



# Mapping foundational literacy and numeracy publications in sub-Saharan Africa

## Report on analysis from international databases

## Authors

The writing of this report was led by H  l  ne Binesse, who conducted the searches for publications and the analysis. Pauline Rose provided overall oversight of the process, together with guidance and report review.

## Acknowledgements

This work on mapping Foundational Literacy and Numeracy (FLN) publications is undertaken in partnership with Education Sub Saharan Africa (ESSA) with funding from Bill & Melinda Gates Foundation (grant number INV-043649). The authors are grateful to ESSA and REAL Centre teams for their valuable inputs in the publication searches, analysis and development and review of the report. Any errors are the responsibilities of the authors.

© REAL Centre, University of Cambridge and ESSA

## Suggested citation

Binesse, H., & Rose, P. (2024). *Mapping foundational literacy and numeracy publications in sub-Saharan Africa: Report on analysis from international databases*. REAL Centre, University of Cambridge and ESSA

## Contents

<b>Summary</b>	<b>1</b>
<b>1. Introduction</b>	<b>2</b>
<b>2. Methods</b>	<b>3</b>
<b>3. Findings</b>	<b>4</b>
FLN publications over time	4
Geographical focus of publications	5
Funding of FLN research	8
Collaboration among researchers	10
Open access	12
Impact factor	13
Citations by authorship	16
Research methods	18
Inequality included in FLN publications	18
Thematic focus of FLN research	20
African institutions researching FLN	26
Gender of FLN researchers	26
Francophone FLN publications	28
Francophone researchers and institutions	34
<b>4. Challenges and limitations</b>	<b>35</b>
<b>5. Conclusion and recommendations</b>	<b>36</b>
Recommendations	37
<b>References</b>	<b>38</b>
<b>Appendices</b>	<b>40</b>
<b>Endnotes</b>	<b>43</b>

## List of tables

Table 1: Categories for identifying relevance of publications	3
Table 2: Number of publications per category	7
Table 3: Top international funders of FLN research by authorship category (2015-2023)	10

Table 4: Top 10 journals publishing FLN research co-authored by at least one SSA-based researcher (2015-2023) .....	15
Table 5: Top 10 journals publishing FLN research co-authored by non-SSA-based researcher (2015-2023) .....	16
Table 6: Top 10 cited publications by authorship .....	17
Table 7: Language of FLN publications in Francophone countries .....	33
Table 8: List of journals publishing Francophone FLN research co-authored by at least one SSA-based researcher .....	34
Table 9: Top 10 Francophone institutional affiliation of researchers .....	35

## List of figures

Figure 1: Annual number of publications (2015-2023) .....	5
Figure 2: FLN publications by category (2015-2023) .....	5
Figure 3: Map of FLN publications .....	6
Figure 4: Funding landscape for FLN research in SSA (2015-2023) .....	8
Figure 5: Proportion of funding type by authorship (2015-2023) .....	9
Figure 6: Collaborations in FLN publications involving SSA-based researchers (2015-2023) .....	11
Figure 7: Top institutions collaborating with non-SSA partners in FLN publications (2015-2023) .....	12
Figure 8: Accessibility of publications by authorship type (2015-2023) .....	13
Figure 9: Impact factor of journals publishing FLN studies by authorship (2015-2023) .....	14
Figure 10: Methodology used in FLN studies by authorship .....	18
Figure 11: Proportion of inequality factors used in FLN publications by authorship .....	19
Figure 12: Proportion of inequality factors included in FLN studies co-authored by SSA-based researchers in selected countries (2015-2023) .....	20
Figure 13: FLN themes by authorship .....	21
Figure 14: Mapping FLN themes by researchers based in SSA .....	23
Figure 15: Mapping FLN themes by non-SSA based researchers .....	25
Figure 16: Leading sub-Saharan African institutions for FLN research .....	26
Figure 17: Researcher gender based on FLN studies .....	27
Figure 18: Gender distribution of authors for FLN studies in selected countries (number of researchers) .....	28
Figure 19: Language, accessibility and countries of focus of Francophone publications .....	29
Figure 20: Mapping the Francophone FLN themes by SSA researchers .....	31
Figure 21: Research methods used in Francophone FLN studies .....	32
Figure 22: Collaboration patterns and gender distribution of Francophone researchers .....	34

## Abbreviations

APHRC	African Population and Health Research Centre
CESA	Continental Education Strategy for Africa
FCDO	Foreign, Commonwealth & Development Office
FLN	Foundational Literacy and Numeracy
HAL	Hyper Articles en Ligne
JICA	Japan International Cooperation Agency
NGOs	Non-governmental Organisations
NORAD	Norwegian Agency for Development Cooperation
ODA	Official Development Assistance
RECCAP	Repositório Científico de Acesso Aberto de Portugal
SCIELO	Scientific Electronic Library Online
SSA	sub-Saharan Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

## Summary

This report focuses on mapping publications related to Foundational Literacy and Numeracy (FLN) in sub-Saharan Africa (SSA). It delves into the multifaceted landscape of FLN peer-reviewed publications in 48 SSA countries from 2015 to 2023, and examines trends and patterns in FLN knowledge production. Our analysis revealed several key findings:

- FLN research in SSA saw a consistent increase in output, with significant contributions from SSA-based researchers.
- Less than half of the FLN studies identified that they received funding. External funding sources, particularly from the USA and UK, were most prevalent in advancing FLN research in SSA.
- Collaboration in publications predominantly occurred within country, with fewer instances of collaboration with partners based outside of SSA.
- Most publications co-authored with SSA-based researchers were available in open access, which facilitated broader dissemination.
- Higher impact journals (often viewed as a proxy for the quality of the journal) predominantly featured research without SSA-based authorship.
- Gender disparities existed among SSA-based researchers in FLN studies, with male authors being more predominant, although this varied significantly from country to country.
- Despite attempts at searching databases including publications in French, a limited number of FLN publications in non-Anglophone contexts were found, highlighting disparities in language and geographic representation.

Recommendations for stakeholders involved in FLN research and education policy development included:

- Strengthen research visibility of publications in different languages
- Diversify funding resources
- Ensure a focus on aspects of inequality in FLN research
- Promote gender equity in authorship
- Promote collaboration across SSA countries

# 1. Introduction

Foundational Literacy and Numeracy (FLN) includes basic skills essential for achieving broader educational objectives for individuals and societies (World Bank et al., 2022). However, the development and attainment of these basic skills remain a significant challenge in many countries in the Global South, particularly in sub-Saharan Africa (SSA), where only one in five children reaches the minimum proficiency level by the end of primary education (UNESCO, 2022). To address this, the 2022 Transforming Education Summit urged global policymakers to take decisive action by leveraging evidence and best practices to improve learning outcomes<sup>i</sup>.

The convergence of education stakeholders on FLN to enhance the quality of learning for primary education provides a framework for examining effective strategies and identifying areas for improvement, with the aim of implementing swift and cost-effective measures (Beeharry, 2021; World Bank et al., 2022). In this context, several initiatives are scaling up literacy and numeracy programmes to reach primary-school-aged children, monitoring and evaluating the programme results and learning outcomes. Notable examples include government or organisation-led programmes such as Teaching at the Right-level, Tusome in Kenya, LEARNigeria, Jifinze Uelewe in Tanzania, and Lecture Pour Tous, Primary Remediation Programme in Senegal.

Some donor-funded research programmes such as Learning at Scale, and Science of Teaching, and African research institutions draw on the above-mentioned educational interventions to generate evidence. However, there are also many relevant studies that examine literacy and numeracy skills development in other contexts, including alternative pathways like complementary basic education programmes. Insights from local research are indispensable for effectively addressing context-specific challenges (McLean & Sen, 2019).

Supported by the Bill & Melinda Gates Foundation, Education Sub Saharan Africa (ESSA) and the REAL Centre have mapped educational research focused on improving FLN skills among primary school-aged children in SSA. The project aims to increase the visibility of African FLN research by cataloguing relevant publications on the African Education Research Database<sup>ii</sup>. Specifically, it seeks to systematically document research conducted by researchers based in SSA, which align with Sustainable Development Goal 4.1 and the Continental Education Strategy for Africa 2016-2025, particularly its fourth strategic objective: 'Ensure the acquisition of requisite knowledge and skills and improved completion rates at all levels and among all groups through harmonisation processes for national and regional integration.' (CESA 16-25, 2015, p.23).

Through the mapping of FLN publications, the project aims to identify educational research and researchers based in SSA who have contributed to the FLN research agenda. In this report,

we analysed the bibliometric data of the identified publications in English, Portuguese and French, examining trends in African FLN research, publication visibility, access, funding sources, and collaboration patterns. In conclusion, we provided recommendations to enhance research efforts.

## 2. Methods

For our mapping exercise, we defined the scope of FLN research as studies examining reading, writing and numeracy skills that primary school-aged children acquire and practice within the education system. These foundational skills can be attained in primary school settings or through alternative pathways, including complementary basic education programmes.

As outlined in the FLN mapping protocol (Binesse, Rose & Silva, 2023), we retrieved publications from 2015 to 2023 such as peer-reviewed articles, conference papers, books, and chapters from three international academic databases: Dimensions, Scopus, and Web of Science. Additionally, we searched Francophone databases including CAIRN, Open Edition Search and HAL Sciences, and Portuguese databases RECCAP and SciELO. We employed a set of keywords, translated into French and Portuguese, as detailed in the protocol (see the search string in Appendix A).

Initial searches yielded a limited number of relevant studies focusing on FLN conducted by researchers based in SSA. For this mapping exercise, we also included the FLN publications that were not authored by SSA-based researchers. To organise the analysis efficiently, publications were categorised based on their inclusion of SSA-based researchers and their direct or indirect relevance to the scope of FLN research (Table 1). For example, publications addressing topics such as teacher training, student attendance, or language of instruction, without direct reference to student learning outcomes or children’s engagement in literacy/numeracy activities, were placed in category 2 (with an SSA-based author) or category 4 (without an SSA-based-author). Any publication falling within categories 1 to 4 indicated a study conducted in at least one of the 48 SSA countries. Categorisation into these groups was solely for analysis purposes, providing a comprehensive overview of FLN research in SSA.

*Table 1: Categories for identifying relevance of publications*

Category 1	Directly relevant and includes SSA-based author
Category 2	Indirectly relevant and includes SSA-based author
Category 3	Directly relevant but no SSA-based author
Category 4	Indirectly relevant but no SSA -based author



To complement the search results for publications in French, we searched selected Francophone journals in education likely to publish FLN relevant publications (see Appendix B for the list).

While the search string underwent multiple iterations before its final version, the identified list of FLN publications is not exhaustive. To enrich this search, we filtered and screened the research publications already available in the African Education Research Database, which were identified by using a broader search string with database keywords such as primary education, learning outcomes, literacy, and numeracy (Mitchell & Rose, 2018). Through this screening, we identified 61 additional publications that were not otherwise captured with the initial FLN search string. This could have been because their abstracts did not clearly refer to primary education (or terms related to this). These 61 publications were included in this report under categories 1 or 2.<sup>iii</sup>

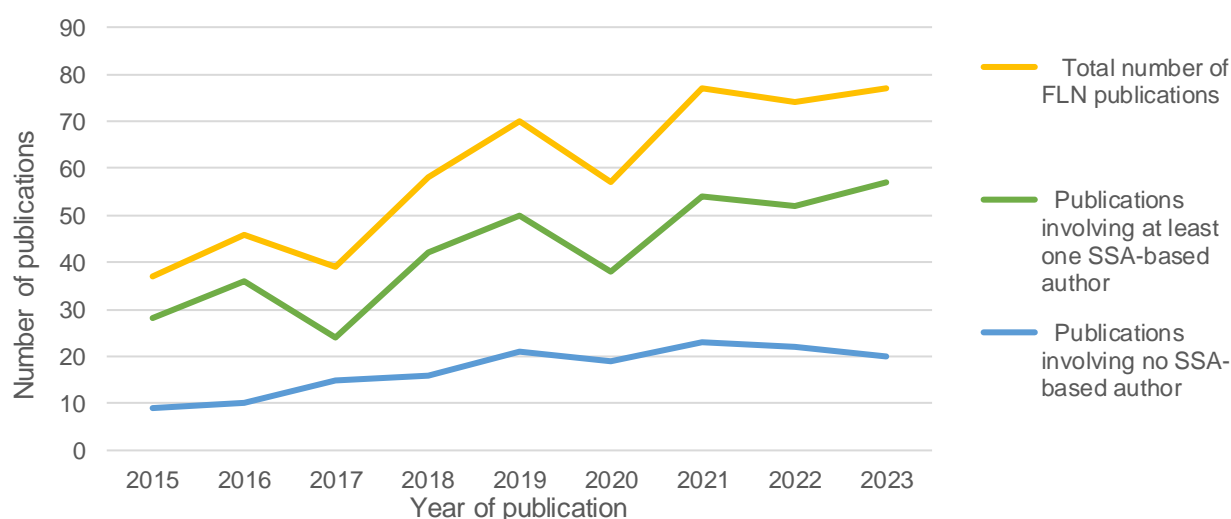
All publications identified were compiled into a spreadsheet for bibliometric analysis, which included: research keywords, study setting, sociodemographic characteristics of participants (gender, disability, wealth/income status, ethnicity, and religion), source of funding, collaboration with other researchers, institution of affiliation and gender of researchers.

