESSON INTRODUCTION

1. Teacher will show children pictures of people celebrating Deepavali in Singapore.
2. Ask the children questions:
 - What are they doing?
 - Which race can they see?
 - What is the name of the celebration?

LEARNING DISPOSITION



Children will be able to reflect on their own cultural festivals

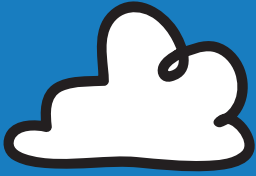


Children will be able to appreciate Deepavali



Children will engage in understanding what the festival looks like, and what people do at it





MATERIALS

- Pictures of Deepavali celebrations
- Paper Plates
- Rangoli Patterns
- Pre-made Rangoli with Circuit Stickers as example
- Copper Tape
- Circuit Stickers

LESSON STEPS

1. Teacher shows children the Rangoli that she had made.
2. Teacher will demonstrate how to make them to children.
3. Teacher distributes the Rangoli patterns on the paper plates.
4. Children will start making the collage.
5. Once they have completed the collage, teacher will distribute the copper tape for them to paste on the Rangoli patterns with teacher's assistance.
6. They will continue to paste the LED stickers on the Rangoli following the patterns.

CLOSURE

Children share their experiences about creating the artworks with their peers.





PCF West Coast Blk 702

CHRISTMAS IS COMING! | K2

LEARNING OUTCOMES

Children will be able to:

- Be creative by designing and drawing their own Christmas cards.
- Use the Circuit Stickers to design their own circuits and create interesting light up cards

LESSON INTRODUCTION

1. Prior to the activity, the teacher would have printed various Christmas card designs that the students are familiar with, and can colour them accordingly.
2. The teacher would also have to prepare the Circuit Sticker materials before hand so that every child will have sufficient materials in front of them to work on the card.
3. Every child is to have 1 LED, a certain length of copper tape and a 2 X AA battery holder with batteries.
4. Before the activity, share with the children on the origins of Christmas, and how it is being celebrated around the world.

LEARNING DISPOSITION



Learn about how different people celebrate Christmas around the world



Design cards that are interactive, rather than traditional cards which have static designs

MATERIALS

- Circuit Stickers
- Copper Tape
- AA Batteries
- Batter Holders
- Printed Christmas Card Designs
- Colouring Materials



LESSON STEPS

1. Allow the children to choose their Christmas card designs and colour them in.
2. Let the children stick the copper tape down on the printed template.
3. Children to stick the LED at the specific place on the template.
4. Make sure both ends of the LED have copper tape under them.
5. Help them to stick the wires of the battery pack down and to make sure the right wire is matched to the right tape (+ve/-ve).
6. Help the children troubleshoot their cards if the circuit does not light up.

CLOSURE

Children can share about who they want to give their cards to, and how they will celebrate Christmas. Children may also share their Christmas wish lists.

How did the Tech Toy enhance the Lesson?

The project allows the children to design cards that are interactive, rather than traditional cards which have static designs. This creates more opportunities for the children to be creative, as they aim to light up their cards in different ways possible.

Additional observations / any challenges to look out for?

Materials should be prepared beforehand, and children should be taught to take good care of their given materials, especially the small Circuit Stickers. Also, they should be taught how to handle the copper tape, instead of tearing it all out at a go and wasting the tape. Care should be taken to introduce the concept of electricity, and the various technical terms, as the focus of the activity should be on the creative art and craft element.



PCF Yu Hua Blk 317

MAKING OF AN ASTRONAUT | K2

LEARNING OUTCOMES

Children will be able to:

- Use recycled materials in order to create an astronaut
- Create art using creativity and imagination
- Communicate and interact with their peers respectfully and helpfully
- Light up their work with LED stickers and copper tape on the astronaut
- Practice fine motor skills as they peel and stick the copper tape and Circuit Stickers

LESSON INTRODUCTION

1. Teacher to talk about what they have learnt previously about the solar system OR read a book to them about astronauts. (If I Were An Astronaut)

LEARNING DISPOSITION



Persevere even on difficult challenges when they encountered problems creating their astronaut



Learn how to accept each other's ideas or suggestions



Find solutions to solve the problems they encounter





MATERIALS

- Recycled Materials
- Cardboard boxes
- Paper/plastic plates
- Juice or Milk Cartons
- Paper towel or toilet rolls
- Rough Paper
- Drawing materials (markers, crayons, colour pencils)
- Other Stationary (Scissors and tape and glue)
- Circuit Stickers
- Copper Tape

LESSON STEPS

1. Children brainstorm of how to create an astronaut using recycled materials.
2. After their creation, get children to decide which part of the astronaut they wish to light up. E.G. helmet, body, legs, hands, in front or behind of the astronaut.
3. Get children to plan the circuit and draw it out on their astronaut.
4. Provide them with the copper tape, batteries and LED stickers.
5. Assist the groups to paste the copper tape on their planned circuits.
6. Attach LED stickers to tape, connect tape to battery.

CLOSURE

- Gather the children to ask them about their experience during the whole activity
- Teacher to share with them about what she saw during the lesson. (Respecting and helping their peers, problem solving together, persevering through difficult challenges)



How did the Tech Toy enhance the Lesson?

This programme enables the children to think out of the box during the process of making their own astronaut with the recycled materials, LED stickers and copper tape. It also aims to inspire the children (esp. the K2), promote more tactile and more kinaesthetic experiences in our preschool setting.

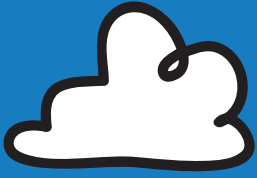
The Tech Toy will definitely enable children to problem solve and help one another whenever their peers encounter difficulties. It also enables children to find solutions to problems and respect one another (learn how to accept each other ideas or suggestions). On the other hand, during their creation of the astronaut, I noticed that most of the children would persevere even on their difficult challenges when they encountered problems while creating their astronaut.

Therefore, learning through using the Tech Toy will really allow children to learn how to solve problems in the future through planning beforehand.

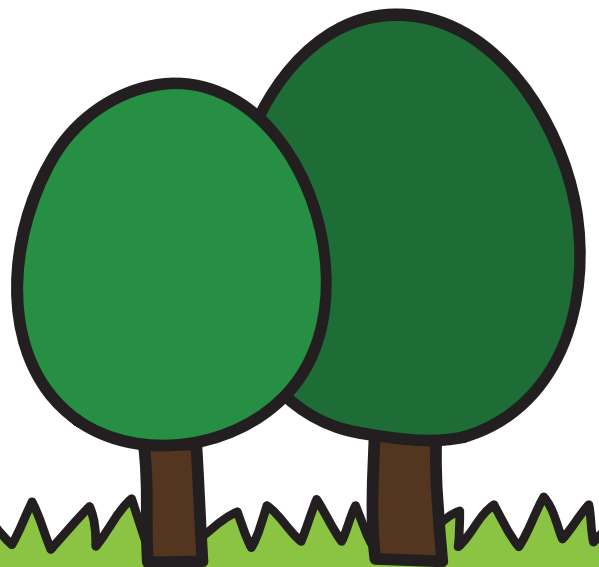
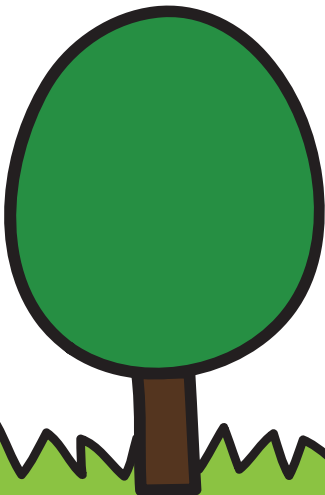
Additional observations / any challenges to look out for?

The challenges to my K2s were the peeling and sticking of Circuit Stickers as they tended to face problems in peeling the copper tape. Moreover, the copper tape tended to twist and stick onto itself. Younger children might therefore have even more difficulty in handling the tape by themselves.





Circuit Stickers





THK Membina

WORKING AS A BAKER | K1

LEARNING OUTCOMES

Children will be able to:

- Explore how the world around them is built and how everyday objects work
- Create art using experimentation and imagination
- Name and identify a builder/construction worker
- Name and identify tools through play
- Build a working circuit using the Circuit Stickers

LESSON INTRODUCTION

1. Teach the clapping pattern to “My Mother is a Baker”.

LEARNING DISPOSITION



Learn and think about the jobs that people do

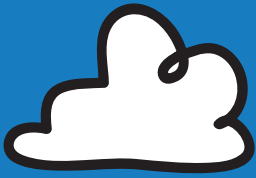


Engaged and drawn into the lesson by the activities they do

MATERIALS

- Round batteries
- Led lights
- A4 paper
- Pictures of a construction worker & wood
- Nail, hammer, saw
- Sandpaper
- Hard hat, harness, scaffolding & ladder
- Drill, screwdriver, screw & toys





LESSON STEPS


1. Ask the children if they have ever wondered who built their homes, the shopping malls, markets, etc.
2. Show the picture of a construction worker and what they use to build houses.
3. Tell them the uses of each item: wood, nails, hammer, saw, sandpaper, hard hat, harness, scaffolds/ladder, drill, screwdriver, screw.
4. Ask the children to fold the A4 paper in half. Then draw an outline of a house on the inside of the folded paper. Then draw a light bulb and switch as well. Then close the paper and trace the outline of the house on the cover page. Then let them decorate their house.
5. On the inside of the paper, stick a battery on the roof and a led light on the bulb and let the children put copper tape from the line all the way to the switch drawing of the light bulb, leave a gap, then continue to stick on the other end of the led light and connect all the way to the battery.
6. So when the children will press the switch on their drawing, the light bulb will light up.

CLOSURE

Let the children manipulate the objects through play.







“This resource guide shares examples of how teachers have integrated KIBO robotics with different early childhood curricular themes and content. These examples are creative and engage children in learning by experimenting in playful ways. They also show how computer science, computational thinking and robotics can be introduced in a developmentally appropriate way through fun, hands-on activities that can happen without screen time.”

- Marina Umaschi Bers, Ph.D.
- Professor, Eliot-Pearson Department of Child
- Study and Human Development
- Department of Computer Sciences



LEARNING OUTCOMES

Children will be able to:

- Identify sequences in logical order
- Identify the main character of the story
- Name what kind of bread is mentioned in the story

LESSON INTRODUCTION

1. Introduce and read to the children the story “Walter the Baker”.
2. Ask: “What is Walter’s job? How did he make the bread?”
3. Discuss the baking process as mentioned in the story.

LESSON STEPS

1. Walter the Dancing Baker Craft: Provide the children with the baker template.
2. Let the children colour, cut and paste their baker template.
3. Recall the different movements the KIBO can do. Assist the children in attaching their baker craft to the KIBO.

CLOSURE

Show and Tell: Walter the Dancing Baker craft

LEARNING DISPOSITION**MATERIALS**

- Story book: Walter the Baker
- Song Lyrics: Baking Song
- Markers
- Colour Pencils
- KIBO

Follow Up Activity

- Let the children sing the “Baker Song” during circle time.
- The K1 children were introduced to KIBO before this lesson. They were given the time to familiarize with the different components, how it works, and allowed to try scanning and testing the different parts. After a few sessions the children were divided into 3-4 groups and given the time to brainstorm ideas about how they can use the KIBO.

How did the Tech Toy enhance the Lesson?

The use of the KIBO was integrated in the theme curriculum with the theme topic “Bread”. The class discussed about different occupations related to bread. It gave the children the opportunity to use KIBO in a craft they can work with.

The idea of “Walter the Dancing Baker” came. The KIBO enabled the children to develop their creative thinking, perseverance and patience. They learned to share their ideas on how to make things work and achieve a desired outcome.

The children were excited to explore and work on this project. The KIBO enhanced their awareness of how simple machines work and encouraged them to create something. The children always looked forward for times when they can use the KIBO in class. It gave them another opportunity to learn more and create something based on their own experiences and exploration.

Additional observations / any challenges to look out for?

In this particular lesson the challenges encountered involved the scanning part. It was a bit difficult for the children at first. They needed assistance in their scanning and attaching the craft to the KIBO. But once it was done the children enjoyed their “Walter the Dancing Baker” craft.



E-bridge Yishun

SEASONS ON EARTH | K1

LEARNING OUTCOMES

Children will be able to:

- Count one-to-one correspondence and scan simple programs up to 10.
- Make a guess of the amount of scanning (forward) to reach a destination.
- Be able to identify 1st, 2nd, 3rd, 4th and last.
- To be able to work together as a group and help each other.
- To learn to manipulate with the scanning procedure and to develop perseverance and patience.
- Recognise matching patterns and problem-solve.
- Respect others and cooperate as a team.

LESSON INTRODUCTION

1. Start off the lesson by discussing the key inquiry questions:
 - What are seasons?
 - Why are there seasons?
 - What are their differences?
 - Which season do you like best and why?
2. Note down their ideas and thoughts into the Brainstorm web and take down other queries as well.
3. Then, get the children to share about their favourite season or experiences with other seasons. Get them to display and use their body to act out things that they can do for that particular season. For example; summer, the children can pretend to be swimming or fishing or riding bicycles and etc.

LEARNING DISPOSITION



Difficulty in scanning based on the amount they would like correctly



Interact with KIBO while learning the Numeracy Concept well



Successfully scanning the program and watching KIBO wins the race



Use knowledge and experience to predict future results

MATERIALS

- 4 sets of KIBO
- A4 papers
- Markers and Drawing materials
- A tape or a line (to act as a finish Line)
- A graph to collect information

LESSON STEPS

1. Divide the children into groups based on the 4 seasons. Provide each group with a piece of A4 paper and some drawing materials and markers. Get them to work together and draw the season that they chose and are representing.
2. Recap the instructions about the simple programs on the wooden blocks and bar code sheets. They should remember that they require the BEGIN and END blocks at each end.
3. Place their A4 Drawings on the floor and have the children make guesses to the number of scans that will allow moving forward to get to their destination.
4. Paste the Finish Line (Tape) on the floor and get them to place their 4 seasonal drawings on the Finish Line.
5. Finally, get them to scan the simple programs and start the race.
6. The fastest team to reach the Finish Line, wins the race.

CLOSURE

Talk about who won 1st, 2nd, 3rd and 4th (last) and get them to predict the number of steps they need to reach the finish line as we move the finish line around.

Follow Up Activity

Allow each child to think of other creative ways to move KIBO to the finish line without using forward as the simple program. Allow them to explore with the other names and functions.



MFS Jurong West

KNOWING OUR EMOTIONS | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Discuss about the different emotions that they are capable of feeling
- Talk about the causes of their feelings
- Share personal experiences and feelings with others
- Children will discuss and come up with a sequence to depict different emotions using the KIBO
- Describe and express their feelings in appropriate ways

LESSON INTRODUCTION

1. Circle time routine

LEARNING DISPOSITION



Allows children to explore the usage of the technology-driven toys



Creates opportunity to share about different emotions

MATERIALS

- KIBO
- Children should already be familiar with the movie Inside Out.

LESSON STEPS

1. Sing feelings with the children

Sung to Twinkle, Twinkle, Little Star

I have feelings (point to self)

So do you (point to children)

Let's all sing about a few.

I am happy (smile).

I am sad (frown).

I get scared. (Wrap arms around self and make scared face).

I get mad (make a fist and shake it or stomp feet).

I am proud of being me (hands on hips, shoulders straight, smile)

That's a feeling too, you see.

I have feelings (point to self)

You do, too (Point to children)

2. Questions for Discussion and Focus:

- Can you name some of the emotions that we are singing about in the song?
- Have you felt/experienced these emotions?
- What happens when you do?

3. Lesson Development

- Ask children to recall the emotions that was portrayed in the movie Inside Out

Questions for Discussion and Focus:

- How did Anger react when he was filled with anger?
- How was Joy different from Anger?
- Inform children that they will be creating sequences for KIBO with regards to the emotions mentioned
- Discuss what blocks can be used to portray the different emotions - shake, turn etc.
- Get children to come together to create these sequences as teacher guides

CLOSURE

Talk about who won 1st, 2nd, 3rd and 4th (last) and get them to predict the number of steps they need to reach the finish line as we move the finish line around.

**DAY 2****LESSON INTRODUCTION**

1. Circle time routine
2. Recap what the children did in Day 1.

MATERIALS

- KIBO
- Crafts – cellophane paper, coloured paper, toilet rolls
- Writing materials – coloured markers

LESSON STEPS


1. Inform the children that they will be decorating the KIBO set according to the characters in the movie Inside Out
2. Explain what is to be achieved – the figurines should capture what each emotion is trying to portray
3. Guide and assist the children in craft work – use of scissors when cutting etc.

CLOSURE

- Gather the children to share what they did today
- Have at least one person to speak of the activity
 - What did you do?
 - What did you like doing?
 - Let's take a look at what you did
- Allow the children to test out each sequence of the characters

How did the Tech Toy enhance the Lesson?

The toy was something out of the norm for children as it was interactive. Scanning of different blocks would result in different actions performed by KIBO, so children were excited and curious about what they could do with it.

An illustration at the top of the page shows several brown rectangular blocks of different sizes and orientations, some stacked. To the right, there is a white circle representing a scanner lens and a white outline of a scanner body.

In line with the lesson about emotions, the KIBO taught children desirable dispositions when using the toy – patience. The scanning of the wooden blocks takes some time to get used to, as placing the KIBO scanner too near or too far results in the bar codes not getting scanned. It also allowed me to develop another disposition – perseverance, as it was observable that a few individuals kept at it to correctly get their sequence played out.

Additional observations / any challenges to look out for?

I recalled an activity that I had participated in during the KIBO workshop with Dr Marina. The requirement of the activity was that by the end of it, the KIBO should reflect a chosen animal from the Singapore Zoo, in its design as well as in terms of its sequencing. My colleagues and I created a lion, using specific blocks that would depict a lion's characteristics, we also designed the KIBO with this in mind using its platform and craft materials. I made a mental note how I could use this experience and incorporate it into a possible lesson with my children.

As my lesson was based on the social and emotional aspect of a child recognizing and handling their emotions in an appropriate way, I decided that the KIBO could be used as children discussed about the portrayal of different emotions.

Using the four KIBO sets available in the centre, different emotions were portrayed both physically and technically, referencing the movie 'Inside Out'. The children decided on the characters in the movie that they would like to adopt, as we discussed about how each character differs. With this in mind, the children contributed in completing a set of sequences depicting each character, such as shaking to portray the emotion anger.

Prior to the lesson, I had apprehensions about introducing the KIBO to the children, as I was worried the children might have difficulty understanding the concept of properly sequencing the blocks. To my surprise, they were quick to catch on the basics – that the sequence should always begin with a 'start' block, and end with an 'end' block. A few of the children were also able to correctly make use of the 'repeat' function.

As each KIBO was assigned to about four children, lessons were carried out smoothly as the children to KIBO ratio was appropriate in allowing each child the chance to work with it.



MFS Yung An Blk 505

10 LITTLE PIGS | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Show mathematical thinking using printouts of the story character and mathematical terms
- Sustain attention and persist on a given task
- Count with one-to-one correspondence up to 10 or more
- Match up to 10 or more
- Combine two sets of objects and indicate how many are there altogether

LESSON INTRODUCTION

1. Circle time routine.
2. Children to watch video on "The Story of 10 Little Pigs".

LEARNING DISPOSITION



Give attention to the numbers stories read and using counters to act them out



Complete the different counting task

MATERIALS

- Video on "The Story of 10 Little Pigs"
- Scenes of house (wood, bricks, metal and more)
- Laminated figures of pigs as counters
- KIBO
- Recording number sheet



LESSON STEPS

1. Children and teacher to discuss the video on “The Story of 10 Little Pigs”.
2. Questions for Discussion and Focus
 - What happens after the wolf blew away the pigs’ houses?
 - As the pigs move from one house to another, are there more or less numbers of pigs seen?
 - How do we know there are more or less numbers of pigs?
3. Children to participate in the addition story using the scenes provided.
4. Each child to be given a few laminated pigs as the characters of the story.
5. Invite the child to paste the laminated pigs as the addition story progresses.
6. Questions for Discussion and Focus:
 - What happen after 2 pigs join in a house of 3 pigs? Are there more pigs now?
 - How many pigs are there in the last house altogether?
7. Introduce KIBO and its functions (For this first lesson, we will introduce a few functions such as *forward*, *left* and *right*)
8. Encourage children to try it out on how to operate it
9. Children to work in small groups to use KIBO as a narrator to the addition story by using KIBO (For example: 2 little pigs wanted to join another 1 little pig in the wooden house. How many pigs are there in the wooden house?)
10. Children will think of ways to program the KIBO so that it can move to the scene they are narrating
11. Children to record how many pigs are there in each house after they joined.

