



# Literature search protocol: **Mapping African-led Foundational Literacy and Numeracy publications in English, French and Portuguese**

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## List of abbreviations

**AERD:** African Education Research Database

**ECD:** Early Childhood Development

**FLN:** Foundational Literacy and Numeracy

**RISE:** Research on Improving Systems of Education

**SSA:** sub-Saharan Africa

**UNICEF:** United Nations International Children’s Emergency Fund

**UNESCO-GEMR:** United Nations Education Science and Cultural Organisation-Global Education Monitoring Report

**USAID:** United States Agency for International Development

**WoS:** Web of Science

## Summary

This protocol provides an overview of the literature search criteria and methodology as part of the African Education Research Database, a collaboration between the REAL Centre, University of Cambridge and the charity, Education Sub-Saharan Africa (ESSA). It presents the methodology and search criteria for mapping and evaluating literature related to Foundational Literacy and Numeracy (FLN) in sub-Saharan Africa in English, French and Portuguese. This protocol complements two additional literature search protocols on: a) identifying Early Childhood Development (ECD) research and researchers in sub-Saharan Africa (Iddrisu *et al.*, 2023); and b) mapping country-based unpublished and locally published research on ECD (Williams *et al.*, 2023).

## 1. Overview

Foundational Literacy and Numeracy (FLN) are essential skills linked with the achievement of other educational outcomes that individuals and societies require (World Bank *et al.*, 2022). However, access and learning of basic skills are particularly poor in low- and lower-middle countries. This is a concern in sub-Saharan Africa (SSA) where one in five children of primary-school age are not enrolled in formal school and only one in five children reaches the minimum level of proficiency by the end of primary education (UNESCO, 2022). In recognition of this, the [2022 Transforming Education Summit](#) called upon global policy makers to respond to the global crisis in education by engaging in concerted actions to improve the quality of learning by building on evidence and good practice.

The African Education Research Database (AERD) endeavours to map research published by sub-Saharan Africa-based scholars that presents evidence with implications for the Sustainable Development Goal 4.1 and the [2016–25 Continental Education Strategy for Africa](#), in particular with respect to the fourth strategic objective of the latter: ‘Ensure acquisition of requisite knowledge and skills as well as improved completion rates at all levels and groups through harmonization processes across all levels for national and regional integration’ (CESA 16-25, 2015, pp. 23). The urge to improve access and quality of foundational literacy and numeracy particularly in Africa reinforce the need to make Africa-based educational research more visible to policymakers and practitioners. There is a particular need to identify how to strengthen the quality of primary schooling to ensure the acquisition of FLN for children.

The mapping of FLN publications linked with this protocol aims to identify SSA-based educational research and researchers to build on existing networks or to create a community of practice (depending on the findings of existing networks). This aims to support researchers to work together to address research gaps as well as to promote the visibility of relevant research to the ongoing national, regional and international education debates.

The methodology follows the literature search protocol for AERD (Mitchell & Rose, 2018). This protocol presents the specific process for mapping and cataloguing the research on FLN published by scholars based in sub-Saharan Africa. It also identifies how these searches were applied to research published in French and Portuguese, which is often overlooked.

## 2. Identifying research for inclusion in the database

### Relevance criteria

This section identifies key concepts in the global literature together with FLN keywords applied in systematic literature reviews. These concepts and keywords have been used to frame the scope of FLN for the searches and develop the search strategy.

#### **Concepts associated with Foundational Literacy and Numeracy in global reports**

Table 1 identifies recent reports and programmes that address FLN. This mapping has been used to help identify keywords for searches, as well as select the components to frame the analysis of the identified FLN publications.

**Table 1: Key reports and programmes on FLN to inform the search strategy**

Publication	Ideas and concepts related to FLN
<p><b>What do we mean by 'foundational skills'?</b> (Kilburn, 2020)</p> <p><u><a href="#">Research on Improving Systems of Education (RISE) programme</a></u></p>	<p>In this blog, RISE research team defines Foundational Skills as follows:</p> <p><b>“Universal</b> means that every child in the world should achieve foundational learning.</p> <p><b>Early</b> means that children need to master foundational skills early in their schooling, because those who fall behind rarely catch up.</p> <p><b>Conceptual</b> means that children must understand the concepts behind what they are learning, not simply memorise content through rote instruction.</p> <p><b>Procedural</b> means that children need practice and fluency in procedures in addition to their understanding of concepts. They must learn how to do the steps to solve problems and apply skills practically.</p> <p><b>Mastery</b> means that children should achieve some agreed-upon level of proficiency and difficulty against which progress can be measured.</p> <p>And, lastly, <b>foundational skills</b> means basic literacy and numeracy—vital, indispensable skills needed for virtually any further education and to lead an empowered, self-determined life.”</p>
<p><u><a href="#">Spotlight Report on Basic Education Completion and Foundational Learning in Africa.</a></u> UNESCO-Global Education Monitoring Report (UNESCO, 2022)</p>	<p>The report recommends the following actions to improve foundational learning:</p> <p>“At the student level</p> <ul style="list-style-type: none"> <li>- Give all children textbooks: ensure that all children have teaching materials that are research-based and locally developed.</li> <li>- Teach all children in their home language: give all children the opportunity to first learn to read in a language they understand.</li> <li>- Provide all children with school meals: give all children the minimum conditions to learn.</li> </ul> <p>At the system level</p> <ul style="list-style-type: none"> <li>- Make a clear plan to improve learning: define learning standards, set targets and monitor outcomes to inform the national vision.</li> <li>- Develop teacher capacity: ensure all teachers use classroom time effectively through training and teacher guides.</li> <li>- Prepare instructional leaders: restructure support mechanisms offered to teachers and schools.</li> </ul> <p>At the continental level</p> <ul style="list-style-type: none"> <li>- Learn from peers: reinvigorate mechanisms allowing countries to share experiences on foundational literacy and numeracy.</li> </ul> <p>At the international level</p> <ul style="list-style-type: none"> <li>- Focus aid on institution building: shift from projects to the provision of public goods that support foundational learning.” (UNESCO-GEMR, 2022, pp. 5-6)</li> </ul>

