

GREEN IT/IS EDUCATION AND TRAINING: AN ASSESSMENT OF CURRICULUM CONTENT

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ABSTRACT

The push toward sustainability and “greening” throughout organizations is evident in the Federal government as well as within the private sector. A more specific focus on “greening” information technology (IT) and information systems (IS) can also be seen. As an example, Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management and Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance, assigns responsibility to federal agencies for increasing their environmental sustainability and contains green information technology (IT) and green information systems (IS)-related requirements (Obama, 2010; Bush, 2007). Private sector businesses have also dedicated themselves to the greening of information technology and systems to reduce costs as well as market their sustainability goals (Fanning, 2009). Cisco, for example, is pursuing a variety of green initiatives to improve its sustainability; the Connected Workplace project reduced the number of electronic devices per employee leading to reducing equipment wattage and less e-waste disposal (Cisco, 2011).

Even though unemployment rates have been higher than normal over the past three to four years, an increase in green jobs is predicted (BLS, 2011) with many of those jobs focused on IT (greenitjobs.org, 2011). The trouble with filling green jobs, IT or otherwise, is finding educated and qualified workers to fill them. As a result, there is a growing demand for green computing education. Early research has indicated, however, the demand for green computing knowledge by those in industry is only slowly making its way to the academic world (Sendall et al, 2010). In the most comprehensive work on green information systems curriculum to date, Sendall et al (2010) found only a handful of higher education educational institutions offering courses in green IT. In this study of 89 institutions, a green computing college minor was identified at 11%

of schools responding and a college major was identified at 16% of schools contacted. Three institutions were found to offer green computing courses while only 17 institutions offered green computing content within other courses (Sendall et al, 2010).

The general nature of Sendall et al's (2010) conclusions, although very informative, beg the question, "So where exactly can green computing education and/or training can be found today?" The authors of this paper investigated this question and found a total of 33 specific institutions across the globe that were offering some type of green IT/IS course offerings. Green IT/IS content was found to be offered via degree programs, college courses, certification/training classes, and workshops/conferences/forums. Although the paper that details the findings is currently under review, the research provided a starting point for the results we report here.

The method used in this research included a content analysis (Krippendorff, 2004) of all the syllabi and course/class information of the Green IT/IS offerings provided by the institutions identified in the prior research. An initial review of all the content allowed the identification of specific content/topic themes. Next, a coding system (Krippendorff, 2004) was used tabulate the number of occurrences across all the offerings. The results of the coding revealed a range of content/topic coverage from a high of 21 mentions for power/energy management to a low of 3 mentions each for telecommuting/green organization culture/green accreditation, etc. A review of all the tabulations revealed a natural break at ten; therefore, those content/topic themes that received ten mentions or above were considered to be more popular, while those that received fewer than ten, less popular.

The results revealed a number of popular content/topic themes to include green computing concepts/terminology/imperatives, power/energy management, data center/server consolidation considerations, virtualization, cloud computing, carbon footprint assessment, recycling/reuse/disposal, green IT laws/regulations, and green IT strategies/implementation. The content/topics that received lesser coverage included green organization culture, green accreditation/credentials, audits, standards/metrics, grid computing, telecommuting, green IT maturity models, and procurement of green IT products/services.

Using Murugesan's (2008) framework for green IT, which says "green" considerations must be made throughout the IT lifecycle (i.e. design, use, manufacture, and disposal), it is instructive to note that, based on the findings of this research, each of the key areas are being touched upon but not by all the offering institutions. As an example, very few organizations are involved in the manufacturing of IT, so it makes sense that not a lot of educational content is offered in this area. What is also interesting is that many of the more popular content/topic themes have to do with "harder" more "tangible" or "measurable" ideas (power/energy data center fixes, recycling, virtualization, etc.) versus the "softer" more "intangible" and "less measurable" ideas (organization culture, maturity models, accreditation/credentials). Although these delineations don't hold in every case; it makes sense that organizations (and those that are educating organization employees) would tackle the topics that could offer more comprehensible approaches that might precipitate quicker turn results. All in all, one of the biggest takeaways from this research is that when looking to take green IT/IS education or training offerings, further investigation of a match between content/topic coverage and specific individual learning needs is highly recommended as they aren't created to be "one size fits all."

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