

RISE

RESEARCH ON IMPROVING
SYSTEMS OF EDUCATION

Conducting Surveys of Enacted Curriculum Studies in Low- and Middle- Income Countries:

A Toolkit for Policymakers, Researchers, and Education Practitioners

Note: For the full toolkit, see https://doi.org/10.35489/BSG-RISE-Misc_2023/13.



Introducing the Surveys of Enacted Curriculum (SEC)

Background

- Instructional misalignment is common in educational settings. Schools and teachers are expected to complete many tasks, such as completing the prescribed curriculum content and preparing children for high stakes examinations. However, the content that teachers are expected to cover is often poorly aligned across components, and poorly aligned with children's learning needs.
- Furthermore, in recent years, many low- and middle- income countries have conducted curriculum reforms aimed at ensuring children develop and master intended skills and competences during their time in school (*Chisholm & Leyendecker, 2008; Altinyelken, 2010; Opertti, Kang & Magni, 2018; Rodriguez-Segura & Mbiti, 2022*). Many of these reforms however have focused almost entirely on the content of the curriculum standards and do not include associated and aligned reforms to other instructional components.
- Finally, growing evidence suggests that the prescribed curriculum is often overambitious relative to the typical child's pace of learning (*Glewwe, Kremer & Moulin, 2009; Pritchett & Beatty, 2015; Kaffenberger & Pritchett, 2021*).
- The Surveys of Enacted Curriculum (SEC) approach aims to address these challenges by systematically analyzing and quantifying the content and alignment of different instructional components.

Chisholm, L. and Leyendecker, R. 2008. Curriculum reform in post-1990s sub-Saharan Africa. *International Journal of Educational Development*. Altinyelken, H. K. 2010a. Curriculum change in Uganda: Teacher perspectives on the new thematic Curriculum. *International Journal of Educational Development*, 30, 151-161. Opertti, R., Kang, H., and Magni, G. 2018. Comparative analysis of the national curriculum frameworks of five countries: Brazil, Cambodia, Finland, Kenya and Peru. UNESCO International Bureau of Education IBE/2018/WP/CD/18. Rodriguez-Segura, D. and Mbiti, I. 2022. Back to the Basics: Curriculum Reform and Student Learning in Tanzania. RISE Working Paper Series. 22/099. Glewwe, P., Kremer, M. and Moulin, S. 2009. Many Children Left Behind? Textbooks and Test Scores in Kenya. *American Economic Journal: Applied Economics*, 1 (1): 112-35. Pritchett, L. and Beatty, A. 2015. Slow down, you're going too fast: Matching curricula to student skill levels. *International Journal of Educational Development*. Kaffenberger, M. and Pritchett, L. 2021. A Structured Model of the Dynamics of Student Learning in Developing Countries, with Applications to Policy. *International Journal of Educational Development*. Volume 82, 2021, 102371. ISSN 0738-0593.

What is the Surveys of Enacted Curriculum (SEC) approach?

- The Surveys of Enacted Curriculum (SEC) is an approach for analysing and reporting on the academic content embedded in instructional components such as curriculum standards, assessments, and teacher classroom instruction.
- The SEC approach offers a way to systematically analyse and quantify the content and level of alignment and misalignment across components, and to identify ways to improve alignment for learning.
- This approach has many applications, including:
 - content and alignment analysis for curriculum, assessments, instructional materials, and classroom instruction;
 - curriculum reform design and implementation support; and
 - teacher professional development and support.

Origins of the SEC approach and prior studies in low- and middle- income countries

- The SEC approach was developed by researchers at the University of Wisconsin who later formed the [Center for Curriculum Analysis \(CCA\)](#).
- The approach has been used in the United States for over 20 years to analyse state-level curricula, measure alignment of state-level curricula with national curriculum standards, and implement teacher professional development programs.
- More recently, the approach has been used to study educational alignment in low- and middle-income countries' education systems through a partnership between the [Research on Improving Systems of Education \(RISE\) Programme](#) and CCA. These countries are:
 - Kenya, Tanzania, and Uganda (*led by [Twaweza East Africa](#)*)
 - Nepal (*led by [Research Triangle Institute \(RTI\) International](#)*)
 - Nigeria (*led by [Centre for the Study of the Economies of Africa \(CSEA\)](#)*)

Findings from SEC studies in low- and middle- income countries

- SEC studies conducted in low- and middle- income countries since 2015 suggest that misalignments between curriculum, classroom instruction, and assessments are commonplace (*Atuhurra & Kaffenberger, 2022; Atuhurra et al., 2023; Adeniran et al., forthcoming*).

Kenya, Tanzania, Uganda

- Non-systematic content articulation.
- High levels of misalignment across components.

Nepal

- Teacher tendency to spread instructional emphasis broadly at the expense of depth.
- Low average student achievement and misalignments between student learning achievement and curricular focus.

Nigeria

- Low levels of progression on the prescribed content across grades.
- High levels of misalignment of English language assessments.

