Chapter XXVI
Computing and Information Ethics Education Research

Russell W. Robbins
Marist College, USA

Kenneth R. Fleischmann
University of Maryland, College Park, USA

William A. Wallace
Rensselaer Polytechnic Institute, USA

ABSTRACT

This chapter explains and integrates new approaches to teaching computing and information ethics (CIE) and researching CIE education. We first familiarize the reader with CIE by explaining three domains where information ethics may be applied: Information Ownership; Information Privacy; and Information Quality. We then outline past and current approaches to CIE education and indicate where research is necessary. Research suggestions for CIE education focus upon developing a deep understanding of the relationships between students, teachers, pedagogical materials, learning processes, teaching techniques, outcomes and assessment methods. CIE education exists to enhance individual and group ethical problem solving processes; however these are not yet fully understood, making research necessary. We then discuss CIE education research results to date and suggest new directions, including applying insights from the field of learning science as well as developing dynamic computing and information tools. Since these tools are dynamic and interactive, they will support collaboration, iteration, reflection, and revision that can help students learn CIE.

INTRODUCTION

The primary purpose of this chapter is to indicate the need for research regarding the education of computing and information professionals about ethics. We start by first abstractly describing computing and information ethics (CIE), but then we provide three concrete examples of contested CIE issues. We then move to discuss the progress to date in developing and implementing CIE pedagogy and material. In our last section, we describe new research directions for CIE pedagogy and explore how computing and information technology can support CIE teaching and learning. We also discuss research results that can enhance our ability to apply computing and information technology to support CIE education.

COMPUTING AND INFORMATION ETHICS EDUCATION: FOCI

CIE foci include concerns about who [using computers] should create, provide, own, access, use, transform, manage, or govern information. Foci also include considering consequences of creating, providing, owning, accessing, using, and transforming information (Bynum 1985, Johnson 1985, Moor 1985, Mason 1986, Weiner 1954) as well as discussions about the rights and responsibilities of individuals, groups, and societies as they interact with information. Finally, CIE foci include issues of equity, care, and virtue as information is used to transform our world.

Does anyone who creates a computer program have the right to accrue economic benefits related to use of that program? Should the program be owned by society? What best serves the individual and society? Does an economically disadvantaged youth from an urban area have a right right to use the Internet in order to learn? If so, what responsibilities do governments, corporations, not-for-profits, you as an individual, or we as a society have to provide this access? What responsibility do we have to support access to information for individuals in China? Alternatively, is the Chinese government's censorship of the Internet appropriate? How can a multinational corporation based in the US support the right to earn a living in an information economy for young [non-emigrant] Indian citizen software engineers while concurrently maintaining its commitments [for its US employees] and [to its stockholders]. When are the social benefits derived from use of private personal information appropriate?

These are just some of the questions considered in CIE. Is there one answer to each question? Or are there multiple answers for different people in various situations, using different techniques and criteria? To introduce the reader to information ethics, and its importance to society and individuals, we now discuss three currently unresolved CIE issues below: (1) who should control procedural information (i.e., software)—information ownership, (2) who should control personal information—information privacy, and (3) information (i.e., software and data) quality.

Information Ownership

"In the information age, there may be no more contentious issue than the scope of ownership rights to intellectual property" (Spinello and Tavani 2004, p. 247).

Intellectual property (IP) is an idea, invention, process or other form of property created by use of the mind or intellect; alternatively, IP is the right to control the tangible or virtual representation of those forms of property. The argument for the ethical appropriateness for intellectual property and legal supports (e.g. trade secrets, trademarks, copyrights, patents) follows.

Software is invaluable to our information economy. The development of unique software that solves problems is intellectually involved and time-consuming, and therefore very expensive. This first unit of software is very expensive, while copies of that software, after development, are