CLOSURE

Gather the children to share what they did today.

**DAY 2****LESSON INTRODUCTION**

1. Circle time routine.
2. Recall and reap the “The Story of Ten Little Pigs” and their experience with KIBO

LESSON STEPS

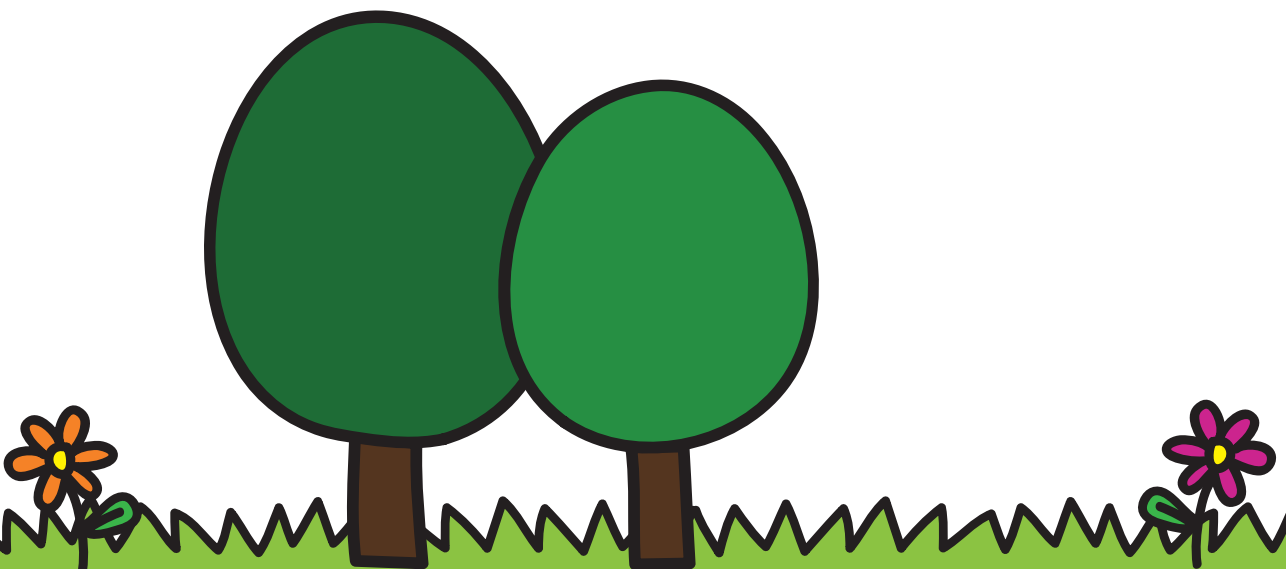
1. Teacher to introduce littleBits and its few parts and functions needed for the game. (For example: Battery, connector, light sensor, buzzer and more)
2. Demonstrate how to connect the littleBits together to create sound and movement- spinning.
3. Allow children to explore and participate in connecting the parts with the use of the littleBits cards that are arranged in sequence as a guide.
4. Once children are more familiar, teacher to introduce the learning centre tie-in activity “How many pigs are there altogether?”
5. Two children will take 2 houses and set up the littleBits in each of the box; one house with the buzzer and the house with the spinning magnet.
6. The two children will set question for another two children to answer. For example: They will write on the white board 3 and 2 makes = ?
7. They will paste the right number of pigs on the house that has spinning magnet and the incorrect number of pigs on the house with the buzzer.
8. The another two friends will count and flip on the box that has the right answer. If the box opens with loud buzzing sound means that the answer is incorrect. If the box opens with a spinning pig means the answer is correct.
9. Divide the whole group into 2 groups of 4 and direct them to the activities.
10. Move around to facilitate each activity and support children’s positive learning dispositions.

MATERIALS

- littleBits introduction cards
- littleBits
- 3 D houses
- Whiteboard
- Whiteboard markers
- Laminated pig counters

CLOSURE

- Gather children to share what they did today.
- Have at least one person to speak of each activity:
 - What did you do?
 - Who did you work with?
 - What did you like doing?
 - Let's take a look at what you did





PCF Bishan East Thomson

KIBO ANIMAL | K1

LEARNING OUTCOMES

Children will be able to:

- Express creativity while decorating KIBO
- Listen and understand the story “Brown Bear, Brown Bear” and any instructions

LESSON INTRODUCTION

1. Begin the lesson by gathering the children around in a circle.
2. Review what they already know: how to assemble the KIBO, the names and functions of all the wooden blocks commands and how to scan the wooden blocks.

LEARNING DISPOSITION



Appreciate their peers' participation in the activity, be it decorating or acting out the story.



Think about the different possible movements KIBO animals can move, what program and blocks their peers used and try to identify.



Amazement in interacting with KIBO by programming it to move the way they want it to be.



Enjoy scanning a program successfully and watch KIBO move.



MATERIALS

- Sets of KIBO
- Art & craft materials
- Storybook (Brown Bear, Brown Bear, what do you see?)
- Floor mat
- Toy trees and objects
- Music CD
- Programming cards

Lesson Steps

1. Once reviewing of the blocks is finished children can hold the command card and mimic the command as a group or play a game of 'Freeze'.
2. Children will do the action of the command that the teacher is holding when the music stops.
3. To make it more complex, the teacher will have a program with a beginning and an end and have the children to memorize it. When the music stops, the children can come out and demonstrate the program in the correct sequence.
4. Give time for the children to program KIBO themselves and test their sequence out with their friends in groups.
5. After review, teacher will read the story "Brown bear, Brown bear, what do you see?" to children.
6. Inform children that they will be making animals and programming their KIBO to venture through the 'forest'.
7. Split children in groups and provide them with arts and crafts materials for making their animal KIBO sets.
8. Children can become engrossed in making their animals, remind them to scan their programs on their KIBO sets midway through the lesson.



CLOSURE

- After all the KIBO sets are completed and programs are scanned, gather all the groups and have them lay out the forest by using the floor mat, trees and objects, making sure there is enough space for the KIBO sets to move through.
- Have each group to start their animal KIBO in the 'forest' and read the story lines along. The children can even make a tune for the KIBO sets as they move along the forest.

How did the Tech Toy enhance the Lesson?

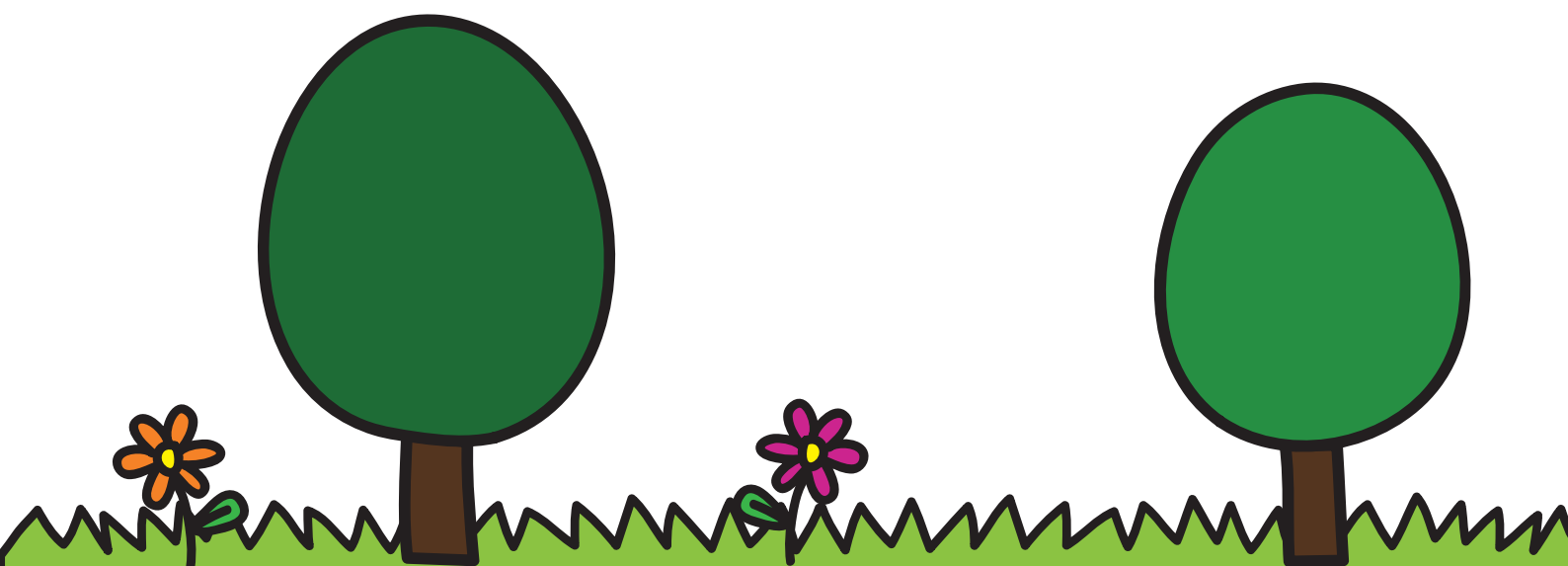
- Children will think about the different possible movements KIBO animals can move.
- Children will appreciate their peers' participation in the activity, be it decorating or acting out the story.
- Children will create unique movements for their animals to move.
- Children will think about what program and blocks their peers used and try to identify.
- Children will be amazed to interact with KIBO by programming it to move the way they want it to be.
- Children will enjoy scanning a program successfully and watch their KIBO move
- This activity will promote creativity, problem-solving and logical thinking.

Additional observations / any challenges to look out for?

- Decorating the KIBO
- Proper scanning of a program might take time
- Children might ask many questions about how to scan the wooden blocks
- Children might need some assistance to think about how to program the KIBO to make it move like an animal.



KIBO





PCF Marsiling Blk 334

THE BILLY GOATS GRUFF BROUGHT TO LIFE! | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Create art and movement using experimentation and imagination
- Communicate, interact and build relationships with others
- Share and convey their feelings

LESSON INTRODUCTION

1. Revisit the names and functions of all the wooden block commands and how to scan the wooden blocks.

LESSON STEPS

1. Read the book, "The Billy Goats Gruff" to the children.
2. After reading the book, split the class into 4 small groups (3 groups to program the three Billy Goats Gruff/1 group to decorate the troll).
3. Let the children discuss and explore how they want to program the movements of the Billy Goats Gruff and decorate the troll.
4. After all the KIBO sets are decorated and programs are scanned, gather all the groups to retell the story using the KIBO sets.

LEARNING DISPOSITION



Work as a pair/group and persevere in scanning the blocks.



Children will create unique and creative move sequences.



Children will be fascinated to interact with KIBO and in giving instructions.

MATERIALS

- 4 sets of KIBO
- Book: "The Billy Goats Gruff" by Nigel Croser
- Markers, crayons, googly eyes, recycled materials

CLOSURE

- Invite the children to talk about the whole experience by asking questions:
 - How can we successfully scan the wooden blocks?
 - Which is the first block to scan?
 - Which is the last block to scan?
 - Which part do you enjoy most?

DAY 2**LEARNING OUTCOMES**

Children will be able to:

- Program movements of KIBO for the characters in the story
- Repeat the sequence of movements created by their peers

LESSON INTRODUCTION

1. Revisit the names and functions of all the wooden block commands and how to scan the wooden blocks.

MATERIALS

- 3 sets of KIBO
- Book: "The Billy Goats Gruff" by Nigel Croser

LEARNING DISPOSITION

Work as a pair/group and persevere in scanning the blocks.



Children will create unique and creative move sequences.



Think about how their peers programmed their KIBO, try to identify the blocks used and repeat the sequences.



LESSON STEPS

1. Re-read the book, "The Billy Goats Gruff" to the children.
2. After reading the book, explain to the children that there is an extension of the story:

After the three Billy Goats Gruff had defeated the troll, they continued their journey up the mountain to look for food. They were lost in the Maze and the Great Billy Goat Gruff went first to find the way out. Followed by the medium Billy Goat Gruff, then the Little Billy Goat Gruff.

3. Spilt the class into 3 small groups to program the three Billy Goats Gruff
 - Let the children explore how to assemble the KIBO sets.
 - Invite the first group to discuss how they want to program the movements of the Greatest Billy Goat Gruff. Get them to exhibit what they have programmed.
 - The second group have to identify the movement of the Great Billy Goat Gruff and repeat the sequence as the Middle Billy Goat Gruff.
 - The third group have to copy and repeat the sequence.

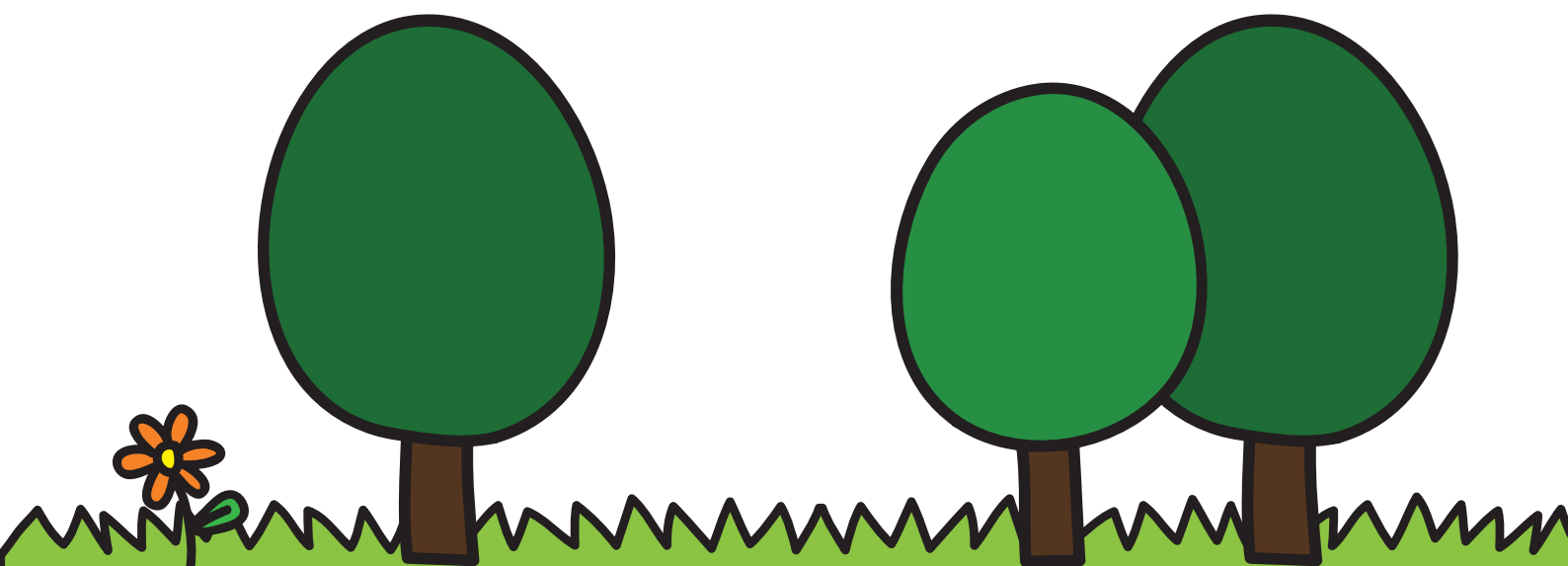
CLOSURE

- Invite the children to talk about the whole experience by asking questions:
 - What was the movement sequences? Name them.
 - How can we successfully scan the wooden blocks?
 - Which is the first block to scan?
 - Which is the last block to scan?
 - Which part do you enjoy most?





KIBO





PCF Nee Soon Blk 781

CLOTHES | K1

LEARNING OUTCOMES

Children will be able to:

- Reinforce how to program KIBO by scanning the blocks
- Introduce names of clothing types
- Children will be able to read the words and paste accordingly (shirt on top, pants below)
- Children will be able to program KIBO to move in the direction towards the boxes to match the words they had chosen (matching words to words)
- Children will be able to read the words and match the cut-outs of clothing as they dress up KIBO (matching words to pictures)
- Read with understanding and communicate clearly to direct the actions of their peers
- Identify distances and use repetition and sequencing to solve problems

LESSON INTRODUCTION

1. Explain to children that the KIBO doll will go to the shopping centre to buy clothes.

LEARNING DISPOSITION



Continue the lesson until they succeed.



Engaged and enjoy the lesson, and learn while playing.



MATERIALS

- 4 sets of KIBO
- Toilet rolls to prop dolls upright
- 2 girl cut-outs
- 2 boy cut-outs
- Laminated cut-outs of variety of clothes: Shirt, shorts, pants, t-shirt (boy), Dress, skirt, blouse (girl)
- Word cards for the cut-outs (4 sets for each gender)
- 8 small boxes to put the clothes cut-outs
- Word card (Home and shopping centre)
- 3 arrow cut-outs
- Masking tape
- Adhesive backing
Velcro strips (hook and loop)

LESSON STEPS

1. Divide children to sit in 4 rows, 2 from each row will go to the opposite side where the ending point 'Shopping Centre' is at.
2. The children at the 'Shopping Centre' will put one box on the left and one box on the right of them, with the labels facing children who are sitting at 'Home'.
3. Those who sit at 'Home' will choose the word cards for the clothes they want to use to dress up the KIBO doll and paste the cards on the KIBO onto it.
4. They will arrange the blocks to scan in order to move the KIBO to the correct box on the other side
5. For example, if the box on the right is labelled 'dress' child will have to scan in this way: Begin, Forward, Forward, Forward, Turn Right, End.
6. Children at the "Shopping Centre' will look at the words and pick the correct type of clothing to paste onto the KIBO doll.
7. Then, they will turn KIBO doll around and press the triangular button to let it move back to 'Home'.
8. The next child at each side will then take their turns.
9. Once all children at 'Home' have had a turn in moving the KIBO doll to 'Shopping Centre', they will switch sides.
10. If there is sufficient time, they could change to the other KIBO doll and types of clothes (the group at the boy KIBO changes to the girl KIBO).



How did the Tech Toy enhance the Lesson?

This activity can be used to enhance word recognition skills by changing the pictures cut-outs and words according to the themes. For example, change 'Shopping Centre' to Supermarket or other Places of Interest.

Additional observations / any challenges to look out for?

Most of the children were able to program KIBO by scanning the blocks. They were more patient in waiting for the green light indication before moving on to the next block for scanning compared to the previous lesson when they used KIBO for the first time. One of them reminded his friend that he had to scan on the bar code so that KIBO can move.

When the children at 'Home' were scanning the blocks, the children on the other side were helping to see if the red light changed to green. There was a lot of peer learning as they helped to remind their friends if the blocks were not scanned in the right way.

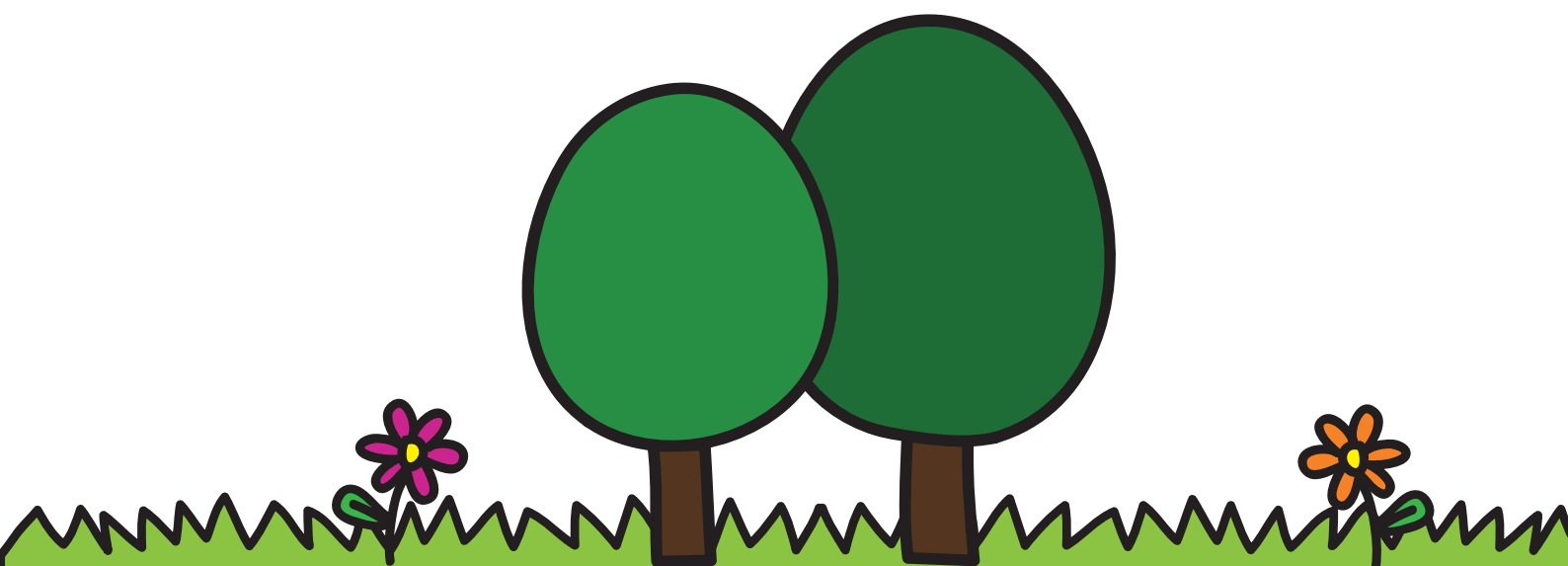
Although a few of them could not program KiBo to turn to the correct boxes, their friends could identify the words and pick the correct clothes to dress KIBO. One group decided to use the 2 boxes as an automatic door in the shopping centre by moving them together and apart when they saw KIBO approaching (relating to their experience and extending their play).