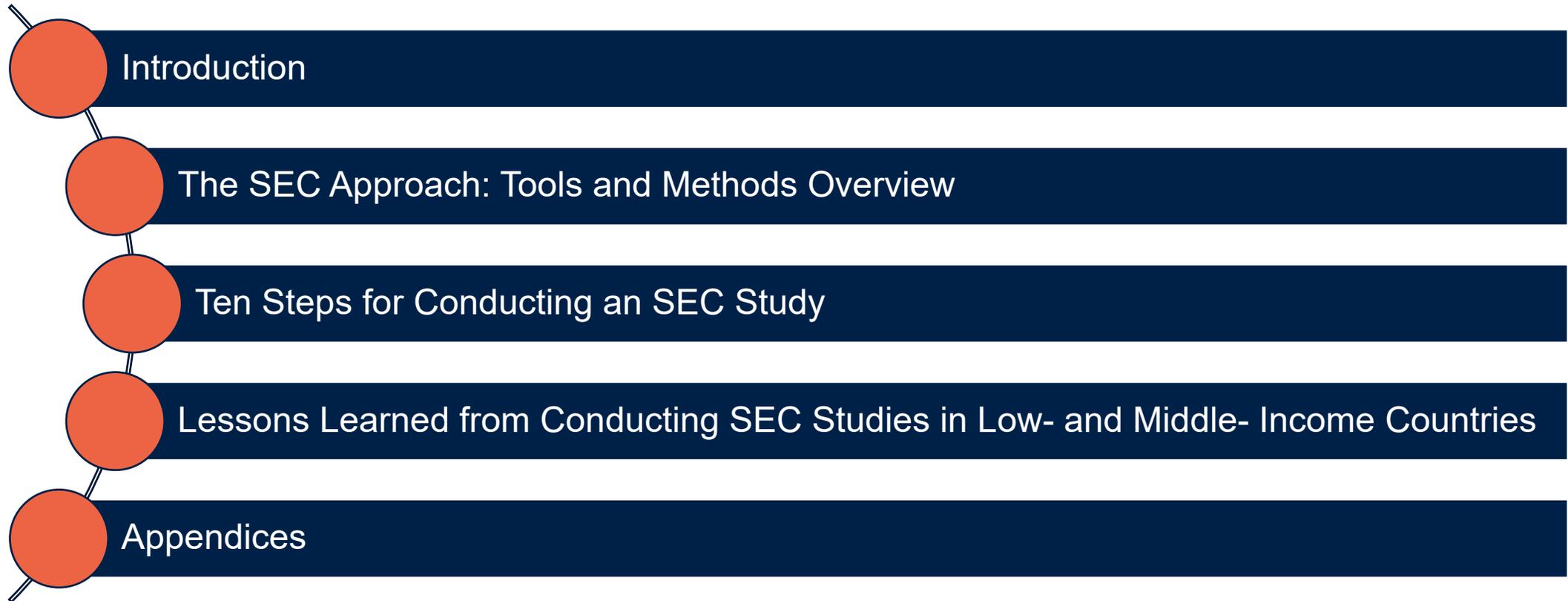
Atuhurra, J. and Kaffenberger, M. 2022. Measuring education system coherence: Alignment of curriculum standards, examinations, and teacher instruction in Tanzania and Uganda. *International Journal of Educational Development*: Vol 92. <https://doi.org/10.1016/j.ijedudev.2022.102598>. Atuhurra, J., Chaudhry, R., Hossain, T. and Kaffenberger, M. 2023. Instructional Alignment in Nepal Using the Surveys of Enacted Curriculum. 2023/057. https://doi.org/10.35489/BSG-RISE-RI_2023/057. Adeniran, A., Onyekwere, S. C., Okon, A., Atuhurra, J., Chaudhry, R., and Kaffenberger, M. [Forthcoming]. Instructional Alignment in Nigeria using the Surveys of Enacted Curriculum. RISE Working Paper Series.

About the SEC Toolkit

Overview of the SEC toolkit

- This slide deck provides a summary of the toolkit for conducting SEC studies in low- and middle-income countries, designed specifically for policymakers, researchers, and education practitioners.
- The toolkit serves as an implementation guide for using the SEC approach to understand the alignment and misalignment of an education system's key instructional components.
- It reflects lessons learned from applying the methodology in five low- and middle-income countries, four of which are in Sub-Saharan Africa while the fifth is in South Asia.
- For more details on any elements in this slide deck, please refer to the full toolkit, available at https://doi.org/10.35489/BSG-RISE-Misc_2023/13.

Sections in the SEC toolkit



The SEC Approach

There are four main uses of the SEC approach

Diagnose current levels of alignment and misalignment of academic content across key instructional components

- SEC methodology provides empirical evidence that identifies areas of (mis)alignment between instructional components.

Evaluate the implementation of a reform

- SEC methodology can assess implementation fidelity, and inform areas where teachers may need greater support.

