

# Chapter 89

## Using 3D Virtual Reality Technology in Cyber Ethics Education: How Can We Really Evaluate and Change Students' Attitudes?

**Toshiki Matsuda**

*Tokyo Institute of Technology, Japan*

**Hiroshi Nakayama**

*Tokyo Denki University, Japan*

**Kazue Tamada**

*Edogawa University, Japan*

### ABSTRACT

*In this chapter, the authors introduce the e-learning material that they developed using Three-Dimensional Virtual Reality (3D-VR) technology in cyber ethics education. They propose a new instructional method that teaches students to use three types of knowledge in their analyses of moral judgment problems: knowledge of ethical codes, ICT, and rational judgment. They also verify that this method is more effective than the conventional method. In addition, the authors developed e-learning material that provides students with analytical problems and feedback according to their ability to understand ethical codes. Reality and authenticity are key to learning for every student. To inculcate a sense of seriousness toward the problems in e-learning material, the authors devised various dialog methods and built an effective instructional design model, such as the three-way interaction model.*

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## **INTRODUCTION**

### **Cyber Ethics Education in Japan and USA**

Currently, many countries highlight the necessity of informatics education. For example, the Programme for International Student Assessment (PISA) investigation of the Organisation for Economic Co-Operation and Development (2009) assesses students' ability to utilize Information and Communication Technology (ICT) in problem solving. Moreover, the Partnership for 21st Century Skills (2009), in participation with the US Department of Education, promotes information, media, and technology skills that students should master in order to succeed in work and life in the 21st century.

As part of the process of change this implies, it is important that students be taught how to ensure their own safety and that of others when they utilize ICT systems. In Japan, this sort of education is called "information moral education," defined by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) as "education to cultivate the basic ways of thinking and attitude to perform adequate judgments in an information-oriented society" (Minister of Education, Science, Sports, and Culture, 2000). To expedite this skill, MEXT and associated institutions have conducted many projects that aim to develop and supply instructional materials and curricula (Center for Educational Computing, 2000; National Center for Teachers' Development, 2005; Japan Association for Promotion of Educational Technology, 2007). However, because they are still mostly committed to a method of education that explains various examples students may encounter when using ICT and instills many rules in the form of "Take care not to..." or "Don't...", they do not give priority to teaching this "way of thinking."

In other countries, similar forms of education are referred to as "information ethics/safety education" or "cyber ethics/safety education" (Tavani,

1999). This education is generally conducted as part of "digital citizenship" education (International Society for Technology in Education, 2007), including "making students thoroughly observe contracts," "making students discuss how to cope with ethical dilemmas after searching for problems related to information ethics/safety on the Internet," and "introducing many cases" (United Nations Educational, Scientific, and Cultural Organization, 1994; American Association of School Librarians and the Association for Educational Communications and Technology, 1998). Ribble and Bailey (2007) argue that the key concerns of digital citizenship can be classified into nine topics: digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and wellness, and digital security (self-protection). Moreover, Ribble and Bailey state that the means of problem solving and thinking about information ethics in one particular topic should be mutually utilized in another topic, as well as necessity to contrast convenience of ICT with the influence on others. However, ICT methods still tend to focus on negative instructions such as "do not..." and "it is dangerous because..." as is the case in Japan. Because of this excessive emphasis on avoiding problems, some students may come to have a negative impression of ICT tools.

### **Drawbacks of the Conventional Instructional Method for Cyber-Ethics Education**

When the Japanese government first discussed computer and informatics education in the mid 1980s, Matsuda (1987) pointed out that information moral education is closely linked to informatics education and that the two need to be integrated as would the accelerator and brake of a car. However, as already described, information moral education in Japan conventionally focuses on teaching many rules to circumvent the drawbacks that occur during the use of ICT. This

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