Publication	Ideas and concepts related to FLN
<p><u>FLN Hub</u> UNICEF</p>	<p>Providing resources to support actors in addressing FLN challenges and approaches, the FLN Hub focuses on the following areas: Early childhood education, teaching at the right level, formative assessment, language of instruction, parental engagement, digital learning.</p>
<p><u>USAID Reading MATTERS Conceptual Framework</u> (USAID, 2019)</p>	<p>USAID’s Reading MATTERS Conceptual Framework focuses on the following components to support all children reading: <b>Mentors, Administrators, Teachers, Texts, Extra practice, Regular assessment, and Standards.</b></p> <p>To achieve consistent reading outcomes, these components are situated within a larger system that encompasses a) commitment and capacity of the country, b) research to inform and improve practices, c) factors that determine children’s well-being (e.g. nutrition, safety, among others) and impact on their motivation to learn to read.</p>
<p><u>The State of Global Learning Poverty: 2022 Update</u> (World Bank <i>et al.</i>, 2022)</p>	<p>To address the learning poverty (rate measures the proportion of children who are unable to read a simple text with comprehension by age 10), the report provides the following framework:</p> <p><b>“RAPID Framework</b></p> <p><b>R</b>each every child and keep them in school:              Reopen schools safely and keep them open              Promote returning to the classroom through back-to-school campaigns              Provide cash transfers to poor families              Use early warning systems to identify at risk students</p> <p><b>A</b>ssess learning levels regularly:              Assess learning losses at national/sub-national level              Provide teachers with tools for classroom level measurement</p> <p><b>P</b>rioritise teaching the fundamentals:              Adjust curriculum across and within subjects              Prioritise numeracy, literacy, socioemotional skills              Focus instruction on closing the gaps between desired and actual student learning in specific subjects</p> <p><b>I</b>ncrease the efficiency of instruction, including through catch-up learning:              Use approaches that align instruction with learning needs: targeted instruction, structured pedagogy, tutoring, and self-guided learning              Support teachers continuously: build practical pedagogical and digital skills              Expand instructional time              Enhance learning with technology</p> <p><b>D</b>evelop psychosocial health and well-being:              Build teachers’ capacity to support their students’ wellbeing and identify students in need of specialized services              Support teacher wellbeing and resilience Invest in students' safety, nutrition, and access to water, sanitation, and hygiene facilities”</p> <p>(World Bank, 2022, pp. 37)</p>

### Keywords on FLN in existing systematic reviews

Table 2 includes keywords that have been used in existing systematic reviews and meta-analysis of publications that are linked to FLN. The table identifies keywords used in their searches, we considered some of them in the development of our search strings.

**Table 2: Meta-analysis of publications addressing FLN**

Publication	Search terms used
<p><b>Identifying effective education interventions in sub-Saharan Africa: A meta-analysis of impact evaluations.</b> (Conn, 2017)</p>	<p>The studies included in the meta-analysis were interventions in the following areas:</p> <ul style="list-style-type: none"> <li>- Quality of instruction, class size and composition</li> <li>- Instructional time</li> <li>- Pedagogical interventions</li> <li>- School supplies provisions</li> <li>- Students or community financial limitations, cash transfers</li> <li>- School infrastructure, school or system accountability, information provision</li> <li>- Management interventions</li> <li>- Students cognitive processing abilities,</li> <li>- School meals</li> <li>- Health treatments</li> <li>- Student or teacher motivation, student incentives, teacher incentives</li> <li>- School type</li> </ul>
<p><b>A meta-analysis of the effects of foundational skills and multicomponent reading interventions on reading comprehension for primary-grade students.</b> (Denton <i>et al.</i>, 2022)</p>	<p>reading interven*, reading instruction, reading strategies, supplemental instruction, special educ*, phon*, fluency, vocab*, comp*</p> <p>reading difficult*, learning disab*, reading disab*, reading delays, reading disorder*, dyslex*</p>
<p><b>PROTOCOL: A systematic review of mobile device use in the primary school classroom and its impact on pupil literacy and numeracy attainment.</b> (Dorris <i>et al.</i>, 2021)</p>	<p>Literacy OR Reading OR Writing OR Handwriting OR Transcription OR Verbal reasoning OR "Critical thinking" OR Comprehension OR Notetaking OR Composition OR Listening skills OR Phonic* OR "phonemic awareness" OR Alphabet " OR Spell* OR Vocabulary OR Punctuation OR Grammar OR "Reading fluency" OR "Speaking skills" OR "Spoken language" OR "Critical literacy" OR "literacy skills"</p> <p>numeracy OR number* OR math* OR arithmetic OR sums OR calculat* OR addition OR adding OR subtract* OR multiplication OR division OR count* OR algebra OR fractions OR decimal* OR geometr* OR statistic* OR problem solving OR "shape sort*" OR "mathematical literacy" OR "quantitative literacy"</p>
<p><b>What really works to improve learning in developing countries? An analysis of divergent findings in systematic reviews.</b> (Evans &amp; Popova, 2016)</p>	<p>Impact evaluation evidence on improving student learning at primary levels in developing countries identified in 2013 and 2014</p> <p>"quality" OR "learning"</p>



Publication	Search terms used
<p><b>Improving education in developing countries: Lessons from rigorous impact evaluations.</b> (Ganimian &amp; Murnane, 2016)</p>	<p>enrollment, attendance, repetition, dropout, retention, or measures of student achievement or cognitive skills</p>
<p><b>School resources and educational outcomes in developing countries: A review of the literature from 1990 to 2010.</b> (Glewwe <i>et al.</i>, 2014)</p>	<p>kw=education and kw=(“class size” OR “school size” OR “student teacher ratio” OR “pupil teacher ratio” OR “school expenditure*” OR “expenditure per pupil” OR “textbook*” OR “instructional material*” OR “work- book*” OR “exercise book*” OR “computer*” OR “laptop*” OR “internet”</p> <p>OR “school infrastructure” OR “facilities” OR “building condition*” OR “laborator*” OR “lab” OR “labs” OR “librar*” OR “desk*” OR “teaching tools” OR “teaching guide*” OR “blackboard*” OR “chalk*” OR “electricity” OR “table*” OR “bench*” OR “chair*” OR “roof*” OR “wall*” OR “floor*” OR “window*” OR “bathroom*” OR “plumbing” OR “teacher quality” OR “teacher efficacy” OR “teacher knowledge” OR “teacher salar*” OR “teacher training” OR “teacher experience” OR “teacher education” OR “teacher absenteeism” OR “teacher gender” OR “class preparation”</p> <p>OR “lesson planning” OR “homework” OR “evaluation” OR “follow-up” OR “monitoring of pupil performance” OR “testing” OR “remedial program*” OR “teaching practices” OR “instructional time” OR “length of instructional program” OR “hours” OR “school day” OR “curriculum” OR “principal quality” OR “principal training” OR “principal education” OR “principal experience” OR “staff assessment*” OR “teacher assessment” OR “school inspection*” OR “parent* involvement” OR “production function” OR “school resources” OR “school inputs” OR “school quality” OR “pedagogical inputs” OR “pedagogical resources”</p>
<p><b>Learning behaviours, executive functions, and social skills: A meta-analysis on the factors influencing learning development in the transition from kindergarten to elementary school.</b> (Hövel <i>et al.</i>, 2022)</p>	<p>Literacy: reading, writing, literacy, linguistic, speech, phonological awareness, and listening</p> <p>Mathematics: mathematics, numerical, numerous, counting, estimates, calculation, and mathematical ability</p> <p>Social-emotional: emotional understanding, social-emotional, prosocial behavior, executive functioning, self-regulation, social skills, externalising, internalising, and behaviour</p> <p>Cognition: working memory, concentration, attention, and cognitive development</p> <p>Type of competencies (predictors: prediction, precursor, forecasting, model, and projection)</p> <p>Relationship to learning success (learning: academic achievement, comprehension, successful learning, motivation, academic aptitude, and ability)</p> <p>Preschool, kindergarten, school transition, primary/elementary school, school age, school readiness, early childhood education, and preschool age</p>

