# IEA International Computer
# and Information Literacy Study 2018
# Assessment Framework

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Springer Open

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# Foreword

The International Association for the Evaluation of Educational Achievement (IEA) is a nonprofit independent research organization built on a collaborative network of scholars, researchers, policy analysts, and technical experts from national education research centers and government research agencies. More than 100 education systems have participated in IEA's large-scale comparative studies over the last 60 years. These studies have been used to investigate education systems, to assess their relative strengths and weaknesses, and measure trends in an international context, with the aim of fostering improvement in the quality of education around the world. The reports and data resulting from these studies are consequently a rich resource for educational researchers and evidence-based policymaking.

IEA's International Computer and Information Literacy Study (ICILS) 2018 is designed to find out more about the contexts and outcomes of ICT-related education programs, and the role of schools and teachers in supporting students' computer and information literacy achievement. IEA has long been interested in the use of information and communication technology (ICT) in education. The Computers in Education Study (COMPED) was the first IEA study in this field, conducted in 1989 and again in 1992. This was followed by IEA's Second Information Technology in Education Study (SITES) in 1998–1999 (Module 1), 2001 (Module 2), and 2006, which assessed the infrastructure, goals, and practices for ICT education in twenty-six countries.

ICILS investigates students' ability to use computers to investigate, create, and communicate in order to participate effectively at home, at school, in the workplace, and in the community and the educational contexts in which these skills are learned. The first cycle of ICILS was conducted successfully in 2013, and collected data in 21 education systems around the world. It investigated how grade 8 students in these countries developed the computer and information literacy skills that would enable them to participate in an increasingly digital world. It researched the differences between and within participating education systems, and the relationship of achievement to student background and the learning environment.

ICILS 2013 identified a number of interesting and some quite surprising results; these are presented in depth in the ICILS 2013 international report, *Preparing for Life in a Digital Age*. ICILS has led national policymakers and researchers to conclude that further research and the measurement of trends in students' skills was critical to informing policies designed to develop students' skills in computer and information literacy. The ICILS 2013 results also indicated that computational thinking was an area that merited more attention; computational thinking skills have been recognized in many countries as an area of increasing relevance for education in the 21st century.

ICILS 2018 is based on and expands the work of ICILS 2013: it reports on changes in students' computer and information literacy since 2013, and further investigates several areas that provided interesting results in 2013 and highlighted areas of concern for educationalists. ICILS 2018 also offers participating countries an option to assess the computational thinking domain, understood as the process of working out exactly how computers can help people solve problems. The assessment of computational thinking is an innovative and engaging challenge for the students, evaluating not only their ability to analyze and break down the problem into logical steps but also their understanding of how computers might be used to solve the problem.

This publication, the ICILS 2018 assessment framework, describes the background, constructs, and design of the assessment of computer and information literacy and computational thinking skills. The framework is based on the ICILS 2013 framework, but has been adapted and amended to address new challenges for this innovative trend study posed by evolving educational requirements. ICILS, as with all IEA studies, was developed in close cooperation with the international study center, and study representatives from the various participating countries.

Dirk Hastedt
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