Overall, the objectives were met as they could program KIBO to move forward three times using the blocks. Some of the children try to sound the beginning letters in order to read the words. However, a few of them needs more practise so as to set the program to make KIBO turn correctly.





KIBO





PCF Pioneer Blk 987D

KIBO SCANNING | K2

LEARNING OUTCOMES

Children will be able to:

- Practice and be proficient with using the KIBO
- Learn about the motion, light and “wait for clap” blocks
- Learn the concept of sequential programming will be reinforced with activity
- The lesson reinforces the children’s concepts in numeracy and sequencing. Each child will learn to count and also learn to recognize actions that take place in a sequence

LESSON INTRODUCTION

1. Teacher to remind children of how to scan and take care of the KIBO

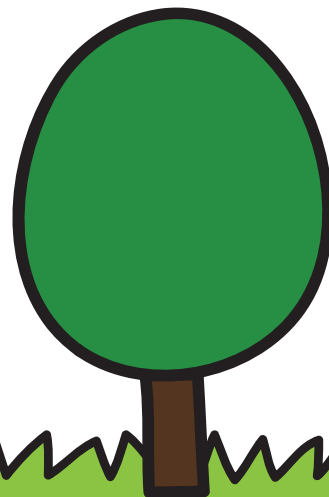
LEARNING DISPOSITION



Lesson increases enjoyment, allows children to seek new opportunities for learning

MATERIALS

- KIBO
- KIBO blocks



LESSON STEPS

1. Class of 12 will be split into 2 groups of 6 and each group will be allocated a KIBO set.
2. The children will be required to sit in a straight line. Teachers can choose to change the order; each time the activity is run.
3. Place the BEGIN block at the start of the line, and END block at the end of the line. Children are not supposed to touch them, as they are the teacher's blocks.
4. Starting from the child closest to the BEGIN block, each child will pick a block randomly from the box. Children love it when the teacher jumbles and shakes the box when this is done, as it adds a sense of thrill.
5. Once every child has a block, teacher will scan the BEGIN block, and then pass the KIBO down the line for children to scan their block.
6. As an added bonus, each child can scan their blocks as many times as they want (up to 5 times) or according to how the teacher allocates. They will have to remember their number.
7. Once the last child has scanned, the teacher is to scan the END block.
8. Before starting the program, the teacher will pass down the BEGIN block, and have children attach their blocks to the chain, eventually forming the entire program.
9. The children will then be required to act out their own blocks in sequence.
10. As the activity advances, the teacher can then move to having all the children repeat the entire chain of activities rather than their own blocks.
11. Teacher will then start the KIBO program so that the children can check if they have acted out correctly.

CLOSURE

Teacher to ask children about their experience. Children will share with the rest of the class how they felt.

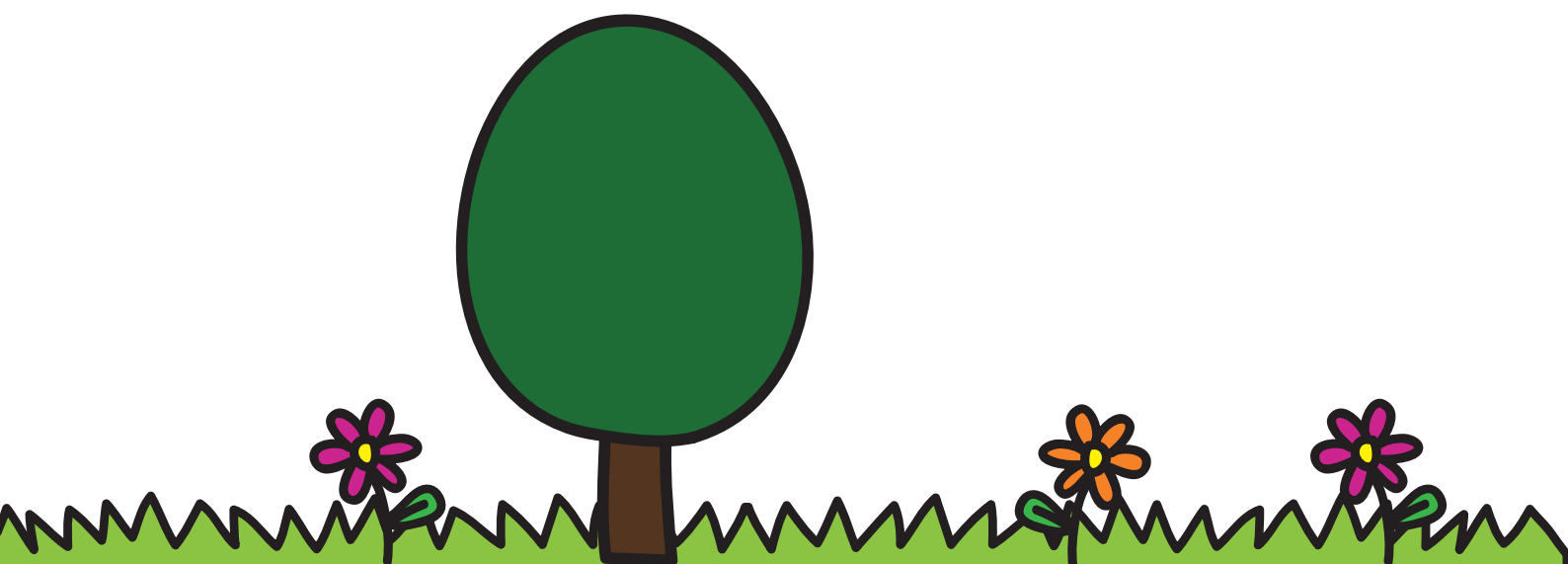


How did the Tech Toy enhance the Lesson?

The Tech Toy(s) enhanced the lesson with more engagement, and reinforces how numeracy and sequencing can be used outside of classroom concepts.

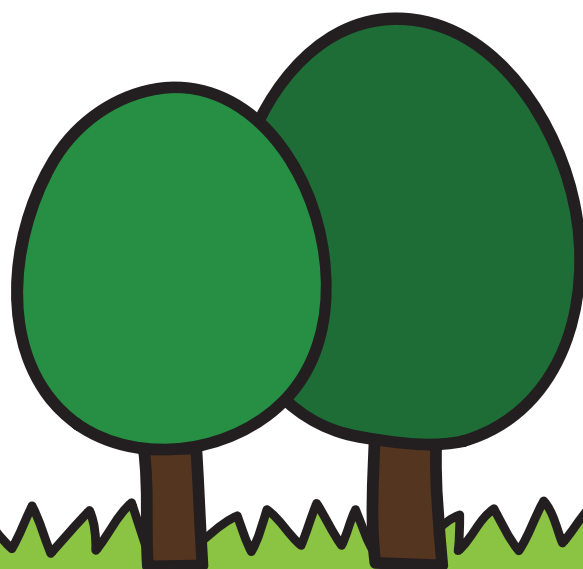
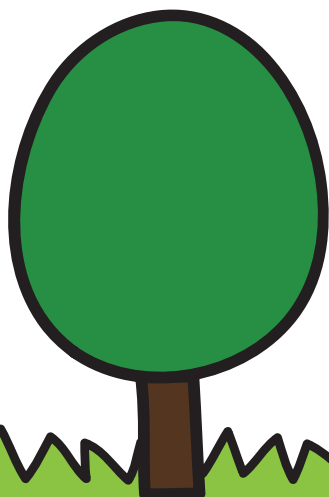
Additional observations / any challenges to look out for?

Challenges would be the use of complex cubes such as the 'if' block, repeat on 'forever' etc, and how it can be introduced via this activity. Teachers can opt to have the children draw out what they think the KIBO will do, to reinforce the sequencing concepts learnt, so that the children can compare their work with the KIBO and self-learn from their mistakes. Overall it was a great experience using the Tech Toys. Parents gave positive feedback about the Tech Toys.





KIBO





PCF Nee Soon Blk 318A

FARM ANIMALS (ANIMATION) | K2

LEARNING OUTCOMES

Children will be able to:

- Use KIBO to animate their farm animal crafts for a story
- Create art and express creativity with language and craft
- Create a story about farm animals that uses the KIBO for the movement
- Speak and listen with understanding for enjoyment

LESSON INTRODUCTION

1. Set up the backdrop that the children made the previous day.
2. Tell the children that they will be animating their farm animal crafts using the KIBO based on the story they have made with their groups.

LESSON STEPS

1. Divide the children to groups.
2. Ask one group to bring their KIBO animals and facilitate the animation by prompting the group the movements that they require their animals to do.
3. Distribute the KIBO blocks and give children, paper and pencil to record their KIBO command block sequence for the movements of their farm animals in the story.

CLOSURE

Let the children present their story and animation.

LEARNING DISPOSITION



Create artwork and make a story about the farm animals they create.



Be engaged in the activity and enjoy learning.

MATERIALS

- Art and Craft Materials (to make backdrops and decorate KIBO)
- KIBO (1 for each group)



How did the Tech Toy enhance the Lesson?

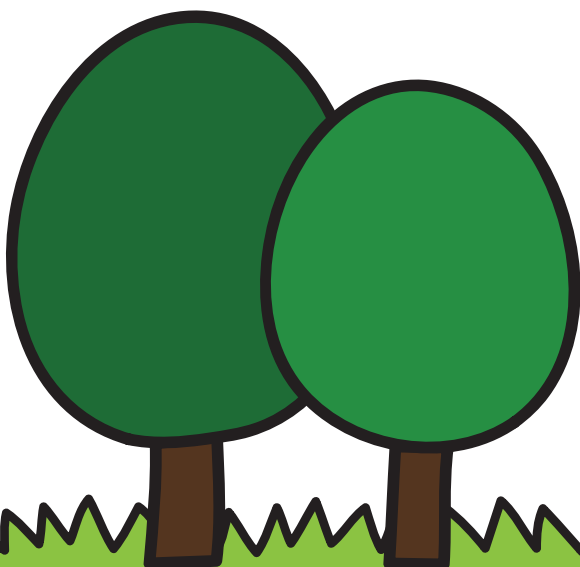
The children were able to think of actions and movements that is within the capabilities of KIBO to present their animation. Further, it made the story creation more exciting and engaging for them.

Additional observations / any challenges to look out for?

Since there are many commands that each of the characters (KIBO) must perform, the sequence has to be thought through and can involve commands that cause less interfering with the spontaneity of the story (e.g. Using “wait for clap” button to trigger successive varied commands to avoid having to scan and pressing buttons each time).

Watch out for battery drainage problem especially when the KIBO were programmed to execute more complex and long strings of commands.

Get children to draw/record the sequence blocks for them to remember. This will prevent them from starting all over again which could cause delay in the execution of the animation.





PCF Yuhua Blk 223A

KIBO AND OUR COMMUNITY | K1

LEARNING OUTCOMES

Children will be able to:

- Practice and be proficient with using the KIBO
- Learn how to identify key facilities in a Singapore housing community
- Learn how to tell time, and some things that we do at a particular time

LESSON INTRODUCTION

1. Prior to the activity, the teacher worked with the parents to have the children build the structures at home, as a parent-child activity. Before this, children will also be taught what activities are usually carried out at a particular time in the community.

LEARNING DISPOSITION



Recognise and connect activities in their daily lives in the community with certain times in the day.



Visualize and play act without leaving the comfort and safety of the classroom. This lesson helps bring to life the community that the children have learnt and read about in class. On top of that, it reinforces what the children have learnt about time, and how it is important to us in our daily life.

MATERIALS

- KIBO
- Recycled Materials and Art and Craft materials for Structures (for children to return home and make the structures at home)
- Props if desired



LESSON STEPS

1. Class of 12 will be split into 6 groups of 2 and each group will be allocated a community structure/facility.
2. The children will be required to sit together with their structure, in a circle around the teacher.
3. The teacher will be in the middle, telling the class what time is it now.
4. For example, starting at 7am, the children at the structure called Home, will program the KIBO to move forward a certain number of steps to get to school.
5. The teacher then tells the new time, and the children holding on to the KIBO will have to decide where the KIBO should go to next.
6. Teachers can repeat this activity as many times as they want, so that every child will get to play the part of different community facilities.
7. Teachers can also add props to the KIBO, e.g. Toy bread from the learning centre given to the KIBO when it visits the bakery.

CLOSURE

- Ask the children about the daily activities they carry out in their daily lives. Or what they do which is similar to what the KIBO did.

How did the Tech Toy enhance the Lesson?

The Tech Toy allows the children to visualize and play act without leaving the comfort and safety of the classroom. This better reinforces the concept of time in the context of a community, and allows the children to see how the community supports us behind the scenes, even when we are not looking.

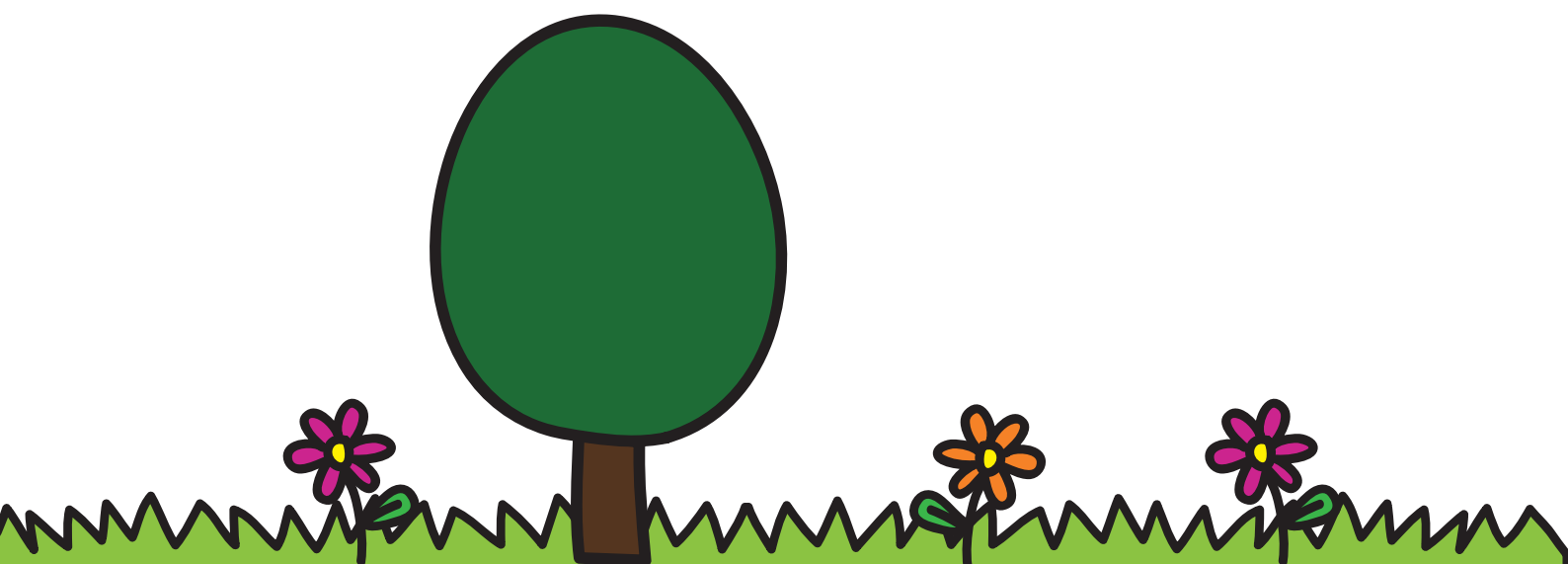


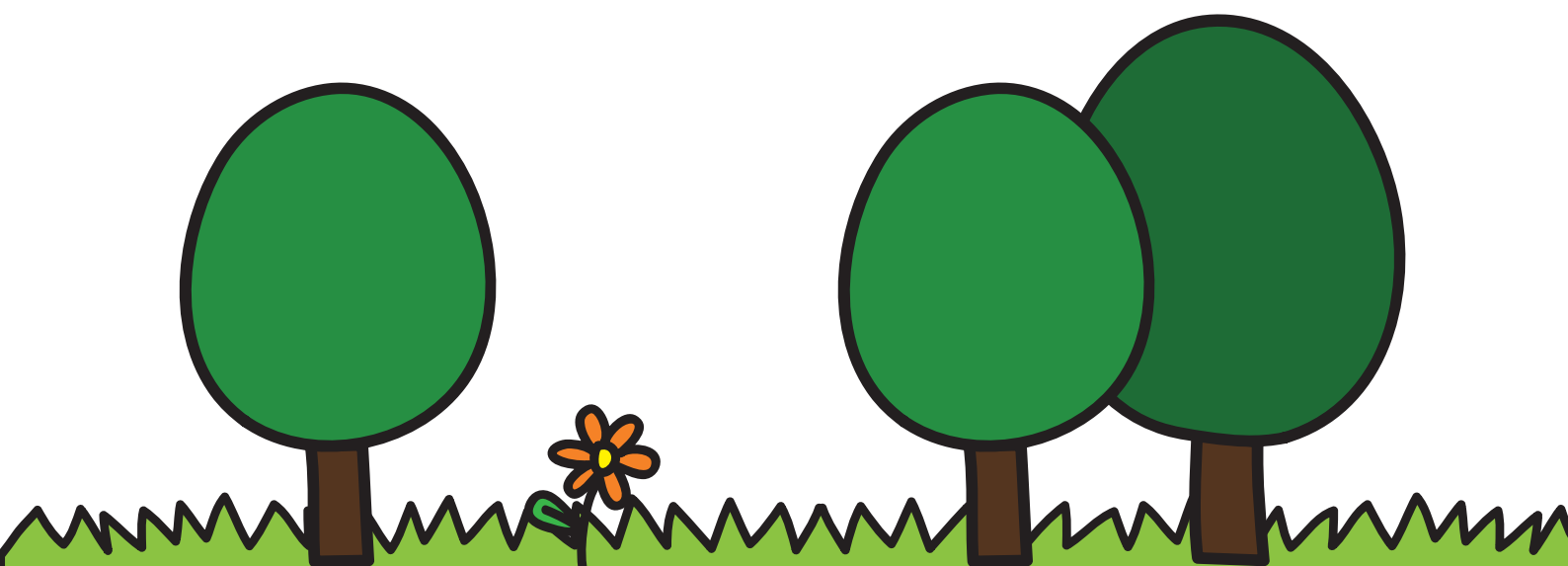


Additional observations / any challenges to look out for?

Classroom management would be tricky as there will be students who are not engaged while the teacher is trying to help the group with the KIBO. More KIBO sets added means lesser structures/facilities and hence the children will get more chances to play with the KIBO.

However, it would be a good chance to engage the children by having them play act the activities happening at the facility even if the KIBO has yet to arrive.







Salvation Army Childcare Centre Bukit Panjang

MONEY MIND | K2

LEARNING OUTCOMES

Children will be able to:

- Count and recognise relationships with a set of numbers and instructions
- Differentiate dollars and cents
- Complete simple money problem sums using different commands on KIBO

LESSON INTRODUCTION

1. Divide the children equally into four groups.
2. Recap with the children on the difference between dollars and cents.
3. Give some examples and invite the children to identify the amount of money shown (i.e.: \$1.30, \$0.50 or \$0.80).