Publication	Search terms used
<p><b>Universal screening in grades K-2: A systematic review and meta-analysis of early reading curriculum-based measures.</b> (January &amp; Klingbeil, 2020)</p>	<p>screen*, benchmark*, diagnostic accuracy, and classification accuracy AND letter nam*, letter sound*, word identification, phoneme segment*, initial sound*, first sound*, beginning sound*, nonsense word, word segment*, subskill, sight word*, and high frequency word*</p>
<p><b>Impact of literacy interventions on reading skills in low- and middle-income countries: A meta-analysis.</b> (Kim <i>et al</i>, 2020)</p>	<p>"emergent literacy" "phonological awareness" "letter knowledge" "alphabet knowledge" "morphological awareness" "orthographic awareness" "phonics" and "reading" "code based approach" "reading fluency" or "oral reading fluency" or "text reading fluency" "reading comprehension" and "comprehension" or "reading for understanding"</p>
<p><b>Improving learning in primary schools of developing countries: A meta-analysis of randomised experiments.</b> (McEwan, 2015)</p>	<p>4 groups of variables: Parent endowments such as schooling and ability Parent-provided education inputs like supplemental instruction Child endowments such as nutrition and health but potentially including a wider range of cognitive or non-cognitive abilities School and teacher inputs (textbooks and related instructional materials, computers and software, and school equipment and facilities)</p>
<p><b>Parental, community, and familial support. Interventions to improve children's literacy in developing countries: A systematic review.</b> (Spier <i>et al</i>, 2016)</p>	<p>"READING achievement" OR "READING comprehension" OR "LITERACY education" OR "FAMILY literacy programs" OR "COMMUNITY education" OR "PARENT participation in children's reading" or "READING intervention" OR "LITERACY programs" or "read*" or "liter*" AND "family literacy" or "community involvement" or "community support" or "collaborative learning" or "facilitator*" or "learning resources" or "community centers" or "community organisations" or "community- based education" or "community-based" or "home-based" or "parent*" or "famil*" or "caregiv*" or "center" or "centre" or "home*" or "communit*" or "librar*" OR "READING achievement" or "READING comprehension" or "alphabet" or "basic skills" or "coaching" or "cognitive skills" or "collaborative learning" or "comprehension" or "ECD program*" or "educat*" or "fluency" or "language" or "learn*" or "lexical" or "lexicon" or "linguistic" or "listening" or "narrative" or "morphem*" or "non-formal" or "informal" or "non-formal education" or "informal education" or "parental speech" or "phonem*" or "phonological" or "print" or "pronunciation" or "read*" or "sentence" or "sight words" or "spell*" or "stor*" or "storybook" or "syllable*" or "syntax" or "text" or "vocabulary" or "write" or "writing" or "written language" or "written text" or "word"</p>

PUBLICATION	SEARCH TERMS USED
<b>What works to improve early grade literacy in Latin America and the Caribbean? A systematic review and meta-analysis.</b> (Stone <i>et al</i> , 2020)	(read* OR litera* OR writ* OR communic*) AND (primary sch* OR primary grad* OR "grades 1 through 3" OR "grades 1 to 3" OR "grades 1–3" OR "first through third" OR "Grade 1" OR first grade* OR "grade 2" OR second grade* OR "grade 3" OR third grade* OR early grade* OR elementary OR kinder* OR pre-school* OR preschool* OR prekindergarten* OR preK OR preK OR "early childhood")
<b>Computer-assisted word reading intervention effects throughout the primary grades: A meta-analysis.</b> (Verhoeven <i>et al</i> , 2022)	Foundational reading instruction, supplementary alphabets, reading fluency, remedial reading.  Letter knowledge, phonological awareness, word and pseudoword reading, sentence and text reading, and spelling, as well as transfer to reading comprehension

## Search strategy

Drawing on the concepts and keywords outlined in the section above, this section presents the criteria used for the searches.

### Scope of FLN for the searches

For the purposes of this protocol, FLN refers to writing, reading and numeracy skills and practices that primary-school-aged children develop and engage with in the education system. These skills can be acquired in primary school settings as well as through alternative pathways, such as in complementary basic education programmes.

### Inclusion and exclusion criteria

Table 3 identifies the inclusion criteria for the searches. These are adapted from the criteria identified for the AERD (Mitchell & Rose, 2018), limited to a focus on FLN.

**Table 3: Inclusion criteria for FLN-related literature**

Inclusion criteria	Specification
<b>Publication date range</b>	2010 to 2023, inclusive
<b>Language of publication</b>	English, French and Portuguese languages
<b>Discipline/subject area</b>	Social science and/or education research
<b>Document type</b>	For searches across sub-Saharan African countries: publications identified through academic databases – peer reviewed articles, conference papers, books and chapters.  For selected focus countries (Kenya, Ghana, Senegal and Tanzania): in-country mapping of relevant unpublished and locally published research (see Williams <i>et al.</i> , 2023 for the approach used).
<b>Region and countries</b>	48 sub-Saharan African (SSA) countries (including Djibouti and excluding South Africa <sup>1</sup> ) see <i>search string 1</i> for the list.
<b>Research intervention / scope</b>	Literacy and numeracy skills and practices that primary school-aged children develop and engage with in the education system, including school settings, as well as through alternative pathways (such as complementary basic education programmes).

