Disability data collection in schools in Sierra Leone

Phase 3 report
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Sightsavers

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Executive Summary

Study background and objectives

For Sierra Leone to meet its commitments to inclusive education for children with disabilities, the country needs an Education Management Information System (EMIS) which holds accurate and reliable data on children with disabilities. This information is crucial to ensure that planning and resource allocation takes the needs of these children into account, and so that their inclusion and progress in education can be adequately tracked and monitored.

This report presents findings from the third phase of a research study conducted by Sightsavers, in collaboration with the Sierra Leone Ministry of Basic and Senior Secondary Education (MBSSE), to generate insights into how information on children with disabilities could be better integrated into the country's EMIS.

Phase 1 of the study analysed Sierra Leone's current EMIS from a disability-inclusion perspective, and identified the need to strengthen the country's EMIS, standardising disability data and data collection processes, enhancing use of disability data, and shifting towards a system which holds individual child records as well as school level data. Phase 2 of the study tested feasibility of individual-level disability data collection by teachers in schools, using the standardised Washington Group Short Set (WG-SS) and the Child Functioning Module – Teacher Version (CFM-TV). While both tools were found to be feasible, there were some concerns about data variability across teachers and schools, particularly with the CFM-TV. Findings from Phases 1 and 2 of the study are available at **https://research.sightsavers.org/project/sierra-leone-disability-data/**.

Methodology

Phase 3 of the study used a mixed methods design, with data collection during the second half of 2023. Data was collected from the same eight schools (4 primary and 4 junior secondary) that participated in Phase 2 of the study.

Participants and methods were as follows:

- Children who had been assessed by teachers during Phase 2 of the study as having 'a lot of difficulty' or 'cannot do at all' in the domains of seeing, hearing or walking/climbing were referred for clinical assessment. A small number of additional children who teachers had subsequently become concerned about were also clinically assessed. Results of teacher assessments were then compared to outcomes of clinical assessment.
- Disability data on individual children who had been previously supported by the Sightsavers Education for All inclusive education programme at study schools, and assessed by teachers during Phase 2 of the study, were extracted from programmatic records, to understand whether teachers had identified children with known disabilities as having functional difficulties.
- For each child who was assessed by teachers during Phase 2 of the study, school attendance and academic outcome data for 2023 Term 3 was extracted from school

records. Data was assessed for any relationship between functional difficulty status, and school attendance or academic outcomes.

- Focus group discussions (FGDs) were conducted with teachers at each of the 8 study schools to understand their experiences with using the WG-SS or CFM-TV, and how they used the data generated to inform their teaching.
- In depth interviews (IDIs) were also conducted with one headteacher and with EMIS officials, who had been involved in an MBSSE pilot of the WG-SS in one of the study schools concurrently with Phase 2 of the study, to understand key learnings from this pilot.

Quantitative data was analysed using Stata version 18. Statistical significance of relationships was assessed using chi squared and t tests as appropriate. FGDs and IDIs were transcribed verbatim, and thematically analysed using Nvivo.

Results

All children identified by teachers as having functional difficulty with seeing were found to have an eye condition on clinical assessment, but none of them were found to have visual impairment using World Health Organisation (WHO) definitions. All children identified by teachers as having functional difficulty with hearing who were clinically assessed were found to have hearing impairment using World Health Organisation (WHO) definitions. Only one of the four children identified by teachers as having difficulty with mobility was found to have a mobility related impairment on clinical examination. Findings suggest that in the seeing and hearing domains, children identified with functional difficulties do have clinically verifiable difficulties, but that these may or may not correspond to clinically defined criteria of disability. However, small sample size means findings must be treated with caution.

A small number of children who teachers had not identified as having functional difficulties, but did have concerns about, were also clinically assessed. In the domains of seeing and hearing, all children were found to have an impairment or health condition. In the domain of mobility, 4 of the 7 children assessed were found to have an impairment.

