Designing the Future: Kids Craft Robots for Real-World Problems

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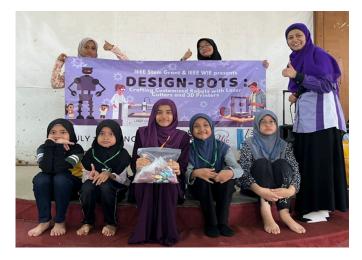Universiti Malaya, 50603 Kuala Lumpur, MALAYSIA

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During the September 2024 school holidays, a remarkable event took place at Masjid Kolej Islam Malaya, near Universiti Malaya. Children from the ages of 8 to 13 gathered to participate in a cutting-edge initiative that combined fun with learning: creating robots to solve real-world problems. Organized by the WIE UM Student Branch Affinity Group in collaboration with IEEE WIE Malaysia, IEEE Malaysia Section, and the Masjid's committee, this event was made possible by an IEEE STEM Grant (Try Engineering) as part of the "Design-Bots: Crafting Customized Robots" project (UM IF074-2024).

Winners of design-bot in the program

The event's main goal? To introduce kids to robotics and inspire them to use technology creatively to tackle real-world challenges. Sixteen teams of young participants, guided by 17 teenage facilitators (aged 14-17), were asked to design robots capable of addressing a variety of environmental and practical issues. These included digging tunnels for future infrastructure, mowing grass in large public parks, cleaning indoor buildings like schools, taking underwater pictures of marine life, cleaning rivers, and even delivering parcels in crowded urban areas.

The students designing 3D Robots in Tinkercad

The creative journey started with simple sketches. Armed with paper, pencils, and coloring tools, the children were encouraged to imagine their robots and what tasks they could perform. This creative exercise sparked excitement and allowed each group to develop their ideas visually before moving to the next step—designing the robots in 3D using Tinkercad, a beginner-friendly design software.

The project's research aspect delves deeper into the differences in how boys and girls approach problem-solving and creativity within STEM fields. The facilitators observed varying approaches in robot design, providing valuable insights for the ongoing research into gender differences in technical problem-solving and design thinking.

Thanks to the use of advanced tools such as laser cutters and 3D printers, the kids could see their robots come to life. The hands-on experience was an essential part of this initiative, offering the young participants a glimpse into the exciting world of robotics. The Design Thinking Lab at CyNex, supported by FSKTM Technovation and the ICT-INOV Erasmus Grant, played a significant role in giving the children access to these technologies.

As the project moves forward, the research team will continue to analyze the robot designs to gain deeper insights into how children of different genders approach design. The hope is that this data will inform future STEM education efforts, promoting more inclusive approaches and encouraging creativity and collaboration in young students.

The event not only provided the children with new skills but also sparked their imagination, showing them that technology can be used for good. The combination of teamwork, problem-solving, and technical skills made this an unforgettable experience for everyone involved.

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