Initial searches identified a limited number of relevant studies on FLN conducted by SSA-based researchers. For the purpose of this protocol, the research is categorised according to whether or not publications include SSA-based researchers. Publications are also categorised based on whether they are either a) directly, or b) indirectly, related to literacy or numeracy skills/activities of primary-aged children. For example, where publications are on teacher training, students' attendance, or language of instruction, but do *not* directly refer to student learning outcomes and/or children's engagement in literacy/numeracy activities, these are identified in category 2 (with an SSA-based author) or category 4 (without an SSA-based author) (see Table 4). Any publication in category 1 to 4 is a study based in at least one of the 48 SSA countries.

If any article does not meet the inclusion criteria in Table 3, it is omitted (category 5). In other words, a study is excluded if it is:

- Related to an education phase other than primary-school-age education, e.g. literacy and/or numeracy in adult education, early childhood education
- Not evidence-based
- In South Africa, or a country outside SSA

**Table 4: Categories for identifying relevance of publications to search criteria**

<b>Category 1</b>	<b>Directly relevant and includes SSA-based author</b>
<b>Category 2</b>	<b>Indirectly relevant and includes SSA-based author</b>
<b>Category 3</b>	<b>Directly relevant but no SSA-based author</b>
<b>Category 4</b>	<b>Indirectly relevant but no SSA -based author</b>
<b>Category 5</b>	<b>Not relevant</b>

### **Selection of databases**

The search process was applied to three international academic databases used for the identification of publications: Dimensions, Scopus, and Web of Science. These databases have been used for the development of the AERD as well as searches of ECD literature more specifically (see Mitchell & Rose, 2018; Iddrisu et al., 2023). The following search strings were tested in the three databases using title-abstract-keywords as a specific field and for the year 2021. All searches include the list of 48 countries in the search protocol developed for the AERD as noted in search string 1 (Mitchell & Rose, 2018).

## **Development of search strings**

### **Search string 1**

A search string was trialled including some search terms in previous systematic reviews that seemed most suited to the database for this protocol:

("foundational skills" OR "basic skills" OR "basic literacy" OR "foundational literacy" OR "reading" OR "writing" OR "reading comprehension" OR "reading fluency" OR "vocabulary" OR "speech" OR "alphab\*" OR "basic numeracy" OR "foundational numeracy" OR "math\*" OR "arithmetic" OR "calculation" OR "proficiency level" OR "learning achievement" OR "teach\*" OR "pedagog\*" OR "language of instruction" OR "learn\*" OR "cognitive skills" OR "social-emotional skills" OR "socio-emotional learning" OR "social-emotional learning")

1. South Africa is excluded because preliminary analysis revealed that it has a markedly different research landscape to other countries in the region, with 3.5 times more education research outputs than Nigeria, the second most prolific country (Mitchell & Rose, 2018).

AND

("basic education" OR "primary education" OR "early grade" OR "elementary school" OR "primary school")

AND

("Angola" OR "Benin" OR "Botswana" OR "Burundi" OR "Burkina Faso" OR "Cameroon" OR "Cape Verde" OR "Central African Republic" OR "Cote D'Ivoire" OR "Chad" OR "Comoros" OR "Democratic Republic of Congo" OR "Djibouti" OR "Equatorial Guinea" OR "Eritrea" OR "Ethiopia" OR "Eswatini" OR "Gabon" OR "Ghana" OR "Guinea" OR "Guinea-Bissau" OR "Ivory Coast" OR "Kenya" OR "Lesotho" OR "Liberia" OR "Madagascar" OR "Malawi" OR "Mali" OR "Mauritius" OR "Mauritania" OR "Mozambique" OR "Namibia" OR "Niger" OR "Nigeria" OR "República de Cabo Verde" OR "Republic of Congo" OR "Rwanda" OR "Sao Tome and Principe" OR "Senegal" OR "Seychelles" OR "Sierra Leone" OR "Somalia" OR "South Sudan" OR "Sudan" OR "Swaziland" OR "Tanzania" OR "The Gambia" OR "Togo" OR "Uganda" OR "Zambia" OR "Zimbabwe")

Using this search string for publications in 2021, the following results were identified:

<b>Scopus</b>	<b>172</b>
<b>Dimensions</b>	<b>42</b>
<b>Web of Science</b>	<b>92</b>
<b>Total retrieved publications</b>	<b>306</b>
<b>Duplicates</b>	<b>166</b>
<b>Total screened publications</b>	<b>140</b>

## Search string 2

The list was further narrowed to FLN specific terms, removing terms such as "teach\*", "pedagog\*", "language of instruction" and "learn\*" to try and avoid capturing publications that were not directly relevant to our focus. In addition, "reading fluency" and "reading comprehension" were removed as these were captured in "reading". This resulted in an updated search string:

("foundation\* skills" OR "basic skills" OR "basic literacy" OR "foundation\* literacy" OR "reading" OR "writing" OR "vocabulary" OR "speech" OR "alphab\*" OR "basic numeracy" OR "foundation\* numeracy" OR "math\*" OR "arithmetic" OR "calculation" OR "proficiency level" OR "learning achievement" OR "learning outcome\*" OR "cognitive skills" OR "socio-emotional" OR "social-emotional")

AND ("basic education" OR "early grade" OR "elementary school" OR "primary school" OR "primary education")

AND countries

Compared with search string 1, the total number of publications was reduced by half for publications in 2021. Several publications that were more health-related in search string 1 (in particular retrieved from Scopus) were not captured through the updated search string. These health-related publications are often health interventions in school or health training programmes that include teacher and/or learning activities but are not necessarily directly related to basic literacy and numeracy skills development, so this search string helped to remove publications that were not relevant. With the updated string, the following results were identified:

<b>Web of Science</b>	<b>27</b>
<b>Scopus</b>	<b>46</b>
<b>Dimensions</b>	<b>33</b>
<b>Total retrieved publications</b>	<b>106</b>
<b>Duplicates</b>	<b>34</b>
<b>Total screened publications</b>	<b>72</b>

The relevance of the 72 identified publications was examined further. Among these, 44 were not considered relevant because they were not by SSA-based researchers. This resulted in 20 which were directly relevant, and 8 that were classified as indirectly relevant, such as related to teachers' continuous professional development, language of instruction and curriculum reform.

