

The Importance of Professional and Pedagogical Competencies of University Chemistry Teachers

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Teaching chemistry at the university level in various courses is a complex process that university teachers must address in lectures and laboratory work based on their experiences over time and the knowledge and competencies they have acquired through their formal and non-formal education. Teachers' competencies consist of professional, pedagogical, and social competencies as well as their personality (Gani et al., 2020). Chemistry teaching depends to some extent on the level of teachers' professional and pedagogical competencies as well as their pedagogical-content knowledge (Schulman, 1987). Teachers' competencies in teaching and learning are a set of knowledge, skills, and abilities to have a meaningful experience in organising an activity (Ketane and Selvi, 2006). Their skills and knowledge in conducting learning activities have a direct impact on students' participation in learning activities (Copriady, 2014).

This qualitative study focuses on the pedagogical and professional competencies of university teachers. Life history was used as the research approach. The aim of this study was to obtain an overview of the pedagogical and professional competencies of university chemistry teachers and to identify the factors that they believe have made an important contribution to their feeling competent to teach chemistry at university. The study also aims to obtain information on what education programmes and support are still needed to become more successful. A semi-structured interview with approximately 15 questions was used to collect data. A total of 20 chemistry teachers from different universities mainly from European countries participated in this study.

The results show that the majority of the respondents have no formal basic pedagogical education for teaching chemistry. Some of the participants have undergone formal education to teach chemistry and then continue their profession as researchers at university level and as pre-service teachers. Some of them have acquired their pedagogical qualification mainly through courses, regular parallel/consecutive pedagogical training, fast track courses or special pedagogical training. Most of the respondents believe that they are competent for their work because they have participated in continuing professional development activities in recent years. On the other hand, some of the respondents believe that they currently need additional professional development for teaching chemistry, mainly because of the changes in science education and because teachers are expected to enhance their competencies to improve their teaching practise.

It can be concluded that all the interviewed university teachers recognized the need to develop teaching competencies as a very important element in the learning process and that for this reason courses on pedagogical-content knowledge for university teachers should be offered frequently.

Keywords: university chemistry teacher, competencies, pedagogical-content knowledge.

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