A total of 10 children could be identified in both the Education for All programmatic data and in the study's Phase 2 dataset. There were 4 children with visual impairment in the programmatic data, but none of these had been identified during the functional difficulty assessments. Of the 5 children with mobility impairment in the programmatic data, only 1 had been identified during the functional difficulty assessment. There was only 1 child in the programmatic data with hearing impairment, and this child had been correctly identified during the functional difficulty assessment. This data suggests that a number of children with impairments or disabilities were not identified during the functional difficulty assessments.

At primary schools using the CFM-TV, girls with functional difficulties had slightly better attendance than those without. This was most evident among girls with emotional or behavioural difficulties. There was no relationship for boys or overall. At junior secondary schools using the CFM-TV, children with functional difficulties had lower attendance than those without. This was again most evident among children with emotional and behavioural difficulties. In schools using the WG-SS, there was no evidence for a relationship between school attendance and functional difficulty.

The relationships between functional difficulty and academic outcomes in our data were very unclear. At primary school level, children with functional difficulties identified by the CFM-TV had better academic outcomes than those without. This was most evident for the group of children with behavioural or emotional difficulties. Girls with functional difficulties identified by the WG-SS performed before than those without, but given very small numbers, this finding needs to be treated with caution.

During FGDs, teachers expressed generally positive feedback about the feasibility of using both the WG-SS and the CFM-TV, and reported value in the process of systematically thinking about each child and any difficulties they might be experiencing. Teachers reported making use of the data they generated to inform and strengthen their teaching for greater disability inclusion. They also reported that they become more aware of disability and the need for disability inclusion as a result of participation in this process. Teachers reported using a range of strategies to support children that they identified as having functional difficulties, including recognising individual learning differences, adjusting classroom seating arrangements, using different handwriting for the board, trying different teaching practices, and addressing issues of stigma and discrimination. Teachers spoke about the need for additional training in disability inclusive education to support them in meeting different needs which they now felt more able to identify. Teachers also spoke of the need for guidance on reasonable accommodations, resources to support disability inclusive education, and clear clinical referral pathways for children identified with functional difficulties.

Conclusion

Teachers participating in this study provided positive feedback about the value of the process of functional difficulty assessments and had used them to strengthen their teaching to support greater disability inclusion. However, the quantitative data examined highlights the limitations of the functional difficulty assessments in reliably identifying all children with impairments or disabilities. While the tools may offer considerable value when used by teachers in classrooms, they cannot replace clinical screening and assessment processes.

Introduction

It is estimated that there are 240 million children with disabilities worldwide. A large proportion of these children live in low- and middle-income countries (LMICs), where diagnostic facilities and record keeping on children with disabilities and special needs continue to be challenging (1). Evidence suggests that in many LMICs children with disabilities are less likely to receive early years stimulation, adequate care and attend pre-primary, primary or secondary education (2).

The sustainable development goal for education (SDG 4) calls for ensuring inclusive quality education and for promoting lifelong learning opportunities for all children irrespective of their social background, residence or disability status. Despite this global commitment, some data shows that the progress towards inclusive equitable education for all has stagnated, and that the gap in educational achievement between children with and without disabilities is widening (3).

Those children with disabilities who do enrol in education often lag in attendance and learning, and are more likely to drop out before completing the minimum level of schooling. In most LMICs, measuring the progress of children with disabilities in schools is very challenging as educational data is not typically collected in a way which allows disaggregation by disability status (4). Many countries collect disability data only as part of their Annual School Census (ASC), once a year and in an aggregate form, making real time monitoring of students' attendance, retention and academic achievement difficult (5).

Disability among school children in Sierra Leone

Sierra Leone's 2022 Annual School Census (ASC) reported that 44,792 children with disabilities were enrolled in schools, which constitutes around 1.3% of all learners. Disability domains reported in the ASC include seeing (27.1% of all disabilities), hearing (21.3%), learning (19.9%), speech (17.8%) and physical (13.8%) (6). Phase 1 of the current study, conducted in eight schools at the same time as the 2022 ASC, found overall prevalence of functional difficulties among school children at 1.8% using the Washington Group Short Set (WG-SS), and 14.7% using the Child Functioning Module-Teacher Version (CFM-TV) (7).