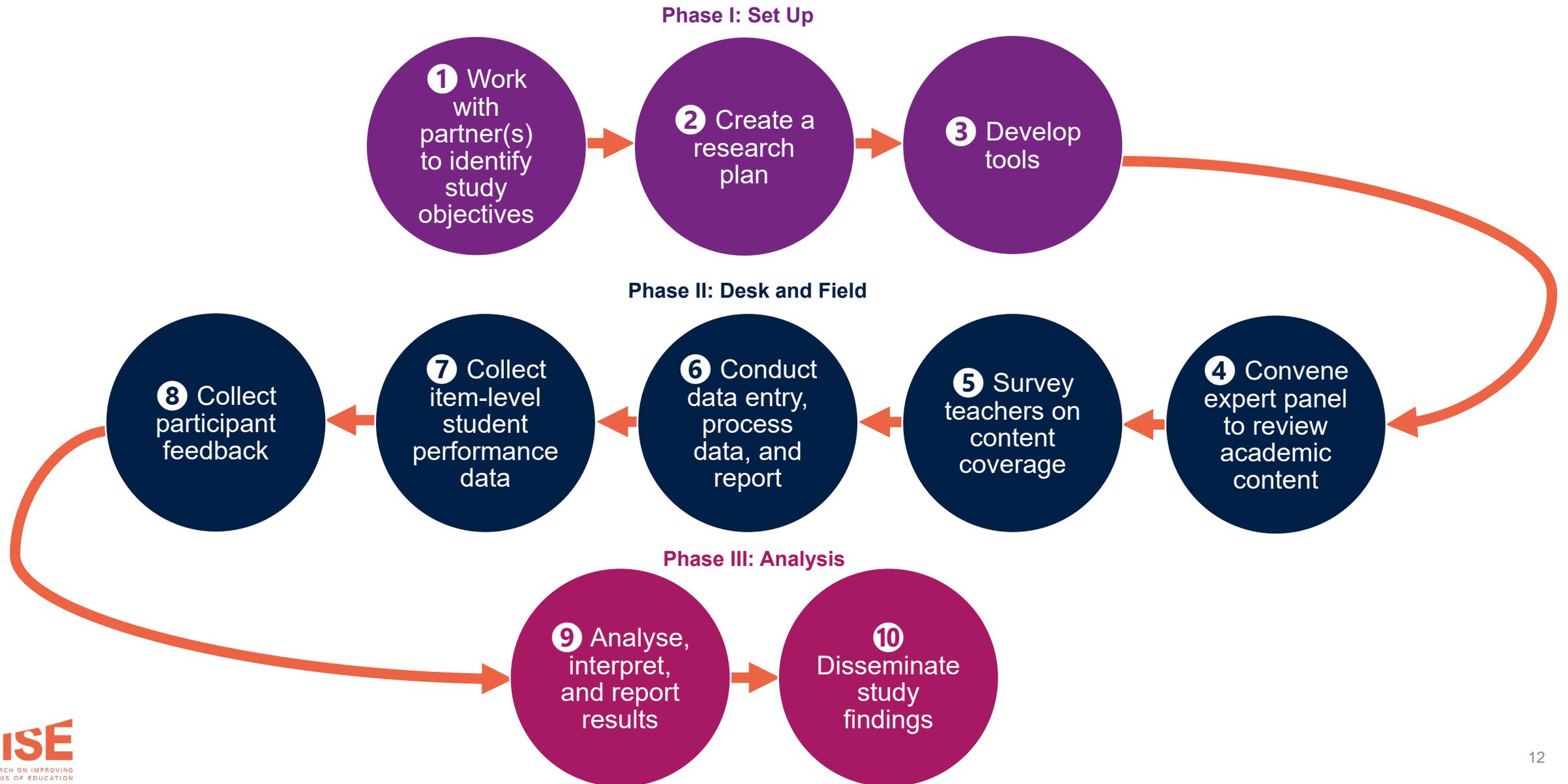
Inform design of training, support, and instructional materials to help teachers better align instruction with intended content

- SEC studies provide empirical evidence on actual practice and content coverage in the classroom, and areas of (mis)alignment.

Activate teacher-level school-based peer reflection and support

- SEC studies can create content-rich and visually appealing outputs that condense thick academic content into user-friendly maps and charts, which teachers can examine and use to compare / discuss approaches with peers.

There are 10 steps in conducting an SEC study



Conducting an SEC Study

Step **1** Work with partner(s) to identify study objectives

An SEC study involves three sets of partners

1

The implementation lead organisation

- Any organisation that plays a role in a country's education sector, whether from within or outside government, can lead an SEC study.

Center for Curriculum Analysis (CCA)

- Researchers with CCA originally developed the SEC approach and hold intellectual property rights to the backend data processing procedures for SEC data analyses.
- See curriculumanalysis.org/

A coalition of in-country education actors, ultimately forming a **consultative forum** to guide the study

- Must include government institutions responsible for the key instructional components that will be analysed.
- Other actors include educators from universities or teacher colleges, education officials that provide schools with regular support and quality assurance services, and other civil society organisations working in the education sector.

Study objectives can include:

- Curriculum policy reform
- Education system alignment
- Effective curriculum implementation
- In-service teacher development
- Decentralised education performance analysis
- Programme impact evaluation
- Establishing alignment between key education system components and children's learning levels
- Improving children's learning

These objectives can be applied at different levels of the education system

Study applications can include:

| | |
|---------------------------|--|
| National level | Inform education policy as well as curriculum framework development and implementation. |
| Sub-national level | Provide information on regional differences in curriculum implementation and student learning outcomes to inform local education reform. |
| School level | Inform school improvement, teacher professional development, and resource allocation decisions. |
| Classroom level | Provide data on alignment of instruction with curriculum standards and student learning needs; inform teacher professional development. |
| Teacher level | Inform professional development by providing information on effective instructional practices and areas for improvement. |
| Programme level | Compare student learning outcomes in schools that implement specific programmes to those that do not (such as for impact evaluations). |

Study scope factors include:

Academic subjects

- Selection of academic subjects to be covered
- Selection of education level (e.g., primary) and sub-levels (e.g., lower primary; all of primary)

Instructional components

- These can include:
- Curriculum standards
 - Instructional support materials
 - Learning assessments
 - Classroom instructional content

Geographical coverage and sampling

- Sample size and distribution for teacher surveys
- Nationally representative sample or comparison of specific regions (e.g., districts or states)
- Choice of public and / or private schools

Time period

- Timing of teacher surveys (ideally, towards the end of the school year)
- Availability of experts for coding and rating instructional components (given full-time work schedules)

Conducting an SEC Study

Step **2** Create a research plan

In addition to study objectives and scope decisions, the following critical design choices need to be made to guide data collection activities.

