

How Does Engagement in Reading Predict Digital Reading Proficiency Among 15 year-olds?



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Context



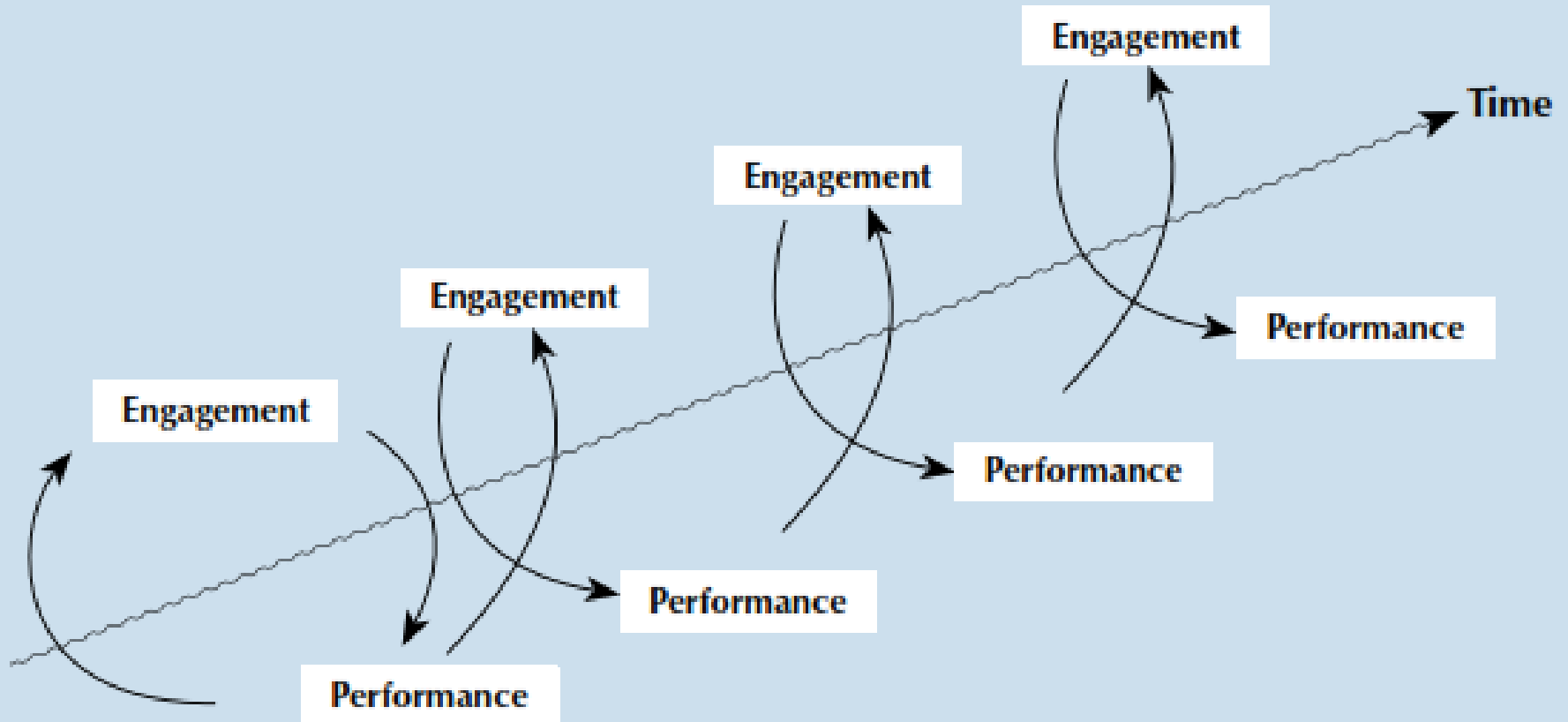
- In PISA 2009, in addition to print reading, digital reading has been assessed in 19 education systems.
- Digital reading tasks have been designed in order to address specific features of digital reading; they require not only reading skills, but navigation skills (hypertext) and some familiarity with the use of computers.
- Achievement in print and digital reading tasks are obviously strongly related. But navigation skills (number of relevant pages visited) also strongly predict digital reading proficiency.

Context



- Gender gap is smaller for digital reading proficiency: 0.38 s.d for print, 0.24 for digital reading.
- Motivational variables (attitudes, practices) could also be more or less strongly related with reading achievement, depending on the media.

The virtuous circle between reading engagement and reading proficiency



- [Source](#): OECD (2011). *PISA 2009 Results : students on line*. Vol. VI. Paris: Author.