LESSON STEPS

1. Assign a certain amount of money for each command in the KIBO set (Turn right = \$0.40) and note this on the whiteboard.
2. Give the children a cost amount which they need to combine more than one command. With a limit of 1 minute, children are tasked to complete an equation using different commands and it's assigned cost.
3. When the time is up, check the train of commands and the total cost each group of children gave and get the children to determine if it is correct or wrong.
4. This exercise may repeat more than one time, and preferably from simple to complex.

LEARNING DISPOSITION



Reflect on how dollars and cents work through the usage of numbers.



Be engaged and encouraged to learn by the activity and use of KIBO.

MATERIALS

- Coins and Notes
- KIBO
- KIBO Blocks



CLOSURE

Share with the children about how people use mental sums in daily life.

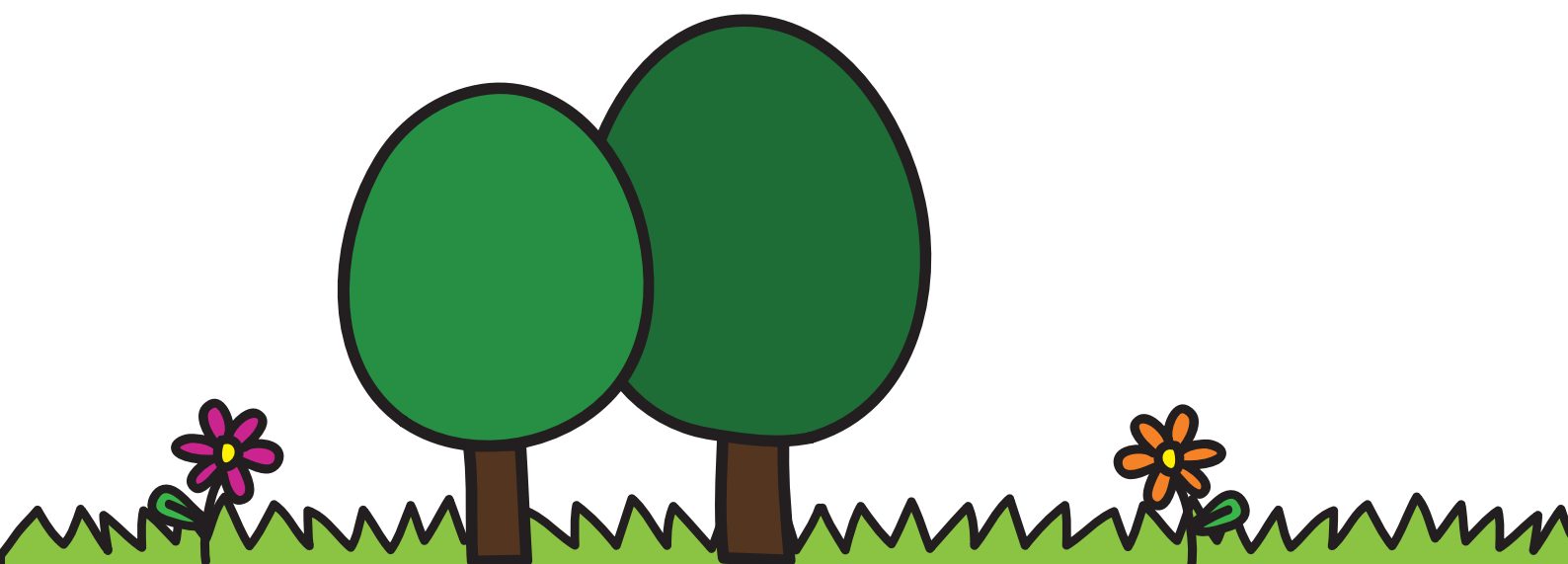


How did the Tech Toy enhance the Lesson?

KIBO was used as a reinforcement on the concept of money and it allows the children to move from concrete, which is the use of real money to count, to abstract, where they had to use mental sums to derive the equation.

Additional observations / any challenges to look out for?

As this is a large group activity, children tend to fight over the use of the KIBO and scanning of the commands. Hence, I suggest assigning a task to each group member to prevent challenging behaviours. Assignment of task are of such: building the train of commands, scanning the train of commands, checking of answers.





THK Educare Centre @ AMK

JUNGLE ANIMALS | K2

LEARNING OUTCOMES

Children will be able to:

- Name animals that live in a jungle
- Discover and learn about the world around them
- Sing and follow the beat of the song “Down in the Jungle”
- Exercise creativity in making jungle animals out of various materials
- Create art through imagination
- Work together in a team
- Manage and communicate with their peers

LESSON INTRODUCTION

1. Teach the song “Down in the jungle”.

LESSON STEPS

1. Children will sing and clap to the beat of the song.
2. Children will name all the jungle animals that is in the song.
3. Get children to name other jungle animals that they know.
4. Divide children into 3 groups.
5. They will decide as a group one jungle animal that they like.
6. Children will use the materials provided to make a figurine of that jungle animal.
7. Children will then attach the jungle animal on the KIBO.
8. Gather the children on the floor.
9. They will choreograph a ‘dance’ using KIBO.
10. They will sing the song ‘Down in the jungle’ as KIBO dances.

LEARNING DISPOSITION



Learn to appreciate their peer’s differences and work together.

MATERIALS

- Recycled Craft materials
- KIBO
- Stationary



CLOSURE

Get children to share about the animal they chose and if the dance they choreographed was like the movement of the animal.

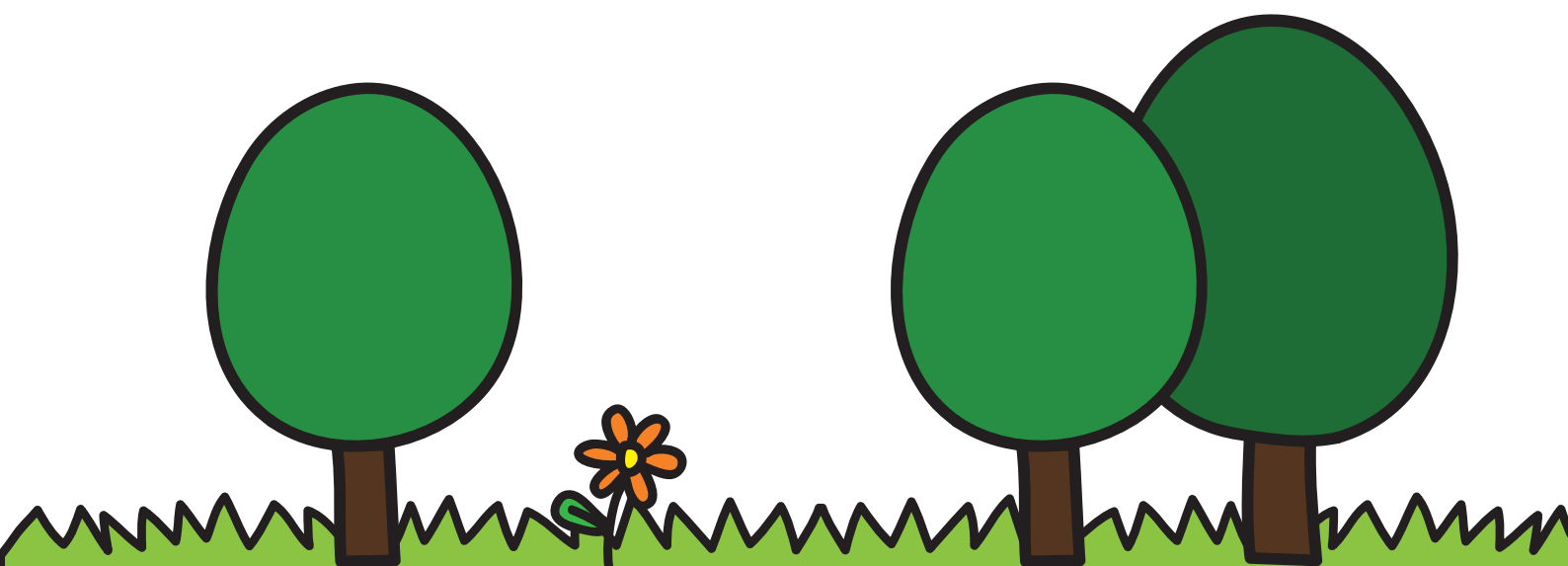


How did the Tech Toy enhance the Lesson?


It made a language, music and art lesson more interesting. The children got to see their otherwise inanimate art work come to live through KIBO.

Additional observations / any challenges to look out for?

Time was a factor. This activity was best stretched over 2 days.

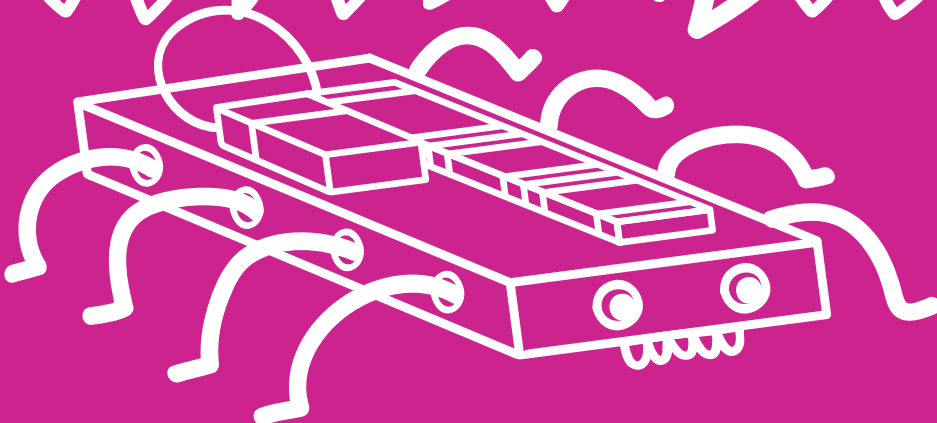






“The publication of the Resource Guide offers an amalgamation of innovative ideas on the effective implementation of littleBits within the curriculum. The curated lesson plans, offer educators opportunities to discover ways to extend children’s active engagement with the technology-enabled resources. The Resource Guide recognizes the best practices already used by educators and serves to support novice teachers new to littleBits. Similar to the self-correcting element of littleBits that allows uninhibited exploration for the children, educators too will experience hours of exploration browsing through the Resource Guide.”

- Dr Weelai Suwanarat
- Co-founding Partner, Jix Sze & Partners LLP
- (Former Director of Professional & Education
- Development Division, PAP Community Foundation)



Bethany Childcare



MAKING A SOLAR SYSTEM | K2

LEARNING OUTCOMES

Children will be able to:

- Show an appreciation and curiosity of the world around them
- Manage their own emotions while respectfully communicating to work as a group

LESSON INTRODUCTION

1. Split children into groups of 3s and get them to sit by the table.
2. Explain to the class that they will be using littleBits to create their own solar system model.
3. Each group to get a set of littleBits.
4. Recap on the functions of different littleBits.

Question(s) asked:

- How does the light sensor work?
- What is the function of a DC motor bit?
- What is needed to build up a torch? Why?

LEARNING DISPOSITION



Learn to appreciate their environment and the earth through the solar system model.

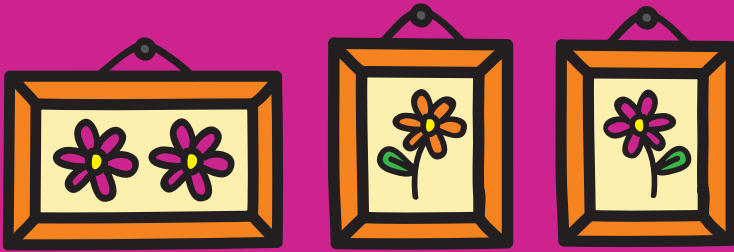


Exercise inventiveness through making their own models of the solar system.



Show interest in the world around them, and in how the solar system works.





MATERIALS

- 3 sets of littleBits
- 3 sets of ping pong balls in 8s
- 3 plastic yellow ball (bigger than ping pong ball)
- Paint (red, yellow, orange, dark blue, light blue, green, white, brown, purple)
- Paint brushes
- 27 satay sticks
- 3 small panels of Styrofoam board
- 3 scotch tape dispensers
- Scissors
- Ribbon
- 3 A4 printer paper cover lids (pre-painted in black)
- Pencils and erasers

LESSON STEPS

1. Get children to discuss the characteristics of the 8 planets.
2. Teacher to list down points discussed on the board.
3. Each group to get a set of ping pong balls, a plastic yellow ball, 9 satay sticks, a panel of Styrofoam board (for drying of painted ping pong balls), an A4 printer paper cover lid (as universe), scotch tape dispenser, scissors, ribbon, different paints and paint brushes.
4. Get children to discuss the uses for the different materials; plastic yellow ball as Sun, ping pong balls as planets, etc.
5. Get children to discuss the steps needed to create their own solar system model. Encourage them to start from discussing the roles; painting of planets, building of circuit, etc.
6. Teacher to move between the three groups for facilitation.



Question(s) asked:

- What are the characteristics of (planet)?
- What do you think the ping pong balls can be used for?
- How do you think you can build up the solar system model?
- Who is going to paint the planets?
- What else can you do while waiting for the paint to dry?
- What bits are you going to use? Why?

CLOSURE

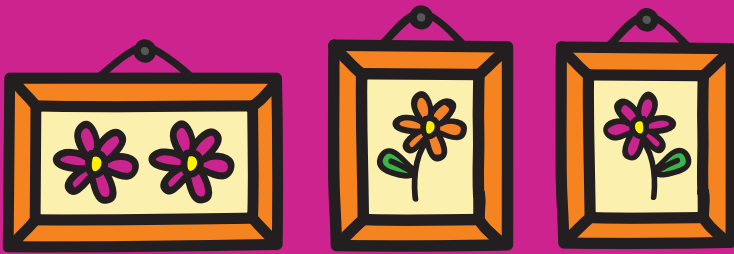
- Invite first group up for show and tell.
- Repeat for the other two groups.

Question(s) asked:

- Can you tell us how did your group build up the solar system model?
- What problems did your group face while building up the solar system model?
- How did you resolve the conflicts?

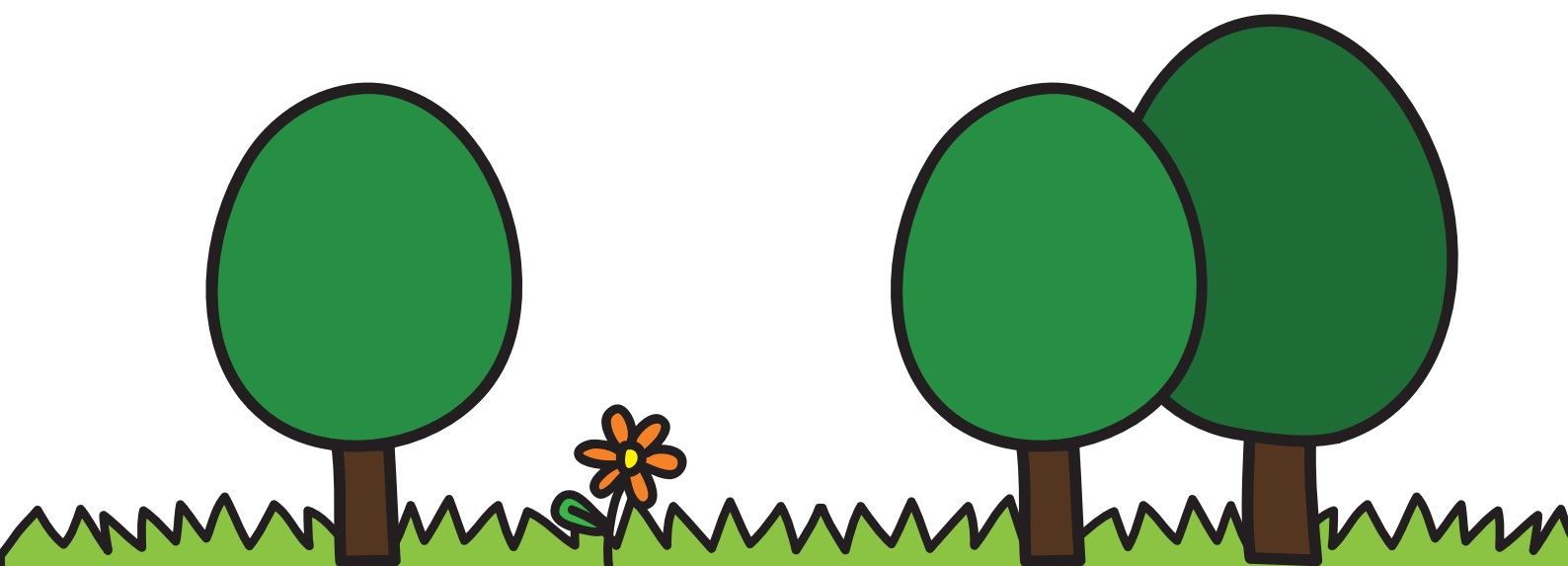
How did the Tech Toy enhance the Lesson?

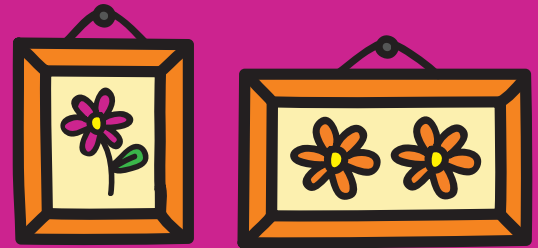
The integration of the TechToy actually helps children to visualise the orbiting planets instead of having the abstract concept/idea. Children were also able to better understand the concept; using their own words to explain why different parts of the world will experience day and night as Earth orbits around Sun. Through the lesson/project, children learn to collaborate and work as a team to problem solve challenges and resolve conflicts.



Additional observations / any challenges to look out for?

Initially the children weren't ready to work as a team as all wanted to get a say in it. It eventually worked out as they realized that bickering leads them to nowhere. The DC motor couldn't really hold the Sun and planets due to the weight, which resulted to the whole thing dropping off. Perhaps some other lighter materials could be used as Sun and planets in lieu of the ping pong balls and yellow plastic ball.





WHERE DOES BREAD COME FROM? | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- To discuss where does bread come from
- To name the plant where flour for bread comes from
- To have a hands-on experience of sifting flour used in making bread
- Read with understanding and enjoyment
- Understand how bread is made and where it comes from
- Enjoy art and create it

Lesson Introduction

1. Mystery Bag: Tell the children that inside the bag is something that you would like to share with them today.
2. Ask: "What do you think it is?" Let the children guess.

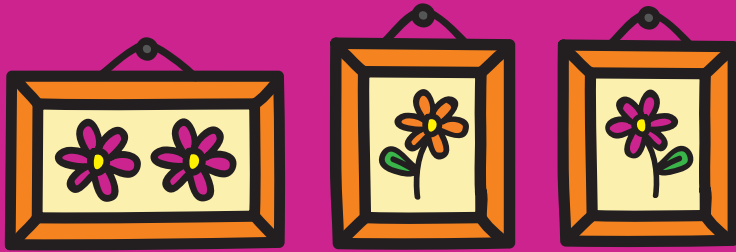
LEARNING DISPOSITION



MATERIALS

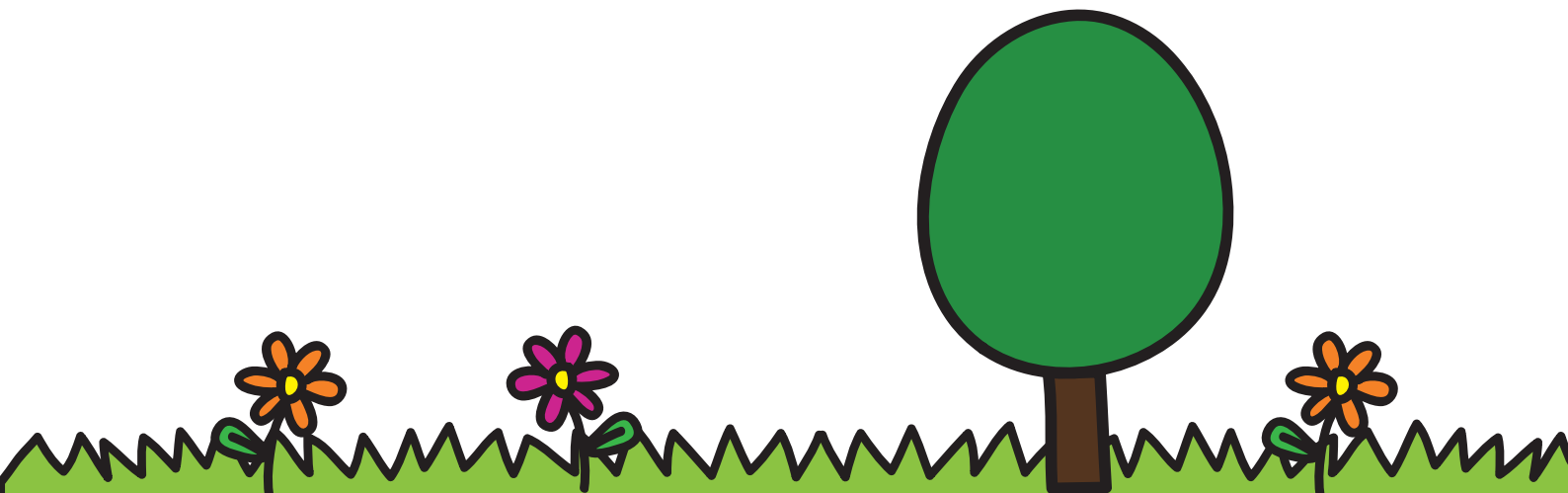
- Mystery Bag
- Bread Samples
- Picture of a wheat plant
- Sieve, bowls and spoons
- Song Lyrics of The Farmer Grows the Wheat





Lesson Steps

1. Bread Tasting Activity: Take out the content of the bag. Ask: "Who has eaten bread today for breakfast? What did you eat with it?" Let the children share the bread from the mystery bag.
2. Tell the children that in many parts of the world, people eat bread every day.
3. Ask: "Do you know where bread comes from? Discuss the children's ideas.
4. Discuss with the children the idea that the main ingredient of bread is the flour. Ask: "Do you know where does flour come from?"
5. Picture Talk: Show the children a picture of a wheat plant. Ask: "Do you know what plant is this?" Discuss with the children that the flour we use in making bread comes from this wheat plant.
6. The farmer plants, grows and cuts the wheat. The miller grinds the wheat into flour and the baker bakes the bread.
7. Picture Talk: Show the children a picture of a wheat plant.
8. Let's Scoop and Sift the Flour: Bring the children to the Discovery Table. Show them the flour. Let the children take turns in scooping and sifting the flour. Afterwards let the children taste the bread samples.





