When administrators invest in laboratory education, the school's academic performance and reputation improve. It also reduces dropout rates and increases student motivation, leading to a more vibrant and inquiry-based learning culture on campus.

4. For the Community (Parents, Local Leaders, and Society at Large)

The community serves as both a support system and a stakeholder in the success of the school. Parents, local authorities, and social groups contribute resources, feedback, and advocacy for quality education.

Implications:

- Communities can assist by supporting schools through local fundraisers, donations, or partnerships with educational NGOs and science institutions.
- Parents should be informed and encouraged to take an interest in their children's science education, ensuring regular attendance and participation in lab work.
- Community-led science fairs, exhibitions, or awareness campaigns can promote public appreciation of science education, especially in rural or underserved areas.

When the community actively engages in school activities, children benefit from a stronger learning environment at home and school. Over time, this leads to better-educated, scientifically literate citizens who can contribute to local innovation, health awareness, and sustainable development.

By understanding and acting on these educational implications, all stakeholders can collectively create an ecosystem where science education is no longer confined to textbooks but becomes a dynamic, practical, and empowering experience for students. This aligns with the goals of NEP 2020 and strengthens the foundation of future-ready learners.

5.6 Suggestions for further studies:

- Investigate the impact of laboratory utilization on academic performance through longitudinal studies.
- Compare laboratory usage between private and public schools to identify best practices.
- Explore cost-effective alternatives, such as virtual labs, for resource-constrained schools.

These measures could bridge the gap between infrastructure and effective utilization, enhancing science education outcomes in Bhopal and similar regions.

References

- 1. Akçayir, et al., (2016). Augmented reality in science laboratories: The effects of augmented reality on university students' laboratory skills and attitudes toward science laboratories. Computers in Human Behavior, 57, 334–342. doi: 10.1016/j.chb.2015.12.054
- 2. Bajracharya, R.K. (1986). Study of Science Education in the Secondary schools of Nepal with a view to evolving a functional model for improving the science education, Ph.D. Edu., Del. U., 1986-4
- 3. Chakrapani, R., & Puroshottama, S. (1975). A study of practical works in the science program in the secondary schools. *Journal of Educational Research and Extension*, 11(4).
- 4. Geleta, K. (2018). The Upshot of availability and utilization of Science laboratory inputs on students' academic achievement in high school Biology, Chemistry and Physics in Ilu Abba Bora Zone, Southwestern Ethiopia. *International Journal of Scientific and Research Publications*, 8(9), 298-307.
- 5. Hodson, D. (1990). A critical look at practical work in school science, School Science Review, 71(256), 33–40.
- 6. Konyango, O. B. (2011). Impact of resource utilization on the performance of physics in KCSE in public secondary schools in Ugunja/Ugenya districts, Kenya. *Unpublished Master of Education thesis, Kenyatta University, Kenya*.
- 7. Lazarowitz, R., & Tamir, P. (1994). Research on using laboratory instruction in science. In: Gabel, D.L., (Ed.), Handbook of Research on Science Teaching and Learning, New York: Macmillan. pp. 94-130.
- 8. Mogaka, M. M. Availability and Utilization of Physics Laboratory Equipment on Academic Achievement of Students in Public Day Secondary Schools.
- 9. Muddu, V. (1978). A Study of Prevalent Status of Instructional Procedure in Biology in High Schools, An Unpublished Ph. D thesis, Osmania University. In Buch M, B (Ed. 1986) Third survey of Research in Education. New Delhi: NCERT
- 10. Oluwasegun, et al. (2015). The impact of physics laboratory on students' offering physics in Ethiope West local Government Area of Delta State. Journal of Educational Research and Review.10(7), 961-956.
- 11. Orehowsky, W. (1999). The effect of laboratory-based instruction and assessment on student attitudes toward the laboratory experience and achievement in chemistry at the high school level. Temple University.
- 12. Pareek, R. B. (2019). An assessment of availability and utilization of laboratory facilities for teaching science at secondary level. *Science Education International*, 30(1).
- 13. Patole, N. K. (1967). A Study of Teaching of Science in Rural Primary Schools-Standards I to VII Ph. D. Edu., Poona U., 1967-1
- 14. Prerana H. Shelat, (2012). Developing an Instructional Strategy and Studying its Effectiveness for Comprehension in Science Among Class VII Students, A Ph.D Thesis, Centre for Advanced Study in Education. The Maharaja Sayajiroa University of Baroda, Vadodara.
- 15. Rahman, M. S. (2017). Kajian Standarisasi Sarana Prasarana Laboratorium di SMP N 4 Sumenep. Jurnal Pendidikan IPA, 7(24).
- 16. Rajput, J.S., Gupta, V.P. Vaidya, N. (1978). Survey of science laboratories in the western region, Independent study, Regional College of Education, Bhopal.
- 17. Tamunoiyowuna, S. (2022). Extent of availability and usage of various laboratory equipment among physics students in Port-Harcourt, Nigeria. *World Journal of Advanced Research and Reviews*, 13(3), 113-122.