- **Coding and rating by the panel of experts**

- Who will be on the panel of experts for each academic subject?
- Who will train the experts and what will the mode of training be (in-person or online)?
- What will the mode of working be (online, in-person, or hybrid)?
- How will subject-level group discussions work (when will they be and who will moderate)?

- **Surveys of teacher content coverage**

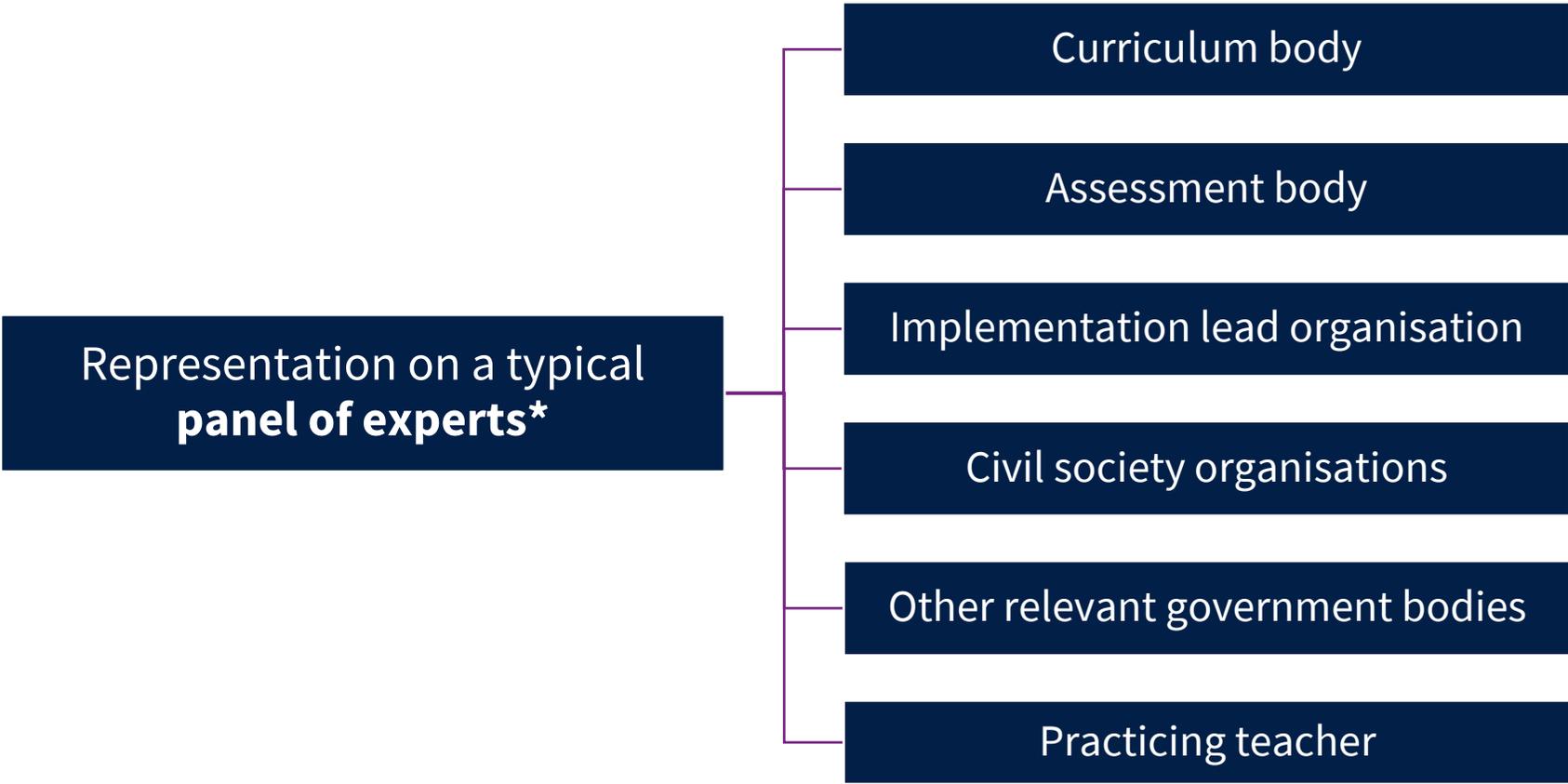
- Who will the teachers be? This is informed by decisions on sampling.
- Who will train teachers and what will the mode of training be (central location or school-based)?
- How will teachers be surveyed (on paper or digitally)?

Identifying and recruiting a panel of subject-matter experts (1/2)

- A dedicated panel of subject-matter experts is required for every academic subject covered in the study.
- Responsibilities of the panel:
 - Adapt a subject-specific taxonomy of topics and subtopics to the country / regional context in the early study stages.
 - Review the content embedded in the relevant academic documents and use expert knowledge and experience to code and rate the content using SEC tools.
 - Train teachers on the SEC approach and teacher survey instrument (optional).

Identifying and recruiting a panel of subject-matter experts (2/2)

- The composition of the subject-matter panel of experts should include representation from among the following, with a minimum of three experts on each panel. Members of the panel of experts are usually identified through the consultative forum meeting(s).