CLOSURE

- Ask the children: “What did we learn today?”
- Let the children sing the song “The Farmer Grows the Wheat”.

Child swings an imaginary hoe up and down:

*The farmer grows the wheat,
The farmer grows the wheat,
Hi ho the dairy oh,
The farmer grows the wheat.*

Child holds an imaginary vertical handle with both hands and moves it in a horizontal circular motion:

*The miller grinds the flour,
The miller grinds the flour,
Hi ho the dairy oh,
The miller grinds the flour.*

Child kneads and rolls an imaginary lump of dough:

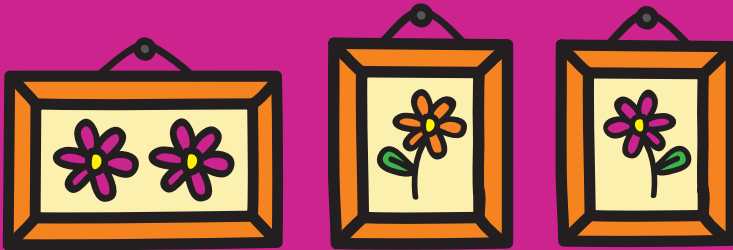
*The baker bakes the bread,
The baker bakes the bread,
Hi ho the dairy oh,
The baker bakes the bread.*

Child hands an imaginary loaf of bread to a customer with one hand, and puts imaginary money into his pocket.

*The grocer sells the bread,
The grocer sells the bread,
Hi ho the dairy oh
The grocer sells the bread.*

Child eats an imaginary slice of bread. (Hand out slices of wholemeal bread for children to eat after singing the song.)

*We all eat the slice,
We all eat the slice,
Hi ho the dairy oh,
We all eat the slice.*

**DAY 2****LESSON INTRODUCTION**

1. Teacher will gather the children to revise main activity by asking the steps of making the bread.

LESSON STEPS

1. Teacher will focus on the step of shaping the dough to make bread. Teacher will inform children that in the main activity it's the children who designed the shape of the bread. But today, it's ART BOT who is going to draw the shape of the bread.
2. Teacher will introduce the pre-made ART BOT to the children. Teacher will tell the children that they are going to make this kind of ART BOT who is actually a device to draw for you. Teacher will also tell that these device children have to build using the littleBits base kit.
3. Teacher will revise the name of the parts of the circuit they will be using for this lesson i,e power, DC motor and motormate.
4. Teacher will distribute the materials used to the children those will work in pair and will take turns to make ART BOT. Teacher will ask children to follow the steps demonstrated by her.
5. Teacher will show and ask the children to start by joining power, DC motor and motormate.
6. Teacher will show and ask the children to rubberband together battery cable and insert your crayoin. Put on the motormate.
7. Teacher will show and ask the children how to put satay stick to make an axel and put it in motormate.
8. Teacher will inform children that their ART BOT is ready to draw. Teacher will put the mahjong paper on the floor to let children test their robot.
9. After putting on the pape, children will turn on the circuit to let ART BOT draw the shape of the bread for them.

MATERIALS

- littleBits base kit
- Satay stick
- Eraser
- Crayon
- Rubber bands



CLOSURE

Children will do a show and tell about their ART BOT to their peers.

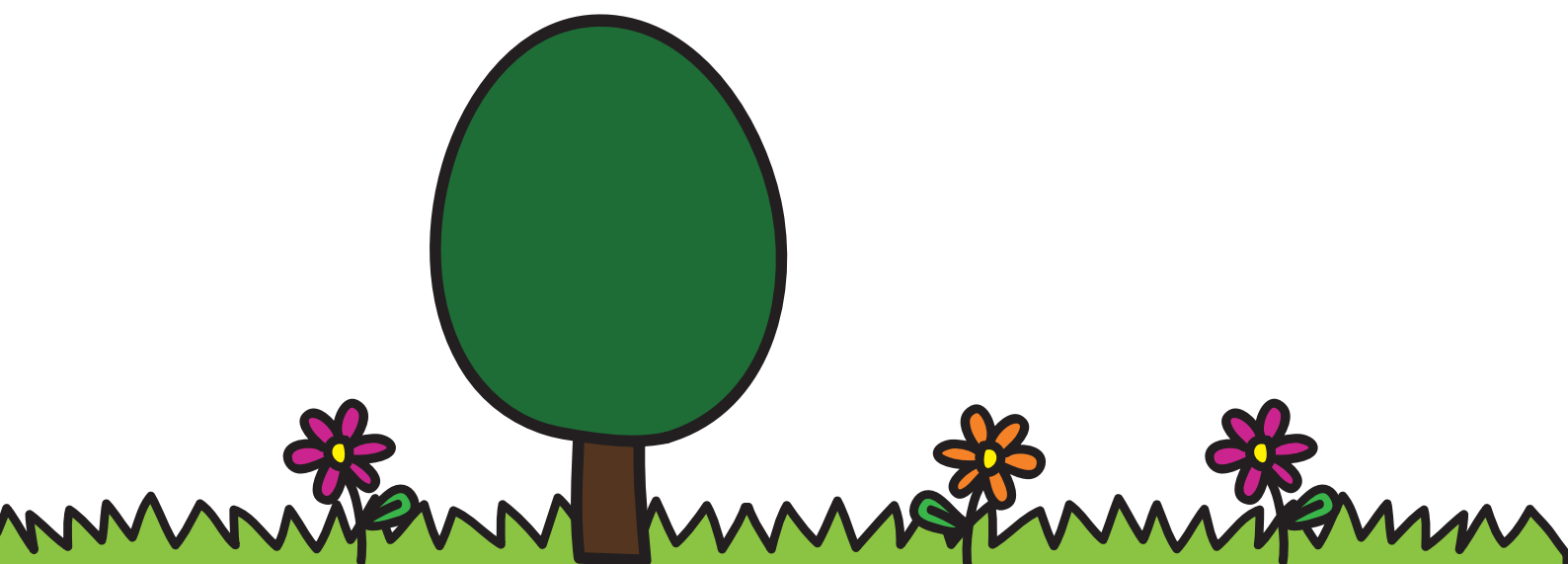


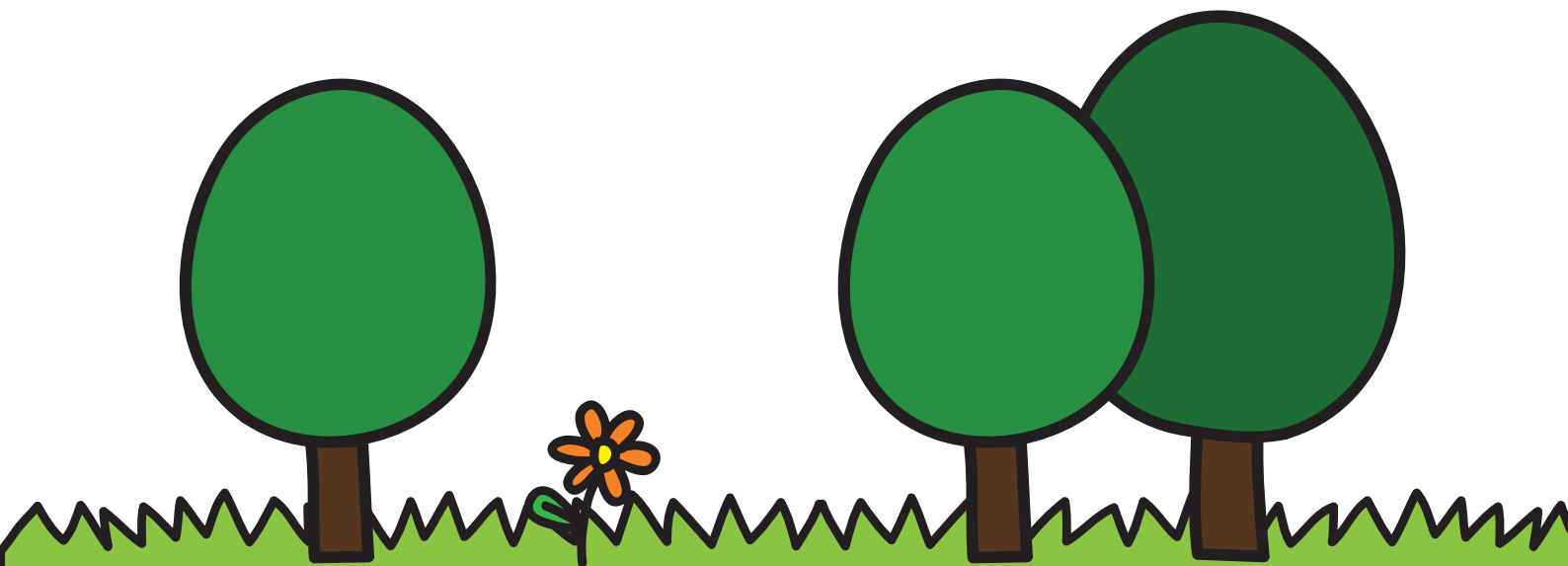
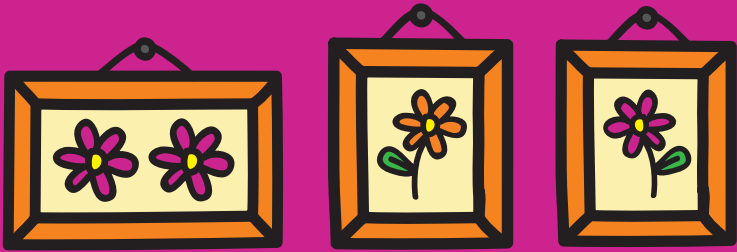
How did the Tech Toy enhance the Lesson?

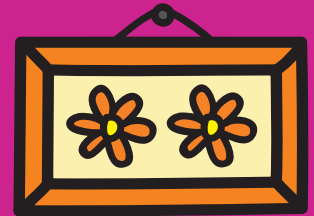
We could incorporate more of such Tech Toy based activities. This use of technology also enables the children to not only investigate subjects but links to their learning in other subject areas such as language, art and math.

Additional observations / any challenges to look out for?

Children were very focused and engaged during the lesson. Teamwork spirit was displayed when they were working as a pair. This collaborative activity does not only prove to be engaging but explicitly gave the opportunity to the children a sense of wonder and curiosity. Children also learnt to appreciate the shape drawn by the ART BOT.







THINGS THAT USE SENSORS | K2

LEARNING OUTCOMES

Children will be able to:

- Create an object to integrate with littleBits – sensor bit
- Learn to work as a team

LESSON INTRODUCTION

1. Planning done a day before lesson. Children in their groups of 3s or 4s are asked to discuss what they want to create using sensor in their Primary School.
2. Show them a model of alarm clock and treasure box.
3. Invite a child to the front to open up the treasure box.
4. Then, allow another child to shine a torchlight symbolizing the sun on the alarm clock.
5. Ask prompting questions:
 - When do you use these two items in Primary school?
 - What happen when Child A shine his light into the box? What causes it to happen?
 - Where else can you find a sensor? (at home, in school?)
 - How do they work?
 - Discuss about the circuit used in the alarm clock (where the light should shine on).

LEARNING DISPOSITION



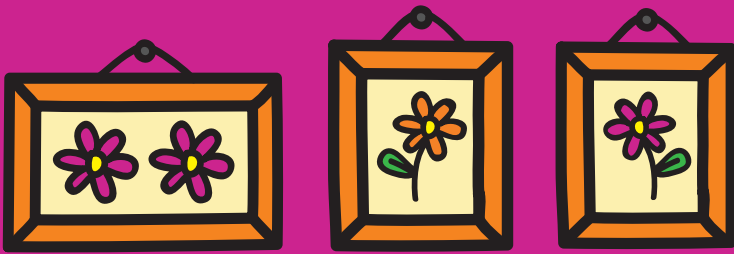
Exercise inventiveness by creating their project and considering how it can be used.



Practice engagement by focusing on their project, and thinking about sensors and how they are used in everyday life.

MATERIALS

- Art materials
- littleBits
- Torchlight

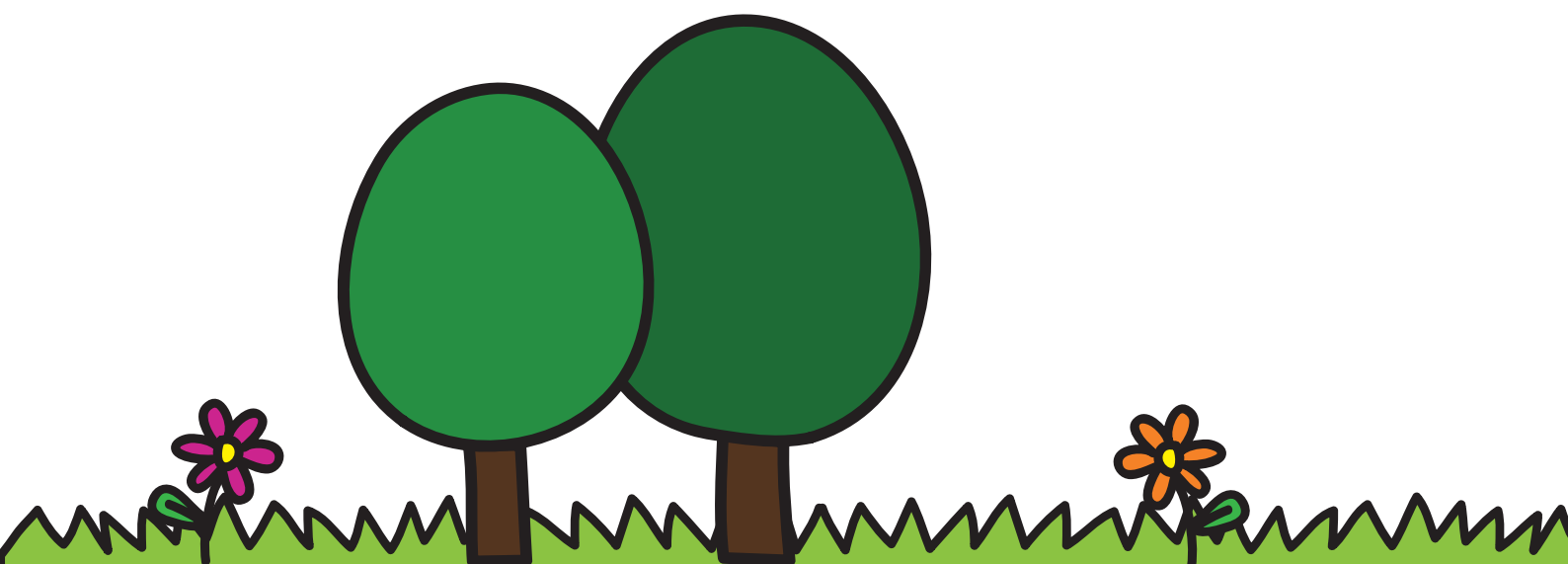


LESSON STEPS

1. Go through the children's planning sheets
2. Each group will be given a set of materials to create their project.
3. Introduce the materials available
4. Go through the check list attached
5. Introduce the recording sheet (attached)

CLOSURE

- In large group questions:
 - Did your original plan work? Did you have to make any changes to make it work? How does your sensor work in your invention?
 - Extension in thinking: Do you think your invention is useful? How can use them?





ROBO-KIBO | K1

LEARNING OUTCOMES

Children will be able to:

- Work in groups to design their own unique robots
- Create 2D and 3D artworks from imagination
- Work in groups to create their chosen design with littleBits and given materials
- Express and represent ideas, experiences and feelings (e.g. personal event, field trip) through artworks
- Use given materials and share cooperatively
- Share toys, tools and resources in group tasks

LESSON INTRODUCTION

1. Circle time routine.
2. Read Boy+Bot by Ame Dyckman.

LEARNING DISPOSITION

By actively participating in the discussion of the topic and group work.

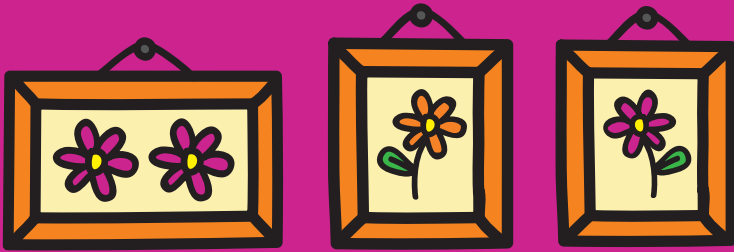


By creating their own unique robots.

MATERIALS

- Boy+Bot Storybook
- Picture of different robots
- littleBits
- A3 paper
- Drawing materials
- Crepe paper, felt, cellophane paper
- Dooby Wop The Robot Song by ThePolkadots





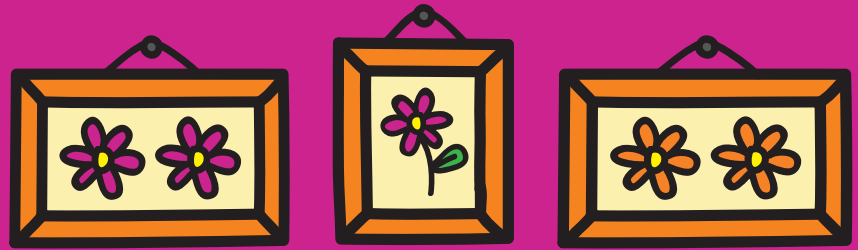
LESSON STEPS

1. Show the children pictures of different robots. (e.g. mopping robot, household's machines, KIBO)
2. Allow children to talk about and discuss how these robots help us in our daily life.
3. Questions for Discussion and Focus
 - What are these?
 - How do robots help us in our daily life?
 - Do you have one at home?
4. Divide children into 2 groups, get them to come up with their unique robot's name and it's functions.
5. Get them to draw on paper and assist them in the group discussion.
6. Questions for Discussion and Focus:
 - What's your robot's name?
 - How can your robot help you?
7. What are the functions you can include in your robot with littleBits?
8. Give them materials and ask them to use littleBit in their 3D design. Teacher help to assign jobs in each group.

CLOSURE

Introduce Dooby Wop The Robot Song by ThePolkadots https://www.youtube.com/watch?v=_0EpYPSrjCE





How did the Tech Toy enhance the Lesson?

- littleBits:

littleBits allowed the children to come up with their own creations and include it in their robots. Instead of only using recycled materials, they used their imagination. Child A said “I want the robot to have green eyes because at night you can see him. My friend designed it like a bee, we can add the buzzer.” It gave them more opportunity to exercise imagination and creativity. Instead of creating 3D models, they created 4D experiences by including the lights and the sounds.

