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Effect of environment-based activities in learning chemistry: An experiment based on selected topics in G.C.E (Advanced Level) chemistry curriculum in Sri Lanka

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Principles of modern education guide teachers to provide opportunities for students to construct and apply their knowledge to engage in higher order thinking abilities while keeping the student at the centre of the process. This study was conducted with three objectives, a) to identify topics in the current General Certificate of Education (Advanced Level) chemistry curriculum that can be incorporated in to environment-based teaching, b) to introduce the environment-based activities to identified subject areas, and c) evaluate the effect of the above application on students' learning outcomes.

Four topics of advanced level chemistry syllabus; i) hydrology investigations, ii) paper chromatography, iii) pH, and iv) indicators of functional groups were identified. Two learning sessions on each selected topic were planned based on either, a) integrated method, or b) the conventional method. Environment-based activities; field studies, *in-situ* observations, *in-situ* investigations, and *in-situ* recordings were included under the Integrated method. Teacher demonstrations, classroom discussions, laboratory experiments and students' presentations were included in the conventional classroom method. A randomly selected sample of 320 students from schools in the Western Province of Sri Lanka was allocated to eight study groups of forty students each. The learning of all groups was facilitated by the same teacher. Pre-tests and post- tests were conducted and the results were analyzed to compare achievements under two learning methods. There was no significant difference in pre-tests marks between conventional and environment-based groups. The post-test marks of all four groups with environment-based activities were significantly higher than that of the corresponding conventional groups. These results indicate that environment-based learning is more effective than traditional methods in learning concepts in the current G.C.E (A/L) chemistry curriculum.

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