



اَوَّلُهُمْ سَيِّدٌ لِّتِلْكَ لَوْ كُنَّا مُنَازِلًا
UNIVERSITI
TEKNOLOGI
MALAYSIA

What's *what* PSPM

EISSN: 2756-7729

- THE BASICS OF MULTI-LAYER FEEDFORWARD NEURAL NETWORKS
- MICRO:BIT – A BEGINNER-FRIENDLY TOOL TO INTRODUCE CODING TO CHILDREN
- UNFOLDING THE SECRETS OF PASCAL'S TRIANGLE
- HOW DATA SCIENCE WORKS IN OUR DAILY LIFE WITHOUT US EVEN NOTICING
- POMODORO TECHNIQUE FOR LECTURERS' PRODUCTIVITY

MICRO:BIT - A BEGINNER-FRIENDLY TOOL TO INTRODUCE CODING TO CHILDREN

Wan Aryati Wan Ghani, Abdul Rahman Gobil and Haslinda Noradzan
Pengajian Sains Pengkomputeran dan Matematik ,
Kolej Pengajian Pengkomputeran, Informatik dan Matematik,
Universiti Teknologi MARA (UiTM) Cawangan Negeri Sembilan, Kampus Seremban,
70300, Negeri Sembilan Darul Khusus, Malaysia.

aryati955@uitm.edu.my

GETTING TO KNOW MICRO:BIT

Micro:bit has been around since 2015, introduced by the BBC in the United Kingdom. It began with the Make IT Digital initiative, aimed at inspiring young children to explore creativity in coding and programming, besides enhancing their digital literacy (Austin et al., 2020).

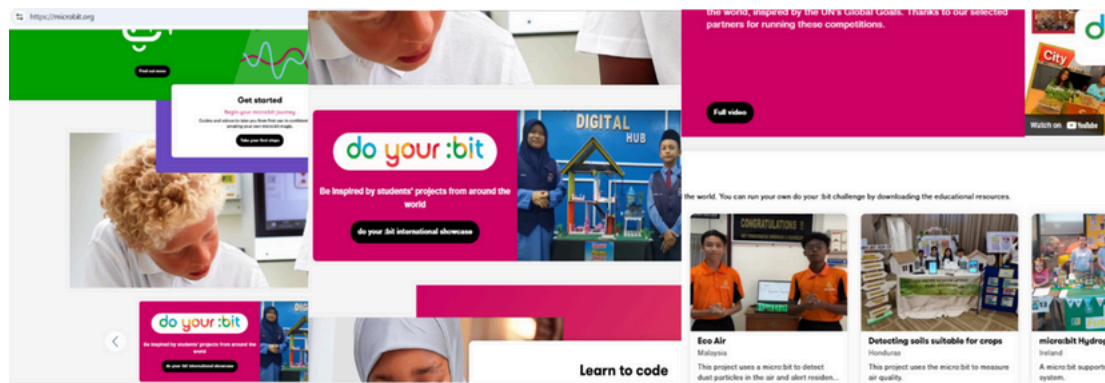


Figure 1: Discovering micro:bit (Source: <https://microbit.org/>)

In Malaysia, micro:bit is introduced in STEM programs at most primary schools. Many participating schools in urban and rural areas are utilising the potential of micro:bit to enhance their curriculum, particularly in the subject called Reka Bentuk dan Teknologi (RBT) (Hussain et al., 2023). It is reported that the hands-on, and interactive nature of micro:bit activities promotes better student engagement (Selvadurai, 2023). This tool does not just make coding easy and fun, but it also encourages students to think creatively and work together to solve problems.

One of the five major goals of micro:bit development is to use it inexpensively and suitably for the school setting (Austin et al., 2020). Using micro:bits, students can design and explore many real-world applications of STEM concepts from all levels: (i) beginner, (ii) intermediate, and (iii) advanced. These teach students about the global goals aligned with the Sustainable Development Goals (SDGs) to promote prosperity and protect the planet (Introducing the Global Goals | Micro:Bit, n.d.).

However, there is a significant gap in the way we approach school children, especially children with special needs and underprivileged children (Madzhi et al., 2024). Therefore, we developed a module targeted at the beginner level at the inception of this program, suitable for various groups of children. Micro:bit has served as a good teaching aid, especially for communities that have not been exposed to coding skills and the use of technology in their daily activities.

PROGRAM KICK-OFFS

The micro:bit program has sparked a lot of attention in most schools across Malaysia. En Abdul Rahman Gobil, a senior lecturer from the Computing Science Studies, KPPIM, Seremban Campus, initiated the micro:bit program to teach and instil coding skills to children from the local community in Seremban. The program, in collaboration with the mosque committee board, was held at Masjid Sheikh Haji Ahmad, Bandar Sri Sendayan, Negeri Sembilan and was attended randomly by children of various ages who live nearby. The children who participated were keen to code using micro:bit. They were taught to write code using the block-based programming language during the session.