### 3. Findings

#### FLN publications over time

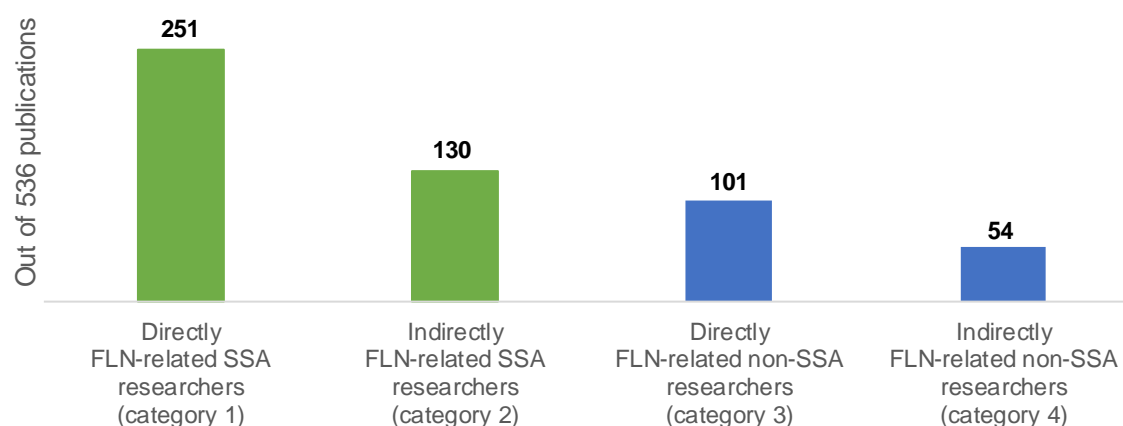
In total, 536 publications were identified over the period 2015 to 2023, more than two thirds of which included an author based in sub-Saharan Africa. Maclure (2006) identified that most research on educational issues in sub-Saharan Africa was produced by researchers and consultants from the Global North. Figure 1 illustrates a shift towards publications including an SSA-based author in more recent times. Beginning with 28 publications co-authored by SSA researchers in 2015, the annual number doubled to 57 publications by 2023. This upward trajectory implied a growing interest and research activity in the field of FLN within the SSA region. This trend could be associated with international calls to action such as Sustainable Development Goal 4 (SDG) with indicator 4.1.1a, as well as the recent Transformation Education Summit in 2022. This increase reflected the global emphasis on addressing challenges related to FLN and the quality of learning. The green line, in Figure 1 highlights the significant contribution of SSA-based researchers to this research domain.

Figure 1: Annual number of publications (2015-2023)



To provide a comprehensive overview of FLN publications in SSA, we categorised publications based on their direct or indirect relevance to FLN (Figure 2). This showed that around two thirds of publications were identified as being directly relevant to FLN, namely that they examined learning outcomes related to children’s skills development and/or literacy and numeracy learning environments and practices. Of these, the majority (71 percent) included an author based in SSA.

Figure 2: FLN publications by category (2015-2023)



## Geographical focus of publications

Figure 3 and Table 2 illustrate the concentration of FLN publications in a few countries, notably Kenya, Uganda, Nigeria, Ethiopia, Tanzania, and Malawi, each with a total number of publications

equal or greater to 30. These six countries contributed almost three quarters (73 percent) of the total publications identified. Kenya alone represented 16 percent of the total publications identified. Out of the 86, 58 publications involved at least one SSA-based researcher, with 22 in collaboration with researchers based outside SSA. A similar pattern was identified in the other five countries with the largest number of publications. In Nigeria and Ethiopia, collaborations were more likely to involve local researchers. Nigeria included 52 publications on FLN, only nine of which involved collaborations with partners outside of SSA, and only three featured collaborations with researchers within the SSA region. Ethiopia presented a similar pattern, with 49 publications, of which 12 were in collaboration with researchers outside SSA and five within SSA.

By contrast, no publications on FLN in international databases were found for Equatorial Guinea, Comoros, Mauritania, Sao Tome and Principe, and Somalia. Additionally, countries such as Cape Verde, Central Africa Republic, Congo, Djibouti, Guinea, Guinea-Bissau, Chad, and South Sudan had only a limited number of publications in international databases.

*Figure 3: Map of FLN publications*

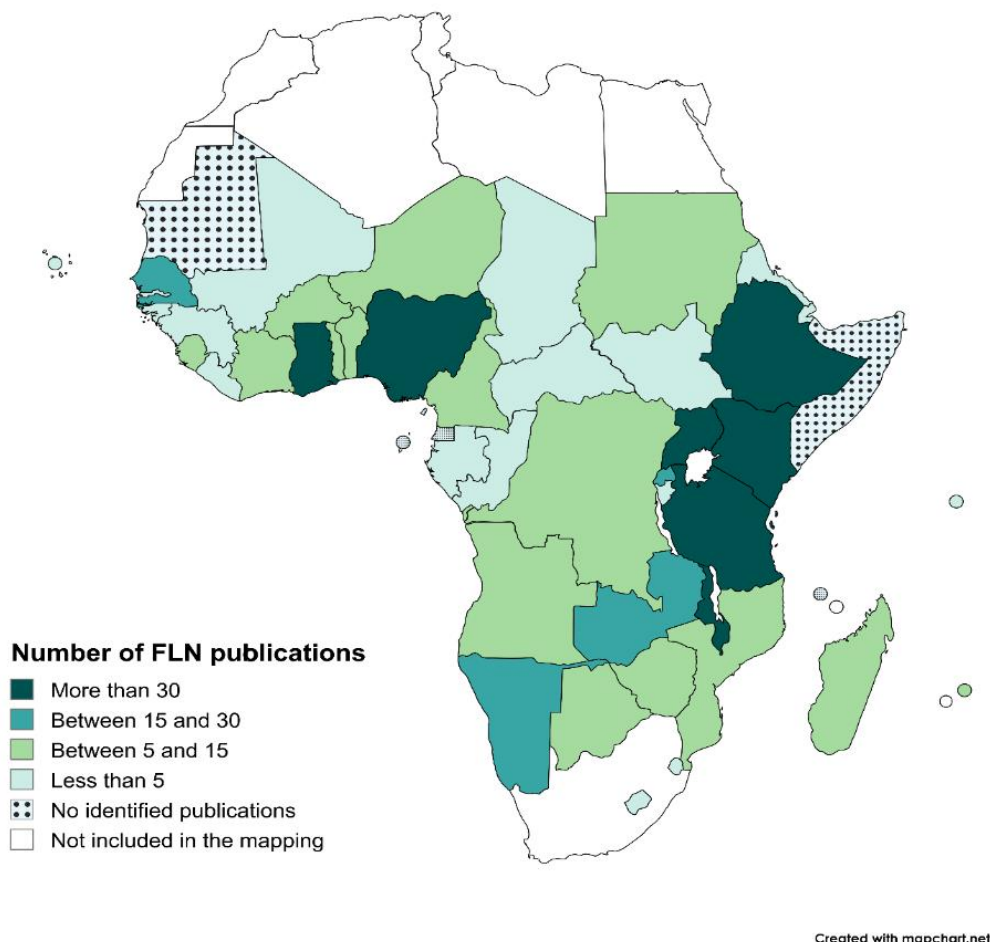


Table 2: Number of publications per category

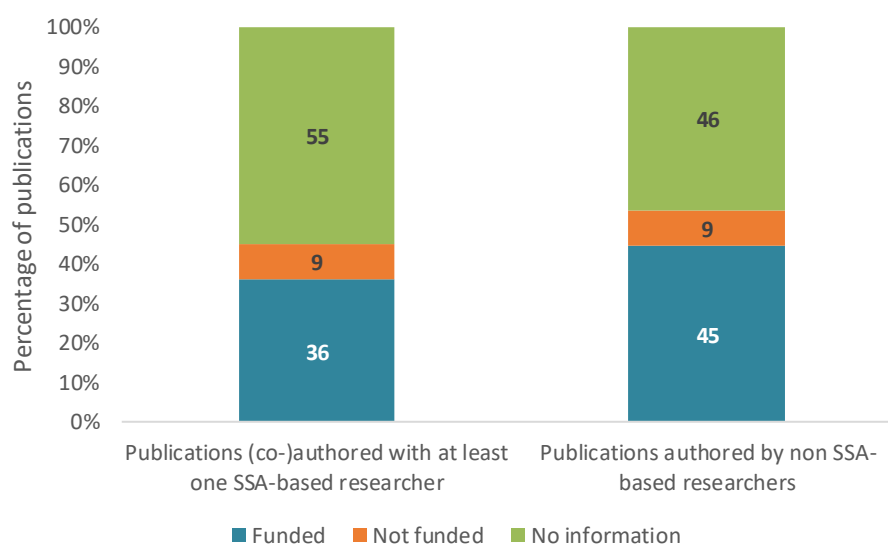
SSA countries	Number of publications in				Total number of publications
	Category 1	Category 2	Category 3	Category 4	
Kenya	44	14	23	5	86
Uganda	33	10	10	11	64
Nigeria	35	17	4	5	61
Ethiopia	31	18	10	2	61
Tanzania	20	4	17	3	44
Ghana	13	12	11	4	40
Malawi	15	5	8	4	32
Namibia	8	5	4	3	20
Rwanda	5	7	5	2	19
Senegal	4	8	4	2	18
Zambia	9	2	6	1	18
Burkina Faso	6	3	5	-	14
Cameroon	7	4	1	-	12
Ivory Coast	5	5	1	-	11
Mozambique	3	1	2	5	11
Zimbabwe	5	3	3	-	11
Botswana	4	2	2	1	9
Sierra Leone	3	-	4	2	9
Madagascar	4	1	-	3	8
Mauritius	4	3	-	1	8
Benin	2	2	1	1	6
Democratic Republic of the Congo	3	-	3	-	6
Sudan	5	-	1	-	6
Niger	2	1	2	1	6
Angola	3	1	-	1	5
Togo	3	-	1	1	5
Eswatini	2	1	1	-	4
Gambia	1	-	1	2	4
Lesotho	1	1	2	-	4
Liberia	1	-	1	2	4
Mali	2	-	-	2	4
Burundi	2	-	-	1	3
Gabon	2	1	-	-	3
Seychelles	2	-	1	-	3
Eritrea	1	1	-	-	2
Cape Verde	-	-	-	1	1
Central African Republic	1	-	-	-	1
Congo	1	-	-	-	1
Djibouti	-	1	-	-	1
Guinea	1	-	-	-	1
Guinea Bissau	1	-	-	-	1
South Sudan	1	-	-	-	1
Chad	1	-	-	-	1
Comoros, Equatorial Guinea, Mauritania, Sao Tome and Principe, Somalia	-	-	-	-	0

The vast majority (90 percent) of publications identified through these searches were in English. Only nine percent were in French and one percent in Portuguese. This was most likely influenced by the predominance of English-language publications in general and their higher visibility in international databases (Vera-Baceta et al., 2019). Another factor may also be that FLN has been particularly promoted by UK and North American donors and philanthropic organisations (SEEK Development, 2023).

## Funding of FLN research

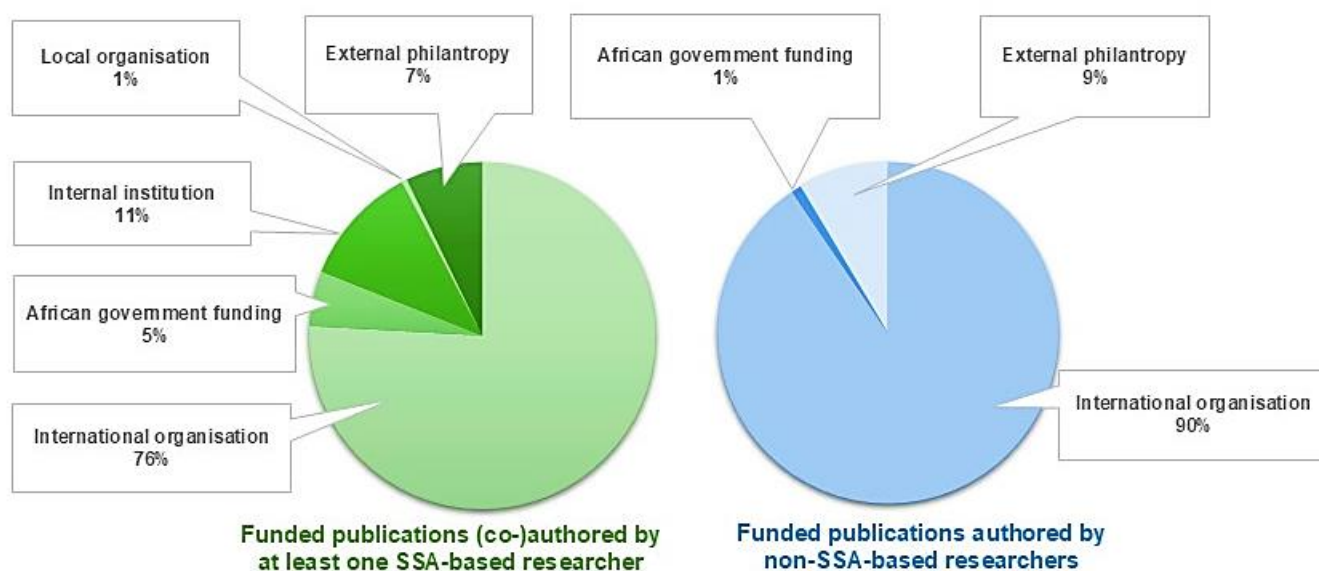
Less than half of the FLN studies identified that they received funding (Figure 4). A marginally higher proportion of non-SSA-based authored publications benefited from funding, compared to their SSA-based counterparts.