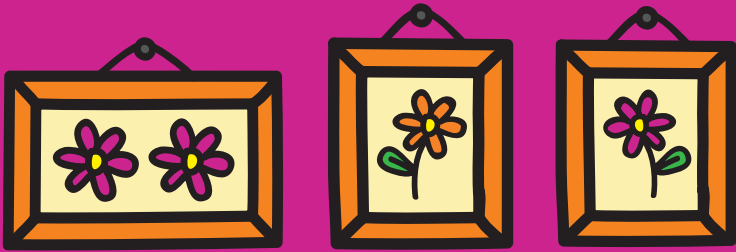
- KIBO:

Children needed to create a common dance to match the music heard. Children sat in a circle and thought of the movement for KIBO. They understood that KIBO was not as flexible as their friends. Having the commands cube in mind they tried with the song and rescanned it once again. They were able to sequence and create a common dance after a few attempts. KIBO body was their ‘baby’ to them. They designed their own unique robots and came out with the movement for their new friends, just like how the boy and bot got along in the storybook.

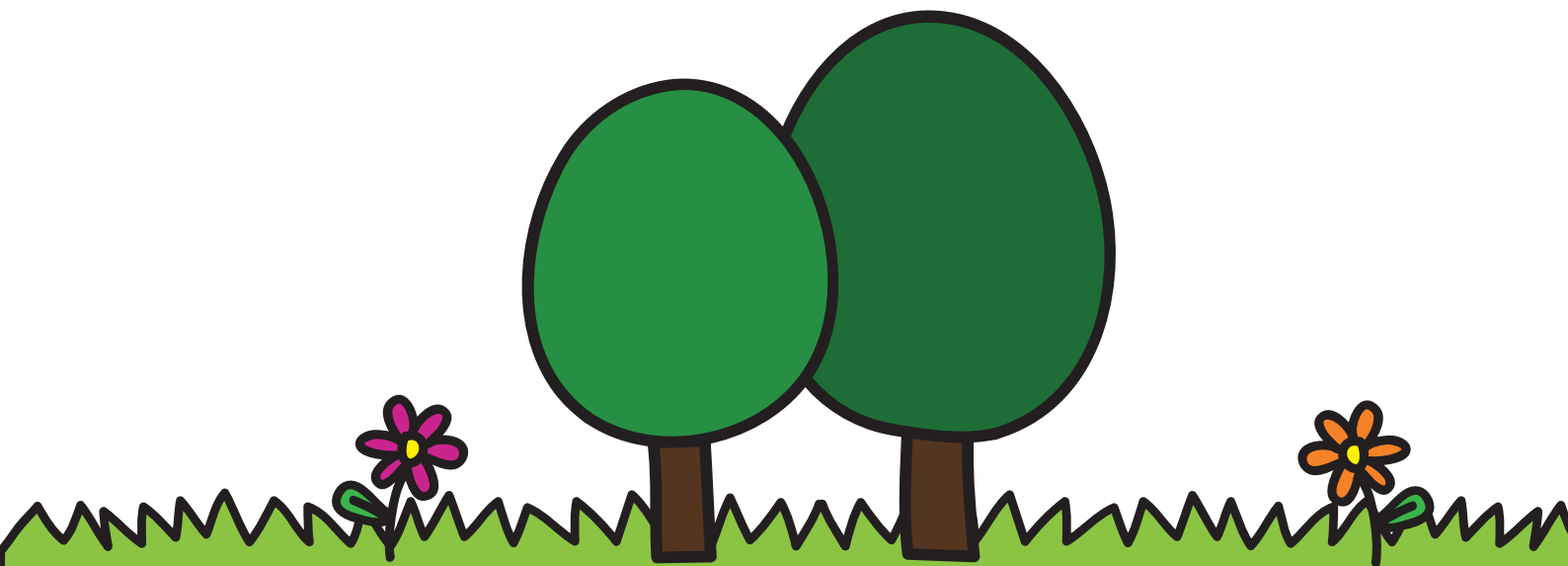
Additional observations / any challenges to look out for?

Children enjoyed and laughed when new robot friend danced with them for the first time. They danced and clapped loud enough for KIBO with move. They ensured the littleBits working with how their friend designed it. Although it is a long process, the children worked together and put them together.





DRAFT.
DO NOT PRINT





CREATING TABLE LAMP WITH THE USE OF LITTLEBITS! | K1

DAY 1

LEARNING OUTCOMES

Children will be able to:

- Compare different types of papers that are transparent, translucent or opaque..
- Ask questions and seek answers by gathering information from different sources.
- Children will create table lamps and talk about it.
- Express and represent ideas, experiences and feelings through artwork .
- Children will discover the concept of 'transparent', 'translucent' and 'opaque'.
- Express and elaborate ideas using appropriate language features.

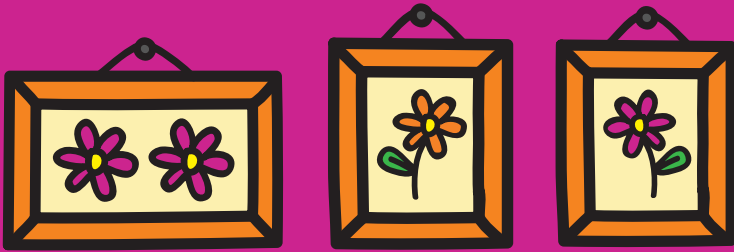
LESSON INTRODUCTION

1. Circle time routine.

MATERIALS

- Things that are made of paper: E.g. newspaper, toilet paper, paper towels, paper bag, plastic bag, magazines etc.
- Different types of papers – drawing papers, cellophane papers, calligraphy papers, tracing papers, laminated paper etc.
- 4 Boxes of littleBits



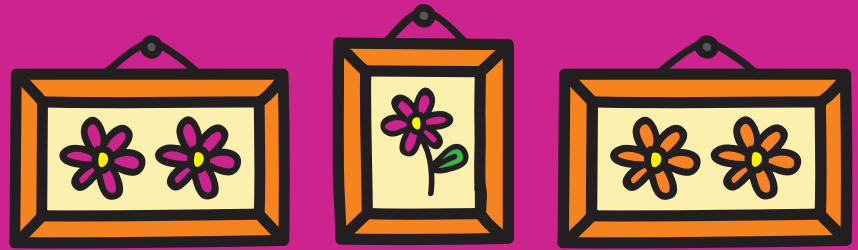


LESSON STEPS

1. Gather the children to sit in a circle.
2. Place all the materials made of paper, different types of papers and the littleBits in the middle of the circle.
3. Allow the children to observe, examine and explore with the materials.
4. Engage in a discussion with the children about the materials together with the littleBits.
5. Questions for Discussion and Focus
 - These things on the floor are the same in one way or another. Can you tell me how these things are the same?
 - How are they different?
 - What are they made of?
 - How does it feel? Do all the materials feel the same?
6. Introduce to the children the words 'transparent', 'translucent' and 'opaque'.
7. Get the children to sort the materials into 'transparent', 'translucent' and 'opaque'.
8. Questions for Discussion and Focus
 - How do you know if the papers are transparent, translucent or opaque?
 - What will happen if you place the little bits in front of the different types of paper?
 - Can the light pass through?

CLOSURE

Get them to share how they have sorted the materials.



How did the Tech Toy enhance the Lesson?

For our lesson, we used littleBits. We introduced the word 'translucent', 'transparent' and 'opaque'. With the help of the littleBits, children were able to explore with the different types of papers that was introduced and discussed about the opacity of the papers and materials made of paper.

The children also learnt that light needs electricity to work and with the littleBits. The children were introduced to the dimmer where they can adjust the brightness of the light. Not only that, the children also discovered about magnetism as they joined the littleBits together. Safety aspect on handling things with electricity was also shared.

Additional observations / any challenges to look out for?

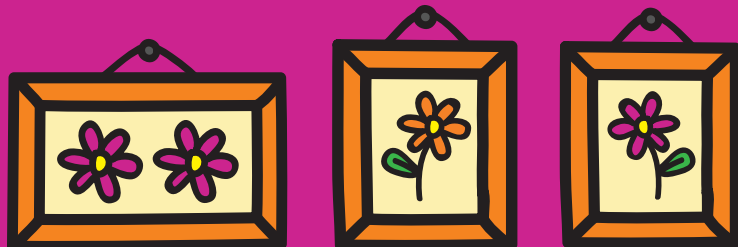
At first, I had some doubts about introducing what we had learnt from the Playmaker session. I was wondering whether the children could understand what I will be delivering to them.

All my fears and doubts were cleared ever since I started the whole project with the K1 children. In fact, the children were looking forward to all the Playmaker lessons. They were more focused on what they were doing with the Playmaker set compared to everyday lessons.

From my observation, children are able to articulate their findings about the different types of materials that are made of paper. Some examples:

- "Drawing paper is opaque. Cannot see through."
- "I can see through the cellophane paper."
- "We have two plastic bags, one is transparent one is not."



**DAY 2****LESSON INTRODUCTION**

1. Circle time routine.

MATERIALS

- 4 Boxes of littleBits
- Different types of papers – drawing papers, cellophane papers, calligraphy papers, tracing papers etc.
- Coloured pencils, coloured markers, calligraphy brushes, Scotch tapes, scissors
- Recycled boxes

LESSON STEPS

1. Gather the children to sit in a circle.
2. Get the children to recap on the types of paper they saw yesterday.
3. Remind the children that they have sorted the materials and papers into 'transparent', 'translucent' and 'opaque'.
4. Encourage the children to sort the papers into two attributes, "Light can pass through" and "Light cannot pass through"
5. Questions for Discussion and Focus
 - Do you think the light can pass through this paper? Why?
 - What can you say about the properties of the papers?
6. Inform the children that they are going to make table lamps in small groups.
7. Get the children to choose the type of paper that they want to use for their table lamp.
8. Provide each group with a recycled box.
9. Get the children to decorate their recycled box using the papers and art materials provided.
10. After decorating their table lamps, encourage the children to share and talk about their table lamps.



Questions for Discussion and Focus:

- Why did you choose the type of paper for your table lamp?
- What can you see?
- Is the paper transparent, translucent or opaque? Why do you say so?
- Do you think the light can pass through the papers? Why?

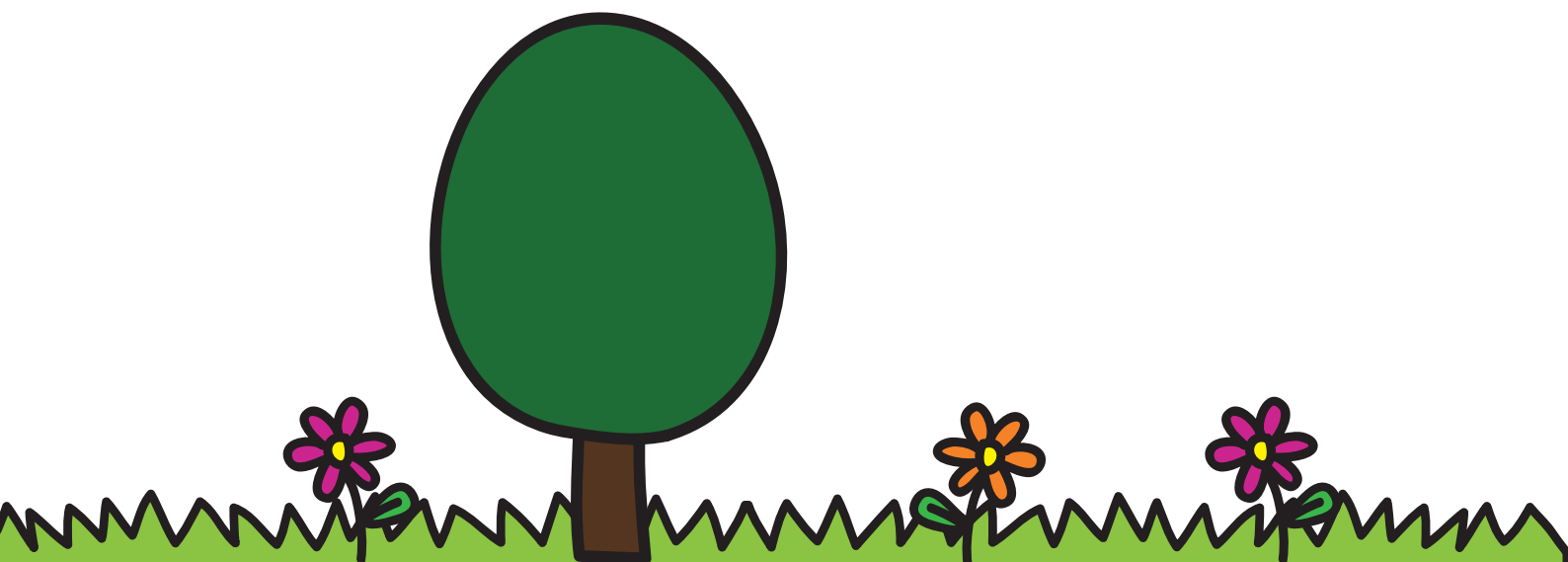
CLOSURE

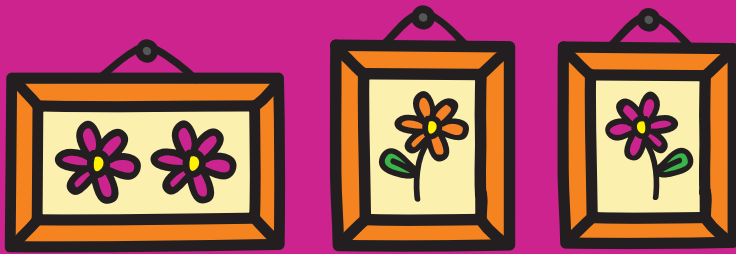
Recap the concept of transparent, translucent and opaque with the children.



How did the Tech Toy enhance the Lesson?

The children decided to create table lamps as they figured out that a dimmer can be adjusted to make the light brighter. As they have also explored with the different types of papers, each group decided on a type of paper and decorated it before they fixed the little bits to the table lamps. With the littleBits, children get to share their observation on the different types of papers used and which one produce the brightest light.



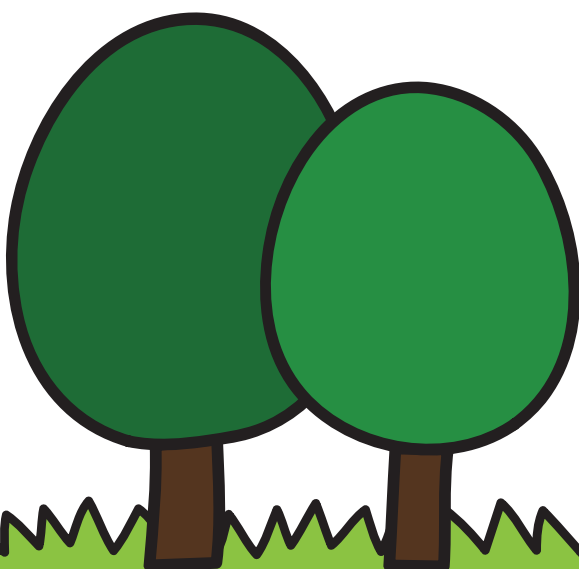


Additional observations / any challenges to look out for?

I started working on the littleBits by grouping the children into 5 groups. We had a mixture of children in each groups to tap on each other's strengths.

I asked the children to design their table lamp as a group. While designing, they discovered and shared about the concept of transparent, translucent and opaque. After their table lamp was done, they tried out the connection of the littleBits individually. The children were seen helping one another when they encounter any difficulties. They also learnt the safety aspect such as turning off the switch before disassembling the circuit. From this activity, I can also extend the children's learning by linking it to electricity, batteries, circuit and magnetism.

One challenge that I would like to share is the sensitivity of the littleBits. At times, children need to make adjustment before it can light up. I feel that children have to handle the littleBits with a lot of care. Also, maybe the lights can be made up of different colours and not only prominently green.





HOPPING! | K1

LEARNING OUTCOMES

Children will be able to:

- Use locomotor skills (hopping) to move from place to place with balance and control
- Hop using one foot, in different directions
- Reinforce their learning and understanding of directions (left, right, forward and backward)

LEARNING DISPOSITION



As they try to hop continuously along different directions.



By manipulating with both the Bee-Bot and littleBits.

MATERIALS

Station 1:

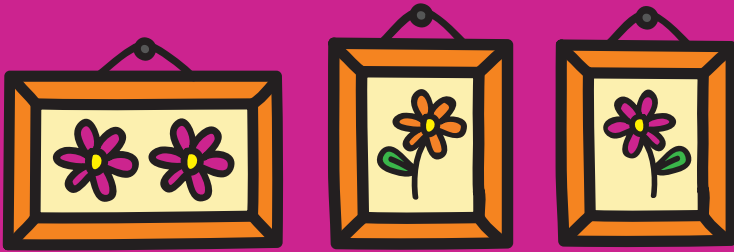
- Balancing beam
- Masking tape or chalk to indicate start line

Station 2:

- Bee-Bot and grid with pictures of both healthy and unhealthy food from the various food groups (Example: apples, grapes, chye sim, broccoli, bread, rice, fish, meat, milk, etc.), child sized grid with pictures similar to Bee-Bot grid (Use a chalk or masking tape to create the grid)
- Drawstring bag with picture words cards of the various food groups.

Station 3:

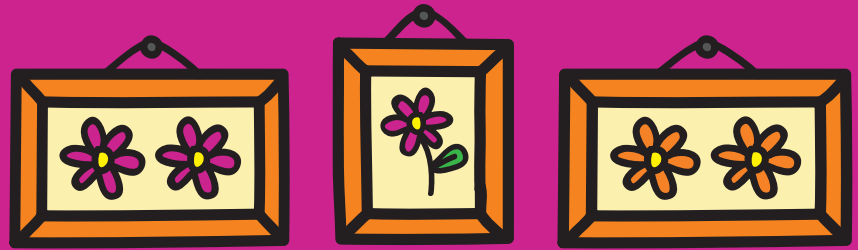
- 2 sets of littleBits (button and sound buzzer).
- 2 hula hoops.
- Two A4 laminated pictures of pre-made littleBit structure that is cut into 6 to 8 pieces-teacher will take a picture, print and laminate it before cutting.



LESSON INTRODUCTION

1. Gather children around the open space, each standing arms apart from another. Children do some warm up stretching exercises for about 10 to 15 minutes from head to toe. These exercises can be done in count of 5 sets/times. Some examples would be:
 - Rotate: Your head, both clockwise and anti-clockwise.
 - Shrugs: shrug your shoulders as if you are saying “I don’t know” and Roll your shoulders and then forward.
 - Sky reaches: Stand tall, stretch one arm towards the sky then stretch the other arm
 - Propellers: Gently circle arms forward, then backward.
 - Belly button circles: Pretend your belly button is in the centre of the circle. Trace 3 circles in one direction and then 3 circles in another.
 - Side stretcher: Standing tall, slowly reach down one side of body, with arms tilt to the side. Do likewise for the other side.
 - Sprinter stretch: Begin in all four positions. Move one leg forward until the knee of this front leg is directly over the ankle. Extend the other leg back for 5 seconds. Do both sides.
 - Quad stretch: Bend one leg gently until heel of foot is touching back of upper leg for 5 seconds. Repeat with the other leg.
- ii. End the warm up with 5 jumping jacks on the spot and jog one round, around the open space.





LESSON STEPS

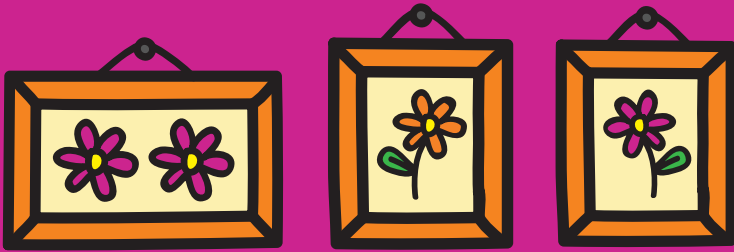
Prior to this lesson, children would already have practised on the skill of hopping. Teacher introduces the 3 stations and explains the rules of each.

Station 1: "U" can hop!

1. Children to stand behind each other in a row behind the start line drawn/taped.
2. Teacher will signal and first child will hop forward towards the balancing beam which had been set up some distance away from the starting line.
3. Once they reach, child will balance and walk across the beam.
4. Next, child comes down and hops back to the start line, tapping the hand of the next child.
5. Every child has a turn.