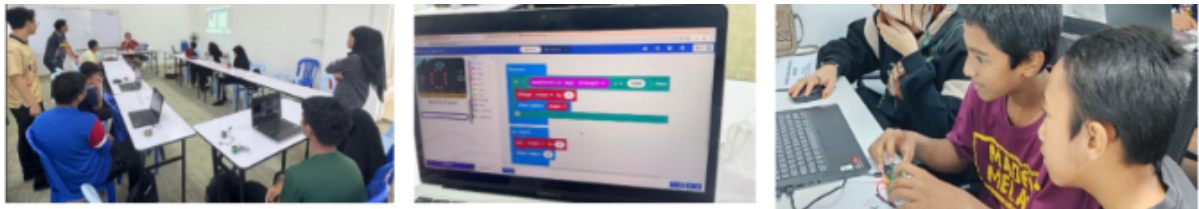


Figure 2: Sessions held at Masjid Sheikh Haji Ahmad, Bandar Sri Sendayan, Negeri Sembilan

The kick-off sessions were conducted over 3 months from October until December 2024. Below are the details of the sessions.

Session		No. of Participants	Activities
20th October 2024		20	<ul style="list-style-type: none">• Introduction to micro:bit with the start-up program• Handling micro:bit buttons• Testing sensors on micro:bit
17th	November	20	<ul style="list-style-type: none">• Developing a counter using a button and dice using a mathematical function (random number generator)• Controlling a microphone on the micro:bit as voice input.
2024			
15th December 2024		20	<ul style="list-style-type: none">• Developing a simple compass and step-counter

Table 1: Kick-off sessions

The children were engaged with hands-on activities that allowed them to explore the micro:bit actively. This session used ten micro:bit sets shared among the children at the beginner level. They learnt to manipulate the LED display on the micro:bit, such as displaying messages and icons. Besides, they were also taught how to control buttons on the micro:bits and sensors such as an accelerometer for movement measurement, temperature, light, compass, and touch logo that uses capacitive touch just like a tablet screen. These activities helped develop the creativity and technical skills among the children.

COMMUNITY ACTION - UPCOMING EVENTS

The kick-off sessions in collaboration with the mosque committee board, were a success. The program received remarkable feedback from the mosque committee and the children. Based on the constructive comments, the mosque committee has proposed that we continue with more sessions scheduled for two hours per session, on the third Sunday of every month, at no participation cost.

Pursuing the success of the first three sessions that we conducted in the mosque in 2024, Jawatankuasa Pembangunan dan Keselamatan Kampung (JPKK) Kg Rasah, Negeri Sembilan also invited us to conduct a similar course in National Information Dissemination Centre (NADI) Bukit Chedang. A 3-hour session conducted on 8 February 2025 provided opportunities to all 25 participants aged between 10-17 years old to explore and engage in fourteen hands-on activities using micro:bit. The session allowed them to experiment with basic coding in an interactive and fun learning environment. Feedback from the survey form distributed at the end of the session shows 88% of the participants indicate that the program successfully improved their knowledge and understanding of the modules covered, and it supports the need for more sessions in the future.



Figure 3: A Timeline of the USR program 2025

Following the positive feedback from the participants and the organiser, we are now gearing up to prepare an intermediate and advanced workshop. The Computing Science Studies of KPPIM, Seremban Campus has planned an 8-month University Social Responsibility (USR) program in 2025 to develop an interest in coding among children, children with special needs, and underprivileged children in communities near Seremban. Figure 3 above shows a timeline of activities for this USR program.

This USR program is not solely intended to bring recognition to the department, more importantly, it aims to offer significant benefits to the children involved. It also provides an avenue for these children to explore real-life applications utilising micro:bit, emphasising the importance of technology to becoming a tech-savvy community. Overall, our program is inclusive and designed to encourage creative young minds.

MICRO:BIT MOVING FORWARD

As more schools introduce Micro:bit into their STEM curriculum, this program helps to close the gap in access to technology and hands-on learning while training children to be technologically sound. Teachers, students, and communities are working together to make learning more accessible and practical, especially for children with special needs and those from underprivileged backgrounds. With the right tools and support, these children can improve their digital literacy and confidence in technology. Besides, learning can become more engaging and meaningful.

REFERENCES

- [1] Austin, J., Baker, H., Ball, T., Devine, J., Finney, J., De Halleux, P., Hodges, S., Moskal, M., & Stockdale, G. (2020). The BBC micro: Bit-From the U.K. to the world. *Communications of the ACM*, 63(3), 62–69. <https://doi.org/10.1145/3368856>
- [2] Hussain, M. A. M., Mohd Shorkri, M. F., Basri, A. Q., Mohd Imam Ma'arof, N. N., A/L Kolandan, S., & Othman, M. A. (2023). Development of a Microcontroller Programming Basic Module for Technology Design Students in the Topic of Electronic Design at Secondary Schools in Malaysia/ Pembangunan Modul Asas Pengaturcaraan Mikrobite Untuk Pelajar Reka Bentuk Teknologi Bagi Topik Reka Bentuk Elektronik di Peringkat Menengah Sekolah Harian di Malaysia. *Sains Humanika*, 16(1), 57–67. <https://doi.org/10.11113/sh.v16n1.2083>
- [3] Introducing the Global Goals | micro:bit. (n.d.). Retrieved February 25, 2025, from <https://microbit.org/teach/do-your-bit/global-goals/introducing-the-global-goals/>
- [4] Madzhi, N. K., M Thamrin, N., Zulkifli, Z., & Herman, S. H. (2024). Exploring the Potentials of Robotic Inclusive Education in Supporting Students with Disabilities. 12(2), 125–135.
- [5] Selvadurai, E. (2023). Kesan Penggunaan Simulasi Papan Pengawal Mikro Terhadap Pencapaian Pengaturcaraan Murid Tahap Dua. *Jurnal Pendidikan Bitara UPSI*, 16(Special Issue), 123–128.