Chapter Six

Teacher Characteristics, Contextual Factors, and How These Affect the Pedagogical Use of ICT

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Whether and how teachers use ICT in their teaching and their pedagogical orientations are influenced by personal, organizational, and system-level factors. In accordance with the conceptual framework described in Chapter 2, the teacher questionnaire was designed to collect data on a number of variables related to these three categories of factors. Questions related to the personal characteristics of the teacher included demographic information (age, gender, highest level of academic qualification reached, possession or otherwise of a teaching license) and his or her self-perceived technical and pedagogical competence when using ICT. The teachers were also asked to respond to a number of questions related to their experiences of factors at the school and system levels: (1) the availability and usefulness of different kinds of professional development activities; (2) obstacles to realizing their [teachers’] vision for ICT-use; and (3) the presence of features indicative of a community of practice in the school.

This chapter begins by profiling the mathematics teachers’ and science teachers’ characteristics and these teachers’ perceptions of the specified school- and system-level factors. In addition, we offer some preliminary explorations concerning possible relationships between the personal-, school-, and system-level factors and whether the teachers were using ICT when teaching the target classes. In cases where
categorical data such as gender were collected, we also present the percentage of teachers in each category who reported using ICT with the target class. This information allowed us some initial insights into whether and how these characteristics (captured through categorical data) correlated with teachers’ use of ICT when teaching. For contextual data that are, by nature, continuous, such as the teachers’ self-reported competence and the extent to which obstacles or support were present, we used binary logistic regression analysis to explore the relationship, and we report the key findings later in this chapter. While more sophisticated explorations on the relationships between various personal and contextual factors with the different aspects of teachers’ pedagogical use of ICT reported in Chapter 5 are clearly warranted, these have been beyond the scope of this first international report. Hopefully, however, the work presented in this publication will be followed by more in-depth analysis at system and cross-national levels.

6.1 Teachers’ demographic characteristics and pedagogical uses of ICT

The teacher questionnaire collected personal information that might have influenced the participating teachers’ pedagogical uses of ICT. This information included age, gender, highest level of academic qualification reached, attainment of a teaching license, and self-reports of technical and pedagogical ICT-competence. This section reports the findings on these basic demographic characteristics.

6.1.1 Teachers’ age

Tables 6.1a and 6.1b present, for each participating system, the percentages of mathematics teachers and the percentages of science teachers belonging to the different age groups. The most obvious pattern in the tables is the large variation in the age profiles of the teachers in different systems. In some systems, such as Chinese Taipei, Hong Kong SAR, and Singapore, most of the teachers who participated in SITES 2006 were below age 40 and so had an age profile younger than those of the teachers in systems such as Finland, Italy, and Moscow, where the majority of the teachers were above the age of 40.

An examination of the results presented in Tables 6.1a and 6.1b shows no single identifiable trend across systems. For mathematics teachers (Table 6.1a), we can see that the age cohort with the highest percentage of ICT-using teachers differs across systems and that, with