### **Search string 3**

Search string 2 was verified to check for any missing publications. For this purpose, FLN-related publications were extracted from the existing AERD using the following keywords that are included in the database:

**Reading, mathematics education, literacy, numeracy, primary education, early childhood education  
– year 2021**

The comparison showed that search string 2 identified publications in addition to those found in the AERD. However, three relevant publications in AERD were not captured in search string 2. Scanning abstracts, additional keywords were identified such as "primary-age\*", "learning level\*", "learning gain\*" and "learning loss\*" to ensure missing publications would be captured.

Moreover, recognising the importance of capturing publications on FLN not related to formal schooling that were not appearing in the searches, "second chance", "alternative education", "complementary education", "accelerated learning", "non-formal education", "community education" and "learning centres" were added to encompass publications on alternative education provision.

This led to the updated search string (with the additional keywords in bold):

("foundation\* skills" OR "basic skills" OR "literacy" OR "reading" OR "writing" OR "vocabulary" OR "speech" OR "alphab\*" OR "numeracy" OR "math\*" OR "arithmetic" OR "calculation" OR "proficiency level\*" OR "learning achievement" OR "learning outcome\*" OR **"learning level\*" OR "learning gain\*" OR "learning loss\*"** OR "cognitive skills" OR "socio-emotional" OR "social-emotional")

AND ("basic education" OR "early grade" OR "elementary school\*" OR "primary school\*" OR "primary education" OR **"second chance" OR "second-chance" OR "alternative education" OR "complementary basic education" OR "complementary education" OR "accelerated learning" OR "non-formal education" OR "primary-age\*" OR "community-based education" OR "community education" OR "learning centres"**)

AND countries

The updated search string increased the number of relevant publications, including the three publications that were in the existing AERD. The following results were identified for 2021:

Web of Science	49
Scopus	76
Dimensions	53
<b>Total retrieved publications</b>	<b>178</b>
Duplicates	75
<b>Total screened publications</b>	<b>103</b>

Including keywords such as "second chance" OR "alternative education" OR "complementary education" OR "accelerated learning" OR "non-formal education" **"community education" OR "learning centres"** added relevant publications, but also captured research in secondary education and adult literacy. These would be screened out as not relevant.

Overall, search string 3 provides the most comprehensive results of relevance to FLN, and therefore was selected for the searches.

Using the categories in Table 4, of the 103 publications, 30 are identified as not being relevant to FLN (category 5). There are 54 publications that are directly related to FLN (categories 1 and 3). Almost half of these do not include SSA-based researchers (category 3).

Category 1	29
Category 2	16
Category 3	25
Category 4	3
Category 5	30
<b>Total publications</b>	<b>103</b>

## Cataloguing the literature

The results from the databases are extracted and coded in an Excel spreadsheet to capture the following information used in the analysis:

- Type of research output (e.g., chapter, peer-reviewed article)
- Research method (e.g., quantitative, qualitative, mixed methods)
- Author, gender, affiliation, email
- Country of focus
- Language
- Funder (where information is available)
- Keywords (see Appendix)
- Characteristics included in the study (i.e., ethnicity, disability, poverty, gender, location, religion)

## Searching the Francophone databases

### French translation of search terms

Search string 3, used with the Boolean operator AND together with the specific field title-abstract-keywords to search the Anglophone literature, was tested and adapted to the search options available in each Francophone database. The first step was translation into French, as identified below. To strengthen the focus on FLN in French literature, the word *alphabétisation* was included. Similarly, *oralité* (to complement the term speech – parole), *scolarisation* (schooling) and *éducation spécialisée* were added to the original search string as relevant terms in French searches. The country names were also translated into French.

("compétences fondamentales" OU "compétences de base" OU "littératie" OU "lecture" OU "écriture" OU "vocabulaire" OU "parole" OU "**oralité**" OU "**alphabétisation**" OU "numératie" OU "math" OU "arithmétique" OU "calcul" OU "résultats scolaires" OU "réussite scolaire" OU "niveau d'apprentissage" OU "progrès scolaires" OU "échec scolaire" OU "aptitudes cognitives" OU "socio-émotionnel")

**ET** ("éducation de base" OU "école primaire" OU "école élémentaire" OR "école de la deuxième chance" OU "école de la 2e chance" OU "éducation alternative" OU "éducation complémentaire" OU "**éducation spécialisée**" OU "éducation non formelle" OU "**scolarisation**" OU "cycle primaire" OU "éducation populaire" OU "éducation communautaire" OU "centre d'apprentissage")

**ET** ("Angola" OU "Bénin" OU "Botswana" OU "Burundi" OU "Burkina Faso" OU "Cameroun" OU "Cap-Vert" OU "Centrafri\*" OU "Comores" OU "Congo" OU "Côte d'Ivoire" OU "Djibouti" OU "Éthiopie" OU "Érythrée" OU "Eswatini" OU "Gabon" OU "Gambie" OU "Ghana" OU "Guinée" OU "Kenya" OU "Lesotho" OU "Libéria" OU "Madagascar" OU "Malawi" OU "Mali" OU "Maurice" OU "Mauritanie" OU "Mozambique" OU "Namibie" OU "Niger" OU "Nigéria" OU "Ouganda" OU "Rwanda" OU "Sao Tomé-et-Principe" OU "Sénégal" OU "Seychelles" OU "Sierra Leone" OU "Somalie" OU "Soudan" OU "Swaziland" OU "Tanzanie" OU "Tchad" OU "Togo" OU "Zambie" OU "Zimbabwe")

### Identification of French databases

For the purposes of the searches in French, three databases have been identified. Each of these have different strengths, as discussed:

- CAIRN.Info <https://www.cairn.info/>



Cairn.Info is an online collection of Francophone publications in social sciences and humanities. There are more than 592 journals and 18,192 eBooks from major French, Belgian and Swiss publishers.