Main research questions



- To what extent are enjoyment of reading and print reading practices related to digital reading proficiency?
- Which kinds of online reading activities are students more often involved in?
- To what extent are online reading activities linked to digital reading proficiency?

Methodology



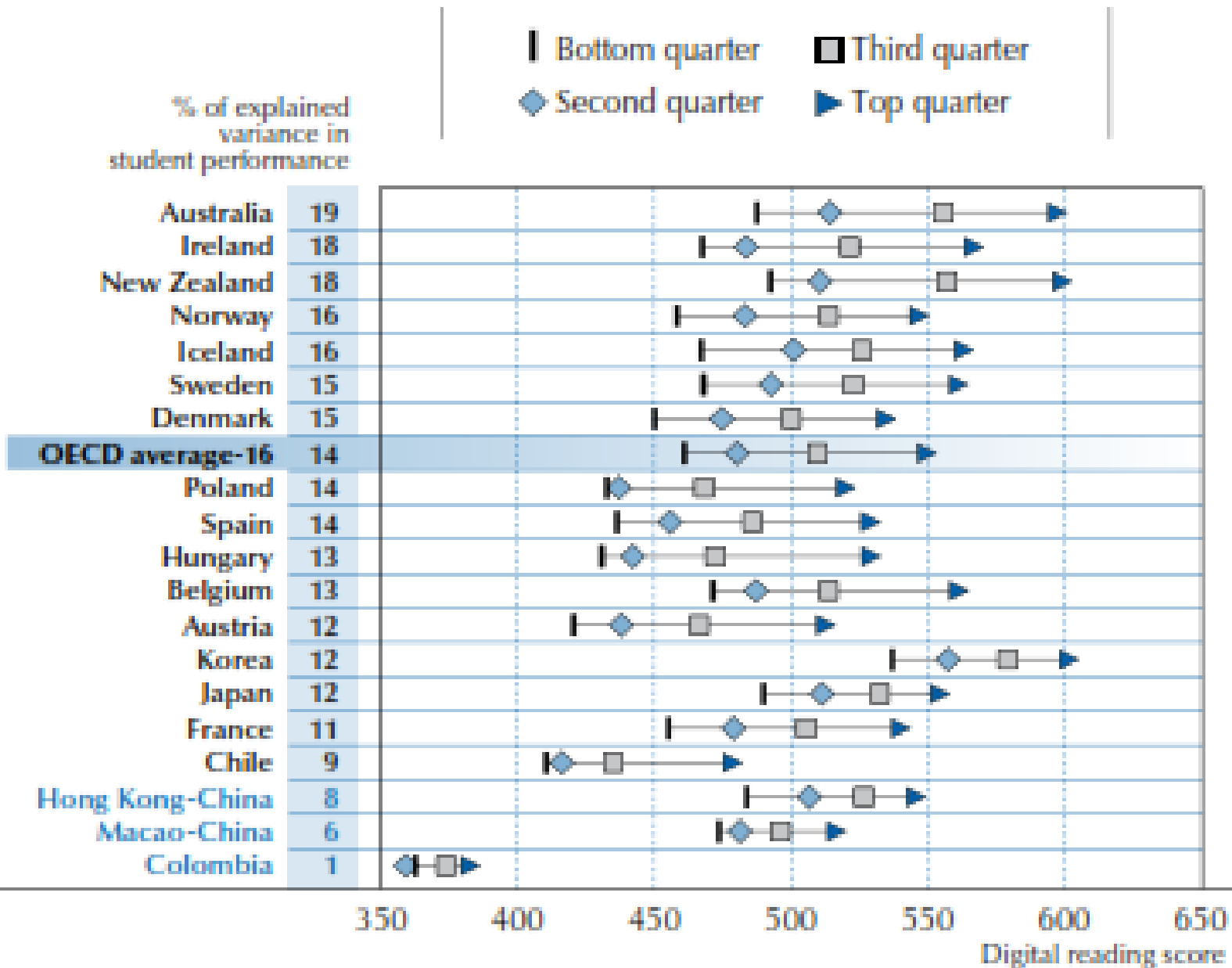
- PISA 2009 data
- 19 countries participating to the digital reading assessment option; 16 Oecd countries.
- Dependent variable: digital reading score (5 plausible values)
- Independent variables: 4 composite indices
 - Enjoyment of reading
 - Diversity and frequency of print reading material
 - Online searching information
 - Online social activities

Analyses



- Factorial analyses → online composite indices;
- Regression analysis (one level and two-level).
- The following indicators are used for reporting the results: by country mean index for all students, by gender and magnitude of the gender difference; mean digital reading score by national quartile of the indices; odd ratios and explained variance.

