An Analysis of the Perceptions of Teachers on Science Teaching

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Background

Science has been made a compulsory subject at junior secondary level and senior secondary level ending at G.C.E Ordinary Level, considering the educational value of science for all citizens. Science is taught to provide scientific literacy to all students who do not have an opportunity to study science after Ordinary Level due to the selection of other subject streams or due to the termination of their formal education after Ordinary Level. The curriculum should also lay the foundation for higher education in the science streams at more advanced levels. Due to these reasons, the curriculum has to cover the life needs and higher educational needs during the compulsory education period. To address these needs, teachers should have a thorough understanding of the nature of science. Science is a subject which contains accumulated knowledge as well as the process of acquiring knowledge. The influence of science is essential to everyone for their life and vocational needs.

Considering the aspects related to these perceptions, science educationists have identified process based science teaching instead of product based science teaching. There are various ends of science teaching:

- integration of science vs. specialization of sciences,
- product based science teaching vs. process based science teaching,
- cognitive and affective.

Parkinson (1994) states that breadth and balance have to be maintained in a curriculum. Therefore, teacher perception is very important in achieving the purpose of science teaching.

It has been observed that the purpose of science teaching is not achieved at the expected level. There are many reasons for this, among which are some teacher related reasons. One is the teaching process which is determined by the perception of the teacher. Wellington (1996) states that the teacher's view of what science is and what science education is have implications on the way that they present and teach in the classroom both on content and process. This paper aims to analyze teacher perceptions on science teaching. The research inquired whether teachers are in favour of teaching the process of science or the content of science and also about teaching separated sciences such as Physics, Chemistry, and Biology or integrated science.

Objectives

- To identify the attitude of teachers on teaching the processes of science and the content (product) of science
- To identify the attitude of teachers on teaching integrated science and separated sciences
- To identify where the teachers stand within the extremes of science teaching
- To identify the diversity in the teachers' perceptions and awareness of science teaching

Methodology

As the research need was to inquire about attitudes of teachers, a descriptive survey method was employed in this study. The study was limited to the Gampaha zone. The population consisted of teachers, from type 1AB, and 1C schools. The teachers consisted of trained graduates, non- trained graduates and trained teachers. Teachers (51 in number) were selected using stratified random Sampling method. Four 1AB schools and five 1C schools were used as the sample. Questionnaires and focus group discussions were used in this study.

A questionnaire consisting of 20 statements in the Likert scale was given to teachers. Four aspects of attitude were examined by the statements. The attitude of teachers towards teaching the process of science (P), teaching the Factual content of science(C), Teaching separated sciences(S), Teaching science as integrated science (I)were examined.

The scale ranged from +2 to -2, and therefore the total marks were within the range +12 to -12 for P &S, +10 to 10 for I &C. In the analysis means and standard deviations (P-C) and (I-S) were calculated. (P-C) is positive when processed based science teaching is preferred than content based science teaching. (I-S) is positive when Integrated Science teaching is preferred than separated sciences

Outcomes

The means and standard deviations (SD) of scores obtained from the teachers for process teaching (mean5.62, SD 2.67) show that they feel process teaching is more important. The mean scores show that the opinion, "content teaching is more important" is negative (mean-0.21, SD2.36). The opinion does not change with school type or teacher qualifications. Similarly integrated teaching at compulsory education period is preferred rather than teaching specific subjects. The mean score for integrated science is 2.70 and S.D. is 3.01while those for separated science are -0.21and 2.36 respectively. Means and standard deviations of scores according to school type or qualifications do not show differences. The scatter graph shows preference spread in the quadrant process based and integrated approach and not in the quadrants content integrated and content separated sciences. Discussions with teachers also verified the same opinion.

Conclusion and Suggestions

The preference of teachers on science teaching at compulsory education is towards process based science teaching. They are of the opinion that teaching the process is more important than the content or the product of science. Similarly they prefer integrated science teaching than separated sciences teaching at the compulsory education period. The study suggests that inquiries have to be done about teachers' competencies and that teacher awareness about science education has to be further strengthened.

References

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