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Press Release

Surfing the Web Safely: New Study Shows What Digital Skills Children Need

A research team from the University of Mannheim has for the first time developed a model that shows what digital skills children between the ages of eight and thirteen need. This EU-funded project will now form the basis for workshops and teaching materials for schools.

Children are surfing the Internet at earlier and earlier ages—but how can they protect themselves when doing so? Professor Dirk Ifenthaler and Nicolai B. Plintz, M.Sc., from the University of Mannheim have developed a competency model that describes the knowledge and skills children at the ages of eight to thirteen need in order to use the Internet safely. The results were recently published in the journal *Educational Technology Research and Development*.

The study was conducted as part of the European "Super Cyber Kids" project. The aim was to identify specific competencies that children at this age should learn in order to navigate digital spaces safely. There had been numerous individual studies and recommendations before but no structured overview.

Based on more than 500 suggestions, the researchers identified 257 competencies suitable for promoting child-friendly media literacy and safety. These skills include, for example, protecting one's own data, identifying unwanted messages, or the correct behavior in the event of technical issues.

"Nowadays, children and adolescents are online almost every day. Therefore, they need the competencies necessary to protect themselves early on," Ifenthaler says. "Our framework helps parents, teachers, and educational institutions specifically promote the skills that children need online."

The study was conducted in two steps. First, a systematic literature review was conducted where 315 expert articles were examined, 39 of which were included in the analysis. Subsequently, 18 experienced experts from pedagogy, education, and technology were surveyed. Based on this data, the researchers developed a clear structure with 30 topic areas—a matrix of security categories such as "Data Privacy" or "Malicious Code" and action dimensions such as "Identify," "Respond," or "Recover."

The researchers placed particular emphasis on ensuring that the competencies mentioned were age appropriate. For example, the original statement "Children can restore files from a backup after a cyberattack" was considered too demanding by the experts—and adjusted accordingly.

The framework developed will be used in the further course of the project to develop pedagogical guidelines and resources for the practical use of game-based cybersecurity education in everyday school life. A multilingual online platform (https://platform.supercyberkids.eu) was developed for this purpose. The use of these resources will be empirically tested by the authors in future studies.

Plintz, N.B., Ifenthaler, D. Empowering children online: a holistic skills framework for cybersecurity. *Education Tech Research Dev* (2025). https://doi.org/10.1007/s11423-025-10565-z

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