Do students who enjoy reading read better on line?

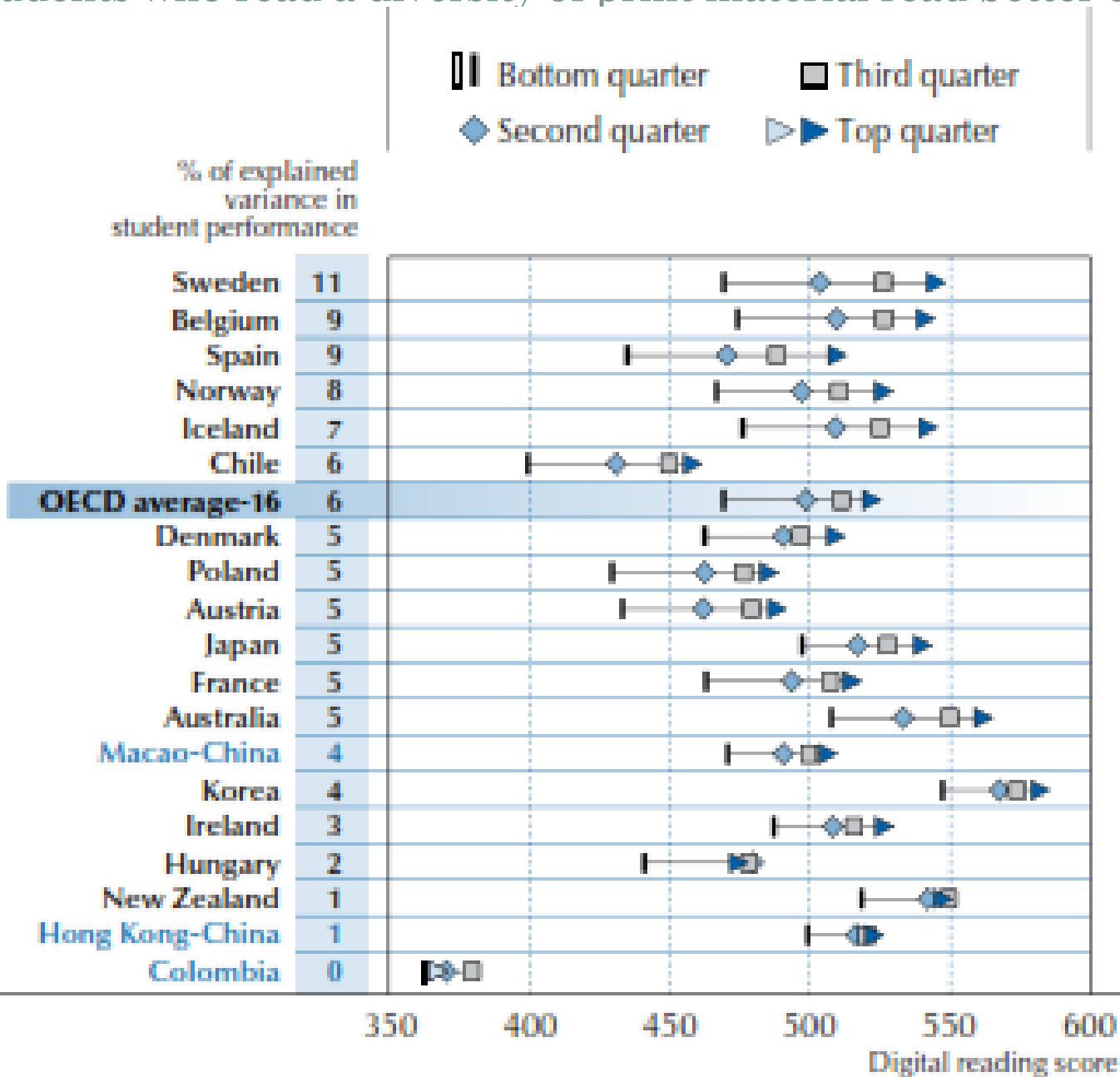


Results: enjoyment for reading



- 14% of variation on average in performance in digital reading explained; 88 score points between the top and the bottom quartiles of the index.
- Students scoring in the bottom quarter of the index are twice as likely to score in the bottom quarter of the national digital reading score.
- Enjoyment of reading explains less variation in digital performance (14%) than in print (20%). Most of the items scale refer to print and especially to books.

Do students who read a diversity of print material read better on line?