Identifying a sample of teachers to be surveyed

- In the SEC approach, teachers are surveyed on the instructional content they teach in the classroom.
- Factors informing the composition of the sample of teachers:
 - Chosen level of education (including grades) and academic subjects
 - Geographical coverage
 - Sampling of schools from rural and /or urban areas, and from public and / or private schools
 - Sampling of teachers from each school, including number of teachers per school, gender composition and teachers' years of experience

An SEC research plan must include a clear timeline

When planning the timeline, pay particular attention to set-up and desk-and-field activities that require coordination with actors outside of the lead organisation. These activities loosely follow the order below:

- I Selection of partners, formation of a consultative forum, and finalisation of research plan.
 - II Selection of the panel of experts and sample of teachers.
 - III Training of the panel of experts.
 - IV Finalisation of tools, including the development or adaptation of subject-matter taxonomy by the panel of experts.
 - V Individual coding and rating of academic content in instructional components by panel of experts, followed by group discussions between the panel of experts.
 - VI Training of teachers, usually by the panel of experts.
 - VII Teacher surveys, ideally conducted close to the end of the school year
 - VIII Collection of participant feedback.
 - IX Data cleaning and quality assurance
 - X Data processing and uploading
 - XI Results reporting and dissemination activities
- 

Conducting an SEC Study

Step **3** Develop tools

An SEC study requires a range of tools

Tool 1

**Comprehensive
subject-
specific
taxonomy**

Tool 2

**Adapted levels
of cognitive
demand**

Tool 3

**Coding and
rating forms
for the panel
of experts**

Tool 4

**Survey
instrument for
teachers'
instructional
content**

Tool 5

**Participant
reflection
surveys**

Tool 1: Comprehensive subject-specific taxonomy (1/2)

What is a taxonomy?

- A subject-specific taxonomy is required for each of the subjects covered in the SEC study.
- A taxonomy is the systematic classification of all subject-relevant academic content that may be covered by the end of a particular education cycle.
- This content is classified under broad categories called topics and more specific sub-categories called subtopics within each topic.
- As can be seen on the right, ‘Whole numbers’, ‘Place Value’, ‘Abacus’, etc. are example subtopics within the ‘Number and Numeration’ topic.

| 100 | Number and Numeration |
|-----|--|
| 101 | Whole numbers |
| 102 | Place Value |
| 103 | Abacus |
| 104 | Operations (addition, subtraction, multiplication, division) |
| 105 | Fractions |
| 106 | Decimals |
| 107 | Percentages |
| 108 | Ratio and proportion (direct and inverse proportion) |
| 109 | Ordering of whole numbers (with inequality symbols) |
| 110 | Roman Numerals |
| 111 | Ordering of numbers (Fractions) |
| 112 | Real and/or Rational numbers |
| 113 | Exponents and scientific notation |
| 114 | Factors and Multiples |
| 115 | LCM |
| 116 | HCF |

How is a taxonomy created?

- Where the relevant taxonomy already exists, all that is required is to identify and customise it to the study requirements.
- Where no taxonomy exists, a choice is made from two possibilities: either developing one from scratch or contextualising an existing taxonomy (such as a standardised one provided by CCA, or one from another country setting) to fit the study country's educational context. Note: Sample taxonomies, including the standardised one, are provided with the toolkit.
- In previous studies, an existing taxonomy was adapted to the country's education setting by the panel of experts.

Tool 2: Adapted levels of cognitive demand

What are the levels of cognitive demand?

- This tool defines the levels of cognitive demand for students. Levels of cognitive demand represent the type and level of “thinking and doing” that is expected of students when engaging with the content being analysed.
- The SEC approach employs a five-level scale for cognitive demand expectations, representing what learners should be able to do with the content they are learning. These five levels stretch from the least demanding ‘memorise’ or ‘recall’ to the most demanding ‘apply to non-routine problems’.

| Level of cognitive demand | Illustrative definition |
|---|---|
| Memorise/Recall | Recognise, identify, or recall facts, definitions, or formulas |
| Explain/Perform Procedures | Perform procedures, solve routine problems, do computations, make observations, take measurements |
| Generate/Demonstrate understanding | Communicate ideas, explain findings from analysis, explain reasoning |
| Analyse/Conjecture | Make and investigate conjectures, infer and predict |
| Evaluate/Apply to non-routine problems | Apply and adapt strategies, solve novel problems, make connections |

Tool 3: Coding and rating forms for the panel of experts

- Coding and rating forms are simple tools designed to facilitate the work of the panel of experts as they review, code and rate the content embedded in various instructional components.
- To achieve uniformity in item references across experts, a standard coding form is used by all experts, as shown in the example here.

Rater:
Class:
Instructional component: Curriculum

| # | Performance Objective | Topic1 | CGD1 | Topic2 | CGD2 | Topic3 | CGD3 | Comments, Suggestions |
|---|---|--------|------|--------|------|--------|------|-----------------------|
| 1 | Learners should be able to state numbers in words | 101 | C | 202 | D | 212 | C | |

Tool 4: Survey instrument for teachers' instructional content

- The teacher survey instrument reflects all topics and subtopics appearing on the taxonomy, and undertakes a three-step process for reporting the extent of instructional content coverage in the classroom:
 - Indicating topics/subtopics not covered
 - Estimating time spent on covered subtopics
 - Indicating 'primary' and 'supporting' level of cognitive demand for each covered subtopic
- The teacher survey also asks teachers to report on class details, such as class size, subject lessons per week and time for each lesson, proportion of students with learning difficulties, etc.

Tool 5: Participant reflection surveys

- Participant reflection surveys are intended to gather views of all who participated in the study with the key goal of using this evidence to inform and guide more effective implementation of SEC studies in LMICs.
- Since different categories of participants are involved in an SEC study, the tools have to be customised to the roles the participant played in the conduct of the SEC study.
- Participants whose reflections are critical include members of the panel of experts, the lead organisation, surveyed teachers, and field coordinators.
- For an example of the insights that can be gained from such reflection surveys, see the last section in this slide deck on ‘Lessons learned from previous SEC studies’.

