

Chapter 30

Case Studies of Scaffolded On-Line Inquiry in Primary and Secondary Classrooms: Technology and Inquiry in a Science Context

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ABSTRACT

The chapter examines the alignment of science inquiry skills to the information literacy framework (Bent & Stubbings, 2011) and considers how these skills were supported by a range of web 2.0 tools using the TPACK framework to create an on-line scaffolded inquiry in two school contexts. Two case studies of inquiry around the pedagogy of ICT skills are examined here; one study in six grade seven high school classes and the other in a single extension group of twenty-five primary students from grade five to grade seven. In addition the affordances and limitations of the technology tools are assessed to determine how the scaffolded on-line inquiry process could be implemented in schools. In conclusion the chapter describes how in these cases, scaffolded on-line inquiry provides an opportunity for students to create an authentic, rich and detailed inquiry around their focus utilising a range of ICT tools and strategies.

CONTEXT

The grade seven inquiry focused on water as a resource through the *Earth and Space Sciences* strand of the curriculum, particularly considering the sustainability of water where students selected problems that related to the use, conservation and function of water in their local environments. The focus of the

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inquiry in the primary classroom was the chemistry of chocolates, lollies and soft drinks, relating to the *Chemical Sciences* strand of the curriculum, with a particular emphasis on the composition of chocolates and lollies, including additives, sugar and fat content.

INTRODUCTION

Children need to demonstrate high-level competency in Information and Communication Technologies (ICT) to be able to navigate an increasingly complex and information-rich life. In recent years the value and importance of developing these high-level ICT knowledge and skills in students have been alluded to in the international arena. UNESCO (Delors, 2010) and ISTE (2008) suggest that information literacy is essential to enable people to utilise vast quantities of information and communication technology that they come into contact with every day (Ministerial Council on Education Employment Training and Youth Affairs, 2008; Ministerial Council on Education Employment Training and Youth Affairs Performance Measurement and Reporting Taskforce, 2005; World Bank Group, 2011).

Rapid and continuing advances in information and communication technologies (ICT) are changing the way people use, share, develop and process technology in this digital age (Ministerial Council on Education Employment Training and Youth Affairs, 2008, p. 6).

BACKGROUND: THE NEED FOR DIGITAL KNOWLEDGE

Children growing up in the current digital age will need to demonstrate high-level competencies in their day-to-day work with Information and Communication Technologies (ICT) to be able to navigate an increasingly complex and information-rich life. Key information literacy and inquiry skills have been recognised as vital learning goals by the Australian Curriculum, Assessment and Reporting Authority (ACARA) (2011) and the International Society for Technology in Education (ISTE) (2008). In recent years the value and importance of developing high-level ICT knowledge and skills have been alluded to in the international arena as both UNESCO (Delors, 2010) and International Society for Technology in Education (ISTE) (2008b) suggest that information literacy is essential to enable people to utilise vast quantities of information and communication technology (Ministerial Council on Education Employment Training and Youth Affairs, 2008; World Bank Group, 2011).

Hence, contemporary teachers have an obligation to support and scaffold students' learning of ICT-related competencies and do this in an authentic context within the frame of curriculum (Australian Curriculum Assessment and Reporting Authority, 2013). ICT are fast, automated, interactive and multimodal, and they support the rapid communication and representation of knowledge to many audiences and its adaptation in different contexts. They have the capacity to transform the ways that students think and learn and give them greater control over how, where and when they learn. They are rapidly evolving and young people need specific knowledge, skills and confidence to use them effectively, not only in a school setting, but in their future workplaces and also extending to their communities.

The curriculum describes how students should effectively access reliable information, curate, collate and communicate information. Finding information has become incredibly easy, but finding credible

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