**THE IMPACT ASSESSMENT OF LOW COST ROBOTIC ARM ON STUDENT’S ENGAGEMENT AND ACADEMIC ACHIEVEMENTS.**

**OTITOLAIYE EMMANUELLA OMOBONILARA.**

**FEDERAL GOVERNMENT COLLEGE, IJANIKIN, LAGOS.**

**JSS2**

**Introduction**

The use of low-cost robotic arm models in Unitary Schools in Nigeria has been gaining popularity as educational tools to enhance students' understanding of robotics principles and provide practical skills in the field.

**Affordable Access to Robotics Education**

One such model is the myArm 300 Pi, a 7-DOF robotic arm designed and developed by Dr. Eric Markvicka, which offers control and programming options ideal for learners. for educational purposes. Its affordability makes it accessible to schools with limited budgets, allowing them to integrate robotics into the curriculum and provide valuable learning opportunities. Additionally, ancillary tools like vacuum pumps enhance functionality, creating a more comprehensive learning experience.

**Features for Engaged Learning**

Several factors contribute to a successful educational robotic arm model:

* **Cost:** Affordability is crucial for Unitary Schools.
* **Ease of Use:** User-friendly interfaces and clear instructions ensure student engagement without extensive technical knowledge.
* **Programmability:** Beginner-friendly coding options allow students to explore programming concepts and create custom movements.
* **Educational Resources:** Comprehensive resources including tutorials, lesson plans, and online communities empower teachers and enhance student learning.

The myArm 300 Pi excels in these areas, offering a competitive price, intuitive control, and visual programming. Additionally, it provides a range of educational resources for a well-rounded learning experience.

**Benefits of Robotic Arm Education**

Incorporating low-cost robotic arms into the curriculum offers numerous benefits:

* **Active Learning:** Students gain practical experience applying scientific concepts by assembling, programming, and controlling the robotic arm, leading to a deeper understanding of physics, engineering, and computer science.
* **Problem-Solving Skills:** Students develop critical thinking and problem-solving abilities as they encounter challenges during construction and programming, fostering analytical and logical reasoning.
* **Creativity:** Building and experimenting with robots encourages creative exploration. Students can design unique structures, experiment with materials, and improvise solutions, nurturing innovation and out-of-the-box thinking.
* **Collaborative Learning:** Robotic arm projects often require teamwork, promoting collaboration and communication. Students learn from each other's strengths, develop interpersonal skills, cooperation, and leadership abilities.
* **Interdisciplinary Learning:** These models provide a multidisciplinary approach, integrating science, technology, engineering, and mathematics (STEM) subjects..
* **Technological Literacy:** Students develop proficiency in programming, coding, and robotics, equipping them with essential skills for future careers in STEM-related fields.
* **Future-Ready Skills:** By engaging in robotics projects, students cultivate skills crucial for the modern workforce, preparing them for the demands of the evolving job market.

**Case Studies: Success in Nigerian Schools**

School like Obafemi Awolowo University, Ile ife, Osun State has successfully implemented robotic arm models, witnessing positive impacts on student learning and skills development. Students have designed and built their own low-cost models, sparking their interest in robotics and applying theoretical knowledge to practical applications. Additionally, teamwork skills and academic achievement have improved through collaborative projects.

**Conclusion**

Low-cost robotic arms are emerging as transformative educational tools in Nigeria. These models provide an engaging and interactive way for students to learn about robotics, engineering, and programming. By incorporating robotic arms into the curriculum, Unitary Schools in Nigeria can foster student engagement, equip them with valuable STEM skills, and prepare them for success in the future.