Station 2: Beat the bot! (Use of Bee-Bot and grid)

6. Each child will pick a card from the drawstring bag with picture words (Living room, kitchen, bedroom and toilet)
7. Once they pick the card, the child will navigate Bee-Bot on the grid mat.
8. Pictures pasted would be objects found in the various rooms and child has to match the correct object accordingly.
9. Next, child will follow the direction of how the Bee-Bot had moved by hopping on the child sized grid that had been prepared.
10. Child will hop within each grid according to how the Bee-Bot had been navigated earlier and to return back the same path.
11. Level 1: Pictures to be pasted on the child sized grid similar to the mat for Bee-Bot (pictures may be small and pasted at the corner of each square grid) and children will hop in the similar direction as the Bee-Bot to how they navigated the Bee-Bot. The pictures will aid as a guide to where the child will hop.
12. Level 2: Grid without pictures. Child will hop in the similar direction to how they had navigated the Bee-Bot.



Station 3: Amazing hop! (using of littleBits)

1. Children will gather behind the start line.
2. A picture of a pre-done littleBits structure (Teacher will create the structure beforehand using the littleBits and take a picture of it to create a puzzle out of it) will be given to each group. If 5 children are in one group, to have a structure that consist of 5 or more little bits connected. (The button and the sound buzzer/sensor are the compulsory pieces to be included).
3. On the other end, the littleBit pieces (not fixed) will be placed within a hula hoop.
4. Once the group of children had fixed the puzzle pieces together, each child will take turns to hop towards the hula hoop to start fixing.
5. The first child will fix the first piece to the main power source and hops back. The second child will hop across to fix the next piece.
6. Similarly, the other children will take turns to hop across and fix the bits one by one, till every child has their turn to be involved creating the whole structure.
7. The fixed puzzle piece will act as a guide to which piece come first, second and so forth (level 1)
8. If the children are already exposed to littleBits prior to the lesson, puzzle need not be given and children will connect the pieces using their own knowledge/understanding) (level 2)
9. The last child in the team who had fixed the last piece will press the button to sound the buzzer.
10. The first team to sound the buzzer, wins!





CLOSURE

- Children do some slow, cool down exercises. Some example include:
 - Breathe in and out!
 - Finger stretcher: In stand tall position, interlock your fingers of both hands, then gently straighten your arms, pushing the palm of your fingers outward. Hold it for about 5 to 10 seconds. Then, stretch in this position with arms over head and then behind your back.
 - Sit and stretch: Sit on the floor with legs stretched forward. Position your arms straight forward and try to touch your toes without bending your knees.
- Remain sitting and children will talk about their experience with littleBits and Bee-Bot.

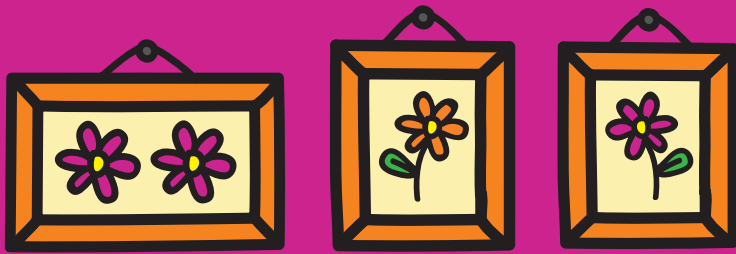
How did the Tech Toy enhance the Lesson?

The lesson was more interesting as apart from just focusing on their gross motor development, their thinking and problem solving skills were also enhanced.

When the children were engaged in the activity that involved Bee-Bot, there were lesser waiting time as when one child was already hopping on the child sized grid; the other children were working towards their next turn on the Bee-Bot grid. Here, all the children were working on something at the same time.

As for little bits station, it created excitement within the children as they were challenge to sequence the different parts the fastest as they competed with one another.



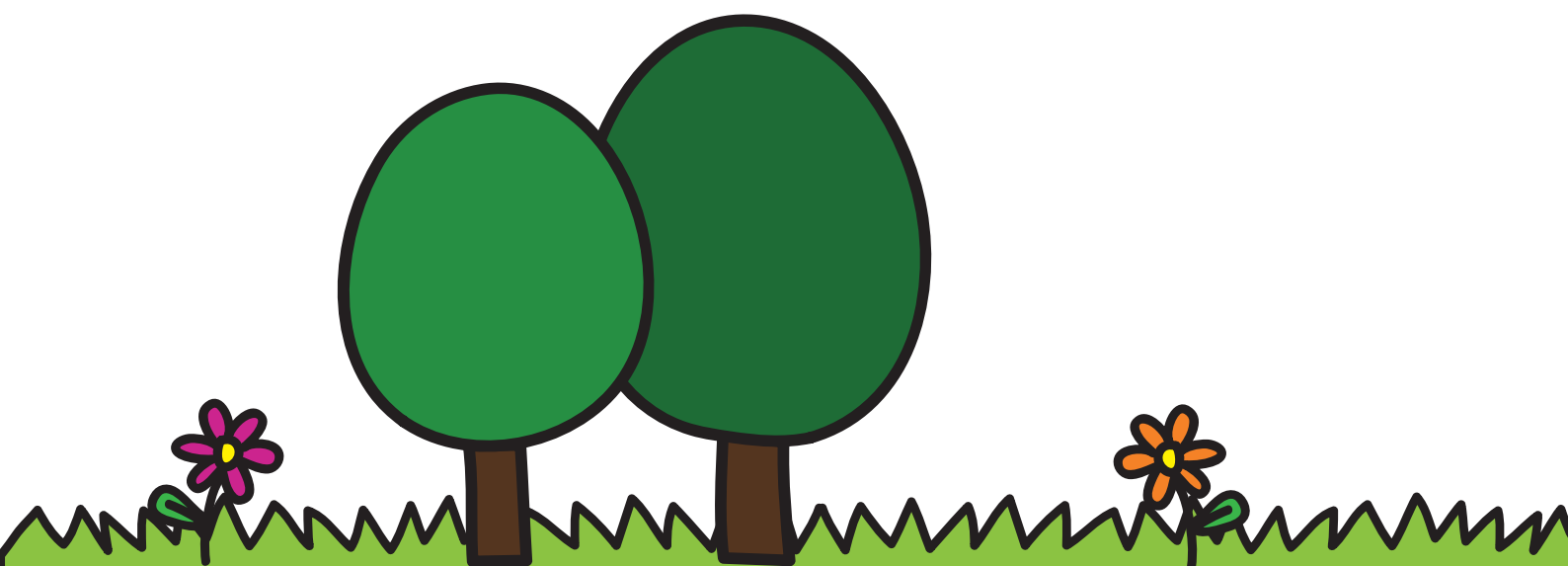


Additional observations / any challenges to look out for?

I felt that when these – Tech Toys are being implemented within an activity, the number of children should be lesser so that we, as teachers, are able to facilitate them better. Therefore, when I split 15 children into 4 groups, 2 groups attempting one activity, there were more meaningfully engaged due to lesser waiting time.

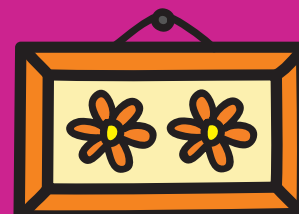
However, more preparation time were taken up as I had to create the child-sized grid using a masking tape, ensuring that the size and distance were appropriate for the children to hop from place to another. Moreover, since this was done outdoor, we had to remove all the tapes again to clear the floor. For the second session, we tried using coloured chalks but the lines were not as straight as using a tape. Therefore, I feel we could have used a string which would work better as we will just have to paste the ends and the string could be re-used.

As an overall, I saw lots of social and cognitive thinking taking place as they children worked with one another to how they could accomplish the task. More sessions were needed to meet the objectives as children were more focused on the Tech Toys rather than the hopping skills as it was still the initial stage of experimenting with the Bee-Bot and littleBits. After many sessions, they were more familiarized with the Tech Toy activity and, it was easier for us, teachers, to guide in their hopping skills.





MY World Tiong Bahru View



TRANSPORT TO SCHOOL | K2

LEARNING OUTCOMES

Children will be able to:

- Use open-ended materials to create 3-D vehicle based on their imagination
- Make their 3d vehicle move with the use of teach toy littleBits
- Read pictorial graph to answer simple questions beginning with “how many” and “how many more/fewer”

LESSON INTRODUCTION

1. Ask the following:
 - How many ways are there to travel to school?
 - How did you travel to school?
 - How many more/ fewer children travel by _____ than by _____?
 - Which part of littleBits do we need to make our 3-D vehicle buzz/light and wheels to move?

LESSON STEPS

Picture Talk

1. Show cover page of the story book; read the tittle page and ask,
 - What is the picture about?
 - How many ways are there to travel in school?
 - How did you travel to school?

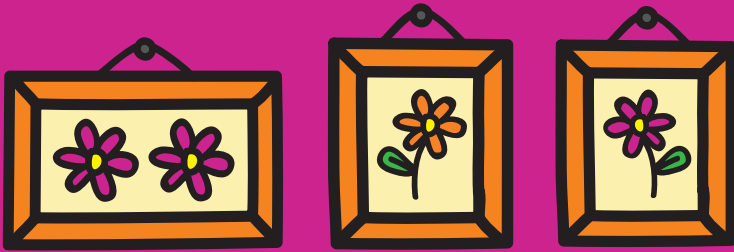
LEARNING DISPOSITION



Practice inventiveness by creating their 3-D vehicle and making it move.

MATERIALS

- Book/video: “*This is the Way We Go to School: A Book of Children Around the World*” by Edith Baer
- Mahjong Paper for graphing purposes
- Paper (half the size of A4 paper) one child each piece
- Drawing block and colouring materials
- Cardboard, sticks and bottle caps, paint (for making vehicles)
- littleBits



Story Reading

1. Read the story "This is the Way We Go to School" by Edith Baer.
2. Ask, "What are the different ways that people go to school"
3. Give each child a piece of paper to draw the way they come to school.
4. When they are done drawing, ask them to look for friends who travel to school in the same way.

Creating and Reading a Graph

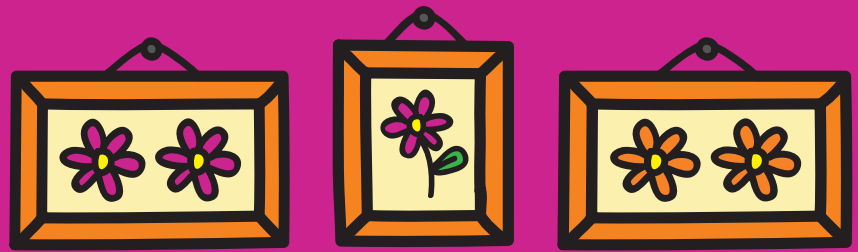
1. Using the children's pictures, create a graph to show different ways they travel to school; ask,
 - Why do you think most of us walk to school?
 - Why don't we need to take ferry/cable car like those children on the book?
 - How many children come to school by _____?
 - How many more/fewer children travel by _____ than by _____?

Art and Craft

1. Ask children, "If you would have a magical vehicle to take you to school, what do you think it would look like?"
2. Group the children into 3.
3. Get each group to draw their magical vehicle on a piece of paper.
4. Get the children to plan what material they will need to construct their magical vehicle.

Making 3-D vehicle

1. Based on the drawing they have made, children will create magical vehicle
2. Ask, "Which part of the Little bits do we need to make our 3-D vehicle buzz, light and the wheels to move?"
3. Get the children to work in making their magical cars move with the use of teach toy.



CLOSURE

Children to share their art works to their classmates.

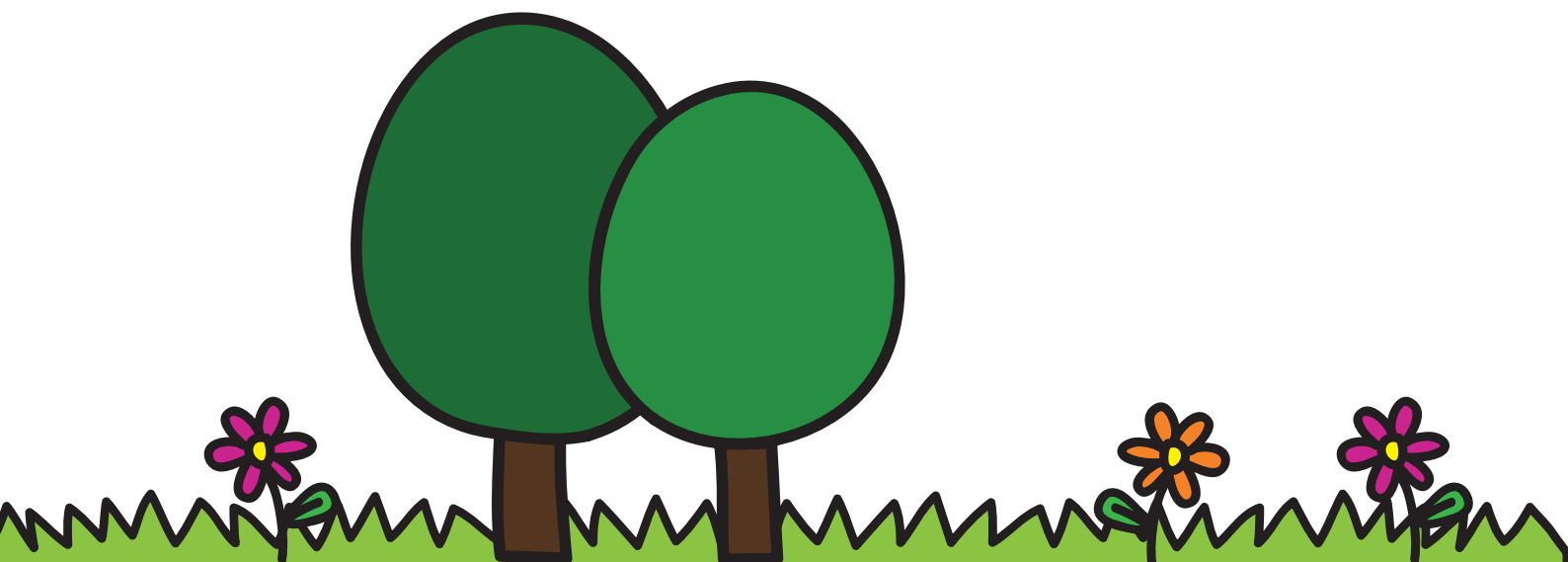
Additional observations / any challenges to look out for?

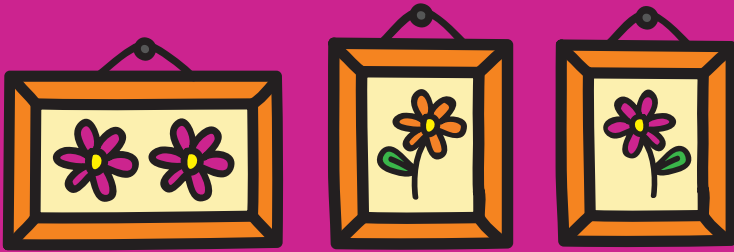
The children enjoyed the activities. They learned to cooperate so that they could finish their vehicles. They learned how to problem solve when problems occur. They learnt that most of them walk when going to school. They applied their creativity and were able to decide which materials they will use so that they can create a 3D vehicle. They learned to persevere when things are tough and things do not work.

Evidence of children's learning (children's questions and responses; how are children engaged in learning through play):

The children's answers to graph questions are:

- There are more children who go to school by walking than by car.
- There are fewer children who go to school by train than by car.





Answers to what are the things we need to use in making 3D vehicles.

- We can use box
- I know! We can use this tissue for the wheels.
- We need circles for the wheels but where should we find it?
- I know we can use blocks and demonstrated how it can be used with the help of my friend.
- We can also use caps like these showing the cap that he took from Art Centre while putting the little bits in the vehicles.
- Remember we need to put the pink first before the green that's what Teacher said.
- Oh we can connect all the motors together.
- Oh, Yes! I know. We should connect it to the wheels.
- We can use the wire, See I make it longer.
- The bus is too big that's why it the "little bits" is not working
- I think we should connect the motor in the wheels then we put the buzzer then put some lights.
- I want it to light up when it's dark and off when it's bright.

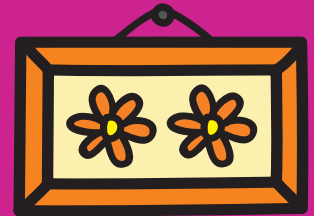
Areas to do better (how would you extend children's learning or meet learning needs?)

- Putting some art and crafts materials that are accessible for the children and let them use it during learning centre time.





PCF Bukit Timah Blk 305



STAR PROJECTOR | K2

LEARNING OUTCOMES

Children will be able to:

- Use the littleBits and recycled materials to create their own star constellation projectors
- Demonstrate control in fine motor tasks
- Create art through experimentation
- Children will learn how to differentiate constellations in the sky
- Discover and explore the world around them

LESSON INTRODUCTION

1. Prior to the activity, the teacher would have printed various constellations that are easy to re-create (made up with less than 10 stars), and allocated them to the students. Ideally, the names should be easy for the children to understand and relate to.

LEARNING DISPOSITION



Making the projector and holding the activity helps the children visualize the constellations which can be only seen at night.

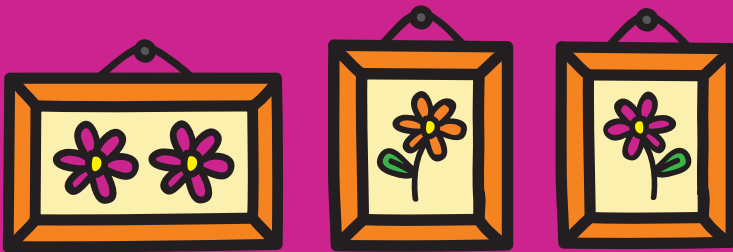


Making their own projectors from recycled materials engages the children in learning about the solar system.

MATERIALS

- littleBits kit
- Constellation Printouts
- Recycled materials
- Cardboard boxes
- Unwanted magazines
- Toilet rolls
- Writing Materials
- Scotch Tape
- Pointed tool like satay stick





LESSON STEPS

1. The teacher would also have created a dark box, where the star projector can be inserted, and the resulting constellation can then be observed.
2. Children will be given a paper cup, tape, unwanted magazines, toilet roll and a constellation.
3. Cut a page from the magazine into a circle, a bit bigger than the paper cup opening.
4. Using a pencil, students are to draw the position of the stars on the circular cut-out, and use a pointed tool to poke a hole where the stars are.
5. Tape the circular paper to the opening of the paper cup, and cut out the bottom of the cup.
6. Tape a toilet roll to the bottom of the cup to make the star projector sturdy.

CLOSURE

- Teacher will gather the children and arrange the constellation boxes around the classroom and allow children to go to different constellations and look at them.
- After which, teacher can discuss with all the children about their experience, and also about how they can see real constellations

How did the Tech Toy enhance the Lesson?

The project allows the children to see the constellations in the classroom, when they can only be observed in the night. Furthermore, it makes the projector made from recycled materials, more fun and engaging.

Additional observations / any challenges to look out for?

The star box can be easily created with A4 paper boxes, so more boxes should have been made so that the children do not have to wait too long for their turn. Children should be taught to be gentle when moving the projector around, as it will gradually widen the hole used to insert the star projector, and loosen the projector.



PCF West Coast Blk 728



LEARNING EMOTIONS IN PUNCTUATION | K2

LEARNING OUTCOMES

Children will be able to:

- Learn to recognise and differentiate punctuation marks
- Learn to read and understand differences in emotion from punctuation
- Learn to convey and express their own emotions

LESSON INTRODUCTION

1. Let the children narrate the story 'The Magic Paintbrush'.

LEARNING DISPOSITION



Reflect on the punctuation they have learnt in the lesson and how it can convey emotions.

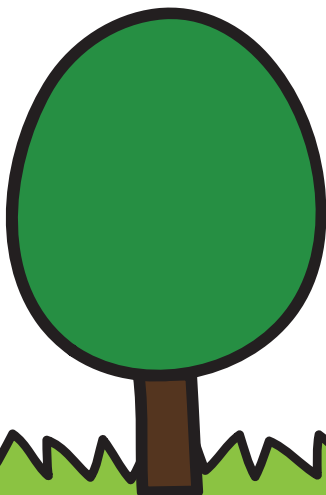


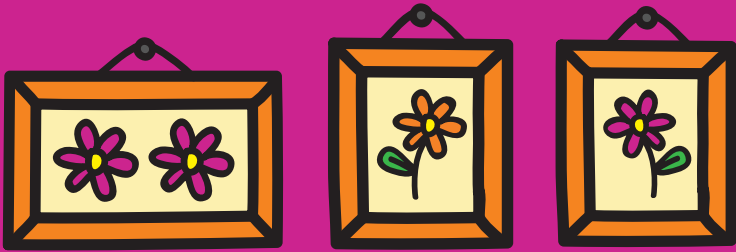
Practice engagement by relating the story with use correct usage of punctuation.