*Figure 4: Funding landscape for FLN research in SSA (2015-2023)*



A key source of funding was from international organisations<sup>iv</sup> both for publications (co-)authored by SSA researchers and those that were not (Figure 5). Despite limited financial support from African governments, with only 10 publications identified, funding was received from Kenya (National Research Fund, Ministry of Education, Science and Technology), Namibia (National Institute for the Development of Education), Nigeria (Nigeria's Tertiary Education Trust Fund), Seychelles (Ministry of Education and Youth), Sudan (Department of Research, Ministry of Higher Education and Scientific Research), and Uganda (Ministry of Sports and Education).

Figure 5: Proportion of funding type by authorship (2015-2023)



The largest funders of the identified FLN publications were the UK Foreign, Commonwealth & Development Office (FCDO) and USAID (Table 3). This aligned with the strong commitment these two donors have shown to FLN. Using data from the OECD creditor reporting system, a recent report has estimated that the USA provided 64 percent of Official Development Assistance (ODA) for FLN, with the UK contributing 21 percent (SEEK Development, 2023, p.15).

Table 3 also identifies a wide range of funding providers beyond governmental institutions including philanthropy, research institutions and non-governmental organisations (NGOs), indicating the involvement of several key actors in supporting FLN research.

*Table 3: Top international funders of FLN research by authorship category (2015-2023)*

*Table 3a SSA-based researchers*

Organisation	Number of times funder acknowledged in publications
USAID	14
FCDO	13
William and Flora Hewlett Foundation	9
Norwegian Research Council	7
Jacobs Foundation	6
Research Triangle Institute,	4
Social Sciences and Humanities Research Council of Canada	4
Ministry of Foreign Affairs of The Netherlands	4
Effective Intervention	3
NORAD, Direktoratet for Utviklingssamarbeid, Norway	3
Voluntary Service Overseas	3
World Bank Group	3

*Table 3b: Non-SSA-based researchers*

Name of the organisation	Number of times funder acknowledged in publications
FCDO	11
USAID	10
UKRI Economic and Social Research Council	5
Bill & Melinda Gates Foundation	4
Norwegian Research Council	3
Bernard and Irene Schwartz Foundation	2
Comic Relief	2
European Research Council	2
Irish Aid	2
Japan International Cooperation Agency, JICA	2
National Institute for Health Research (NIHR)	2
Scottish Government	2
University of British Columbia,	2
World Bank Group	2

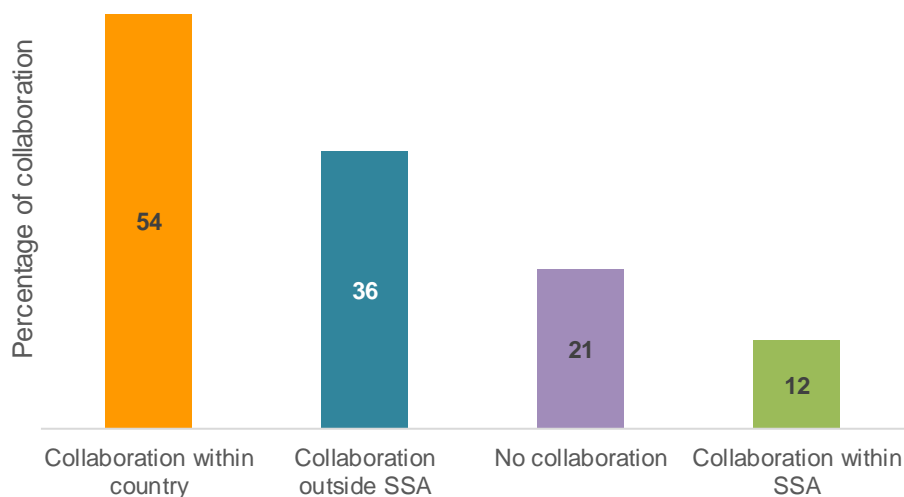
## Collaboration among researchers

Around three in four of all SSA-based authored publications (302 out of 381) were developed in collaboration with researchers either within the same country, within SSA or outside SSA.

Collaboration largely occurred within countries, and sometimes involved multiple institutions within

the same country. More than one third of the publications (co-)authored by SSA-based researchers involved partners based outside SSA, while 12 percent were South-South partnerships within sub-Saharan Africa (Figure 6).

*Figure 6: Collaborations in FLN publications involving SSA-based researchers (2015-2023)*

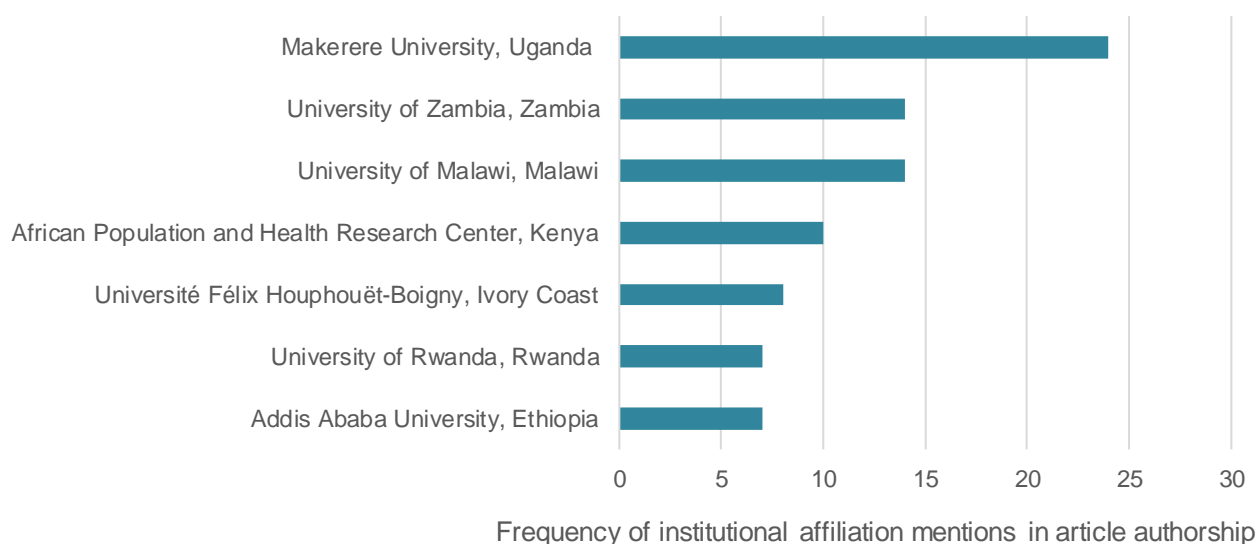


Note: Some publications may include multiple forms of collaboration

Makerere University had the largest number of collaborations with countries outside SSA, followed by the University of Zambia, University of Malawi, African Population and Health Research Council (APHRC), and the University Félix Houphouët-Boigny in Ivory Coast (Figure 7). Despite being the institution with the highest number of publications in Figure 16, the University of Nigeria did not appear as actively engaged in partnerships outside SSA.



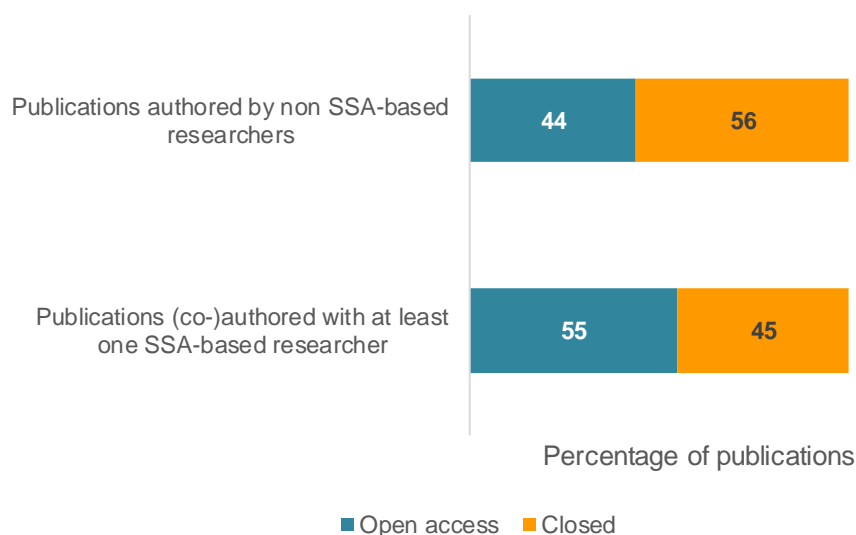
*Figure 7: Top institutions collaborating with non-SSA partners in FLN publications (2015-2023)*



## Open access

In this report, we define open access as publications that are freely accessible in full text to the public. Half of the FLN publications identified were open access. Figure 8 illustrates a slightly higher proportion of open access publications involving SSA-based researchers compared to those authored by non-SSA-based researchers. Previous analysis found that open access research on education in the region tended to be published in journals with a lower impact factor, which are often perceived as lower quality and consequently can be overlooked. By contrast, articles published in journals with a higher impact factor are often inaccessible (Asare, Mitchell & Rose, 2021). The analysis of journals publishing FLN research had a similar pattern.

Figure 8: Accessibility of publications by authorship type (2015-2023)

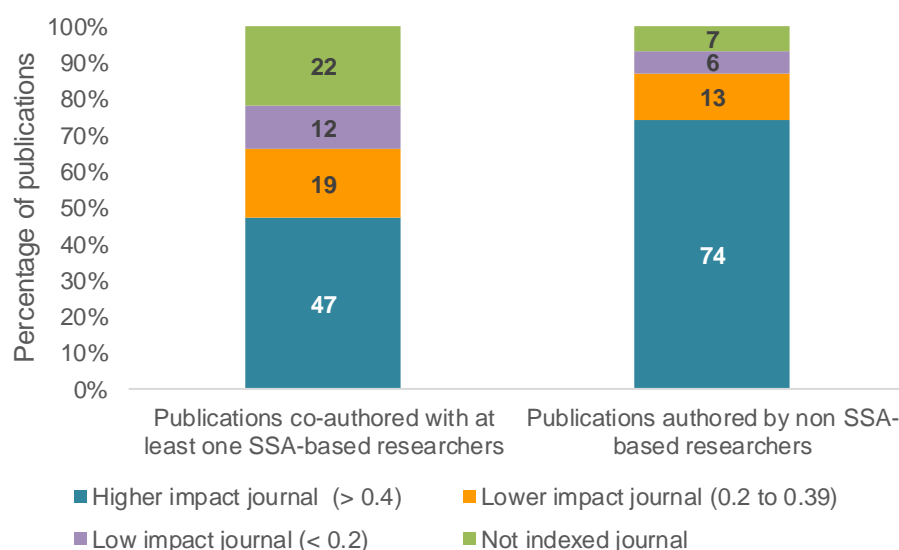


## Impact factor

Figure 9 illustrates the trend in FLN publications categorised by the impact factor of journals. The impact factor data of Scimago<sup>v</sup> in 2022 is used, with journals classified into “lower impact” journals (with impact factors ranging from 0.2 to 0.39) and “higher impact” journals (those with impact factors of 0.4 or above). The impact factor is typically used as a proxy for the quality of journals (not of individual articles), and from discussions with leading African researchers, it is a measure which researchers themselves use to inform decisions about where to publish (Asare et al., 2021).

The majority of FLN publications were published in ‘higher impact’ journals (Figure 9). However, there was a significant disparity by authorship. Almost three quarters of publications that did not involve SSA-based authors were published in ‘higher impact’ journals. Half of SSA-based co-authored publications were published in journals with a lower impact factor or not assessed by Scimago. The latter may not be given the same level of credibility. Although the publications in these journals were more likely to be open access, they may still be overlooked and under-utilised.

