Teaching Information Security (as Part of Key Competencies): The Situation in Austria

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Abstract: The poster and abstract describe the importance of teaching information security in school. After a short description of information security and important aspects, I will show, how information security fits into different guidelines or models for computer science educations and that it is therefore on of the key competencies. Afterwards I will present you a rough insight of teaching information security in Austria.

Keywords: Teaching information security, key competencies, computer science education, Austria

1   Information Security

Information security (definition in (Praxiom, 2013)) is very important, also in classroom, especially in times of heavy usage of smartphones and social networks. Do I have my (posted) data under control? Is it really my friend behind a certain account? There are further more questions to deal with, for example cyber mobbing as a possible consequence of easily taking snapshots of persons everywhere in any embarrassing and inconvenient situation and because of the "spatial distance" between offender and victim. Information security covers a wide range of (potential) problems, which cannot all be mentioned in detail here. In classroom it is also necessary to deal with technical basics to understand the used techniques like encryption and verification mechanisms.

Modern teaching approaches in every subject should be competence-oriented. According to Fuchs and Landerer (2005) important competencies in the field of computer science education could be: (C1) system competence, (C2) application competence, (C3) modelling expertise, (C4) communication skills, and (C5) problem-solving skills. System competence (C1) covers structure, function, limitations, safety and effects of (networked) computer science systems (ibid., p. 8). Information security belongs to system competence (including safety and effects of (networked) computer science systems (ibid., p. 8)). Students should also be able to deal with technical basics to understand the techniques behind a user interface of a system (e.g. encryption and authentication) as part of their application competence and communication skills. So, competence-oriented teaching in computer science should certainly emphasize aspects of information security.

2   Situation in Austria

At the AHS (allgemein bildende höhere Schule, Gymnasium, a wide spread secondary school type in Austria) computer science education is diverse because of decentralization and autonomy as possible reasons. In general, there are no obligatory computer science lessons in lower secondary education. Pupils in upper secondary education (ages 15 to 18) have two lessons weekly in 9th grade (age 15) that are obligatory. That is the only invariant in computer science education at a Gymnasium in Austria (Micheuz, 2009). Therefore, almost all relevant computer science topics have to be taught in this single course. Teaching information security should be included in this year, as mentioned (partially) in the curriculum (cf. BMUKK, 2003, p. 1). One of the objectives is to "understand key measures and legal principles related to data security, privacy and copyright, as well as learn about the impact of technology on individuals and society" (ibid., p. 2, translated by the author).

Troubles due to lack of awareness about information security are starting much earlier, long time before the compulsory computer science lessons begin. Therefore in Austria there exist different initiatives to raise awareness about information security, such as Saferinternet.at (Saferinternet.eu, co-founded by the European Commission (Saferinternet, 2013)) as well as the "Click&Check" workshops (Polizei, 2013).

Currently, models for digital literacy skills emerge in Austria (cf. EduGroup, 2013). In addition to these competence models, on (DigiKomp, 2013) a collection of ready-to-use teaching examples can be found, a part of them dealing

with information security, which opens up the chance of bringing information security issues also to lessons of different subjects.

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Biography
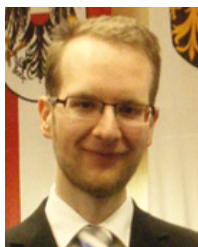
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