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CONCEPT TEACHING IN PHYSICS AT JUNIOR SECONDARY LEVEL

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According to existing scholarship physics concepts are more difficult than those of biology and chemistry to learn. Of these, force, energy and work concepts are the most fundamental and abstract concepts in nature and are taught throughout the junior secondary level. The objective of this study was to investigate the specific qualitative strategies used to teach physics concepts which include energy, force and work at the junior secondary level.

Two schools of 1AB type representing both genders which taught in the Sinhala medium were selected. The study sample included three parallel classes of each grade (from 6 to 9) in these schools. Science teachers of those classes were the sample of teachers. Participant observation was used as the method of data collection and transcripts were prepared using field notes and audio records. The grounded theory method was used for the analysis of field notes and data were summarized into six core-categories.

In depth analysis of each core-category revealed different strategies used by the teachers. The main strategies found under the first core-category, "dealing with students' existing ideas and pre-conceptions" were meaningful questioning, testing content knowledge and small group discussions. The strategies for the second core-category, "encouraging students to apply new concepts into novel situations" included group activities, writing activities, practicals, role-play and computer simulations. In addition to the strategies used in these two categories, teacher demonstrations, metaphor and stories were found under the third core-category which was "encouraging students to actively participate in the lesson". Design of small experiments, problem investigation and observation strategies were found in the fourth core-category, which was "encouraging students' inquiry". Strategies included in the fifth core-category namely, "providing co-operative learning experiences" were effective ways of communicating and sharing ideas, negotiating and reporting ideas and new concepts and peer discussion and sharing new experience. The strategies under the sixth core-category namely, "supplying continuous assessment and providing positive feedback" were written tests, verbal questioning and individual / group presentations.

The application or non-application of the strategies identified under the respective co-categories showed a positive or negative impact on the learning of the concepts. When implementing concept teaching, teachers should pay more attention to help students understand difficult concepts and needed thorough preparation to inspire active participation of students in the concept learning process.