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## **PREPARING SCIENCE TEACHERS: IMPROVING SCIENCE TEACHING THROUGH CONSTRUCTIVISM**

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The aim of pre-service teacher education is to equip prospective teachers with various professional competencies that will enable them to start their professional career successfully. Teacher competencies involve subject knowledge as well as pedagogical knowledge and skills which enable teachers to work with students. The main objective of this study was to explore the prospective teachers understanding, confidence and competence to teach science effectively using constructivism over the first two years of their three year pre-service training. Fifty eight prospective Science English medium teachers participated in this study.

Data were collected by administering a questionnaire at the beginning, at the middle and by the end of the pre-service programme. Participant observation and semi-structured interviews were also used to collect data by selecting ten prospective teachers randomly from the sample. During the two years, diverse remedial activities were employed and they were encouraged to use constructivism in teaching science. Data were analyzed using a qualitative method.

Initially, the prospective teachers did not have a clear idea about teaching and knowledge of constructivism. Over the two years they gradually increased their understanding of the theoretical basis of constructivism and changed their views on teaching and learning science. They felt that science was particularly difficult to teach well with limited background knowledge about constructivism. Observing lessons during their practice teaching showed how the prospective teachers classroom teaching improved over the two years. They expanded their views of the teacher's role, they taught lessons using more, small, heterogeneous groups and introduced subject matter in a way that encouraged active involvement of students in lessons, used constructivist activities and experimentation, reduced the amount of lecturing, increased questioning and opportunities for students to discuss their ideas and to construct knowledge by the students themselves. At the end they were confident in their ability to teach the subject but less confident in using constructivism. Still, they faced a number of problems such as inadequacy of time and resources, and insufficient work spaces when employing the correct methodology in meaningful contexts. The major problem linked here was the prospective teachers' inadequate knowledge about adopting constructivism to science teaching. Therefore, they required further training on effective use of constructivism in classroom teaching.

In conclusion, prospective science teachers teaching process could be enhanced by equipping them with competencies of using constructivism more effectively, and developing self confidence and ability to use constructivism in science teaching.