Results: diversity of print reading



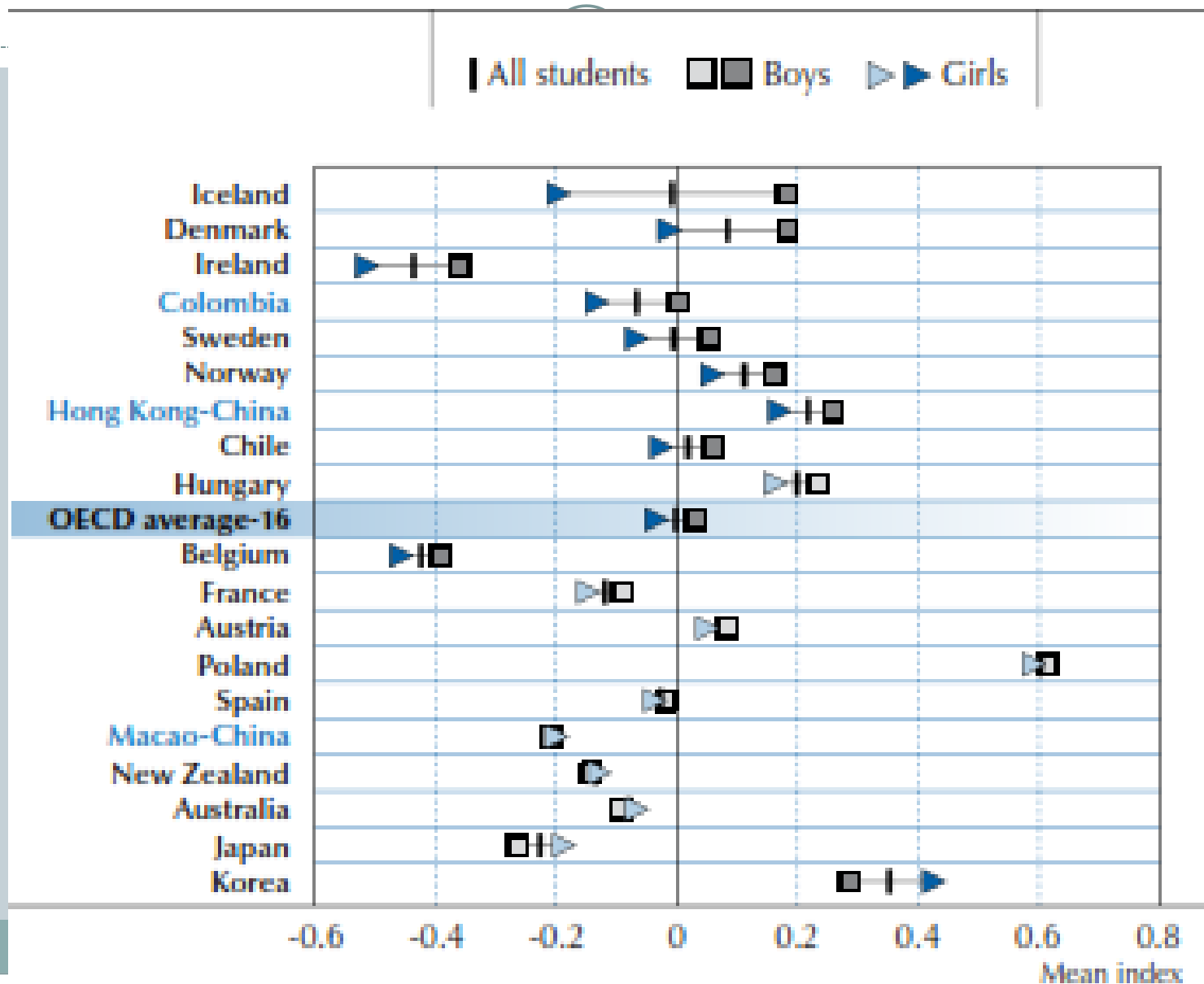
- 6% of student variance on average (OECD countries) of the digital reading performance explained (7% for print); 58 score points between the top and the bottom quartile
- Students scoring in the bottom quarter of the index are 1.8 as likely to score in the bottom quarter of the national digital reading score.

Results: online reading practices items



- Frequency with which students are involved in the following : **reading emails; chatting online**, reading online news, using an online dictionary or encyclopedia, searching online information to learn, searching for practical information, taking part in online discussion groups or forums.
- The most common activities are emails (64% several times a week) and searching information (51%).
- Factorial analysis were conducted in OECD countries → 2 components: **searching information** and **online social activities**.

