

USING SCIENCE COMMUNICATION STRATEGIES TO CLOSE THE RESOURCE GAP IN UNDER-RESOURCED SCHOOLS

Blessing Nemadziva^a, Catherine Cole^a, and Steven Sexton^b

Presenting Author: Blessing Nemadziva (blessing.nemadziva@postgrad.otago.ac.nz)

^aDepartment of Science Communication, University of Otago, Dunedin 9016, New Zealand

^bCollege of Education, University of Otago, Dunedin 9016, New Zealand

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BACKGROUND

South Africa's national curriculum (CAPS) encourages an inquiry-based approach to science teaching. However, 80% of public schools lack adequate resources and facilities for effective science learning (Nemadziva, Sexton, & Cole, 2023). This situation has potential to perpetuate educational inequality as the majority of schools are not well-equipped to meet curriculum requirements. While nationwide education reforms are required to address infrastructural deficit in schools, there is need for immediate interventions. Science communication presents a solution to develop cost-effective science learning material for use in under-resourced schools. This study aimed to evaluate if science communication strategies could be used to develop effective inquiry learning material for use in under-resourced schools.

METHODS

The study involved Grade 9 life science classes (students aged 14–16 years) at three secondary schools from a rural district in the KwaZulu-Natal province of South Africa. The design-based research methodology (Crippen & Brown, 2018) was adopted and followed three stages: needs analysis, development of learning resource, and evaluation of learning resource.

RESULTS

A nucleotide blocks model kit was developed and evaluated by the Grade 9 students and teachers at the same schools. Further evaluations were conducted by consulting 5 life science teachers based at urban schools in Durban, South Africa. Results showed that the model kit successfully enabled inquiry-based learning, improved science learning experience, and had measurable value as a teaching/learning aid in under-resourced classroom settings.

REFERENCES

- Crippen, K. J., & Brown, J. C. (2018). Design-Based Research. In B. B. Frey (Ed.), *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation* (pp. 490-493). SAGE. <https://dx.doi.org/10.4135/9781506326139.n195>
- Nemadziva, B., Sexton, S., & Cole, C. (2023). Science communication: The link to enable enquiry-based learning in under-resourced schools. *South African Journal of Science*, 119(1/2), Article #12819. <https://doi.org/10.17159/sajs.2023/12819>

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