Teaching Green Information Technology Inside and Outside the Classroom:
An Undergraduate Case-Study in the South African Context

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ABSTRACT

One socio-economic and environmental challenge facing the leaders of tomorrow is how Green Information Technology can be applied effectively by organisations to contribute to the global green revolution. The author teaches 1500 undergraduate students yearly about Green Information Technology to influence awareness positively in terms of efficient ways that computer resources can be used. In order to facilitate this process, the author supplemented the theory component with a practical assignment leveraging a number of interactive learning tools, including: social networking, on-line collaboration, and 3-D programming. These tools can be classified as one of the components of social computing. Social computing is seen as the convergence of information technology with social behaviour, and the resulting interactions. The tools used include: Alice ©, Facebook ©, and pbWiki ©. The students were tasked with creating an animation using Alice © teaching people about Green Information Technology. Upon completion of the assignment, a questionnaire was distributed in order to ascertain what their view of Green Information Technology was. This paper details the nature of the Green Information Technology teaching techniques that were employed and details the findings of the questionnaire. The paper merges theory and practical aspects of teaching Green IT and provides educators and researchers with insight in terms of interactive teaching tools that can be employed.

Keywords: Alice©, Collaborative Learning, Facebook©, Green Information Technology, Net Generation, Social Computing, YouTube©

INTRODUCTION

When searching for research conducted on green information technology (green IT) it becomes apparent that the concept of green information

technology, which is also known as green computing, is relatively new. There is speculation that the term was coined after the United States Energy Protection Agency (USEPA, http://www.epa.gov) launched the Energy Star© voluntary labelling programme in 1992 which was introduced with the intention of promoting

Figure 1. Energy Star logo (taken from http://www.epa.gov)

energy-efficiency in monitors, climate control equipment and other technologies. The Energy Star programme has enjoyed wide-spread adoption within the consumer electronics market and the term green computing arose during the adoption of the programme. The Energy Star logo is depicted in Figure 1.

Despite this concept being relatively new, it is apparent that it is one of the most prominent topics within corporate, governmental and societal communities at large. This phenomenon is driven by the fact that environmental challenges are at the pinnacle of the consciousness of these communities and information technology is one of the contributors to these environmental challenges (Murugesan, 2008). This is due to the pervasiveness of information technology and the fact that there is no longer a differentiation between information technology and organisations. The impact of this is that information technology consumes material amounts of electricity as well as creating environmental hazards during its production and disposal processes (Murugesan, 2008, p. 24). Organisations can no longer afford to consider only profit as their primary objective and as such need to adopt the concept of triple bottom-line accounting which takes into account: people, planet and profit. The triple bottom line captures an expanded spectrum of values and criteria for measuring organizational (and so-

cietal) success: economic, ecological and social (Brown et al., 2006).

As such, in order to prepare global leaders for a sustainable future, we need to educate students about the fundamentals of green information technology. And the students who are being educated by higher education institutions globally have grown up with personal computers and the internet. These learners are of a generation, commonly referred to as the Net Generation or the Millenials that have different and varying learning styles and preferences (Carlson & Sohn, 2000). They have many unique defining characteristics which have an impact on higher education and one of these characteristics is that they like to learn about things that matter, for example environmental concerns (Oblinger & Oblinger, 2005, p. 16). Additionally, they like to 'learn by doing' or what is commonly referred to as 'experiential learning.' This means that these students have an exploratory style of learning and have a preference for 'learning by doing' which results in better memory retention of the subject matter, for example: creating an animation to teach peers about green information technology instead of writing a document (Oblinger & Oblinger, 2005, p. 16). It is because of these characteristics and the fact that green information technology is a concept that is imperative to teach to the leaders of tomorrow, that the author decided to use social computing in the

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