Online searching-information activities, by gender



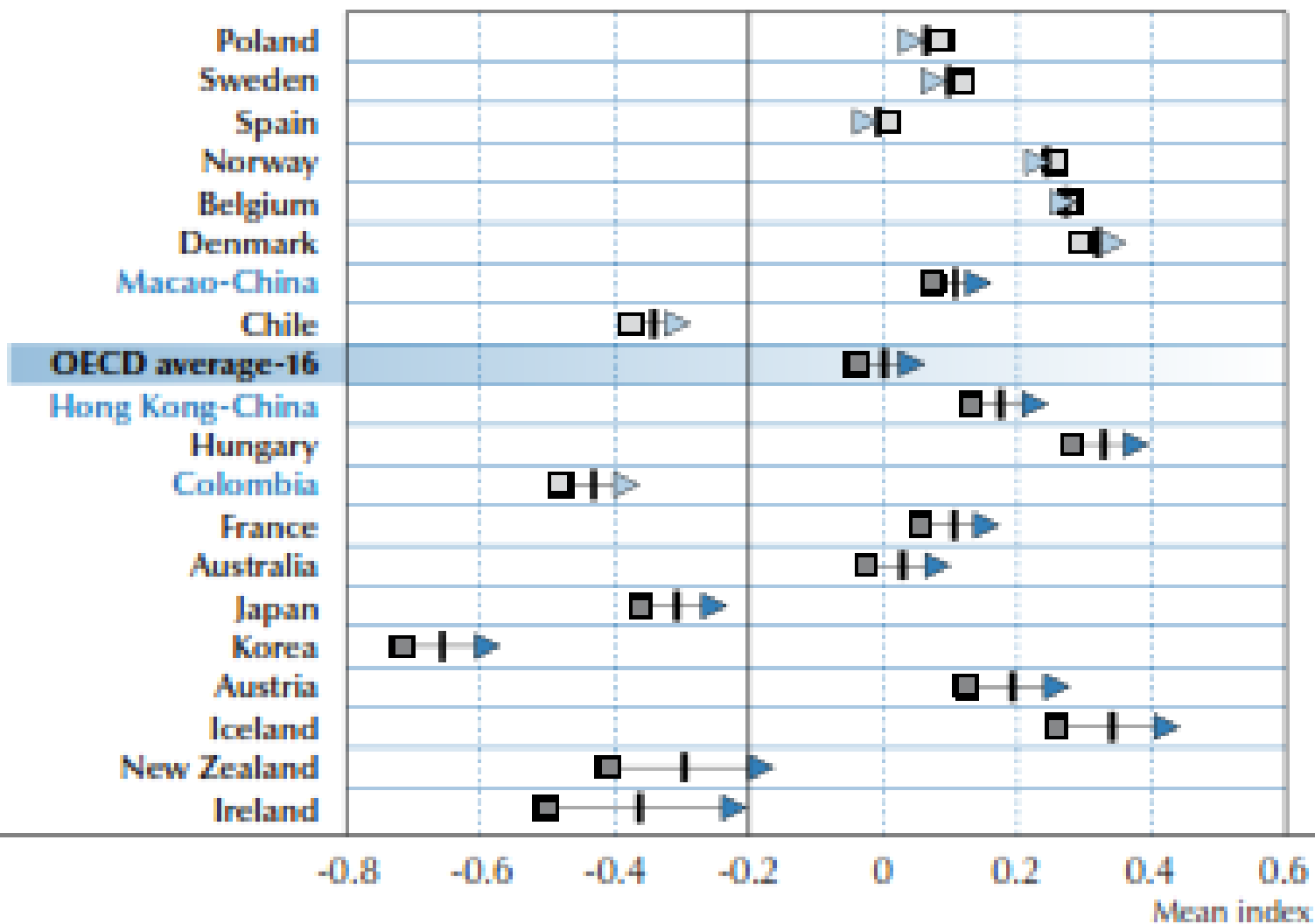
Results: online searching information



- Boys are slightly more engaged in online searching information than girls. Gender difference is 0.07; larger (>0.10) in Iceland, Denmark, Ireland, Sweden, Norway.
- The correlation with digital reading is stronger for boys (0.29) than for girls (0.25).