Conducting an SEC Study

Step ④ Convene expert panel to review academic content

First, the panel of experts must be trained in the SEC methodology

- Two to three days of in-person training are required to fully orient members of the panel of experts on the SEC methodology.
- By the end of this training, the experts should have gained an in-depth understanding of the theoretical and practical underpinnings of the methodology and should be able to effectively conduct content analysis tasks as individual experts and engage in group discussions with other members.
- Objectives of the training:
 - a. Introducing the SEC approach
 - b. Explaining the concept of 'cognitive demand' and how it relates to other frameworks
 - c. Clearly defining tasks and timelines
 - d. Introducing the taxonomy and explaining the coding and rating procedures
 - e. Explaining the linkages of expert panel work with the rest of the study, including their role in teacher training
 - f. Directing experts to further optional resources on the SEC approach

Next, the experts conduct content analysis of instructional components

What is content analysis?

- The work of reviewing the academic content embedded in the document-based instructional components is called ‘content analysis’.
- Members of the panel of experts code and rate each portion of content (this could be learning objectives in curriculum documents, items in assessment documents, or paragraphs of text in textbooks) for each document.
- For each portion of content, they code at least one subtopic, and rate the level of cognitive demand expected of students.
- Content analysis is a cognitively engaging task, and so experts are advised to allocate sufficient time for this exercise and avoid other distractions.

Content analysis involves individual analysis followed by group discussions

How is content analysis done?

- Experts first individually code and rate content. They must submit at least one set of codes and ratings for each item.
- Following this, a group discussion takes place between the panel of experts.
 - Group discussions are not meant to lead to a group consensus, but experts have the option of revising their codes and ratings if they choose.
 - A neutral facilitator is present at group discussions to ensure calm and reflective discussions.
- Final coding and rating forms submitted must identify the expert, and the instructional document, academic subject, and grade analysed.

Conducting an SEC Study

Step ⑤ Survey teachers on content coverage

Before the teacher survey:

- Pilot the teacher survey instrument with a small group of teachers and revise if necessary.
- Decide whether teacher surveys will take place at a central location or in their individual schools.

Training teachers to participate in the survey

- Training and orientation on the SEC methodology for teachers should be viewed in a similar way as the training given to members of the panel of experts.
- Teachers must be trained on the SEC methodology, the tools, and their specific tasks in the survey process.
- Objectives of the training:
 - a. Stating the objectives and goals of the training and survey.
 - b. Providing a clear explanation on how the sample of teachers was chosen.
 - c. Ensuring teachers that their responses to the survey are confidential and will not be used for performance evaluation purposes.
 - d. Training on the SEC methodology, including in-depth discussions on the taxonomy and levels of cognitive demand.
 - e. Introducing the teacher survey tool and explaining the task.

- Teachers should complete the survey tool on the day after the training.
- Teacher surveys are conducted via a three-step process, in addition to teachers providing overall information about the class for which they are being surveyed.
 1. Teachers indicate the topics and subtopics (not) covered in the class for which they are being surveyed.
 2. Teachers indicate the amount of instructional time spent covering each subtopic in the class.
 3. Teachers indicate the relative emphasis of cognitive demand for each subtopic covered in the class

Conducting an SEC Study

Step ⑥ Conduct data entry, process data, and report results

Overview of data entry, data processing, and reporting results

The process for entering and processing data, and reporting results is shown below.



Note: For processing SEC data, a close collaboration with the Center for Curriculum Analysis (CCA) is required since this organisation holds the intellectual property rights for the backend data processing approaches in the SEC methodology.

- **Data from teacher surveys**
 - If teacher surveys were conducted on paper, then the lead organisation must plan for data entry into a purpose-built online or offline Microsoft Excel form which is developed in collaboration with CCA. The lead organisation must decide who will undertake this task, such as data entry clerks, assistants or in-house employees.
 - If teacher surveys were conducted digitally, then the lead organisation must simply share the survey responses with CCA.
- **Coding and rating data from the panel of experts**
 - The panel of experts inputs their codes and ratings directly into a purpose-built Microsoft Excel template created by the lead organisation.
 - The lead organisation must simply share these responses with CCA.

- **Data cleaning and quality assurance**

- Data cleaning and quality assurance is needed before the datasets can be forwarded to CCA.
- The lead organisation must check for completeness, compliance to coding procedures, uniformity of item references, and identification and labelling.

- **Data processing and upload**

- Data processing is predominantly undertaken by CCA. This processing is guided by a pre-analysis plan which must be designed by the lead organisation and shared with CCA.
- The pre-analysis plan primarily guides the data aggregations that are needed to address the study aims and objectives. Details on this can be found in the toolkit document.
- Once datasets are shared with CCA, CCA provides back Microsoft Excel-based viewers for analysis and results reporting following the specifications outlined in the pre-analysis plan.

- Results are analysed in the Microsoft Excel-based viewers that are provided to the lead organisation by CCA.
- The lead organisation can use these Microsoft Excel viewers to generate outputs for reporting, including content maps, marginal charts, and alignment tables at both topic and subtopic analysis levels.
- Note that users must have Microsoft Excel macros enabled on their computers to gain full access and easily generate results and outputs of their interest.

Conducting an SEC Study

Step **7** Collect item-level student performance data

Collect item-level student performance data

- An SEC study provides a unique opportunity to link various instructional components to children's learning by identifying content areas in which children are struggling to keep up with the content prescribed in those documents.
- Such rich policy analysis work can be conducted if item-level child performance data is available for the assessments coded by the panel of experts.
- Including and analysing student performance data in an SEC study requires a somewhat different approach than the expert panellists and teacher survey inputs. Descriptions of how this was done in Nepal and Nigeria are available in Atuhurra et al. (2023) and Adeniran et al. (forthcoming).