Using the advance search features, the translated search string 3 with no date restriction retrieved only 18 publications. After several trials, the below search string was pasted in the “all fields” section, using the proximity operators (w/15, i.e. within 15 words of each other) with the country list to ensure context relevancy:

(“compétences fondamentales” OR “compétences de base” OR “littératie” OR “lecture” OR “écriture” OR “vocabulaire” OR “parole” OR “oralité” OR “alphabétisation” OR numératie” OR “math” OR “arithmétique” OR “calcul” OR “résultats scolaires” OR “réussite scolaire” OR “niveau d’apprentissage” OR “progrès scolaires” OR “échec scolaire” OR “aptitudes cognitives” OR “socio-émotionnel”) **AND** (“éducation de base” OR “école primaire” OR “école élémentaire” OR “école de la deuxième chance” OR “école de la 2e chance” OR “éducation alternative” OR “éducation complémentaire” OR “éducation spécialisée” OR “éducation non formelle” OR “scolarisation” OR “cycle primaire” OR “éducation populaire” OR “éducation communautaire” OR “centre d’apprentissage”) **w/15** (countries)

Using this search string and restricted to the years 2010-2023, a total of 619 publications are identified. Unlike the searches on WoS, Scopus and Dimensions, the data extraction is more challenging as these results cannot be directly exported into an Excel spreadsheet. Moreover, the Cairn database does not provide the option to save the search. Instead there is the possibility to create a reading list in the database. Therefore, the titles and abstracts were screened online and all relevant publications saved in a reading list. The reading list can be exported as an RIS file (file format that facilitates exportation of citation information and abstract, among others) and imported into a reference management programme such as Zotero. From Zotero the list is exported as a CSV file, format that enables the development of the Excel spreadsheet used to catalogue the publications (see above “cataloguing the literature”). Out of 619 publications, only 31 are considered as FLN relevant; of these FLN publications, 6 are directly relevant including a SSA-based author (category 1).

Several publications are not open access and the University of Cambridge does not have full access to all the journals. Consequently, the review of some publications is limited to the abstract. In addition, the information regarding funders is rarely available in the information that is accessible.

- **Open Edition Search** <https://search.openedition.org/?s=>

Open Edition is a portal hosting 4 platforms: *Open Edition Books* (books in humanities and social sciences, with half of the collection being open access), *Open Journal* (607 journals); *Hypothèses* (academic blogs), and *Calenda* (calendar of events and call for papers). This protocol focuses on the first two platforms. Open Edition is a relevant search engine, as it includes African journals, and the majority of articles are open access.

The Open Edition Search engine allows the following search strategies: a) search on all fields using search string 3 with Boolean operators, b) search on specific fields i.e., title, author, abstract but with one keyword at a time, and c) both types of searches at the same time. After several trials, option c was selected, with the first two parts of the string pasted in the “all fields” and each country added to the specific field abstract (see Figure 1).

Figure 1: Screenshot of the search on OpenEdition

**OpenEdition Search**

ADVANCED SEARCH | SEARCH HELP

**Advanced Search** [? HELP](#)

**IN ALL FIELDS**

in alternative\* OR "éducation complémentaire" OR "éducation spécialisée" OR "éducation non formelle" OR "scolarisation" OR "cycle primaire")

**IN SPECIFIC FIELDS**

Tanzanie	Abstract	×
OR	Kenya	Abstract
OR	Ghana	Abstract
OR	Mozambique	Abstract
OR	Éthiopie	Abstract
OR	Soudan	Abstract
OR	Djibouti	Abstract
OR	Lesotho	Abstract
OR	Angola	Abstract
OR	Bénin	Abstract
OR	Botswana	Abstract
OR	Cameroun	Abstract
OR	Burundi	Abstract
OR	Burkina Faso	Abstract

Restricted to the years 2010-2023, 2 562 publications are identified for screening. Similar to CAIRN.info, there are technical challenges as the results cannot be exported directly. Therefore, the screening needs to be processed within the database, with each relevant publication copied and pasted manually in the Excel spreadsheet used to catalogue FLN publications. No directly relevant FLN publication are found, only 7 publications indirectly relevant are identified.

- **HAL Science** <https://hal.science/search/>

The HAL Science database is run by the *Centre pour la Communication Scientifique Directe*, a French computing centre, which is part of the CNRS (French National Centre for Scientific Research). It is a large self-archiving database for French-speaking research with around 1,300,000 journal articles from French-speaking institutions and researchers around the world.

For this database, the search string 3 was edited by adding quotation marks when more than one word, and truncation punctuation. The following search string was used in the advanced search field code abstract:

("compétences fondamentales" OR "compétences de base" OR littérature OR lecture OR écri\* OR vocabulaire OR parole OR oralité OR alphabétisation OR numératie OR math\* OR arithmétique OR calcul OR "résultats scolaires" OR "réussite scolaire" OR "niveau d'apprentissage" OR "échec scolaire" OR "progrès scolaires" OR "aptitudes cognitives" OR socio-émotionnel)

AND ("éducation de base" OR "école primaire" OR "école élémentaire" OR "école de la 2e chance" OR "éducation alternative" OR "éducation complémentaire" OR "éducation spécialisée" OR "éducation non formelle" OR scolari\* OR "cycle primaire")

AND (Angola OR Bénin OR Botswana OR Burundi OR Burkina Faso OR Cap-Vert OR Cameroun OR Centrafri\* OR Comores OR Congo OR "Côte d'Ivoire" OR Djibouti OR Éthiopie OR Érythrée OR Eswatini OR Gabon OR Gambie OR Ghana OR Guinée OR Kenya OR Lesotho OR Libéria OR Madagascar OR Malawi OR Mali OR Maurice OR Mauritanie OR Mozambique OR Namibie OR Niger OR Nigéria OR Ouganda OR Rwanda OR "Sao Tomé-et-Principe" OR Sénégal OR Seychelles OR "Sierra Leone" OR Somalie OR Soudan OR Tanzanie OR Tchad OR Togo OR Swaziland OR Zambie OR Zimbabwe)

Restricted to French language, journal articles, book sections, books, special issues, for the years 2010-2023, 354 publications are identified for screening. These can be exported in a CSV files including citation information and the abstract. Despite the list of sub-Saharan African countries in the search string, many publications are not related to these countries, there is no directly nor indirectly relevant publications found.

## Searching the Lusophone databases

Searching literature in Portuguese has similar challenges to the French searches.<sup>2</sup> An additional challenge is the need to use of both European Portuguese or Brazilian Portuguese.

The Portuguese language databases available (RECCAP / SciELO) are open access and funded by the Portuguese and the Brazilian (Federal and State) research funding agencies or higher education and research organisations. The databases allow a general search and an advanced search. In the advanced search, the SciELO allows a search similar to Anglophone literature (title-abstract-keywords). However, the RECCAP only enables the combination of title-subject-author-description.