Online social activities, by gender

All students Boys Girls

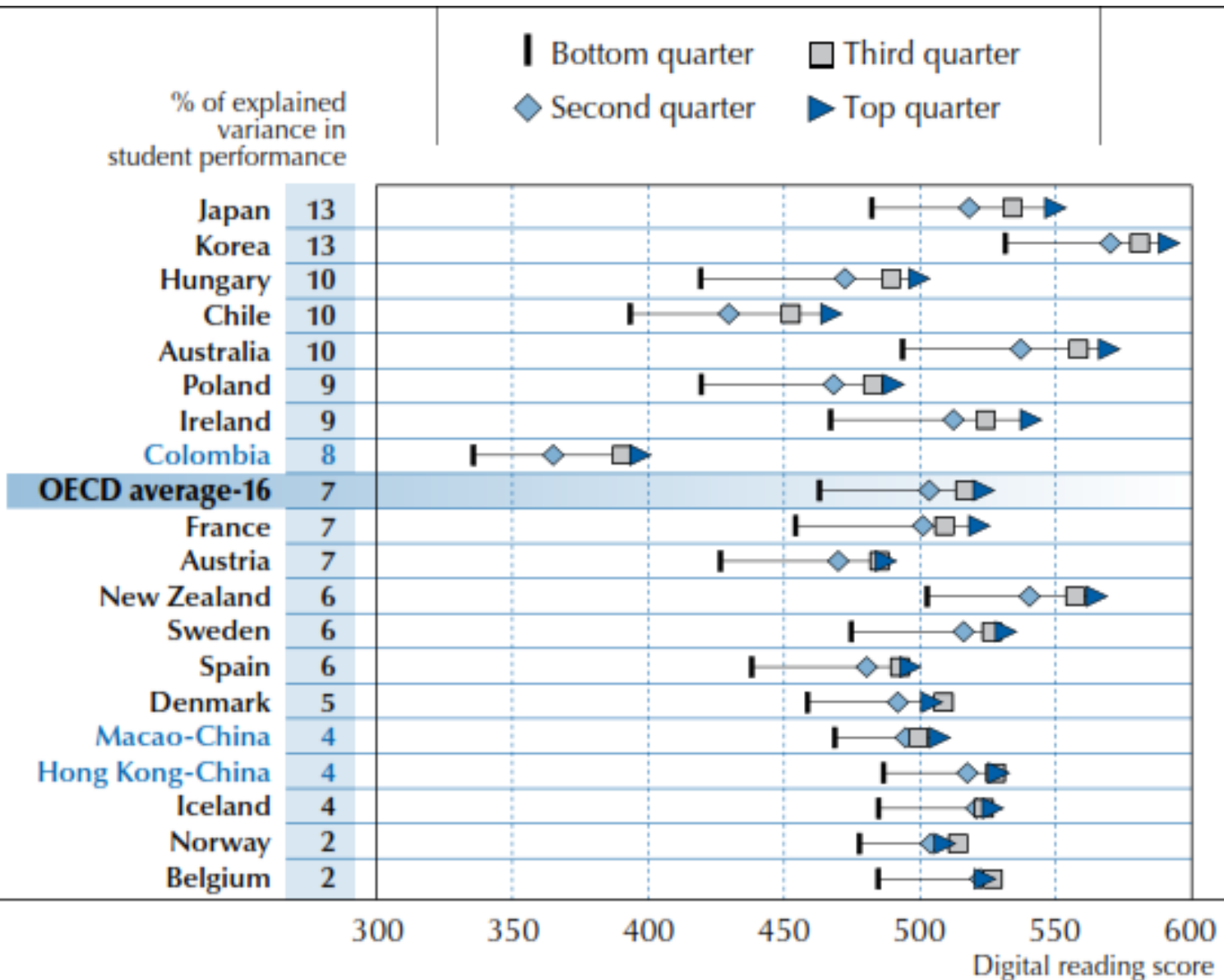


Results: online social activities



- Girls are more frequently involved in online social activities than boys. Gender difference is - 0.08; quite stronger (>0.20) in New Zealand and Ireland, but online social activities are not frequent in those 2 countries.
- The correlation with digital reading is stronger for boys (0.09) than for girls (0.02).

Relationship between online searching-information activities and digital reading performance