Figure 9: Impact factor of journals publishing FLN studies by authorship (2015-2023)



In Table 4 and Table 5, we highlight the top 10 journals in which FLN African researchers publish. The International Journal of Educational Development had the highest number of FLN-related publications, whether or not there was an SSA-based researcher. Frontiers in Psychology and South African Journal of Childhood Education were also key platforms for FLN research in both categories of authorship. Cogent Education, Revue Internationale d'Education de Sèvres (a Francophone journal) and Library Philosophy and Practice featured work co-authored with SSA-based researchers.

Among the 70 publications (co-)authored by at least one SSA-based researcher, 70 percent were available as open access (Table 4). These publications included five 'higher impact' journals (>0.4) and two journals considered to be of 'lower impact' (0.2 to 0.39). Notably, the high-impact journals (>0.4), such as Frontiers in Psychology and Cogent Education, both open access journals, published 13 FLN publications (co-)authored by at least one SSA-based researcher.

In contrast, among the 44 publications authored by non-SSA researchers, 48 percent were available as open access (Table 5). Of these journals, seven were classified 'higher impact' (>0.4), while the rest fell under the category 'lower impact' journals. This suggested that non-SSA based researchers had more opportunities to publish in journals with a higher impact factor.

The 'lower impact' journals in the SSA-based researcher list, namely Library Philosophy and Practice (online) and the South African Journal of Childhood Education had either no fees or very low fees, which may incentivise researchers to publish in them. Three journals publishing SSA-based research were classified as low impact (<0.2). Except for the African Education Review,

these journals published the identified publications in open access. Notably, *Revue Internationale d'Education de Sèvres* was the only journal in a language other than English appearing in the top 10 list, publishing African research in French. This journal is edited by France Education Internationale, a French institution under the supervision of the Ministry of Education.

*Table 4: Top 10 journals publishing FLN research co-authored by at least one SSA-based researcher (2015-2023)*

Name of journal	Number of publications	Impact factor	Number of publications in open access	Number of studies acknowledging funding	Number of publications funded and open access
International Journal of Educational Development	15	0.83	5	8	3
Cogent Education	9	0.43	9	4	4
Library Philosophy and Practice (e-journal)	8	0.23	8	0	0
Revue Internationale d'Education de Sèvres	7	N/A	7	N/A	N/A
South African Journal of Childhood Education	7	0.29	7	2	2
Africa Education Review	7	0.19	1	2	0
Journal of Language Teaching and Research	5	0.19	5	0	0
Journal of Research on Educational Effectiveness	4	0.9	2	3	2
Education 3-13	4	0.41	1	0	0
Frontiers in Psychology	4	0.89	4	3	3
Total	70		49	22	14
			70 percent	31 percent	20 percent

Half of the publications by non SSA-based authors were funded (Table 5). Among the 23 funded publications, 15 were open access, while 7 of the non-funded publications were available as open access. By contrast, only 31 percent of the publications authored by SSA-based researchers acknowledged funding (Table 4). Among the 22 funded, 14 were open access, while 35 of the non-funded publications were available as open access. Those that did not receive funding might have either been available as open access in journals that do not charge fees to authors, or provided discounts to those from low- and lower-middle income countries (Asare et al., 2021).

*Table 5: Top 10 journals publishing FLN research co-authored by non-SSA-based researcher (2015-2023)*

Name of journal	Number of publications	Impact factor	Number of publications in open access	Number of studies acknowledging funding	Number of publications funded and open access
International Journal of Educational Development	16	0.83	4	7	3
Economics of Education Review	4	1.26	1	3	1
South African Journal of Childhood Education	4	0.29	4	0	0
Compare	3	0.71	1	2	1
Frontiers in Psychology	4	0.89	4	3	3
African Journal of Research in Mathematics, Science and Technology Education	3	0.26	2	2	2
New Directions for Child and Adolescent Development	3	0.73	2	2	1
Prospects	3	1.3	1	1	1
The Journal of Human Resources	2	3.33	2	2	2
The British Journal of Visual Impairment	2	0.26	1	1	1
Total	44		22	23	15
			50 percent	52 percent	34 percent

## Citations by authorship

Citation counts provide a gauge of the academic impact and influence of research outputs. Citation counts were retrieved in March 2024 from Scopus, Web of Science and Dimensions. None of the identified publications in French were indexed in any of the above databases, leaving their citation impact unassessed.

The 10 most cited publications revealed a similar citation volume between those including an SSA-based author and those without an SSA-based author (Table 5). The newer articles were less likely to have as many citations. This was expected given citations take time to accumulate following publication. The most cited research including a SSA-based researcher was 71, compared to 63 citations for the leading publication from non-SSA-based researchers.

Three publications of the most cited research from SSA-affiliated authors related to health interventions in primary schools. These publications were included in our mapping as they assessed literacy practices and measurement of its impacts on health or vice-versa. The studies, published in health focused journals including the Lancet (with impact factor of 14.6), Archives of Public Health (0.89) and BMJ Global Health (2.37), were all accessible via open access.

Among the most cited publications in Table 6, all journals were ‘higher impact’ (>0.4) and 65 percent of the publications were open access. Among the top 10 publications involving at least one SSA-based author, seven acknowledged funding, and five of them indicated a collaboration outside SSA. Haile et al.’s health publication (2016), was the only one co-authored exclusively by SSA-based researchers and funded by an internal institution, Madawalabu University in Ethiopia.

*Table 6: Top 10 cited publications by authorship*

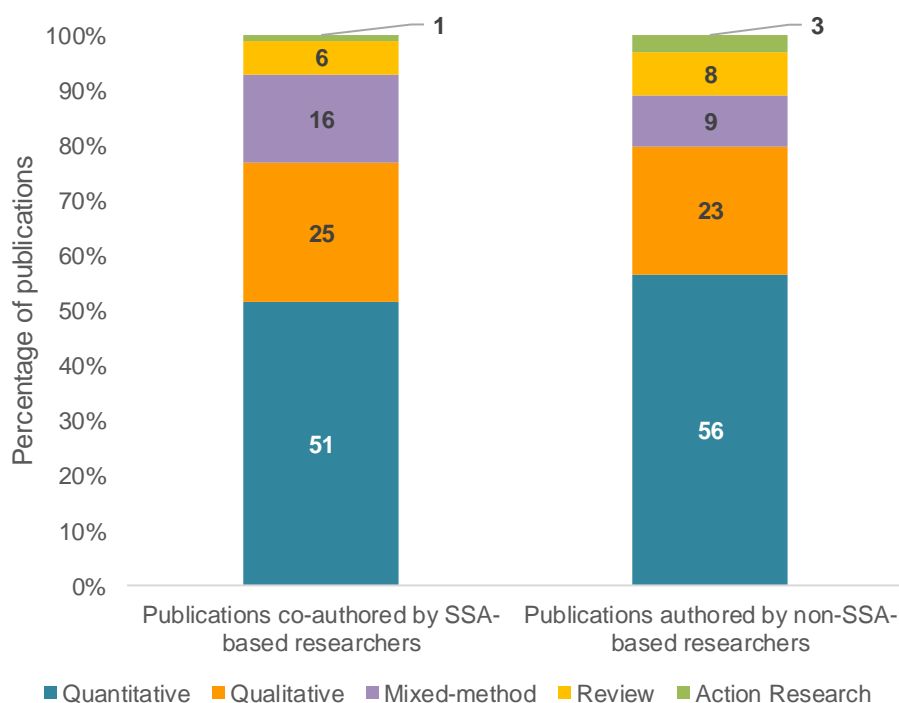
	Article	Journal	Citation counts (March 2024)
Publications (co-)authored with at least one SSA-based researcher	Nsangi, A., et al. (2017)	The Lancet	71
	Ojanen, E., et al. (2015)	Frontiers in Psychology	50
	Piper, B., Zuilkowski, S., Kwayumba, D., & Strigel, C. (2016)	International Journal of Educational Development	46
	Haile, D., Nigatu, D., Gashaw, K., & Demelash, H. (2016)	Archives of Public Health = Archives Belges De Santé Publique	44
	Piper, B., Destefano, J., Kinyanjui, E. M., & Ong’ele, S. (2018)	Journal of Educational Change	42
	Jukes, M., Turner, E., Dubeck, M., Halliday, K., Inyega, H., Wolf, S., Zuilkowski, S. & Brooker, S. (2017)	International Journal of Educational Development	35
	Azigwe, J. B., Kyriakides, L., Panayiotou, A., & Creemers, B. P. M. (2016)	Journal of Research on Educational Effectiveness	35
	Clarke, S., Rouhani, S., Diarra, S., Saye, R., Bamadio, M., Jones, R., . . . Sacko, M. et al. (2017)	BMJ Global Health	33
	Pitchford, N., Kamchedzera, E., Hubber, P., & Chigeda, A. (2018)	Frontiers in Psychology	32
	Abrami, P. C., Wade, C. A., Lysenko, L., Marsh, J., & Gioko, A. (2016)	Education and Information Technologies	29
Publications authored by non SSA-based researchers	Pitchford, N. (2015)	Frontiers in Psychology	63
	Akyeampong, K. (2017)	Educational Researcher	53
	Piper, B., Schroeder, L., & Trudell, B. (2016)	Journal of Research in Reading	49
	Trudell, B. (2016)	Comparative Education	42
	Lederman, J., et al. (2019)	Journal of Research in Science Teaching	39
	Stranger-Johannessen, E., & Norton, B. (2017)	The Modern Language Journal (Boulder, Colo.)	39
	Angrist, N., et al. (2021)	International Journal of Leadership in Education	35
	Williams, T. (2017)	World Development	33
	Pitchford, N., & Outhwaite, L. (2016)	Frontiers in Psychology	27
	Zuilkowski, S., Jukes, M., & Dubeck, M. (2016)	International Journal of Educational Development	24

Note: See Appendix C for full citations.

## Research methods

Quantitative research methods constituted half of the FLN studies (Figure 8), including studies looking at learning outcomes and ones linked to evaluation interventions. However, qualitative and mixed-methods studies also played an important role in the FLN research landscape, allowing for deeper exploration of practices, perceptions, and engagement.

Figure 10: Methodology used in FLN studies by authorship



## Inequality included in FLN publications

The inequality factors considered in the analysis were gender, household poverty, religion, ethnicity and disability. The analysis included studies that examined these factors, excluding those that mentioned them only briefly, such as simply reporting the number of male and female participants in a study. Overall, only half of the publications identified included inequality in the analysis. Gender and poverty emerged as the most commonly addressed indicators for publications that do and do not include SSA-based authors (Figure 11). Issues related to disability were rarely studied.

The setting of the research was also considered, as rural areas often experience greater deprivation. Consequently, we categorise the locations as rural, urban, or a combination of both. Studies focusing on rural communities were more prevalent among non-SSA-based researchers, around 25 percent of these studies were focused on rural settings, compared to only 14 percent for those conducted by SSA-based researchers.

These findings raised questions about the representation and visibility of the most marginalised populations in FLN research. They also revealed a striking gap in addressing intersecting forms of marginalisation. For instance, only seven studies, regardless of authorship, included gender, disabilities, and rural settings simultaneously.