MATERIALS

- littleBits
- Bee-Bot
- Sample Sentence Strips
- Customised Bee Bot mat

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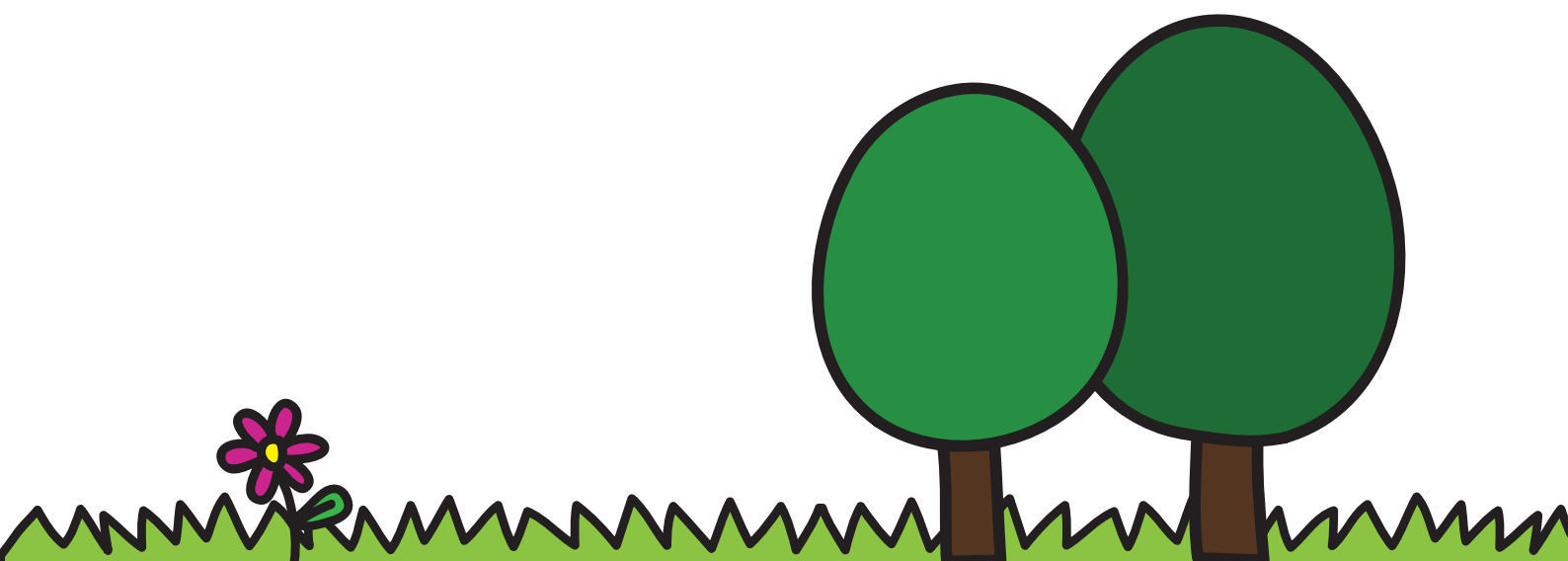


LESSON STEPS

1. Keep the littleBits assembled with dimmer and light.
2. Introduce '!' and tell children it is associated with feeling excited.
3. Say sample sentences and the light brightens up with exclamation sentences. Dim during normal sentences.
4. Read out sample sentence strips.
5. Ask children about the punctuation symbols associated with it.
6. Demonstrate the Bee-Bot movement to the specified punctuation.
7. Practice with them for a few more sentences.

CLOSURE

Let children come up with their own sentence that has exclamation mark associated words as a group. Demonstrate using Bee-Bot.



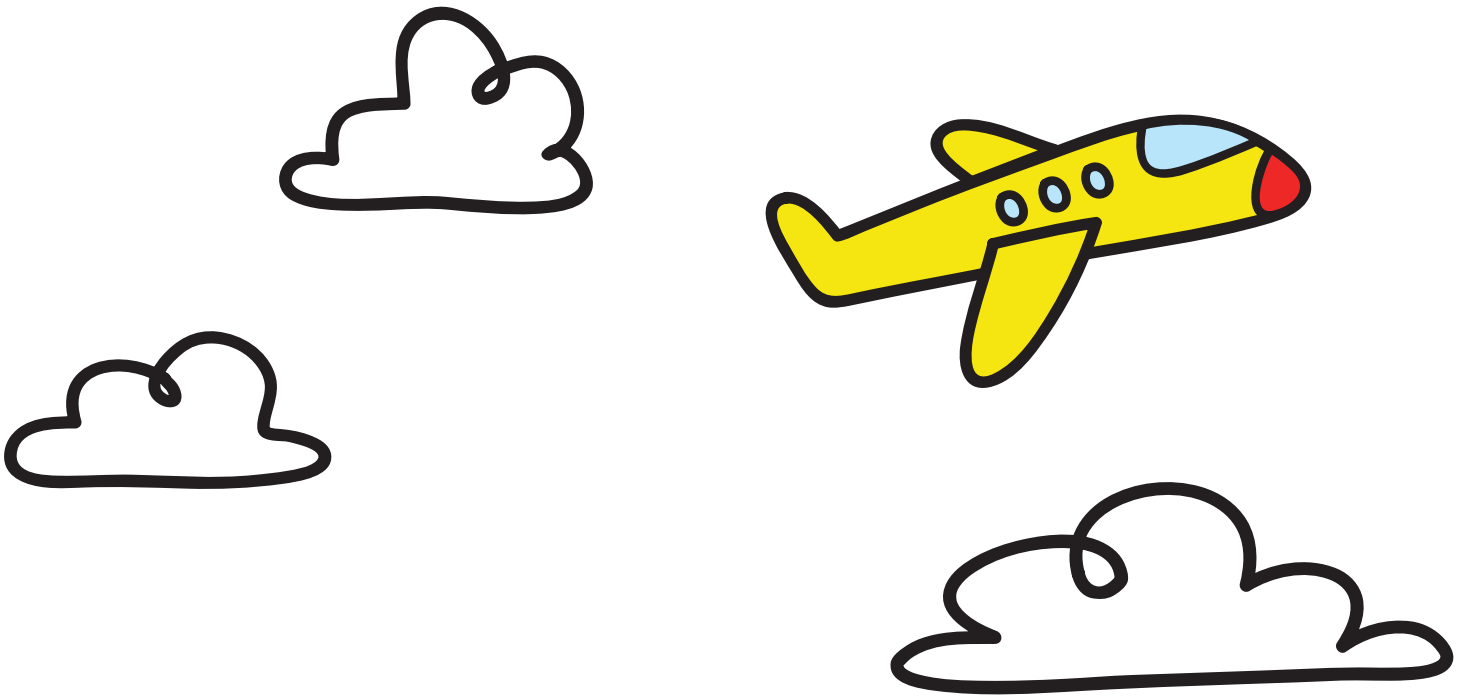
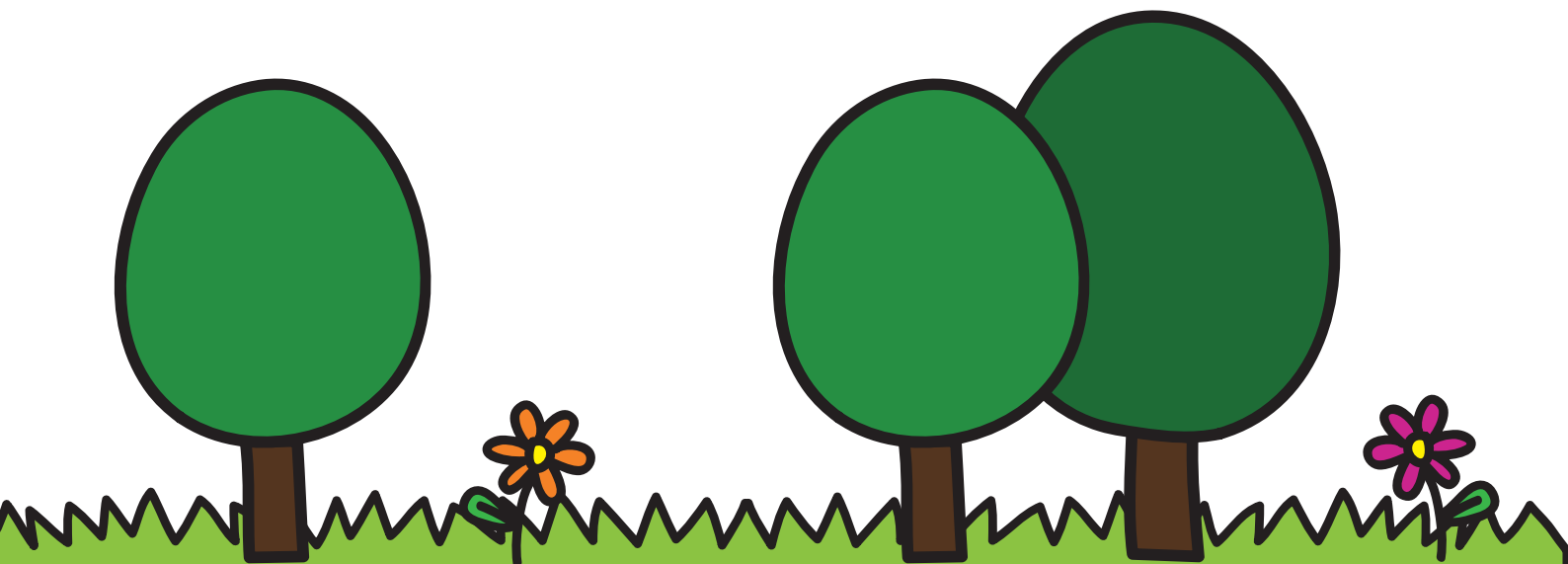


PHOTO GALLERY





MFS Serangoon



Macpherson Sheng Hong
Child Care



PCF Tampines West



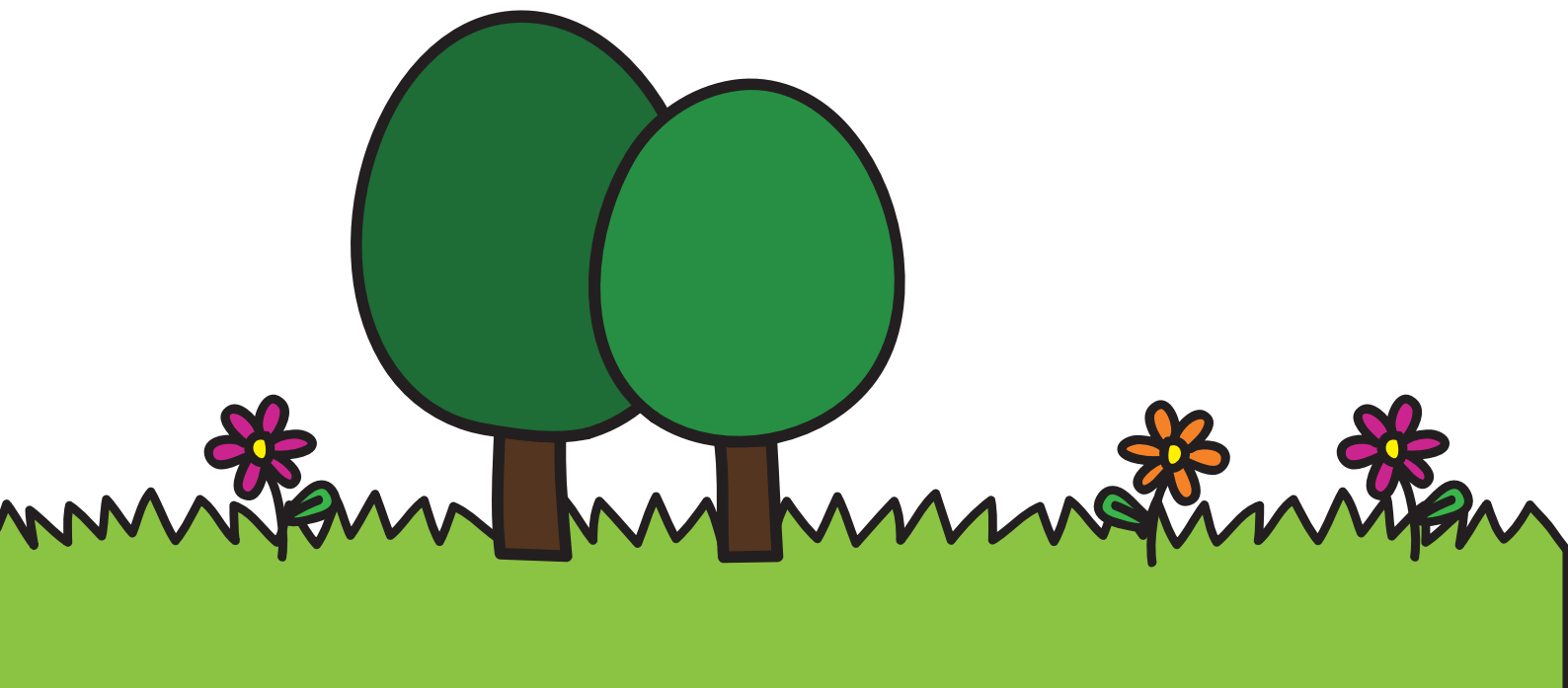
MFS Jurong West



THK Membina



PCF Jurong East





MY World Kan Ching



PCF Yu Hua



**Skool4Kidz Woodlands
Crescent**



MFS Jurong West



PCF Bishan East Thomson



E-Bridge Yishun



MFS Serangoon



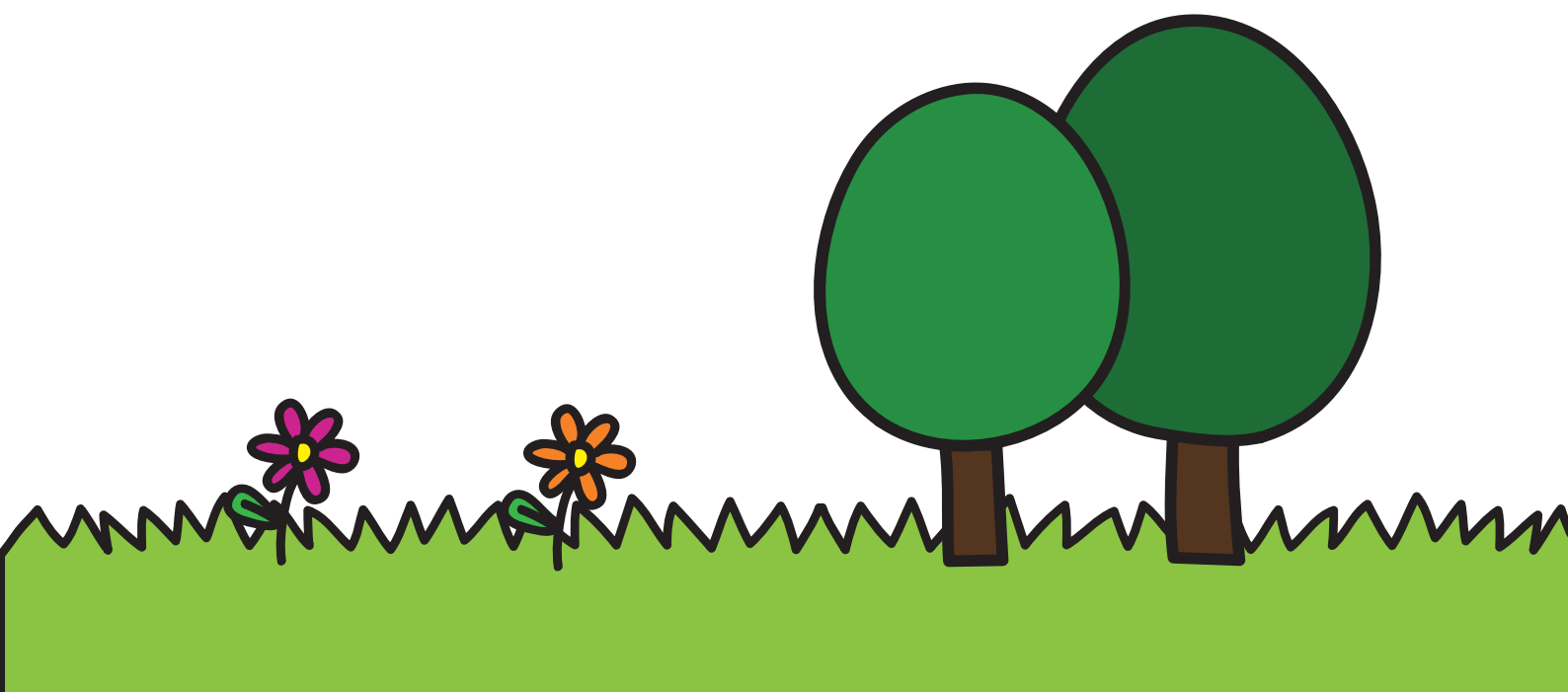
Chinese Kindergarten



Daystar Holland



Jurong Christian Church
Kindergarten





MY World Tiong Bahru



MFS Yung An



Skool4Kidz



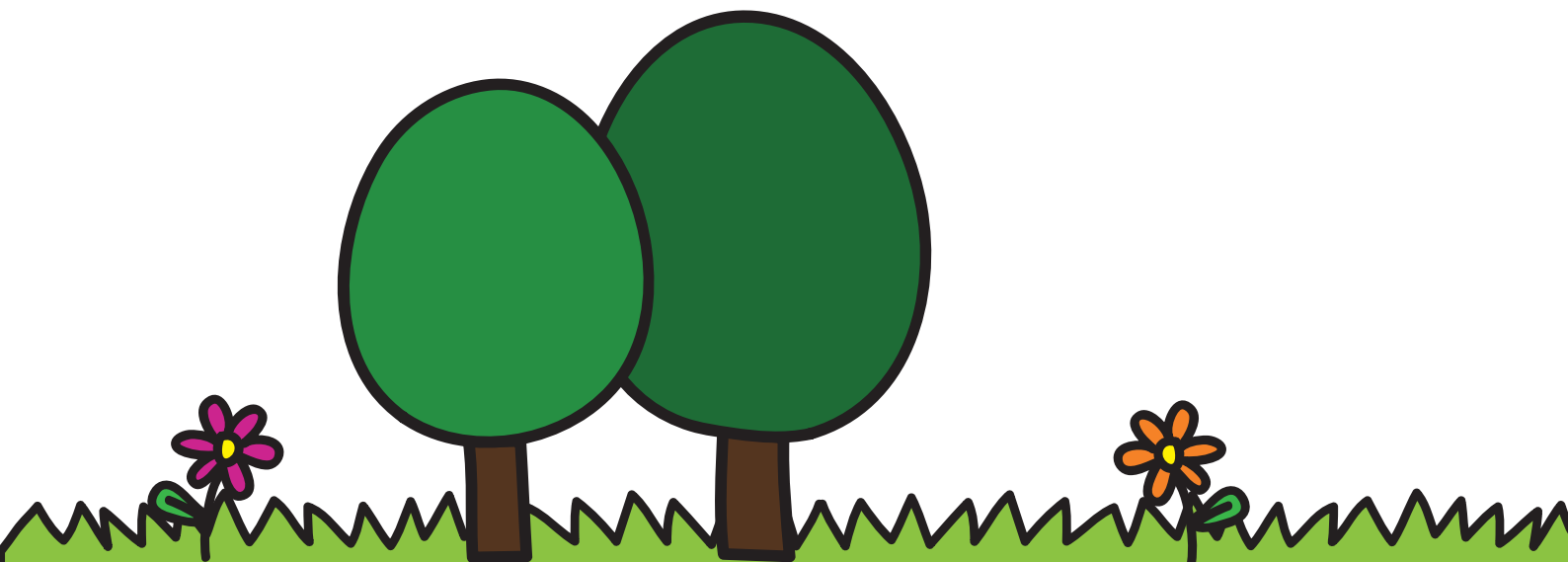
PCF Bukit Batok



KidsKingdom



MFS Westgate



IMDA would like to acknowledge everyone who have come together to make this PlayMaker guide book possible. The hard work and dedication to enrich the learning experiences is evident in each lesson plan and we are grateful for the invaluable contributions. We hope educators will find this guide useful and be motivated to embark on a new pursuit to experiment technology in your classrooms.