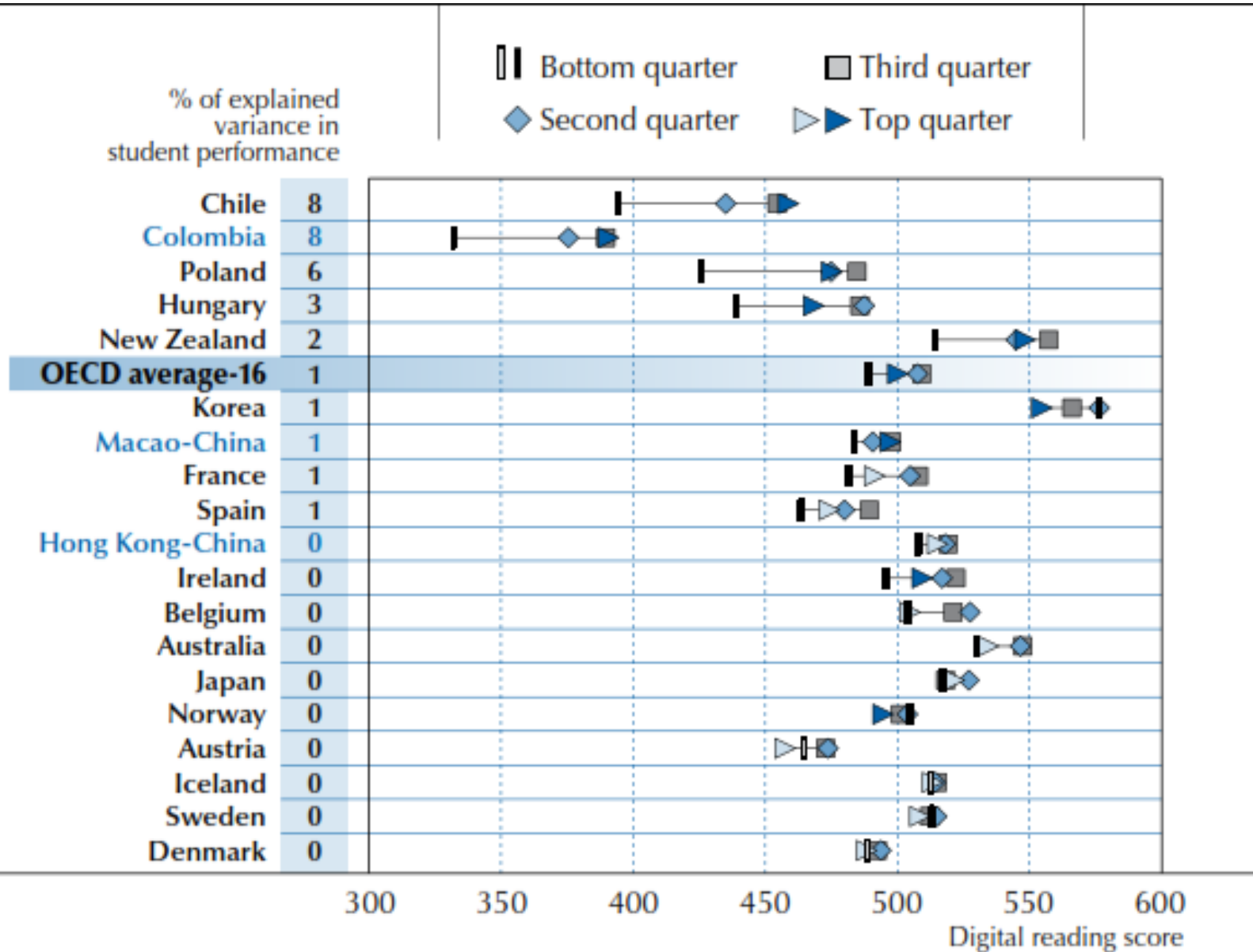


Results: online searching-information



- on average, 7% of students' variance explained; 60 score points difference between the top and the bottom quarter of the index.
- Students scoring in the bottom quarter of the index are 2.1 as likely to score in the bottom quarter of the national digital reading score.

Relationship between online social activities and digital reading performance



Results: online social activities



- on average, 1.4% of students' variance explained; only 11 score points difference between the top and the bottom quarter of the index.
- Students scoring in the bottom quarter of the index are 1.4 as likely to score in the bottom quarter of the national digital reading score.

Results: non linear relationships



- For both indices, relationships with digital proficiency are nonlinear, especially for social activities

	Bottom quarter	Second	Third	Top quarter
Searching info	463	503	516	523
Social activities	489	508	509	500

Conclusions



- Enjoyment of reading is modestly related to students' performance in digital reading, less than with print reading.
- Reading a diversity of print material is positively but weakly linked to digital reading proficiency.

Conclusions



- Online reading practices are to some extent + related to reading proficiency, but this is true mainly for searching information.
- Online social activities seem to be loosely related with reading (→ is it reading?): not related with print achievement, - related with enjoyment (-0.09) and 0.05 with print reading practices.
- Searching information has a 0.33 correlation with print reading practices and a 0.24 correlation with enjoyment of reading.