*Figure 11: Proportion of inequality factors used in FLN publications by authorship*

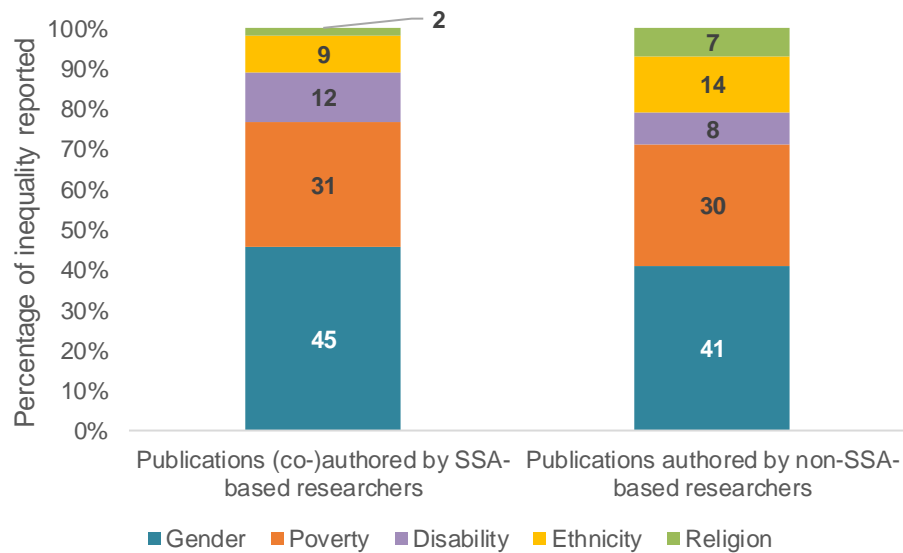
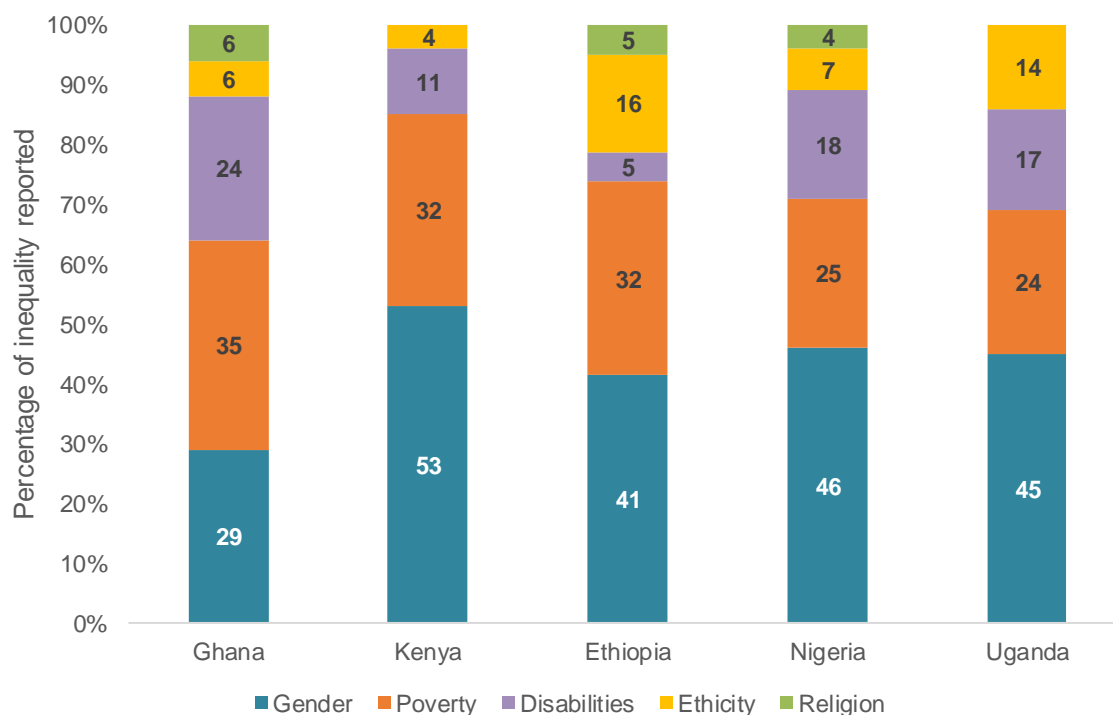


Figure 12 shows the inclusion of inequality within the publications co-authored by SSA-based researchers in specific countries. Gender and poverty appeared as the most frequent areas of focus across the countries. There were also some variations across countries. For example, in studies undertaken in Ghana, Nigeria and Uganda, there was more emphasis on students with disabilities.



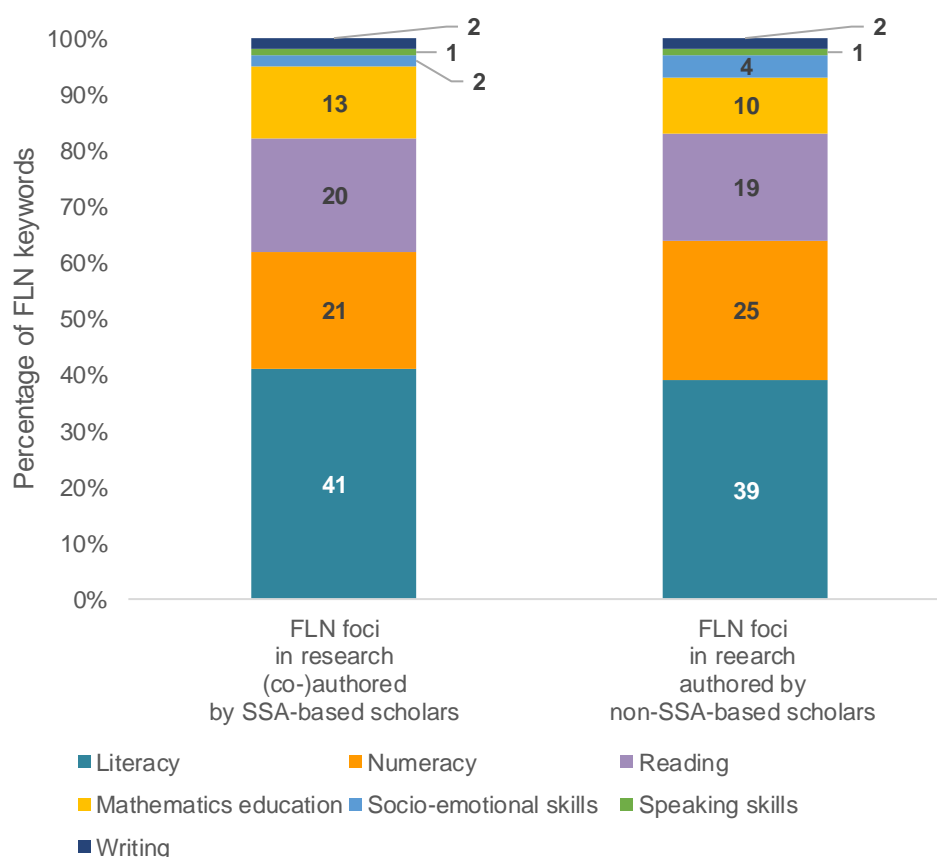
Figure 12: Proportion of inequality factors included in FLN studies co-authored by SSA-based researchers in selected countries (2015-2023)



## Thematic focus of FLN research

Of the themes included in the publications, most addressed literacy, often combined with reading skills (Figure 13).<sup>vi</sup> Studies exploring numeracy and mathematics education<sup>vii</sup> were second in frequency. However, the number of studies examining socio-emotional skills, as well as those including writing and speaking skills development, were very limited.

Figure 13: FLN themes by authorship



The African Education Research Database comprises nine thematic areas and about 130 keywords which were used to catalogue the identified FLN publications (Binesse, Rose & Silva., 2023; Mitchell & Rose, 2018) (Figure 14 and Figure 15). Language and curriculum were the primary thematic focus in FLN studies co-authored by SSA-based researchers (Figure 14). These were followed in decreasing order by: students, learning & assessment; teachers and teaching; institutional leadership, culture & facilities; equitable, inclusive education; extra theme linked to intervention evaluation and Covid-19; access to education; information and communication technology (ICT); and policy & financing.

The emphasis on language and curriculum, particularly on languages of instruction, was related to ongoing debates over language choice in education – a critical issue across the African continent. This focus, along with significant attention to textbooks, curriculum relevance, and reforms, underscored ongoing efforts to make educational content relevant and accessible to students.

The second major thematic area, students, learning & assessment, with learning outcomes as its central concern, reflected the importance placed on identifying factors that influence student learning, including household influences. The attention to assessment and student motivation within this theme pointed to a broader commitment to enhancing educational quality and student engagement.

Within the teachers and teaching theme, the prominence of teaching methods and teacher capacity indicated a strong focus on examining instructional quality. However, the limited number of studies on class size, time for learning, indigenous pedagogies, problem-based learning, and peer learning suggested that certain pedagogical practices may be underexplored.

The institutional leadership, culture & facilities theme highlighted the critical role of parents and the incorporation of local knowledge and practices, emphasising the value of community involvement in the educational process.

Positioned fifth in the ranking of thematic foci, equitable, inclusive education echoed findings from the analysis of inequality indicators (Figure 11), highlighted the gap in research outputs focused on the needs of marginalised children.

The ICT thematic area had a shorter list of keywords associated with it in the database, yet the specific keyword “ICT in education” itself had a significant count of 41. This surpassed keyword counts for example on teacher education and parental engagement. This indicated a notable number of studies that primarily evaluated the impact of interventions involving ICT on literacy and numeracy teaching and learning. Policy & financing, which examined structural and financial aspects of education systems, received the least attention overall.

Figure 14: Mapping FLN themes by researchers based in SSA



Note: Number of counts with respect to a total of 381 publications; the size of each box corresponds to the frequency of keywords associated with thematic areas as assigned across the identified FLN studies. The same study can cover multiple thematic areas.

The thematic emphasis of studies conducted by researchers outside of SSA did not significantly differ from those within the region (Figure 15). The three primary thematic areas remained consistent, although there was a more pronounced focus on learning and assessment. The emphasis on language of instruction was similar, with the keyword representing about 11 percent in publications co-authored by SSA-based researchers and about 14 percent by non-SSA-based researchers. Notably, the exploration of policy & financing within FLN studies appeared more frequently among this authorship category, highlighting an interest in education policy and cost-effectiveness of FLN interventions.

Figure 15: Mapping FLN themes by non-SSA based researchers

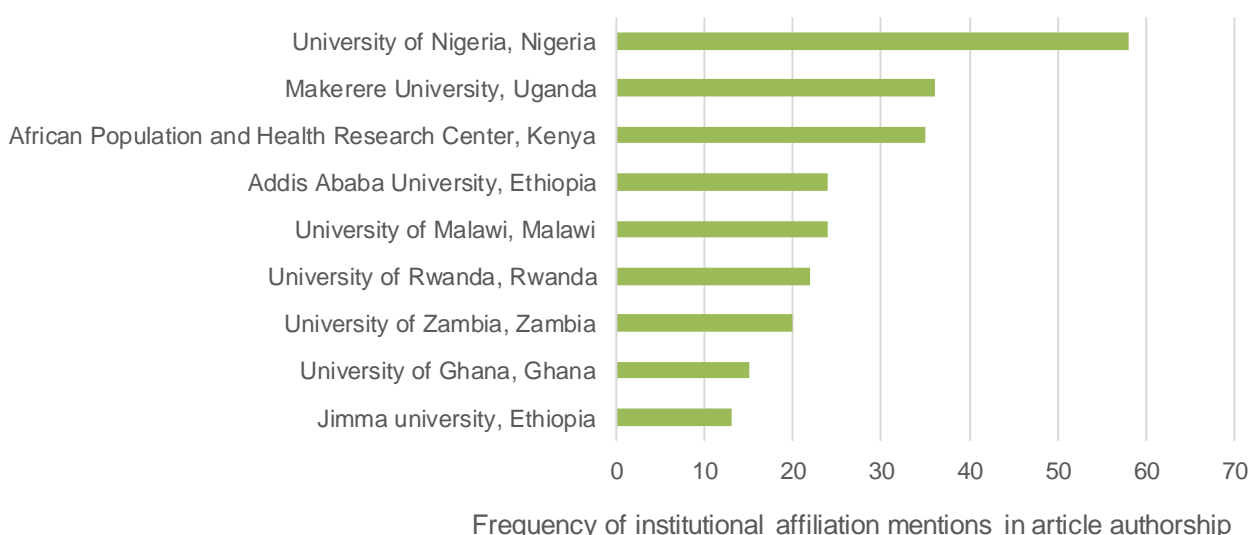


Note: Number of counts with respect to a total of 151 publications: the size of each box corresponds to the frequency of keywords associated with thematic areas as assigned across the identified FLN studies. The same study can cover multiple thematic areas.

## African institutions researching FLN

The University of Nigeria stood out as the institution publishing the highest number of FLN studies, followed by Makerere University, the APHRC and Addis Ababa University (Figure 16). The number of institutional affiliations mentioned in article authorship served as a proxy for both the volume of research output and the breadth of researchers contributing to this body of work. It is important to note that an individual researcher was counted multiple times if they appeared in the authorship of more than one article.

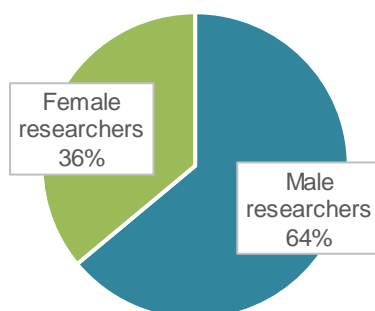
*Figure 16: Leading sub-Saharan African institutions for FLN research*



## Gender of FLN researchers

The gender distribution of SSA-based researchers in FLN studies underscored a persistent pattern of gender disparity in knowledge production. Among the publications included in the analysis, only 36 percent of the authors were women (Figure 17). This imbalance highlighted the need to address barriers to women's participation in educational research and foster a more inclusive research environment. This pattern was similar for SSA-based researchers receiving funding, suggesting that funding opportunities did not increase the possibilities for female authorship.