Conducting an SEC Study

Step ⑧ Collect participant feedback

Collect participant feedback

- Collecting and analysing feedback from participants in an SEC study is critical for achieving effective design and implementation of subsequent studies in LMICs.
- Feedback can be gathered from each of the groups involved in the study.
- When collecting feedback, consider:

The nature and focus of feedback to be collected from different participant categories.

When and how to collect feedback from teachers (as the largest group of participants).

How to strike a balance between giving participants enough time to reflect and avoiding long time lags that can lead to inaccurate responses.

Conducting an SEC Study

Step ⑨ Analyse, interpret, and report results

Overview of analysis, interpretation and reporting results

- Analysis, interpretation, and reporting of results is based upon the Microsoft Excel-based viewers that contain processed data. These viewers are prepared by CCA.
- Aspects of this process include:
 - Navigating the Microsoft Excel viewers.
 - Understanding content maps and marginal charts.
 - Interpreting alignment tables and indices.
 - Reporting results from the SEC study.

Navigating the Microsoft Excel viewers

Instructions for Using the SEC Content Viewer Go To Viewer

- 1 Click on the 'Go to Viewer' icon at the top of the 'Introduction' sheet of the Excel file. This will take you to the "ContentMap" sheet. Note that when you begin, the information on this sheet is a 'place holder' and will change when you enter the data you wish to review.
- 2 In order to create the content map for the data you wish to examine, click on 'Select New' at the top of the page.

Instructions tab: Introduces the viewer file and provides a summary description of each of the other tabs and basic guide notes for the user to begin interacting with the various tabs on the file.

Content Map tab: Generates and displays content maps following user-defined analysis specifications.

Marginals tab: Displays two-dimensional bar charts and data tables for level of emphasis on topics/subtopics and cognitive demand.

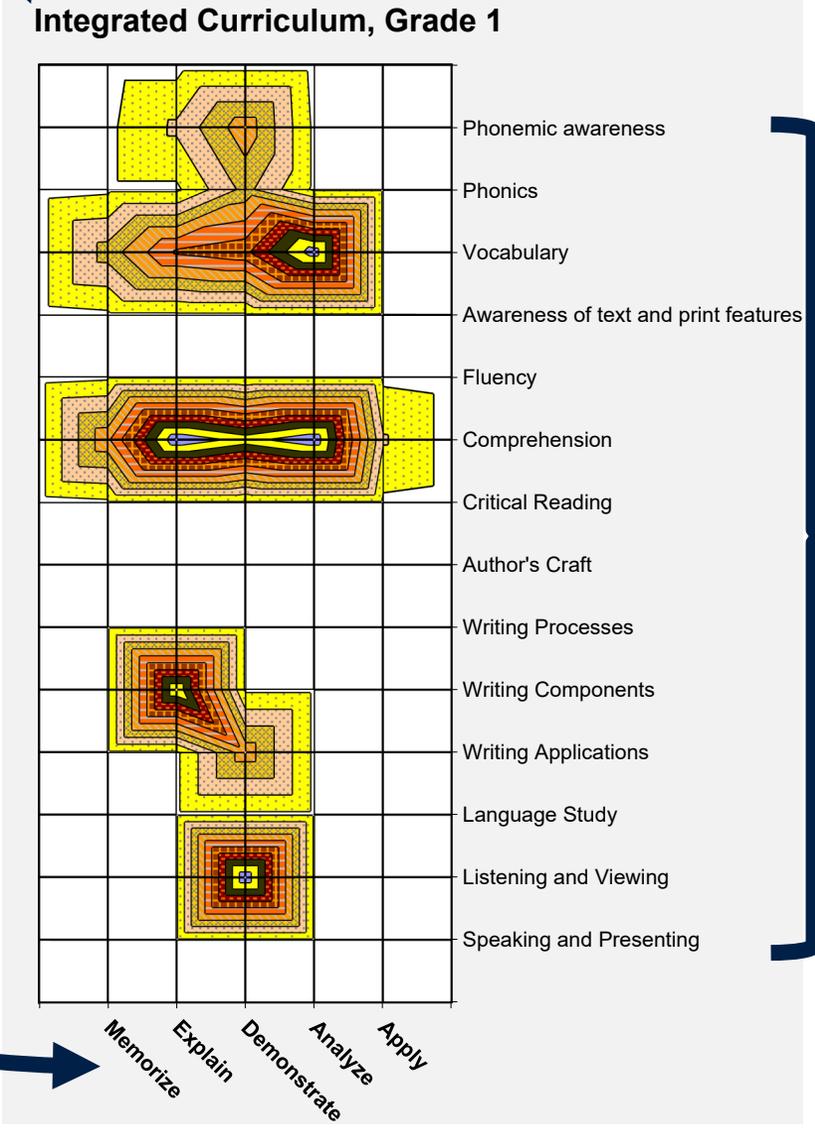
Alignment Table tab: Displays the detailed breakdown in alignment measures and overall alignment summaries at coarse and fine grain levels.

Other tabs: More detailed computations and outputs that the user might want to use as reference from time to time to gain deeper understanding of the analysis results. It might be necessary to reach out to CCA to obtain first-hand guidance on how to use the data in those tabs.