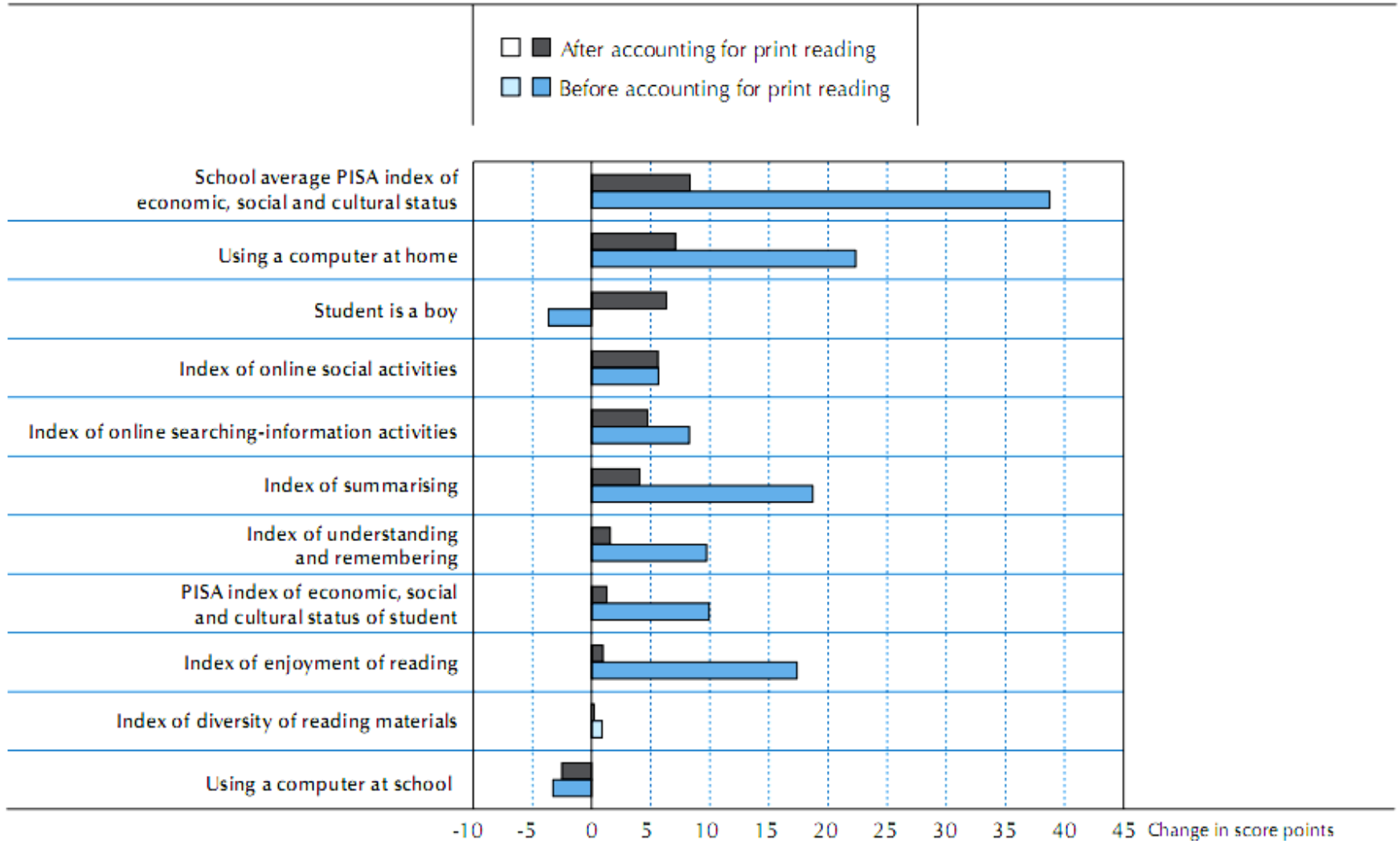
Multilevel model



- A multilevel regression analysis was also performed.
- At the student level:
 - Background variables: gender, HISEI,
 - Engagement and metacognition,
 - Familiarity with the computer
- At the school level: school social intake
- Analyses were performed with and without including print reading score in the model.
- Comparing the score points differences before and after taking print reading into account gives an estimate of which variables (malleable ones) are good predictors of the difference between print and digital reading.

Multilevel analyses

Score point differences in digital reading associated with variables in the multilevel regression models, OECD average-15



Conclusions



- The use of a computer at home is one of the variables explaining the difference between print and digital proficiency, as well as the metacognition variable 'Index of summarising'.
- Online social activities and online searching information also explains the difference between print and digital reading. Students with the same level of reading (print) who are more often involved in online reading activities tend to perform somewhat better in digital reading.