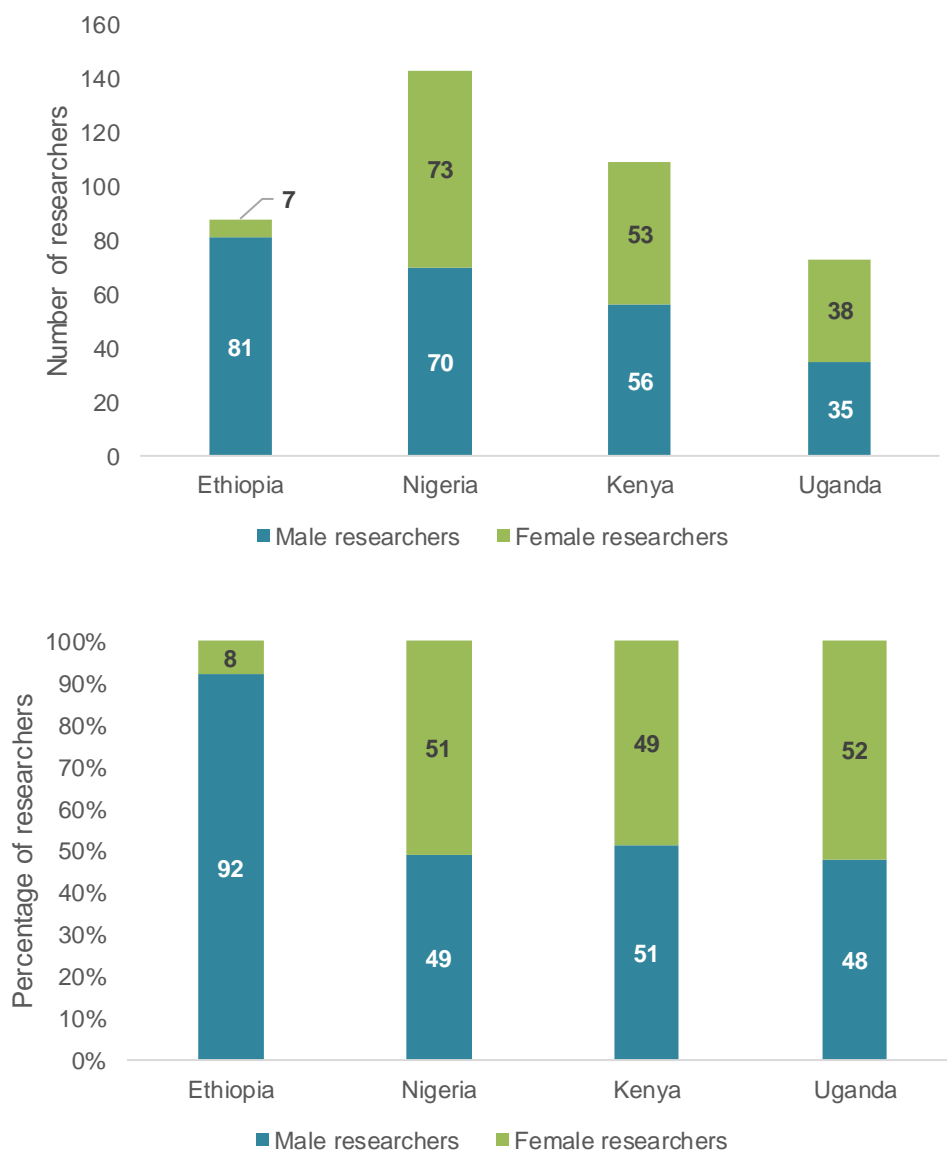
*Figure 17: Researcher gender based on FLN studies*



However, the gender disparity in women's participation in academic research varied across the African continent. A closer look at selected countries with more than 30 FLN publications co-authored by SSA-based researchers (Table 2) illustrated this point. While Kenya showed evidence of closing the gender gap, Nigeria and Uganda exhibited an inverse trend with more women represented, while Ethiopia demonstrated an extreme imbalance in favour of male authors (Figure 18). Understanding these country-specific dynamics can inform targeted interventions to promote gender parity in educational research.



Figure 18: Gender distribution of authors for FLN studies in selected countries (number of researchers)



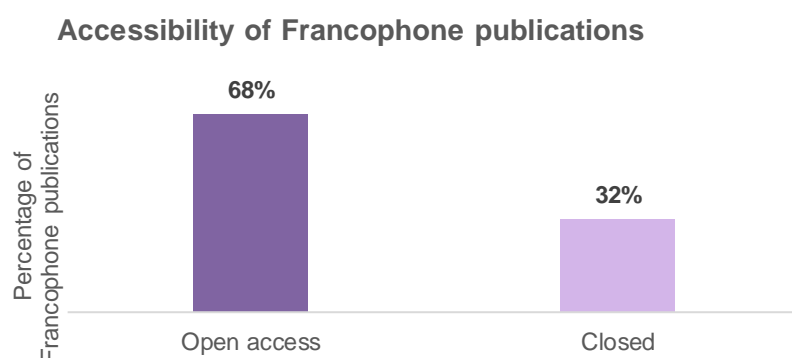
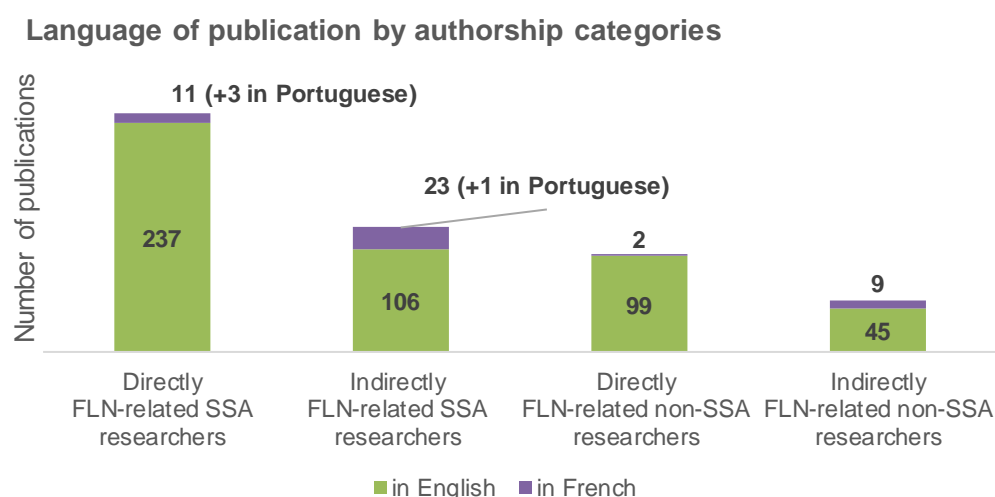
## Francophone FLN publications

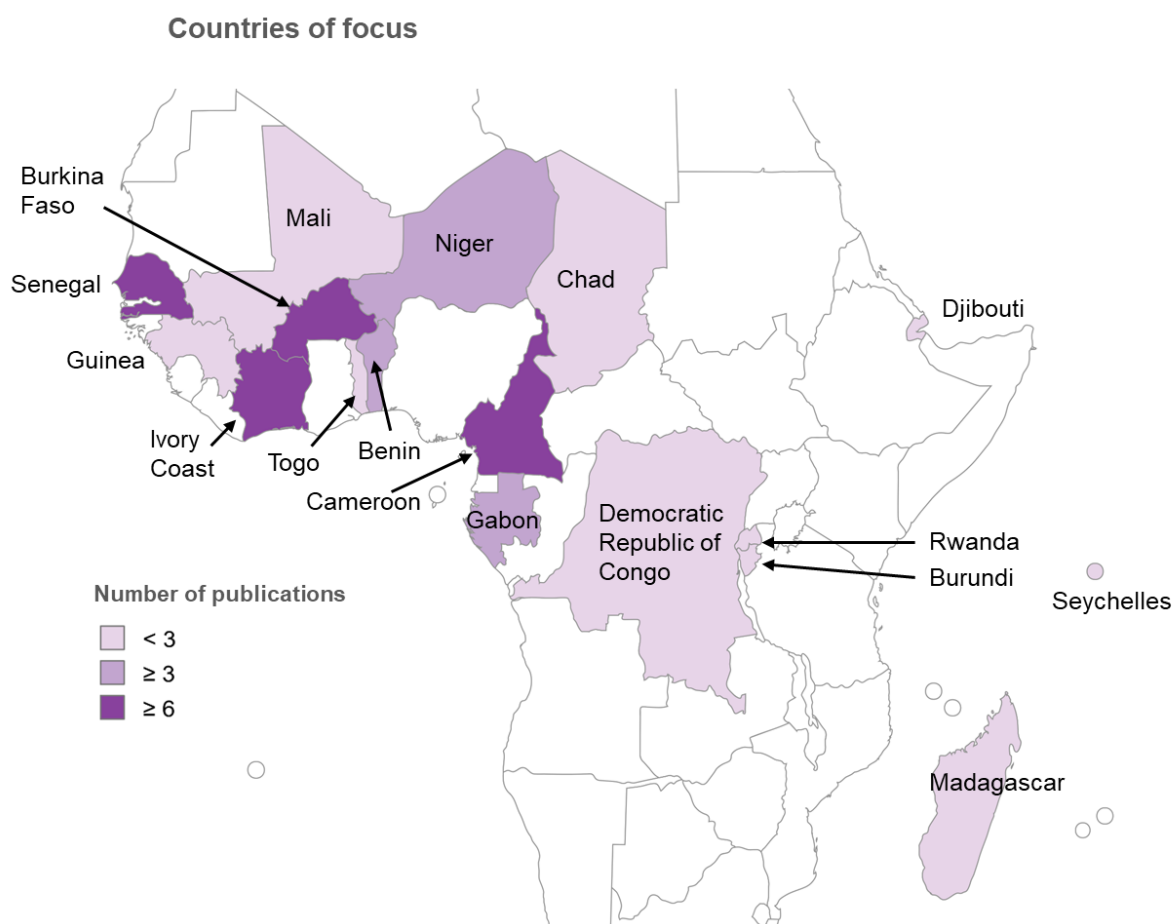
As outlined in the methodology section, conducting literature searches in French was complex. Within the international databases such as Scopus, Web of Science and Dimensions, none of the identified publications were in French, although four were found in Portuguese. Studies that were not indexed in these international databases are often perceived as lower in quality and are frequently overlooked (Collyer, 2018). Therefore it is likely that many relevant FLN publications in French (or other languages) were being overlooked. To try and address this, Francophone databases were consulted, and specific Francophone journals reviewed (see Appendix B).

This approach yielded a total of 45 publications (13 through the search in specific journals), accounting for approximately one-tenth of the entire dataset of identified FLN publications (Figure 19).

More than half of the identified publications were available via open access. Among those not freely accessible, 9 out of 11 were from a book section. Among the 34 Francophone publications identified, research covering 18 French-speaking countries was included (Figure 19). Notably absent were Comoros and Equatorial Guinea, where no publications were identified.

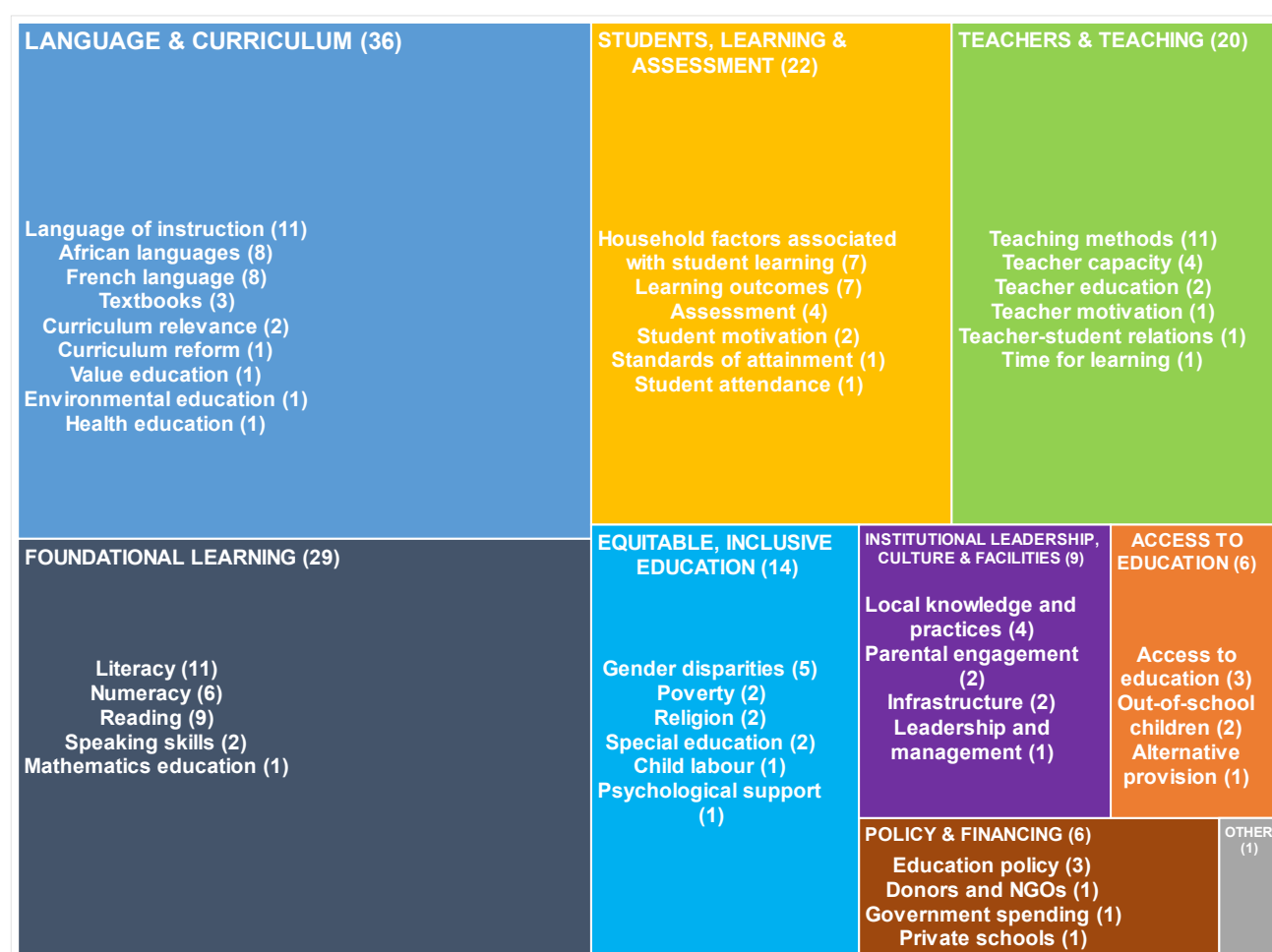
*Figure 19: Language, accessibility and countries of focus of Francophone publications*





A notable observation was the higher number of indirectly relevant (23) compared to directly relevant (11) publications co-authored by SSA-based researchers. This suggested that while the research outputs included language of instruction, literacy and teaching methods, they rarely connected these to learning outcomes (Figure 20).

