

Improving Science Learning Achievement through the Impact of Language in Structured Inquiry-Based Learning Approach

Human Education

Global Education

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Firstly, a student's interest determines the effort they are likely to put into their learning subject. Muralidhar (1989) describes a rather depressing situation where students in Fiji have little opportunity to carry out practical activities in a science lesson. The Ministry of Education in Fiji, as stated by National Examiners Report (NER), 2018 section 'b' in the general comment and part 4, continuously reiterates the need for teachers to develop innovative ideas to curb the problems of students' lack in the application of knowledge and inability to read comprehend questions. Helmenstine (2013) highlights the method of science is a way of 'conducting an objective investigation.' It entails asking questions, making observations, and testing hypotheses.

There are several variations of Inquiry-Based Learning cycles. This research aims to support and give teachers confidence through improving grade 5 student's elementary science achievement level using a Structured Inquiry-Based Approach with the support of prescribed steps provided by the 5E Instruction Model integrating Kasetsu Jikken Jugyo, a Japanese method of teaching that could sharpen or hone students' basic skills

allowing them to actively engage in a science lesson in an enjoyable way. They are compatible with the Constructivism approach. A method to keep the Structured Inquiry-Based approach is the 5E Instructional Model, a teaching model in constructivist frameworks (Bybee & Landes, 1990). Constructivist teaching approaches create opportunities for learners to extend their own knowledge by engaging them in stimulating learning experiences. They are able to, and more importantly, motivated to actively develop their own understanding by expanding their existing knowledge through active reasoning.

Language plays an important role in the teaching and learning of science. As Martin (1997) asserts "science without language is like a ship without a compass. Reading is critical in discovering what others have learned and writing is critical for children to communicate what they have discovered" (p312). With students lacking in scientific literacy, the researcher allocated three language groups in the Pre-Tests and Post-Tests to see a significant difference. A prerequisite for high-order thinking skills is speaking and writing one's language; they are comfortable with the attention of having the

language as a central role in engaging students' active participation during any science lesson (Jan 2003). In the Structured Inquiry-Based Learning Approach, the students investigate teacher-presented questions through a prescribed procedure. The research involved both quantitative and qualitative data collection. The Covid 19 situation, has posed unprecedented challenges whereby the researcher collects data and conducts lessons online using Zoom meetings, Google Forms, and emails for correspondence in Fiji. 104 students from Veiuto Primary School participated in the online lesson and 52 primary teachers answered the questionnaire survey. Of the 104 students, 49 were assigned in the experiment groups whereby language was translated and instructed accordingly in each group with the implementation of Structured Inquiry-based Approach and 5E Instruction Model a method to support inquiry-based teaching integrating Kasetsu Jikken Jugyo to sharpen and hone grade 5 science basic skills. The basic skills include predicting, hypothesizing, observing, classifying, measuring, inferring, and communicating. These skills were incorporated in the steps of the 5E Instruction model and specifications shown in the children's worksheet. While the other 49 students were assigned as control groups with mediums of instruction translated and instructed accordingly for each group, however, utilizing the traditional method of teaching which is textbook-based. Research

instruments comprise test papers, 1 lesson plan, zoom video recording, student feedback, and question papers.

In light of the findings, data analysis supports that the treatment group in the Mix Language group (English and Itaukei) improves students' achievement performance level in science. Supporting the evidence from the One-Way ANOVA analysis shows that both English and Local language is vital in quality science lessons and improving student performances. After the intervention lesson, the treatment group like the English Language Experiment Group (ELE) has a (p-value- $0.009427 < 0.05$), and the Mix Language Experiment Group (MLE) has a (p-value $0.000 < 0.05$) is statistically significant while the Itaukei Language Experiment Group (ILE) has weak significance (p-value $0.071 > 0.05$). It is vital to investigate and realize the uncertainty it might take to reduce the lack of comprehension skills, which hinders the cultivation of 21st-century skills inside the science classroom. Children's interest level increase if teachers actively engage students using the language they are comfortable in with the teaching methods such as Structured Inquiry-Based Approach supported by 5E Instruction Model steps giving time for the student to respond thoughtfully. This fosters critical and problem-solving skills in students' metacognitive thinking enabling them to be creative and to listen and understand concepts deeply.