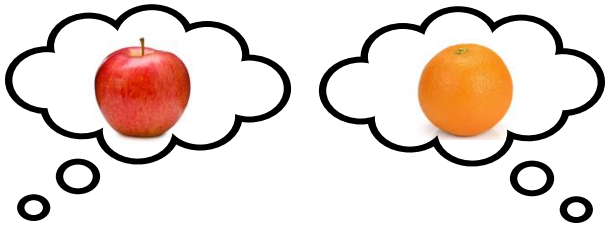
Measuring digital skills

Best practices from cognitive interviews in India, Kenya and Nigeria

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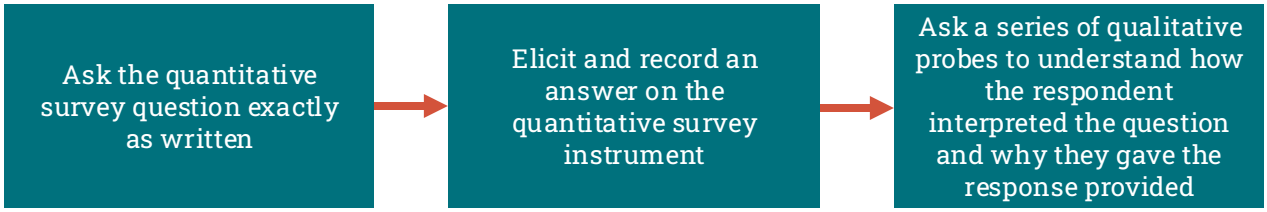
What is cognitive interviewing?



- Cognitive interviewing is a qualitative research method used primarily to improve the design of quantitative surveys
- The goal is to understand how respondents interpret draft survey questions and revise the questions as needed to ensure they capture the intended meaning
- Without cognitive interviews, gaps between question intent and respondent interpretation can persist, severely compromising the validity and, reliability of data generated from surveys

How does cognitive interviewing work?

- Recruit and train experienced qualitative researchers who are proficient in both the target and original language (when surveys are being translated)
- Sample participants with the same profile as the intended survey respondents, but prioritize those who are most likely to struggle with the survey (usually the least educated and most marginalized people)
- Researchers conduct interviews, taking the respondent through each draft survey question:



- Debrief to identify cognitive gaps and revise the draft questions
- Conduct additional rounds of interviews with new respondents to assess the revised questions
- Continue until a final version of the questions has been developed

How have we applied cognitive interviewing to the assessment of digital skills?

- We conducted cognitive interviews in India (Hindi), Kenya (Kiswahili) and Nigeria (Hausa)
- We tested digital skills questions drawn from global surveys (MICS - 7, DigComp 2.2, Global Kids Online 2021, Young Lives) and some drafted by our team

- Our researchers conducted four iterative rounds of cognitive interviews, involving between 90 and 101 respondents per country

India; Hindi (n=101 CIs)



Jaunpur
Bareilly
Budaun
(Uttar Pradesh)

Kenya; Kiswahili (n=90 CIs)



Nairobi
Kajiado
Makueni
Murang'a

Nigeria; Hausa (n=90 CIs)



Kano City
North Kano
Central Kano
South Kano

What did we learn from cognitive interviews on digital skill measurement?

General principles

Short, sweet & complete

Long questions with multiple clauses caused confusion

Preambles and "stems" were not retained

"I statements" were unclear (e.g., "I am confident…."); complete "you questions" worked instead (e.g., "Are you confident…?")

Get specific

Respondents struggled with hypernyms (e.g., "social media") and "umbrella time periods" (e.g., within the last three months)

Stating subordinate items (e.g., Facebook, Instagram…) achieved cognitive match and asking when X happened relieved cognitive burden

Avoid longer Likert scales

Likert scales seeking gradation of agreement, intensity of confidence, did not resonate

Many respondents, particularly in India, replied in binaries, rather than gradations

3-point scales worked

Digital skill specific principles

Assess independent practice

Asking "can you…" or "do you know how to…" can measure self efficacy not capability; ask "have you" instead

Separate having done an activity on one's own versus only with assistance because some respondents do activities only with assistance

Avoid computer-centric language and obsolete practices

Ensure language is relevant to a mobile-first population

Remove questions as they become obsolete due to technology advancement

One basic & measurable skill per question

One basic skill per question

Ensure responses have a clear interpretation (e.g., if someone says they have not verified the reliability of information found online do they accept all information uncritically or do they not see any content that needs verification?)

Example of our findings

Original question

I will now ask you about activities that you may have done on a computer or phone during the last 3 months.
Did you…

a) Send a message, for example by email, messaging service, or SMS, with an attached file, for example a document, picture, or video? [Yes / No]
b)…
c)…

Stem-and-leaf style question, wherein the stem or preamble may not be retained

Umbrella time period ("last 3 months") difficult to conceptualize

Too many clauses, respondents lost track of what the question was asking (e.g., many thought it was asking whether they had sent a message, rather than whether they had sent an attached file)

Having done an activity did not always align with having the skills to do an activity

Some respondents did activities but only with assistance

"Attached file" is computer- centric language

Suggested revision based on CIs

Have you ever added a picture, video or document to an SMS, WhatsApp, other messaging service, or email? Have you…

1. Done this on your own
2. Done this only with assistance
3. Never done this / do not know what this is

[If 1 or 2] When did you last do this?

A. Less than 24 hours ago
B. 2 - 7 days ago
C. 8 - 14 days ago
D. 15 - 31 days ago
E. More than 1 month but less than 3 months ago
F. More than 3 months ago but within the last 1 year
G. More than 1 year ago

Each "leaf" now stands alone and an independent question

Question simplified, avoids hypernyms; terms for messaging services to be adjusted based on context

Language reflects prevalence of sending files by phone message service (rather than "attaching" them)

Done on one's own and done only with assistance are now separate

Response options allow for analysis of within the last 3 months, but also other periods

For more information, please contact kscott2@yorku.ca **or see:**

Scott, K., Ummer, O. & LeFevre, A.E. (2021). The devil is in the detail: Reflections on the value and application of cognitive interviewing to strengthen quantitative surveys in global health. *Health Policy and Planning* 36(6): 982–995. https://doi.org/10.1093/heapol/czab048

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