

Acquisition of Process Skills by IV Standard Pupils through an Instructional Programme in Environmental Studies

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Introduction

An Environmental study is a human enterprise through which we come to some understanding of the Biological, Social and Physical aspects of the world around. Their understanding involves the development of ideas or concepts, which enable related situations, objects or events to be linked together, so that past experience enables us to make sense of new experiences. The cognitive process of relating to experiences and learning content requires the usage of process skills. Thus process skills consist of following skills (Harlen, 1993), Observing, Question-raising Designing and Making, Predicting, Hypothesizing, Communicating Effectively, Devising and Planning investigations measuring and Calculating Finding patterns and Relationships, Manipulating Materials and Equipment effectively.

The focus of the present study is on acquisition of process skills by IV standard pupils. The acquisition of process skills is realized through pupils' ideas and change in pupils' ideas within the 'context' of scientific investigation created through an instructional programme in environmental studies.

Significance of this study

The various policy initiatives on Environmental studies place emphasis on '*learners to relate and understand their surrounding environment*'. (NCERT, 1981,

2000). The research efforts to translate these policies into practice have resulted in development of Instructional programme for teachers and pupils (Lobo, 1990 and Sharma, 1994). The instructional programme developed to understand the process skills were based on Linear model of process skills, where the process skills were assumed to be arranged in a linear fashion, which develops in isolation, independent of content and context. The idea that once developed, these skills tends to be transferred to other content areas has been criticized by Harlen (1986), Roth and Roychoudhury (1993). In light of the criticism on linear model, an alternative model based on constructivist approaches has been proposed by Harlen (1993). The emergence of this alternative conceptual learning model makes it imperative to refine and question the utility of Instructional Programmes based on linear model of process skills. Therefore, there is a need to develop Instructional programmes based on alternative model of process skill development.

Process Skill Development – An Instructional Frame Work

When process skill development is viewed from the perspective of conceptual learning model (Harlen, 1993), learning is seen as modification or expansion of pupil's existing ideas. These ideas result, when pupils, teachers interact with learning experiences. This learn-

ing involves the processes of planning, implementation and evaluation of learning experiences. It is in this context, instruction as a process emerges, since the primary purpose of instruction is to cause learning. Thus instruction is an intentional, interpersonal process (Anderson & Burns, 1989) meant for planning, implementing and evaluating the learning experiences. In other words, instruction is a plan of action, implemented to modify or expand the pupils initial ideas.

The emergence of constructivist approaches provides an instructional framework for process skill development. In this regard the instruction framework for the present study is derived from the constructivist model of curricular development (Driver, 1988). In this model, instruction is seen as a continuous process involving the aspects such as planning, implementation and evaluation. These aspects are interrelated and interact with each other and constitute a 'whole'. Instruction guides the planning, implementation and assessment of learning strategies and materials. In turn planning, implementation and assessment procedures, shape the instruction by facilitating the design of learning strategies and materials.

The process skills were assumed to act as 'whole' and influence the conceptual learning among pupils. This assumption along with the constructivist approaches to learning and researchers' practical knowledge of the school were the basis on which an instructional programme was conceptualized in Environmental studies.

Objectives

To prepare an Instructional Programme in Environmental Studies for IV Standard pupils.

To implement the prepared instructional programme in environmental studies for IV Standard pupils.

To identify the process skills employed by pupils during the Instructional Programme.

To study the acquisition of process skills employed by the pupils during the Instructional Programme.

Instructional Programme

In the present study the Instructional Programme was meant to provide instructional support to teacher. This instructional programme was prepared with respect to three topics (Soil, Sound and Water evaporation from 4th standard, Environmental Studies text book of Karnataka state Government). The Instructional programme consists of following components: Instructional materials for teachers, Lesson plans, Instructional sheets for pupils, Teaching strategies and Assessment procedure.

Research Design

The data collection approaches were qualitative and were governed by 'Case Study' Methodology. A rural primary school in Karnataka was purposively chosen as a Case study school. The researcher took the role of a teacher to collect data from IV standard pupils. The data was collected through Participant observation, In-depth interviews and documentary analysis for a period of six months. The data from participant observation, documentary analysis and in depth interviews were used to prepare field notes. The data analysis consists of reading and re-reading the field notes. The emergent patterns were listed in terms of interactions with pupils, teachers, parents and classroom. The patterns were triangulated to construct the meaning on the preparation of Instructional programme.

In order to identify the process skills employed by pupils during the instructional programme, pupils' ideas were grouped according to pupils' activities across three topics. The recurring patterns in pupils' ideas were coded and categorized to construct meaning on a particular activity. The meaning that evolved for particular activity was constructed. This meaning was compared with process skill indicators (Harlen, 1993) to identify process skills employed by pupils for each activity. The process skills employed by the pupils indicated ideas related to process skills. Pupil's ideas were further categorized for each activity to identify the change in pupils' ideas. The change in pupils ideas obtained for each activity was triangulated to construct meaning on the acquisition of process skills through instructional programme.

Findings

In the present study the findings of the study have been expressed as four assertions. They are as follows:

Assertion One: Instructional programme in environmental studies facilitated the teacher in evolving teaching strategies for enhancing teacher-pupils interactions during the acquisition of process skills.

Assertion Two: During the context of scientific investigation pupils expressed autonomy in learning through interactions with teachers and with fellow peers.

Assertion three: Pupils proposed hypothesis based on certain concepts to explain the occurrence of events during the context of scientific investigation.

Assertion four: Pupils showed willingness to change ideas in the light of evidence.

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