ENHANCING SCIENCE EDUCATION THROUGH THE USE OF PROPER INSTRUMENTS AND EQUIPMENT

by:
Ericka A. Susi
Teacher I, Hermosa National High School

Science education is one of pillars of development and innovation. Its effectiveness depends not only on curriculum and pedagogy but also on the availability and proper use of instruments and equipment. The use of appropriate scientific tools in teaching fosters conceptual understanding, practical skills, and student motivation. From digital simulations to physical laboratory apparatus, proper equipment transforms abstract scientific concepts into tangible experiences.

The integration of appropriate science instruments enhances students' acquisition of scientific process skills such as observation, hypothesis formulation, experimentation, and data analysis. The pre-laboratory discussions coupled with the use of proper equipment significantly improved students' engagement and performance in physics practical's. The presence of real, manipulable tools enabled learners to internalize scientific methods beyond rote memorization. On the other hand, a lack of devices in underprivileged schools as a primary barrier to effective science teaching. Teachers proposed a blended teaching model that includes digital and physical resources to compensate for infrastructure gaps while reinforcing practical competencies in organic chemistry.

In the post-pandemic era, digital resources have become increasingly vital. The development of digital enrichment books it allowed for the simulation of environmental chemistry experiments that would otherwise require expensive and dangerous reagents. This digital approach was not merely a substitute but an enhancement, enabling repeated experimentation and engagement across devices.

Teaching science with proper instruments and equipment is indispensable for quality education. It turns theoretical knowledge into practical understanding, encourages curiosity, and develops critical skills. This article demonstrates that where appropriate resources are integrated with effective pedagogy, science learning thrives. Policymakers and educators must prioritize investments not just in materials, but in the systems and people that make them impactful.

References:

Akano, B. U., Dania, C. M., & Arowolo, J. G. (2025). Effects of planned pre-laboratory discussion on physics students' acquisition of science process skills. International Journal of Science, Technology and Educational Research (IJSTER). https://academicjournals.org/journal/IJSTER/article-full-text-pdf/52B16FE73485.pdf

Chakawodza, J. M., & Mushayikwa, E. (2025). Design features of a blended teaching model for underprivileged schools in South Africa focusing on organic chemistry. EDULEARN25 Proceedings. https://library.iated.org/view/CHAKAWODZA2025DES

Ekaputri, R. Z., Hidayat, T., & Surtikanti, H. K. (2025). Prospective science teachers in the conservation education study. AIP Conference Proceedings, 3206(1), 080033. https://pubs.aip.org/aip/acp/article-abstract/3206/1/080033/3355664