Open BevyBot 2020 – An Open Source Low Cost Educational Robot for Effective Learning

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The modern world with lack of availability of an effective learning platform for students who are tired of traditional learning techniques. In the present day, basic mathematics is the most valuable fact for primary level students to improve their problem-solving skills. This study is carried out to develop a cost-effective open-source robot with a rewarding system for the children of the age group between five and ten years. The open-source robot chassis designed with computer-aided designing which can print by using 3D printing technology. In this research, a Java-based library is developed to communicate with the microcontroller of the robot and the hardware of the smartphones. And also, there is another problem that they have to spend more strive to build a robot as it is not a work that can be done in less time with a low budget. Throughout this study, present solutions such as Cosmo, Poppy, Q.bo-one are considered to gather information. But these robots are costly and also lack of opportunities to use for education purposes and that robots need external hardware sensors. But in the modern world, most people own a smartphone and it contains the above hardware (Processor unit, Sensors.). If can reuse that mobile phone hardware as robot hardware it will much cost-effective. Researchers decided to combine three ideas of open-source hardware/software, 3D printing technology, and reuse mobile phone hardware. As the final solution researchers build an open-source robotic platform with reusing mobile phone hardware combining the android library and finally they build an educational robot to evaluate the platform. Furthermore, researchers analyse the effectiveness of the built educational robot by providing a questionnaire to the students (age group 5-10 years) & getting feedback from them. Researchers plan to use PCB designs as hardware circuits into one platform which reduces the circuit space and commercialization of the product in the future.

Keywords: Educational robots, Open source, 3D printing technology, Low cost, Mobile phone