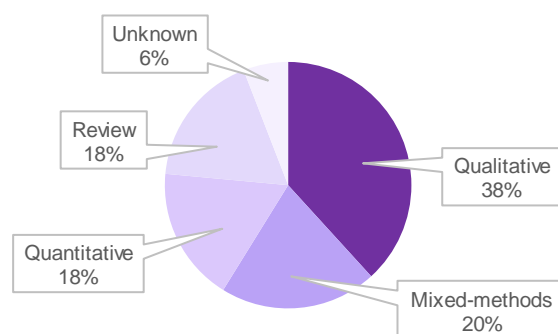
Figure 20: Mapping the Francophone FLN themes by SSA researchers



Note: Number of counts with respect to a total of 34 publications: the size of each box corresponds to the frequency of keywords associated with thematic areas as assigned across the identified FLN studies. The same study can cover multiple thematic areas.

An important observation regarding the characteristics of the Francophone dataset was the methodology employed in research. Figure 21 reveals that there were twice as many qualitative studies as quantitative studies. This contrasted with the publications in the entire dataset, where half of the publications were quantitative (see Figure 10).

Figure 21: Research methods used in Francophone FLN studies<sup>viii</sup>



Out of 64 publications co-authored by SSA-based researchers in Francophone countries, nearly half were published in English (31). Table 7 examines the number of publications in these countries, noting that several countries may be studied in one publication. This revealed that SSA-based researchers were rarely publishing in French in Francophone countries like Cameroon, Ivory Coast, Madagascar, Rwanda<sup>ix</sup> and Seychelles.

The publication concerning the Central African Republic in Table 7 was identified in English in Scopus, authored by researchers affiliated with the University of Cheikh Anta Diop in Senegal. Publishing in English may be incentivised by the desire to reach a wider readership and gaining more citations within the scientific community (Bahji et al., 2023; Fejes & Nylander, 2017).

Publications by non-SSA based authors were predominantly in English. Out of 32 Francophone countries, only eight were in French. This raises questions about their dissemination and uptake by policymakers, particularly in countries where English is rarely used, such as Burkina Faso and Mali.

Table 7: Language of FLN publications in Francophone countries

	Publications (co-)authored by at least one SSA-based researchers	Publications authored by non- SSA-based researchers		
Francophone countries <sup>x</sup>	Number of times Francophone countries are studied			
	in <b>French</b>	in <b>English</b>	in <b>French</b>	in <b>English</b>
Benin	4	-	1	1
Burkina Faso	9	-	-	5
Burundi	2	-	-	1
Cameroon	7	4	-	1
Central African Republic	-	1	-	-
Comoros	-	-	-	-
Democratic Republic of Congo	1	1	-	3
Djibouti	1	-	-	-
Equatorial Guinea	-	-	-	-
Gabon	3	-	-	-
Guinea	1	-	-	-
Ivory Coast	5	5	-	1
Madagascar	2	3	1	2
Mali	2	-	-	2
Niger	3	-	1	2
Republic of the Congo	1	-	-	
Rwanda	2	10	1	6
Senegal	9	3	2	4
Seychelles	-	1	-	2
Togo	2	-	-	3

Table 8 lists all the journals from which the publications in French have been sourced. Except for the African Development Review, the journals primarily published studies in French. The head offices of the top four are based in France or Belgium with an international editorial board. However, Synergies des Grands Lacs has several editorial members based in SSA countries.<sup>xi</sup>

None of these journals provided information regarding the funding of the studies. Additionally, citation counts were unavailable in the Francophone databases, and among the identified publications, 11 out 16 Francophone journals were not assessed by Scimago (Table 8).

*Table 8: List of journals publishing Francophone FLN research co-authored by at least one SSA-based researcher*

Francophone journals	Number of publications	Impact factor 2022
Revue Internationale d'Education de Sèvres	7	not available
Cahiers du CEDIMES	2	not available
Éducation et Sociétés	2	0.1
Synergies des Grands Lacs	2	0.1
African Development Review	1	0.75
Autrepart	1	not available
Cognition Représentation Langages	1	not available
Djiboul	1	not available
Études Créoles	1	not available
Genre Éducation Formation	1	not available
Glottopol	1	not available
La Revue Internationale de l'Education Familiale	1	not available
Le Journal des Psychologues	1	not available
Recherches En Éducation	1	not available
Revue d'Economie du Développement	1	0.12
Revue Française de Pédagogie	1	0.12

## Francophone researchers and institutions

In contrast to the trend observed in the entire dataset, where the majority of collaborations occurred within country (see Figure 6), Francophone researchers appear to engage less frequently in collaboration. Specifically, 65 percent of the identified Francophone publications were authored by a sole researcher (Figure 22). In addition, the unequal representation of female authors is more pronounced within Francophone FLN publications than the general trend, with only 18 percent of the authors identified as women (Figure 22).

*Figure 22: Collaboration patterns and gender distribution of Francophone researchers*

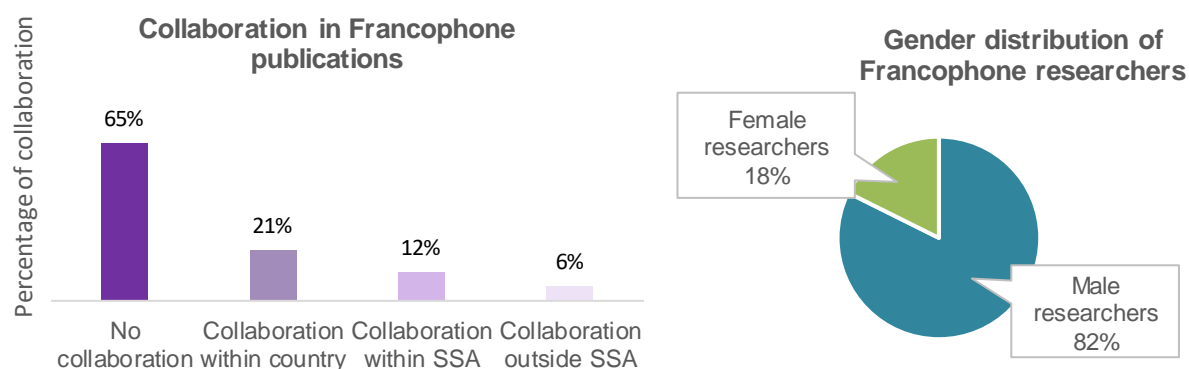


Table 9 lists the key Francophone institutions, highlighting the limited number of FLN publications produced by each. Although universal basic quality education and foundational skills appeared as a priority for France as the fourth top donor to FLN (after USA, UK and Canada), it did not present an FLN-specific strategy (SEEK Development, 2024). This may impact the funding available, and therefore the knowledge production priorities of these institutions.

*Table 9: Top 10 Francophone institutional affiliation of researchers*

Institutions	Frequency of institutional affiliation mentions in article authorship
Confemen	4
Université Félix Houphouët-Boigny d'Abidjan, Ivory Coast	4
Université Ouaga I Pr Joseph KI-ZERBO, Burkina Faso	4
Université d'Abomey – Calavi, Benin	4
Université Cheikh Anta Diop de Dakar, Senegal	3
Université de Maroua, Cameroun	3
Université Gaston Berger, Senegal	3
École Normale Supérieure, Burkina Faso	2
Université de Yaoundé I, Cameroun	2
Université du Rwanda, Rwanda	2

## 4. Challenges and limitations

Mapping FLN research in SSA presented challenges and limitations. The limitation of the search string was particularly pronounced in the case of Francophone and Lusophone searches, where the identification of relevant keywords in French and the limited availability of publications in these languages in international databases presented significant hurdles (Binesse, Rose & Silva, 2023).

The identified Francophone and Lusophone databases lacked advanced search functionalities, necessitating manual online screening of search results. This process was not only labour-intensive but also susceptible to oversight, especially considering that the exercise was conducted by a single individual. Despite meticulous effort to identify relevant publications in French and Portuguese, we acknowledge the possibility of inadvertent omission. Given that only four publications were identified in Portuguese, the results were not included as a separate analytic section in this report.



## 5. Conclusion and recommendations

There is a noticeable surge in global effort to tackle FLN challenges, associated with overarching initiatives such as the Sustainable Development Goal 4 and the Continental Education Strategy for Africa (CESA 2016-2025). Despite this growing interest, our mapping exercise revealed a relatively limited number of publications on FLN, totalling 536 publications over the past nine years in 48 SSA countries. Of these, 381 included an SSA-based author. This highlighted the limited evidence available for African policymakers to draw upon. However, there is a promising upward trend in publications.

Our analysis highlighted significant disparities in language and geographic representation within FLN research. Most publications were in English which accounted for 90 percent of all identified publications. This may be partly attributed to funding availability, as the USA and the UK are the main bilateral donors for FLN. Collaboration with researchers from the Global North was more common than across SSA countries. Several publications resulted from these North-South collaborations, often in higher impact journals.

Our mapping further indicated the scarcity of an intersectional focus on equitable learning outcomes, with disability being a particularly neglected theme. This indicated a critical gap that needs to be addressed to ensure more inclusive educational research.

Gender disparities in authorship were also evident in the research landscape, and even more so in Francophone countries. Significant barriers existed regarding women's participation in educational research. Country-specific variations in gender representation highlighted the importance of localised strategies to promote gender equity in research and publications across the African continent.

In conclusion, while African publications on FLN is growing, significant challenges remain. Addressing language barriers, promoting collaboration across SSA countries, ensuring a focus on inequalities in learning outcomes, and addressing gender disparities in authorship are important steps towards strengthening the evidence base and making research more accessible and relevant for African policymakers.

## Recommendations

These recommendations are intended for stakeholders involved in FLN research and education policy development.

**Strengthen research visibility of publications in different languages:** Academic institutions, governments and publishers need to address language barriers by improving availability, visibility and accessibility of FLN research in languages other than English.

- Academic institutions, publishers, and donors should convene to develop strategies for more inclusive practices in academic publishing, including improving the functioning of databases of French-language journals to facilitate the identification of, and access to, relevant publications.

**Diversify funding sources:** Funding sources need to be expanded and diversified for FLN research beyond traditional bilateral donors to further include philanthropic organisations and national government institutions in SSA.

- Grant research initiatives should foster partnerships with diverse stakeholders to ensure sustainable funding support for FLN research initiatives.

**Ensure a focus on aspects of inequality in FLN research:** All stakeholders should increase their focus on identifying and addressing challenges faced in access to quality education by marginalised groups.

- Research initiatives should focus on intersecting forms of marginalisation to better understand and meet the needs of diverse communities.

**Promote gender equity in authorship:** Academic institutions, governments and funders should encourage and support initiatives that aim to address barriers faced by female researchers in SSA.

- Research initiatives should foster mentorship and training to build capacity and enhance female researchers' visibility in the academic community.

**Promote collaboration across SSA countries:** Establish and strengthen FLN networks' activities and influence within SSA.

- Efforts should be made to facilitate collaboration and knowledge sharing among SSA countries, enhancing regional research capacity and impact.