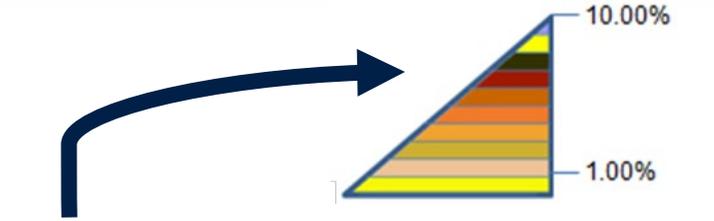
Understanding SEC content maps

Instructional component being analysed
(e.g., curriculum, assessment, teacher instructional content, etc.)

Levels of cognitive demand
on 5-level scale:
“Memorise” is least demanding,
“Apply” most demanding



Topics



Legend for level of emphasis.
Content maps are read like topographical maps with level of emphasis on Z axis.

At each intersection of topic and cognitive demand, the colour indicates level of emphasis.
Concentric circles identify 'peaks' of emphasis.

Interpreting alignment tables and indices

- **Alignment tables** provide key alignment measures based on topics, subtopics, cognitive demand levels, and emphasis levels between two instructional components.
 - Within a component (such as alignment across different grades within the curriculum), high alignment suggests low content stretch.
 - Across components, high alignment suggests high overlap.
- **Alignment indices** are reported on a 0-1 scale, with 0 being perfect misalignment and 1 being perfect alignment.
 - Alignment indices are calculated for both fine-grained (subtopic level) and coarse-grain (topic level) alignment.
 - A minimum or target level of alignment should be discussed among experts to inform later analysis and interpretation

| Alignment Analysis Summary Table | | | | |
|----------------------------------|-------------|-------------|-------------|-------------|
| Coarse Grain | 0.61 | 0.96 | 0.39 | 0.98 |
| | | | (Topics) | (Cog. Dmn) |
| Grade 1 Instruction | | Balance | Categoric | Cognitive |
| TO: Grade 1 Curriculum | Alignmen | of | al | Complexi |
| Number & Numeration | 0.40 | 0.03 | 0.46 | 0.73 |
| Basic Operations | 0.35 | 0.02 | 0.46 | 0.61 |
| Everyday Arithmetic | 0.00 | 0.01 | 0.00 | 0.69 |
| Measurement | 0.00 | 0.01 | 0.00 | 0.00 |
| Algebraic Processes | 0.48 | 0.00 | 0.69 | 0.80 |
| Trigonometry & Geometry | 0.00 | 0.00 | 0.00 | 0.38 |
| Everyday Statistics | 0.60 | 0.00 | 0.71 | 0.85 |
| Fine Grain | 0.38 | 0.96 | 0.48 | 0.61 |

| Grades/ Cycles | Overall Alignment indices | | | | | | | |
|-------------------|---------------------------|--------|---------------------------|--------|---------------------------|------|--------|------|
| | Standards vs. Exams | | Standards vs. Instruction | | Standards vs. Instruction | | | |
| | Fine | Coarse | Fine | Coarse | Rural | | Urban | |
| | | | | Fine | Coarse | Fine | Coarse | |
| P1-P7 | 0.26 | 0.36 | | | | | | |
| P4-P7 | 0.26 | 0.37 | | | | | | |
| P5-P7 | 0.36 | 0.52 | | | | | | |
| P6-P7 | 0.17 | 0.35 | | | | | | |
| P3 | | | 0.05 | 0.15 | 0.04 | 0.15 | 0.05 | 0.14 |
| P5 | 0.42 | 0.42 | 0.01 | 0.05 | 0.01 | 0.05 | 0.01 | 0.06 |
| P6 | 0.14 | 0.25 | | | | | | |
| P7 | 0.19 | 0.41 | | | | | | |

Reporting results from the SEC study

- The objectives of the study inform the structure of the report, including alignment analysis, curriculum articulation and sequence analysis, education policy reform, and teacher development and school improvement.
- The reported results must provide an objective basis for discussion by relevant authorities to determine desired normative stance.
- Results can be reported at two levels: ‘coarse grain’ (topic level) and ‘fine grain’ (subtopic level).
- Child performance results are highly dependent on the assessment and must be analysed in tandem.
- For more guidance on report results, see previous SEC studies in LMICs (*Atuhurra & Kaffenberger, 2022; Atuhurra et al., 2023; Adeniran et al., forthcoming*).

Atuhurra, J. and Kaffenberger, M. 2022. Measuring education system coherence: Alignment of curriculum standards, examinations, and teacher instruction in Tanzania and Uganda. *International Journal of Educational Development*: Vol 92. <https://doi.org/10.1016/j.ijedudev.2022.102598>. Atuhurra, J., Chaudhry, R., Hossain, T. and Kaffenberger, M. 2023. Instructional Alignment in Nepal Using the Surveys of Enacted Curriculum. 2023/057. https://doi.org/10.35489/BSG-RISE-RI_2023/057. Adeniran, A., Onyekwere, S. C., Okon, A., Atuhurra, J., Chaudhry, R., and Kaffenberger, M. [Forthcoming]. Instructional Alignment in Nigeria using the Surveys of Enacted Curriculum. RISE Working Paper Series.

Conducting an SEC Study

Step 10 Disseminate study findings

Dissemination of SEC study findings should include the following audiences:

| Participants | Government and Policy Actors | Academic Audiences |
|--|---|---|
| <ul style="list-style-type: none">• Panel of experts and surveyed teachers• Prioritising experts for internalization and facilitation• Disseminating to teachers for feedback and professional development | <ul style="list-style-type: none">• Explanation of SEC approach necessary• Focus on coarse-grain summative results• Importance of understanding how findings align with policy intentions | <ul style="list-style-type: none">• Demonstrating system-wide approach to analysing education systems• Potential to draw more research attention to education system coherence |

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