

Abstract

Effect of Teachers' Epistemological Beliefs on Their Pedagogical Content Knowledge

The study aimed to investigate the effects of teachers' epistemological beliefs on their pedagogical content knowledge (PCK). In particular the study aimed to answer the following questions: -

1. What are the epistemological beliefs that chemistry teachers possess?
2. What is the teachers' pedagogical content knowledge in stiochiometry?
3. What are the effects of teachers' beliefs on their PCK?

To answer these questions, the case study technique was employed. The following steps were followed:

1. A sample made up of four chemistry teachers was selected using an epistemological beliefs questionnaire. Two of these teachers held constructivist beliefs while the other two held emprivicist beliefs.
2. In order to describe their beliefs, interviews were held with teachers, an open questionnaire about beliefs was given to them, and six sessions for each teacher was attended.
3. To describe teachers' PCK , interviews about PCK were made, open questionnaire was given to the sample, sessions were attended.

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4. Protocols attained in B and C above were analyzed and coded to reveal the effects of beliefs on PCK .

The study showed that:-

1. Teachers possessed epistemological beliefs that were categorized in a framework with the following main dimensions learning, students' role, teachers' role, and knowledge.
2. A framework that describes teachers PCK was found; it consisted of four dimensions: teachers' knowledge of students' understanding, teachers' knowledge of content, teachers knowledge of instructional processes, and teachers' knowledge in developing content.
3. It is found that epistemological beliefs affect PCK as follows :
 - Absence of developed beliefs can the lack of corresponding knowledge.
 - Unsuitable beliefes have negative effects on teachers' PCK .
 - Suitable beliefes have positive effects on teachers PCK .