Children's and young people's digital skills: a systematic evidence review

# Details

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## Authors

Haddon L.;Cino D.;Doyle M.-A.;Livingstone S.;Mascheroni G.;Stoilova M.

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* Learning
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* Internet usage, practices and engagement
* Literacy and skills
* Risks and harms
* Access, inequalities and vulnerabilities

## Sample

110 studies

## Implications For Policy Makers About

## Other PolicyMaker Implication

Promoting parents' knowledge of ways to foster children's digital skills acquistition; promote peer-to-peer education

## Implications For Stakeholders About

Researchers

# Abstract

Given the considerable policy and practical importance of digital skills and literacies for young people’s life chances, especially as regards inequalities and digital inclusion, and the increasing reliance on digital technologies for learning, employment and civic life, a systematic evidence review was conducted to answer this question.
The review was informed by the International Telecommunication Union’s (ITU) definition of digital skills: "the ability to use ICTs in ways that help individuals to achieve beneficial, high-quality outcomes in everyday life for themselves and others" and to "reduce potential harm associated with more negative aspects of digital engagement" (2018, p.23).
A preliminary rapid evidence mapping found that relatively little research was published in the early years of mass internet use (2000–09). Hence the systematic evidence review encompassed all research published between 2010 and 2020, thus representing the large majority of available studies. The search protocol, registered on PROSPERO, included studies of moderate to high quality (judged using the Weight of Evidence approach) that used quantitative methods, were published in the English language, and related directly to the digital skills of 12- to 17-year-olds.
The results of 110 studies were analysed to identify what is known about youth digital skills, and to examine the evidence for the antecedents (or factors influencing the acquisition) of digital skills, and the consequences of having digital skills. They were also scrutinised for research gaps and to generate questions and hypotheses for future investigation. In addition, they were examined for the many ways in which digital skills have been conceptualised and measured in the research literature.

# Outcome

"How are youth digital skills conceptualised and measured?
 Both broad and narrow conceptions of “digital skills” are used in the literature, with some researchers conceiving of multiple dimensions of digital skills and others focusing on particular skills (e.g. information literacy or computer programming) as befits their topic. Moreover, the definition of digital skills is not much discussed, making it difficult for the field to come to a consensus. The plethora of definitions in use means that comparing study findings is a bit like comparing apples and oranges.
 It is important to distinguish demonstrated or claimed digital skills from digital self-efficacy. The former are revealed through performance tests or self-report surveys that ask direct and factual questions. Self-efficacy (“I am good at…” or “I am confident about…”) is subject to social desirability biases, and we place less weight on such studies. We also excluded studies that infer skills from methods that measure digital uses or activities, but do not measure digital skills directly. The studies analysed were conducted in 64 different countries, with the USA and Europe generating most of the available research. Most of the studies used self-report surveys, but a minority (almost one-third) conducted performance tests, involving some form of task-based assessment. Most performance tests were used to examine the antecedents rather than the consequences of digital skills.
Findings on the antecedents of youth digital skills are summarised below.
 There is strong evidence that children’s digital skills improve with age, as expected.
 Contrary to popular belief, the evidence regarding gender differences is inconsistent. Boys appear to claim better digital skills than girls, but when performance tests are used, there are no gender differences.
 Ethnicity is examined by a handful of studies as a potential source of digital inequality, with mixed results.
 A few studies suggest that better cognitive skills are associated with better digital skills.
 The higher a child’s academic achievement, the better their digital skills. Motivation also plays a role and, possibly, learning style.
 Children with positive attitudes towards information and communication technology (ICT) have higher digital skills.
 Children from higher socioeconomic status (SES) households are found to have higher digital skills in around half of the studies that examine this relationship.
 When parents practise restrictive mediation, this is linked to lower digital skills for their children, while enabling mediation is generally linked to better digital skills, although some studies found no relationship.
 When ICT is more available in schools, children’s digital skills tend to be better. Also, those with earlier or broader access to ICT, including at home, have better digital skills. Most studies do not examine possible underlying causes (such as household SES). Studies of the consequences of youth digital skills are scarcer than studies of the antecedent factors that may lead to better skills. Nonetheless, the consequences of youth digital skills were found to be as follows:
 Few studies examined whether digital skills improve wellbeing, and even fewer found that they do.
 There is clearer evidence that greater digital skills are linked to better learning outcomes for children, although again, the evidence base is small.
 Of the few studies that looked for a relationship between digital skills and youth civic engagement (offline and online), all found it to be positive.
 Children with higher levels of digital skills may be better able to protect their privacy online.
 There is evidence that better digital skills are linked to more online risk, although the evidence also suggests that the type of skills matters: critical digital skills, for instance, are not linked to online risk. Moreover, better digital skills are not linked to more harm, and may even reduce harm, possibly because children with better digital skills appear better able to cope with online risks.
Twelve studies sought to model the relation between the antecedents and consequences of youth digital skills, using statistical modelling techniques. Their findings are complex, and bear careful investigation, in crucial ways questioning the simple bivariate relationships between antecedents or consequences and digital skills. Notably, they show that:
 The association between better digital skills and more online risk is indirect, as better skills are linked to more online opportunities, and those, in turn, are linked to more risk.
 Relatedly, it seems that enabling parental mediation has only an indirect association with digital skills, through its role in facilitating online opportunities.
 Efforts to model the relations among factors to understand digital inclusion suggest that the online and offline disadvantages that girls and children with lower level education face can be countered if efforts are made to improve their digital skills. SES and age are independently associated with outcomes, but again, improving digital stills can mitigate inequalities." (Haddon et al., 2020, pp. 5-7)