2. Given that the French and Portuguese adaptation of the English search protocol faced similar challenges, the team members responsible for the French and Portuguese searches worked closely to identify the challenges and identify strategies.

### **Portuguese translation**

The translation of the keywords is not straightforward, considering that some words could be used with different meanings in Portuguese. Taking this into consideration and to strengthen the focus on FLN, the word *alfabetização* is included in the string in Portuguese, the same as in French. Similarly, *oralidade* (to complement the term speech – *fala*), *escolarização* (schooling) and *ensino especial / educação especial* are added to the original search string as relevant terms in Portuguese searches. The word primary-age was not included in the translation because no similar keyword is used in Portuguese. The country's names have also been translated into Portuguese.

The search string 3 has been translated into Portuguese as follows:

("competências fundamentais" OR "competências essenciais" OR "competências de base" OR "competências básicas" OR "habilidades fundamentais" OR "habilidades essenciais" OR "literacia" OR "leitura" OR "escrita" OR "vocabulário" OR "fala" OR "**oralidade**" OR "**alfabetização**" OR "numeracia" OR "matemática" OR "aritmética" OR "calcul" OR "resultados escolares" OR "resultado de aprendizagem" OR "sucesso acadêmico" OR "sucesso escolar" OR "êxito acadêmico" OR "nível de proficiência" OR "nível de aprendizagem" OR "nível de aprendizado" OR "progresso escolar" OR "resultados escolares" OR "insucesso escolar" OR "ganho de aprendizagem" OR "perda de aprendizagem" OR "fracasso escolar" OR "competências cognitivas" OR "capacidades cognitivas" OR "aptidões cognitivas" OR "aprendizagem socioemocional" OR "socioemocionais")

**AND** ("ensino básico" OR "educação básica" OR "escola primária" OR "primeira série" OR "ensino fundamental" OR "Escola de Segunda Oportunidade" OR "educação alternativa" OR "Ensino alternativo" OR "Ensino complementar" OR "Ensino suplementar" OR "**educação especial**" OR "**ensino especial**" OR "educação não formal" OR "escolarização")

**AND** (Tanzânia" OR "Quênia" OR "Gana" OR "Moçambique" OR "Etiópia" OR "Sudão" OR "Djibuti" OR "Lesoto" OR "Angola" OR "Benim" OR "Benin" OR "Botswana" OR "Botsuana" OR "Camarões" OR "Burundi" OR "Burquina Faso" OR "Burkina Faso" OR "República Centro Africana" OR "Cabo Verde" OR "Chade" OR "Comores" OR "Guiné" OR "Eritreia" OR "Gabão" OR "Gâmbia" OR "Costa do Marfim" OR "Libéria" OR "Madagáscar" OR "Malawi" OR "Malauí" OR "Mali" OR "Maurícia" OR "Mauritânia" OR "Namíbia" OR "Níger" OR "Nigéria" OR "Congo" OR "São Tomé e Príncipe" OR "Senegal" OR "Seicheles" OR "Seychelles" OR "Serra Leoa" OR "Somália" OR "Togo" OR "Uganda" OR "Zimbabué" OR "Zâmbia" OR "Eswatini" OR "Essuatíni" OR "Suazilândia" OR "Ruanda")

### **Identification of databases**

- RECCAP - <https://www.rcaap.pt/>

RCAAP portal aims to collect, aggregate and index open-access scientific contents from Portuguese institutional repositories. RCAAP constitutes a single-entry point for searching, discovering, and recalling thousands of scientific and scholarly publications, namely journal articles, conference papers, thesis and dissertations, distributed by several Portuguese repositories.

We used various strategies to try to use the search string 3, but we obtained an error message or zero results. Considering this, we searched using each keyword from the first group of words in search string 3. The results (206 entries) were filtered for the years 2010-2023, and then we manually screened the relevant publications considering the complete search string 3. No relevant publications were found once the inclusion and exclusion criteria were taken into account.

- SciELO - <https://www.scielo.org/>

Scientific Electronic Library Online (SciELO) is a multidisciplinary repository for depositing, preserving and disseminating research data from articles submitted and approved for publication, already published in SciELO Network journals or deposited in SciELO Preprints.

In this database, we had the same technical challenge as the previous database. The search string did not work - we obtained an error message or zero results. We therefore searched using each keyword from the first group of words in search string 3. The results (144 entries) were filtered for the years 2010-2023, and then we manually screened the relevant publications considering the complete search string 3. This still did not result in any relevant publications, once the inclusion and exclusion criteria were taken into account.

Given the relatively small number of publications in French, and none in Portuguese, a next step is to identify and search specific journals in education in which FLN relevant publications could be found.

### 3. Conclusion

Mapping publications in English, French and Portuguese, as well as inclusion of other languages in the future, will enhance the knowledge of relevant institutions, individual practitioners, and so support policy makers to make evidence-informed decisions on these issues.

