

**Training of secondary school chemistry teachers in practical work at selected public
Universities in Tanzania
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This study investigated the teaching and learning of practical work in teaching methods course during the training of secondary school chemistry teachers in public universities in Tanzania. The underlying assumption was that, though there are several factors that may influence teachers' competency, pre-service education and training provide fundamental knowledge and skills for effective teaching. The goal of the study was to understand whether or not university teaching methods courses help student teachers to develop competency for effective teaching of chemistry practical. Four objectives guided the study namely, to examine the content of teaching methods courses offered at universities to student teachers specialising in chemistry, to assess the knowledge and skills that student teachers develop during the university teaching methods courses for implementing the secondary education chemistry syllabus, to examine the appropriateness of the available resources for chemistry practical work and to explore participants' perceptions of teaching and learning chemistry practicals at the University of Dodoma (UDOM) and University of Dar es Salaam (UDSM). The study employed a qualitative research approach with the use of single embedded case study design. The study involved a total of 86 participants, which included three lecturers, two laboratory technicians and eighty one student teachers from UDOM and UDSM. Data collection methods were questionnaires, interviews, focus group discussions, observations and documentary review. Data were reduced, organized and subjected to thematic analysis. The findings of this study revealed that teaching methods courses at UDOM and UDSM differed in terms of their focus. At UDOM there was a chemistry teaching methods course, which focused on chemistry subject while at UDSM the course combined four subjects and was called Science and Mathematics Teaching Methods. The findings further showed that the courses covered very little content of chemistry practical, which provided student teachers with inadequate knowledge and skills for effective teaching of chemistry practical. However, student teachers at UDOM were better than those at UDSM in teaching chemistry practicals during teaching practice due to variation in the structure and

environment where practical part of the teaching methods courses were conducted. The study disclosed that, in some cases, there were inadequate and inappropriate resources for implementing the practical part of the courses. Participants perceived that the courses were important only that they were not comprehensive enough to equip student teachers with appropriate competency for handling the practical part of the secondary education chemistry syllabi. It is surmised that the teaching methods courses at the two universities have not effectively covered the chemistry practical part, due to the structure of the courses. It is, therefore, recommended that each science subject should have its own teaching methods course with clearly stipulated content for the chemistry practical part. Standards for PRESET programmes for science teachers should be set so as to minimise the existing disparities across universities in the country. Universities should devise ways where colleges and/or schools offering courses with similar characteristics can share available resources at a particular university.