

Chapter 4

Development of the Assessment Design and Delivery of Collaborative Problem Solving in the Assessment and Teaching of 21st Century Skills Project

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ABSTRACT

This chapter describes an approach to assessment task design and delivery from the Assessment and Teaching of 21st Century Skills project (ATC21S). ATC21S is an example of an innovative, international, multi-stakeholder partnership involving industry, academics, governments, and educators that is aimed at shifting the direction of assessment and teaching towards a model more suited to the development of skills that students need in the 21st century. Within ATC21S, assessment design and delivery is just one component of a holistic framework in which assessment, teaching, resourcing, and policy work in unison to improve student outcomes. This chapter outlines this developmental framework and the impetus for ATC21S and partnerships which drive and support the project, and sets the scene for dealing with performance measurement issues – how can we tell that people have learned anything? The focus of the chapter is on the technology-based design and delivery of assessments of one of the key skill areas of interest in the project - collaborative problem solving.

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THE CHANGING CONTEXT OF WORK

With ubiquity of telecommunications and the emergence of the information age, the role of information in society has changed, and with it the structure of the workforce. Many occupations that depended on the direct use of manual or routine labour that dominated the 20th century have disappeared or have been altered completely because of technology. Robots have replaced many specialised routine assembly skills. Unskilled labour occupations remain but in reduced quantity. A new set of occupations has emerged based on the production, distribution and consumption of information using technology. These occupations involve reasoning, collaboration, critical and creative thinking, and the capacity to learn while solving problems through the medium of technology.

In such occupations, individuals need the skills to create or analyse the credibility and utility of information, evaluate its appropriateness, and intelligently apply that information. A study by Autor, Levy and Murnane (2003) illustrates the substantial shifts in the structure of the workforce and how they might be conceptualised. From 1960 to 2000 there was an increase in abstract tasks with a corresponding decrease in both routine and manual tasks. Those without the skills to act as information producers, distributors and/or consumers will be disadvantaged, even if their related commodity skills are still in demand. Access to management and advisory roles has become dependent on information skills. Increasingly, people are relying on information and communications technology (ICT) as a medium of day-to-day exchange and interaction. At the individual level, the ability to learn, collaborate and solve problems in a digital information environment has become mandatory. There are also implications at the societal level. Economic growth depends on the synergies between new knowledge and human

capital. New technological advances are of little value in countries that have few skilled workers to use them.

As a result, education faces the challenge of providing the populace with the information skills needed in a society that depends on the production, distribution and consumption of information. Education has to emphasise information and technology skills rather than those emphasising the manufacture, distribution and consumption of products, as is the current approach. There is also a corresponding need to rethink the way education is measured and monitored.

PROJECT BACKGROUND: A MULTI-NATIONAL, MULTI- STAKEHOLDER PARTNERSHIP TO DRIVE INNOVATION

In response to these changing workforce and education demands, three major companies - Cisco, Intel and Microsoft – commissioned a ‘Call to Action’ paper to prompt political, education, and business leaders to join a multi-national multi-stakeholder project to transform educational assessment and instructional practice. The paper highlighted the urgent need for education systems to respond to changes in technology and its increasing impact on employment, living and social interaction. This led to the creation of the ATC21S project, launched at the London Learning and Technology World Forum in January 2009. The goal of the ATC21S project is to develop ways of assessing 21st century skills, encourage curriculum change, and enable teachers to assess and teach these skills in the classroom.

Cisco, Intel and Microsoft negotiated with six national governments to join the project as founder countries. These were Australia, Finland, Portugal, Singapore, England, and the USA. Costa Rica and the Netherlands joined during a later period. An academic partnership was created with

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