## References

- CESA 16-25. (2015). *Continental Education Strategy for Africa (2016-2025)*. African Union Commission. <http://www.education2030-africa.org/index.php/en/education-agendas/cesa-16-25>
- Conn, K.M. (2017). Identifying Effective Education Interventions in Sub-Saharan Africa: A Meta-Analysis of Impact Evaluations. *Review of Educational Research*, 87(5), 863–898. <https://doi.org/10.3102/0034654317712025>
- Denton, C.A., Hall, C., Cho, E., Cannon, G., Scammacca, N., & Wanzek, J. (2022). A meta-analysis of the effects of foundational skills and multicomponent reading interventions on reading comprehension for primary-grade students. *Learning and Individual Differences*, 93, 102062. <https://doi.org/10.1016/j.lindif.2021.102062>
- Dorris, C., Winter, K., O'Hare, L., & Lwoga, E.T. (2021). PROTOCOL: A systematic review of mobile device use in the primary school classroom and its impact on pupil literacy and numeracy attainment. *Campbell Systematic Review*, 17(2), e1155–n/a. <https://doi.org/10.1002/cl2.1155>
- Evans, D.K., & Popova, A. (2016). What really works to improve learning in developing countries? *The World Bank Research Observer*, 31(2), 242–270. <https://doi.org/10.1093/wbro/lkw004>
- Ganimian, A. & Murnane, R.J. (2016). Improving Education in Developing Countries: Lessons From Rigorous Impact Evaluations. *Review of Educational Research*, 86(3), 719–755. <https://doi.org/10.3102/0034654315627499>
- Glewwe, P.W., Hanushek, E.A., Humpage, S. & Ravina, R. (2014). School resources and educational outcomes in developing countries: A review of the literature from 1990 to 2010. In Glewwe, P.W. (ed.) *Education Policy in Developing Countries*. Chicago: University of Chicago Press.
- Hövel, D., Hennemann, T., & Offer-Boljahn, H. (2022). Learning behaviors, executive functions, and social skills: A meta-analysis on the factors influencing learning development in the transition from kindergarten to elementary school. *Journal of Pedagogical Research*, 6(1), 1–17. <https://doi.org/10.33902/JPR.20221175398>
- Iddrisu, D.H, Williams, E.M., & Rose, P. (2023). *Literature search protocol: Mapping African-led Early Childhood Development research*. Methodological Note. REAL Centre, University of Cambridge.
- January, S.A.A., & Klingbeil, D.A. (2020). Universal screening in grades K-2: A systematic review and meta-analysis of early reading curriculum-based measures. *Journal of School Psychology*, 82, 103–122. <https://doi: 10.1016/j.jsp.2020.08.007>
- Kilburn, L. (2020). *What do we mean by 'foundational skills'? RISE Programme*. <https://riseprogramme.org/blog/what-do-we-mean-foundational-skills>
- Kim, Y.S.G., Lee, H., & Zuilkowski, S.S. (2020). Impact of Literacy Interventions on Reading Skills in Low- and Middle-Income Countries: A Meta-Analysis. *Child Development*, 91(2), 638–660. <https://doi: 10.1111/cdev.13204>
- McEwan, P.J. (2015). Improving learning in primary schools of developing countries: A meta-analysis of randomized experiments. *Review of Educational Research*, 85(3), 353–394. <https://doi: 10.3102/0034654314553127>
- Mitchell, R., & Rose, P. (2018) *Literature search protocol for the African Education Research Database*. Methodological Note. REAL Centre, University of Cambridge. <https://doi.org/10.5281/zenodo.1245521>

Rose, P. Downing, P., Asare, S., & Mitchell, R. (2019). *Mapping the landscape of education research by scholars based in sub-Saharan Africa: Insights from the African Education Research Database*. Synthesis Report. Cambridge: REAL Centre, University of Cambridge. <https://doi.org/10.5281/zenodo.3242314>

Spier, E. Britto, P., Pigott, T., Roehlkapartain, E., McCarthy, M., Kidron, Y., Song, M., Scales, P., Wagner, D., Lane, J., & Glover, J. (2016). Parental, community, and familial support interventions to improve children's literacy in developing countries: A systematic review. *Campbell Systematic Reviews* 12(1), 1–98. <https://doi: 10.4073/csr.2016.4>

Stone, R. Hoop, T., Coombes, A., & Nakamura, P. (2020). What works to improve early grade literacy in Latin America and the Caribbean? A systematic review and meta-analysis. *Campbell Systematic Reviews*, 16(1), 1-112. <https://doi: 10.1002/cl2.1067>

UNESCO (2022). *Spotlight Report on Basic Education Completion and Foundational Learning in Africa*. Paris, UNESCO.

USAID (2019). USAID Reading Matters Conceptual Framework. <https://www.edu-links.org/resources/usaid-reading-matters-conceptual-framework>

Vera-Baceta, M. A., Thelwall, M., & Kousha, K. (2019). Web of Science and Scopus language coverage. *Scientometrics*, 121, 1803–1813. <https://doi.org/10.1007/s11192-019-03264-z>

Verhoeven, L., Voeten, M., & Segers, E. (2022). Computer-assisted word reading intervention effects throughout the primary grades: A meta-analysis. *Educational Research Review*, 37, 100486. <https://doi.org/10.1016/j.edurev.2022.100486>

Williams, E.M., Iddrisu, D.H., & Rose, P. (2023). *Literature Search Protocol: Mapping African-Led Unpublished and Locally Published Research in Early Childhood Development*. Methodological Note. REAL Centre, University of Cambridge.

World Bank, UNESCO, UNICEF, USAID, FCDO, & Bill & Melinda Gates Foundation (2022). *The State of Global Learning Poverty: 2022 Update*. World Bank. <https://www.worldbank.org/en/topic/education/publication/state-of-global-learning-poverty>

## Appendix

Selected from the existing list of keywords used to catalogue publications for AERD (Rose *et al.*, 2019), we added 7 keywords (in bold) given the focus on FLN. Below is the list of keywords used to code the relevant FLN-related publications:

<p><b>Language &amp; Curriculum</b></p> <p>Literacy Reading <b>Writing</b> <b>Speaking skills</b> Numeracy Mathematics education Health education Science education Peace education Value education Environmental education Curriculum reform Curriculum relevance Textbooks <b>Socio-emotional skills</b> Language of instruction African languages French language English language Portuguese language</p>	<p><b>Students, Learning &amp; Assessment</b></p> <p>Learning outcomes Assessment Household factors associated with student learning Standards of attainment Student motivation</p>	<p><b>Institutional Leadership, Culture &amp; Facilities</b></p> <p>Community participation <b>Local knowledge and practices</b> Library Violence Wellbeing School feeding Home-school relations <b>Parental engagement</b> <b>Nutrition</b> Infrastructure Student voice Leadership and management</p>
<p><b>Access to Education</b></p> <p>Access to education Distance education Drop-out Alternative provision Enrolment Out-of-school children Completion Emergency education provision Student attendance Progression, repetition Widening participation</p>	<p><b>Equitable, Inclusive Education</b></p> <p>Gender Disability Poverty Ethnicity <b>Religion</b> Special education Child labour Psychosocial support Regional disparities in access and learning Mental health Emotional and behavioural difficulties Low attaining students Remedial education Early pregnancy/marriage</p>	<p><b>Policy &amp; Financing</b></p> <p>Education policy Government spending Household spending Private schools Public private partnership Cost-effectiveness Expansion of provision National development Regional disparities in resourcing Donors and NGOs Benefits of education Student financial support</p>
<p><b>ICT</b></p> <p>Learning using mobile phones ICT in education E-learning</p>	<p><b>Teachers &amp; Teaching</b></p> <p>Teaching methods Teacher education Teacher capacity Teacher motivation Teacher deployment Indigenous pedagogies Peer learning Teacher-student relations Problem-based learning Time for learning Class size Teacher supervision</p>	<p><b>Extra</b></p> <p>Covid-19 Intervention evaluation</p>



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