## References

- Asare, S., Mitchell, R., & Rose, P. (2021). How accessible are journal articles on education written by sub-Saharan Africa-based researchers? *Development and Change*, 52(3), 661–669. <https://doi.org/10.1111/dech.12639>
- Bahji, A., Acion, L., Laslett, A.-M., & Adinoff, B. (2023). Exclusion of the non-English-speaking world from the scientific literature: Recommendations for change for addiction journals and publishers. *Nordic Studies on Alcohol and Drugs*, 40(1), 6–13. <https://doi.org/10.1177/14550725221102227>
- Beeharry, G. (2021). The pathway to progress on SDG 4 requires the global education architecture to focus on foundational learning and to hold ourselves accountable for achieving it. *International Journal of Educational Development*, 82, 102375. <https://doi.org/10.1016/j.ijedudev.2021.102375>
- Binesse, H., Rose, P., & Silva, R. (2023). *Literature search protocol: Mapping African-led Foundational Literacy and Numeracy publications in English, French and Portuguese*. <https://www.educ.cam.ac.uk/centres/real/researchprojects/ongoing/mapping-education-sub-saharan-africa/Literature-search-protocol-mapping-FLN-research-in-languages.pdf>
- 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>
- Collyer, F. M. (2018). Global patterns in the publishing of academic knowledge: Global North, global South. *Current Sociology*, 66(1), 56–73. <https://doi.org/10.1177/0011392116680020>
- Fejes, A., & Nylander, E. (2017). The economy of publications and citations in educational research: What about the ‘Anglophone bias’? *Research in Education*, 99(1), 19–30. <https://doi.org/10.1177/0034523717740146>
- Maclure, R. (2006). No longer overlooked and undervalued? The evolving dynamics of endogenous educational research in sub-Saharan Africa. *Harvard Educational Review*, 76(1), 80–109. <https://doi.org/10.17763/haer.76.1.1855703m42272353>
- McLean, R. K. D., & Sen, K. (2019). Making a difference in the real world? A meta-analysis of the quality of use-oriented research using the *Research Quality Plus* approach. *Research Evaluation*, 28(2), 123–135. <https://doi.org/10.1093/reseval/rvy026>
- Mitchell, R., Rose, P., & Asare, S. (2020). Education research in sub-Saharan Africa: Quality, visibility, and agendas. *Comparative Education Review*, 64(3), 363–383. <https://doi.org/10.1086/709428>
- Mitchell, & Rose. (2018). *Literature search protocol for the African Education Research Database*. Zenodo. <https://doi.org/10.5281/ZENODO.1245521>
- SEEK Development. (2023). *Understanding funding for Foundational Literacy and Numeracy (FLN) summary report*.

SEEK Development. (2024). *FLN profile: France*. Donor Tracker. <https://donortracker.org/fln/France-FLN-Profile>

UNESCO. (2022). *Spotlight on basic education completion and foundational learning in Africa, 2022: Born to learn*. <https://unesdoc.unesco.org/ark:/48223/pf0000383289>

Vera-Baceta, M.-A., Thelwall, M., & Kousha, K. (2019). Web of Science and Scopus language coverage. *Scientometrics*, 121(3), 1803–1813. <https://doi.org/10.1007/s11192-019-03264-z>

World Bank, UNESCO, UNICEF, FCDO, USAID, & Bill & Melinda Gates Foundation. (2022). *The State of Global Learning Poverty: 2022 Update* (p. 77). <https://thedocs.worldbank.org/en/doc/e52f55322528903b27f1b7e61238e416-0200022022/original/Learning-poverty-report-2022-06-21-final-V7-0-conferenceEdition.pdf>

## Appendices

### Appendix A: search string developed and used for the project

("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** 48 SSA countries

### Appendix B – List of Francophone journals searched

- [Africa Development](#)
- [African Development Review](#)
- [Cahiers d'études africaines](#)
- [Cahiers de la recherche sur l'éducation et les savoirs](#)
- [CEDIMES](#)
- [Éducation et francophonie](#)
- [Infundibulum Scientific](#)
- [Les sciences de l'éducation Pour l'ère nouvelle](#)
- [Nouveaux cahiers de la recherche en éducation](#)
- [Recherche en éducation](#)
- [Revue des sciences de l'éducation](#)
- [Revue Djiboul](#)
- [Revue internationale d'éducation de Sèvres](#)
- [Synergies Afrique des Grands Lacs](#)

## Appendix C – full references of the most cited FLN publications

- Abrami, P. C., Wade, C. A., Lysenko, L., Marsh, J., & Gioko, A. (2016). Using educational technology to develop early literacy skills in Sub-Saharan Africa. *Education and Information Technologies*, 21(4), 945–964. <https://doi.org/10.1007/s10639-014-9362-4>
- Akyeampong, K. (2017). Teacher educators' practice and vision of good teaching in teacher education reform context in Ghana. *Educational Researcher*, 46(4), 194–203. <https://doi.org/10.3102/0013189X17711907>
- Angrist, N., De Barros, A., Bhula, R., Chakera, S., Cummiskey, C., DeStefano, J., Floretta, J., Kaffenberger, M., Piper, B., & Stern, J. (2021). Building back better to avert a learning catastrophe: Estimating learning loss from COVID-19 school shutdowns in Africa and facilitating short-term and long-term learning recovery. *International Journal of Educational Development*, 84, 102397. <https://doi.org/10.1016/j.ijedudev.2021.102397>
- Azigwe, J. B., Kyriakides, L., Panayiotou, A., & Creemers, B. P. M. (2016). The impact of effective teaching characteristics in promoting student achievement in Ghana. *International Journal of Educational Development*, 51, 51–61. <https://doi.org/10.1016/j.ijedudev.2016.07.004>
- Clarke, S. E., Rouhani, S., Diarra, S., Saye, R., Bamadio, M., Jones, R., Traore, D., Traore, K., Jukes, M. C., Thuilliez, J., Brooker, S., Roschnik, N., & Sacko, M. (2017). Impact of a malaria intervention package in schools on *Plasmodium* infection, anaemia and cognitive function in schoolchildren in Mali: A pragmatic cluster-randomised trial. *BMJ Global Health*, 2(2), e000182. <https://doi.org/10.1136/bmjgh-2016-000182>
- Haile, D., Nigatu, D., Gashaw, K., & Demelash, H. (2016). Height for age z score and cognitive function are associated with Academic performance among school children aged 8–11 years old. *Archives of Public Health*, 74(1), 17. <https://doi.org/10.1186/s13690-016-0129-9>
- Jukes, M. C. H., Turner, E. L., Dubeck, M. M., Halliday, K. E., Inyega, H. N., Wolf, S., Zuilkowski, S. S., & Brooker, S. J. (2017). Improving literacy instruction in Kenya through teacher professional development and text messages support: A cluster randomized trial. *Journal of Research on Educational Effectiveness*, 10(3), 449–481. <https://doi.org/10.1080/19345747.2016.1221487>
- Lederman, J., Lederman, N., Bartels, S., Jimenez, J., Akubo, M., Aly, S., Bao, C., Blanquet, E., Blonder, R., Bologna Soares De Andrade, M., Buntting, C., Cakir, M., EL-Deghaidy, H., ElZorkani, A., Gaigher, E., Guo, S., Hakanen, A., Hamed Al-Lal, S., Han-Tosunoglu, C., ... Zhou, Q. (2019). An international collaborative investigation of beginning seventh grade students' understandings of scientific inquiry: Establishing a baseline. *Journal of Research in Science Teaching*, 56(4), 486–515. <https://doi.org/10.1002/tea.21512>
- Nsangi, A., Semakula, D., Oxman, A. D., Austvoll-Dahlgren, A., Oxman, M., Rosenbaum, S., Morelli, A., Glenton, C., Lewin, S., Kaseje, M., Chalmers, I., Fretheim, A., Ding, Y., & Sewankambo, N. K. (2017). Effects of the informed health choices primary school intervention on the ability of children in Uganda to assess the reliability of claims about treatment effects: A cluster-

randomised controlled trial. *The Lancet*, 390(10092), 374–388.  
[https://doi.org/10.1016/S0140-6736\(17\)31226-6](https://doi.org/10.1016/S0140-6736(17)31226-6)

- Ojanen, E., Ronimus, M., Ahonen, T., Chansa-Kabali, T., February, P., Jere-Folotiya, J., Kauppinen, K.-P., Ketonen, R., Ngorosho, D., Pitkäänen, M., Puhakka, S., Sampa, F., Walubita, G., Yalukanda, C., Pugh, K., Richardson, U., Serpell, R., & Lyytinen, H. (2015). GraphoGame—A catalyst for multi-level promotion of literacy in diverse contexts. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00671>
- Piper, B., Destefano, J., Kinyanjui, E. M., & Ong'ele, S. (2018). Scaling up successfully: Lessons from Kenya's Tusome national literacy program. *Journal of Educational Change*, 19(3), 293–321. <https://doi.org/10.1007/s10833-018-9325-4>
- Piper, B., Schroeder, L., & Trudell, B. (2016). Oral reading fluency and comprehension in Kenya: Reading acquisition in a multilingual environment. *Journal of Research in Reading*, 39(2), 133–152. <https://doi.org/10.1111/1467-9817.12052>
- Piper, B., Zuilkowski, S. S., Kwayumba, D., & Strigel, C. (2016). Does technology improve reading outcomes? Comparing the effectiveness and cost-effectiveness of ICT interventions for early grade reading in Kenya. *International Journal of Educational Development*, 49, 204–214. <https://doi.org/10.1016/j.ijedudev.2016.03.006>
- Pitchford, N. J. (2015). Development of early mathematical skills with a tablet intervention: A randomized control trial in Malawi. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00485>
- Pitchford, N. J., Kamchedzera, E., Hubber, P. J., & Chigeda, A. L. (2018). Interactive Apps promote learning of basic mathematics in children with special educational needs and disabilities. *Frontiers in Psychology*, 9, 262. <https://doi.org/10.3389/fpsyg.2018.00262>
- Pitchford, N. J., & Outhwaite, L. A. (2016). Can touch screen tablets be used to assess cognitive and motor skills in early years primary school children? A cross-cultural study. *Frontiers in Psychology*, 7. <https://doi.org/10.3389/fpsyg.2016.01666>
- Stranger-Johannessen, E., & Norton, B. (2017). The African Storybook and language teacher identity in digital times. *The Modern Language Journal*, 101(S1), 45–60. <https://doi.org/10.1111/modl.12374>
- Trudell, B. (2016). Language choice and education quality in Eastern and Southern Africa: A review. *Comparative Education*, 52(3), 281–293. <https://doi.org/10.1080/03050068.2016.1185252>
- Williams, T. P. (2017). The political economy of primary education: Lessons from Rwanda. *World Development*, 96, 550–561. <https://doi.org/10.1016/j.worlddev.2017.03.037>
- Zuilkowski, S. S., Jukes, M. C. H., & Dubeck, M. M. (2016). “I failed, no matter how hard I tried”: A mixed-methods study of the role of achievement in primary school dropout in rural Kenya. *International Journal of Educational Development*, 50, 100–107. <https://doi.org/10.1016/j.ijedudev.2016.07.002>

## Endnotes

---

<sup>i</sup> See <https://transformingeducationsummit.sdg4education2030.org/CTALearning>

<sup>ii</sup> <https://essa-africa.org/AERD>

<sup>iii</sup> These publications do not include ones solely authored by non-SSA researchers (categories 3 and 4) as they are not included in African Education Research Database searches, which consequently slightly biases some comparisons made between publications in categories 1- 2 and those in categories 3 - 4. However, it does not affect the analysis significantly.

<sup>iv</sup> In our mapping exercise, international organisations include intergovernmental organisations, governments and academic institutions outside SSA, and Non-Governmental Organisations registered outside SSA.

<sup>v</sup> See [www.scimagojr.com](http://www.scimagojr.com)

<sup>vi</sup> In our mapping, alongside the keyword “literacy”, the keyword “reading” is employed in studies focusing specifically on the teaching and learning of reading skills.

<sup>vii</sup> Alongside “numeracy”, the keyword “mathematics education” is employed in studies focusing specifically on the teaching and learning of mathematical skills (counting, problem solving, arithmetic, etc.).

<sup>viii</sup> The methodology is labelled as “unknown” for publications with closed access and insufficient detail in the abstract to ascertain the methodology.

<sup>ix</sup> Since 2008, English replaced French as the official language of instruction.

<sup>x</sup> List of African countries where French is an official language.

<sup>xi</sup> For more details, visit <https://gerflint.fr/afrique-des-grands-lacs>



### REAL Centre

Faculty of Education  
University of Cambridge  
184 Hills Road, Cambridge  
CB2 8PQ, UK  
Email: [REALCentre@educ.cam.ac.uk](mailto:REALCentre@educ.cam.ac.uk)  
X @REAL\_Centre  
in @real-centre

[www.educ.cam.ac.uk/centres/real](http://www.educ.cam.ac.uk/centres/real)

### ESSA

3rd Floor, Chancery House  
St Nicholas Way  
Sutton SM1 1JB, UK  
Email: [info@essa-africa.org](mailto:info@essa-africa.org)  
X @ESSA\_Africa  
in @essa1

<https://essa-africa.org/>