Chapter 4.18
Robotics as a Vehicle for Multiliteracies

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ABSTRACT

This chapter is a catalyst for encouraging educators to use robotics as a vehicle for multiliteracies. This chapter will provide compelling, practical evidence of the multimodal nature of robotics, highlighting the potential of robotics to encompass any or all of the linguistic, spatial, visual, audio and gestural elements of multiliteracies, as described by the New London Group (1996). The social and technological benefits for both genders arising from the integration of robotics into the curriculum, and their importance in a rapidly changing world are discussed, as is the need for educators to learn how to facilitate a learning environment that entices students to take risks and solve problems through the development of higher-order thinking skills. Robotics crosses curriculum boundaries, and engages and motivates students of all ages by making learning directed and real.

ROBOTICS AS A VEHICLE FOR MULTILITERACIES

Being literate in today's society and in the future is more than just being able to read and write the written word. With advances in technology and the inclusion of technology in educational settings students are reading and viewing an increasingly complex and diverse range of multimodal texts. Literacy and learning in these new environments requires students to be multiliterate. (Zammit & Downes, 2002, p. 24)

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INTRODUCTION

Literacy and thinking skills are generally accepted as two of the core building blocks that support

learning across the curriculum (Hedley, Antonacci & Rabinowitz, 1995; Stoll, Fink & Earl, 2003). To be literate in today's technological knowledge-based society requires more than just the ability to read, write, listen and speak in English (Chua, 2004; Cope & Kalantzis, 2000). The arrival of new technologies in the educational arena in the late 1970s brought with it a myriad of issues and implications for literacy practice (Snyder, 1998). In 1994, a group of educational theorists (the 'New London Group') met to share and discuss their combined concerns, experiences, expertise and expectations for the future of literacy learning within national and cultural contexts (Cope & Kalantzis, 2000). They concurred that to achieve positive social outcomes for all students it was essential that literacy pedagogy capitalise on cultural and linguistic diversity. As a result of their discussions, they used the term 'multiliteracies' to encapsulate their vision for literacy learning which combined traditional literacy approaches with the multitude of technological tools present in the community (Cope & Kalantzis, 2000). The New London Group recognised the dynamic nature of multiliteracies, placing importance on learning to make meaning by the integration of multimodal dimensions with texts full of media, multimedia (text, graphics, video and audio), and hypermedia (multimedia linked by hypertext) (Cope & Kalantzis, 2000). With multiliteracy viewed as essential to effective global citizenship, the group considered it extremely important that educational achievements not be hampered by cultural, linguistic, or gender differences (Cope & Kalantzis, 2000). According to Giddings (1988) the development of critical thinking skills is crucial for students to respond to, and reflect on, the diversity of cultural literature. Thus it is imperative for teachers to devise learning experiences that develop thinking skills, and which are equitable, engaging, and achievable by all students (Darling-Hammond, 1997; Eggen & Kauchak, 2001; Hamston & Murdoch, 1996; Luke & Carpenter, 2003; Marsh, 2000; Murdoch & Hornsby, 1997; Perkins & Blythe, 1994; Stoll et al., 2003).

A multiliterate pedagogy views modern technologies as a means of transforming curricula, and uses a variety of texts in critical, dynamic, reflective and thoughtful ways (Department of Education [DoE], Tasmania, 2005; 2007; Unsworth, 2001). The complex relationship between modern technologies and literacy learning challenges educators to rethink their practice (Healy, 2004; Snyder, 1998). While technologies such as the Internet, email, word processing and hypertext have not replaced the printed book, they have blurred the boundaries of literacy and changed the production, processing, storage, retrieval and usage of written and visual language (Snyder, 1998). With approximately 377 million people using the Internet world-wide, the scope of technology's impact on business, media, entertainment, and society is creating an e-world, comprised of "perhaps the most transformative technology in history" (United States Web-based Education Commission [USWEC], 2000, p. 1). The USWEC argues that it is high time the Internet's potential to transform education was made a reality. Hawkridge (1989) is also concerned with the manner in which schools prepare students for active participation in society, arguing that they must be better equipped with the skills to function effectively in the technological global society of the future. Similarly, Kearns and Grant (2002) offer the rationale that technological competence is now a prerequisite life skill, key to employability and participation in society. Some have viewed technology as a passing fad in the educational arena; however it is now widely recognised as a valuable tool for promoting students' learning (Cromwell, 1998). Although virtually impossible for teachers to accurately predict the technological skills students will need in their future, Williams (2000) believes a wide range of technological experiences are invaluable for developing positive attitudes towards technology that will support students in their personal and professional life