

Teaching the Pedagogical Content Knowledge of Astronomy with a Learning Management System

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Abstract

Very often, early childhood teachers do not display sufficient content knowledge in science. As a result, they do not feel confident enough to ask the right questions and interpret children's answers in a way that leads to the scaffolding of the natural sciences activities. In recent years, studies are focusing on the development of science for the early years, the subject's teaching strategies and suitable activities or interventions. The influence of science on our lives is important since it shapes our perceptions about the world and our interaction with the natural environment. Science's main goal in early years is to help children's thinking move from the simple seeing of the natural world phenomena to systematic investigation and the development of a critical research attitude. Although science is still an unknown subject for the early years, it is both attractive and daunting for the teachers.

Early years teachers are not science specialists, and many of them were not provided with the basic knowledge during their initial training. Consequently, teachers' knowledge on how to approach astronomical phenomena in their class is quite limited and shows the need for a professional development course which is versatile and rigorous. Thus, ICT and Learning Management Systems are going to be utilised in this direction. In this context, the role of ICT and LMSs is crucial. The dynamic embodiment of ICT at all educational levels means that all the different technology applications can also serve purposes of teacher in-service training and professional development. ICT can now help so that training provides and integrates both the science content and pedagogical content knowledge in order to improve teacher competencies and consequently, more effective knowledge transfer to young children.

This paper focuses on the development of an open online course on teaching astronomy in early years. It addresses teachers of young children (Nursery, Reception, KS1, K, Grade 1 teachers) and is built on the Learning Management System (LMS) Moodle. Resources are multimodal combining words with pictures, sound, movement. The course is also supported by a Social Media page (Facebook). Thus, the present case study contributes to our knowledge about the use of ICT in the professional development and in-service training courses for teachers. Frequently, teachers find difficulties in using technology too, so the study is focusing not only on the development of the learning tools and but also on the learning processes and the development of support so that teachers fully exploit the LMS.