Section 4

IT COMPETENCIES AND ATTITUDES
Since the early days of Information Technology (IT) use in education, attitudes and competencies of students (and later teachers) have been in the domain of interest of researchers, because they appeared to be an important factor in the decision to use IT in educational practice. In 1995 the US Office of Technology Assessment (US Congress, 2002) reported that helping teachers “effectively incorporate technology into the teaching and learning process is one of the most important steps the nation can take to make the most of past and continuing investments in educational technology” (p. 8). Most researchers agree that the successful use of computers in the classroom is dependent on positive attitudes toward computers (Lawton and Gerschner, 1982; Woodrow, 1992). IT standards have now been established in the USA (Thomas and Knezek, 2002) and other nations, reflecting the importance of positive attitudes as well as adequate competencies in successful technology implementations in education.

In this section six chapters are presented spanning (1) IT in education issues, (2) standards, (3) self-report findings, (4) observation findings, (5) student attitudes and competencies, and (6) emerging characteristics of teacher leaders in IT.

In Chapter 4.1 attitudes and competencies are presented as key intervening variables influencing IT-grounded teaching and learning. Instruments and methods for gathering data as well as formal models for representing associations among many variables are presented.

In Chapter 4.2 authors point out that information and communication technology (ICT) has made its way into industry, communication, education, work, and even recreation. To address this educational need, ICT should become an integral component of students’ educational experiences and, henceforth, every teacher’s and education leader’s professional skill set. The International Society for Technology in Education has developed sets of performance standards describing ICT knowledge and skills for student learning, teaching, and school administration. The standards development process included a wide range of educational stakeholders and resulted in the publication of the USA National Educational Technology Standards for students, teachers, and administrators.
Chapter 4.3 focuses on self-report findings regarding IT attitudes and competencies related to education. For teachers, positive attitudes, competencies, and self-efficacy are important components of highly integrated use of technology in the classroom. Access is important—as well as attitudes and competencies. For students, attitudes and competencies are largely not a concern in the twenty-first century, except for students who have no access to IT at school, and also none at home. Evidence is emerging that this class of students is at a disadvantage in academic subjects as well as in technology skills.

Chapter 4.4 provides insight into how observational measures can contribute to the study of attitudes and competencies in ICT in education. The first part of the chapter outlines the meaning of observational techniques as a tool of research and explains what is important when planning an observational study. Several specific video- and audio-supported observation techniques, as well as advantages and challenges of observational techniques in general, are presented. In the second part of the chapter the focus is on findings from empirical studies that used observational techniques. The chapter ends with the conclusions that observational measures have the potential to deliver meaningful, unique data and that attitudes and competencies toward IT tend to be positive in most of the studies reviewed.

Chapter 4.5 focuses on student attitudes and competencies toward ICT, with a particular emphasis on equity issues such as gender, age, ethnicity, or social economic status. The most frequently reported sociodemographic parameter of the digital divide is gender. In most western countries the participation of females in the IT profession is not only low but is also still falling. Studies on computer attitudes, competencies, or use among students with different cultural or social economic backgrounds are still scarce, although the differences between these groups are substantial as well. In the United States in particular, differences between female and male students in attitudes toward computers have been the subject of many studies since the 1980s. In modern times the number of studies on the “gender gap” in computer attitudes exceeds that on computer competences and abilities by large. Because of their reciprocity, computer attitudes, computer anxiety, and computer competences should be studied in coherence and not as a causal relation.

Chapter 4.6 presents a typology of four dimensions of teacher leadership: (a) a disposition to continually learn from and improve practice, (b) collaboration with peers through critical examination and evolution of each other’s teaching, (c) participation in geographically diverse communities of practice, and (d) making professional contributions through speaking, writing, and teaching. Teacher leadership, from this perspective, is inherently grounded in professional engagement, which in turn is linked with constructivist teaching philosophies and teaching practice and exemplary use of computers. The chapter concludes by pointing to several ways that technology leadership might be fostered.

References


