

ANNEX A.3
TECHNICAL NOTES ON ANALYSES IN CHAPTER 4
(“THE IMPORTANCE OF NAVIGATION IN ONLINE READING: THINK, THEN CLICK”)

Analyses in Chapter 4 relating the navigation behaviour of students to success in digital reading task are based on logistic regressions of a “success” dummy (a dichotomous version of the scored answer, with value 1 corresponding to a full credit score and 0 corresponding to no or only partial credit) on an item-specific dummy and step counts. In these regressions, each observation corresponds to a unique student/item combination.

Depending on the specific analysis, the step count variables can be either a single, total step count, or four variables distinguishing steps by their type (task-relevant, task-irrelevant, missteps, corrections).

To account for the fact that multiple student/items pairs are observed for the same students, and students are nested within schools, and thus for the non-independence of residuals across observations, standard errors are based on the balanced repeated replication method. The sample and replication weights supplied by PISA were divided, for each student, by the number of items across which his or her behaviour is observed. The sum of weights for a same student thus corresponds to the original weight included in PISA databases.

Logit coefficients are transformed into PISA score-point differences after multiplying them by 1/0.00990. This multiplier corresponds to the inverse of the coefficient obtained in a logistic regression of task success on the difficulty threshold for a full-credit score (measured on the PISA scale). Difficulty thresholds are taken from the PISA 2012 Technical Report (OECD, 2014, Annex A). In this regression, weights are normalised so that each country or economy contributes equally to the results.

References

OECD (2014), *PISA 2012 Technical Report*, PISA, OECD, Paris, www.oecd.org/pisa/pisaproducts/pisa2012technicalreport.htm.