

Design and formative evaluation of teachers' guide materials for teaching environmental education in Tanzania secondary schools: a case of coast region

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The study involved designing and conducting formative evaluation of teachers' guide materials for teaching environmental education in Tanzania secondary schools. The study was guided by four objectives namely: to investigate how activity-based environmental lessons were executed, to find out teachers' perception of the use of activity based guides, to determine students' discovery and reaction towards biodiversity conservation activities and to identify the challenges during the execution of lessons. Action research approach was used, where teachers and students participated in the study in all stages. Data were collected through interviews, questionnaires, observation and focus group discussion. It was revealed from the data that the teacher guides were effective in executing activity based environmental lessons, because it allowed the involvement of the learners throughout the study. Second, as perceived by teachers the guides were satisfactory because they operationalized the strategies proposed in the ordinary level biology syllabus into specific out-of-classroom activities for example, to allow students to interact with their natural environment. Third, students found the lessons interesting and challenging in terms of biodiversity conservation activities of which they have not done before. Furthermore, the findings revealed that time management between different stages of activity based lessons was a problem. Many lessons exceeded the estimated time. Moreover the challenges encountered by the students were language barrier during group discussion. As a part of the effective use of the guides, suggestions were made by the teachers to refine the guides to consider some amount of lecturing especially during lesson introduction and conclusion, the guides should include single periods of forty minutes and the guides should have reduced amount of field activities to cope with the estimated time per period. However, the original design specification remains a solid basis for further development of the designed teachers' guide. It was then recommended that Tanzania Institute of Education (TIE) should assure the availability of teacher guides which suggest appropriate out-of-classroom activities as a means of supporting

teachers to change the traditional methods of teaching. Teacher-preparation institutions must work collaboratively to enable teachers to teach for understanding, making students learn from environment. In addition to that secondary schools teachers must ensure the development of students' experiences which will improve their responsibility to care their environment in future. A similar study is recommended to compare transformation and transmission approaches in developing environmental competencies. This may lead to deliberate action in improving the current situation of teaching environmental science in secondary schools.