The 2017 population-based Multiple Indicator Cluster Survey (MICS), which also includes children not enrolled in schools, estimated that 23% of children aged 5-17 years had a functional difficulty, as measured by the UNICEF/Washington Group Child Functioning Module (CFM). The domains with the highest prevalence of functional difficulty were anxiety (13%), depression (9%), accepting change (3%), walking (3%) and controlling behaviour (2.5%) (8). A comparative analysis of data collected through schools and in the MICS survey suggests that the school data underestimates the prevalence of disability among school learners, and also that a significant number of learners with disabilities, most likely those with more severe and complex disabilities, are currently out of school (9).

The government of Sierra Leone prioritises the inclusion of learners from vulnerable and marginalised backgrounds in education, including learners with disabilities, and has called for urgent improvements in the collection of inclusive data in the education sector (10). In recent years, to address availability and quality of disability data, the Ministry of Basic and Senior Secondary Education (MBSSE) and its development partners have embarked on several initiatives. Through the National Policy on Radical Inclusion in Schools, education officials will monitor access, retention and progression of children with disability through regular data collection (11). The current Education Sector Plan (ESP) specifically targets children with special needs by working with parents/careers and specialized ministries to screen children, identify their specific needs, make the learning environment inclusive and provide them with assistive devices. To ensure effective coordination of education databases, the Education Data Working Group (EDWG) has been proposed to establish a central database where individual agency data will be fed, though formal work has not yet begun (10).

Study rationale and structure

Working in collaboration with the MBSSE, Sightsavers developed and implemented a research study to generate insight into how information on children with disabilities could be integrated into the country's EMIS, in support of the objective of ensuring that the country's schooling system is able to meet the needs of children with disabilities. This report presents the third phase of this multicomponent study. It builds on and investigates findings and questions emerging from the first 2 phases of the study, which are summarised below.

Phase 1 overview

Phase 1 of the study was conducted in 2021-2022 and analysed the current EMIS in Sierra Leone. The Phase 1 report can be found at **https://research.sightsavers.org/wp-content/uploads/2022/11/2211_Sightsavers-mapping-the-existing-emis-system-in-sierra-leone.pdf.** Key findings included:

- Although EMIS is supported by the government of Sierra Leone, it does not have a national policy or operational guidelines, and the staff supporting data management are employed on short-term externally funded contracts.
- The Annual School Census (ASC) is the primary data source for EMIS. It is well planned and supervised to ensure methodological soundness, but quality control measures are often circumvented by enumerators, particularly in remote and difficult to reach locations.
- ASC data are not complemented or updated by real-time data, and do not provide access to individual student records at the school level.
- Parallel education data collection systems set up by development partners and projects lead to duplication of efforts and data fragmentation.
- Disability data in EMIS are limited, focusing on a few, primarily visible, types of impairment. Data collection processes are not standardised, and the data is not used to support school-level educational provision for children with disabilities.

- EMIS in Sierra Leone requires significant strengthening and investments in infrastructure to improve its functionality, inclusiveness, and usability.

Phase 2 overview

Phase 2 of the study, conducted in 2022-2023, tested feasibility of collection of disability data by teachers using standardised disability question sets. The study was conducted in ten schools in Bombali and Karene districts of Sierra Leone, where Sightsavers had previously supported an inclusive education project. The study assessed use of the Washington Group Short Set (WG-SS), and the Child Functioning Module Teacher Version (CFM-TV). Following cognitive testing with teachers from two schools, a further 65 teachers from eight primary and junior secondary schools were trained in the use of one of the two question sets. Teachers then used the question set to assess functional difficulties of children they taught, working from their register, and based on their existing knowledge of the child. Teachers did not engage directly with children or conduct specific observations for the purposes of assessment. The Phase 2 report is available at **https://research.sightsavers.org/wp-content/uploads/2024/01/Sightsavers-making-inclusion-count-phase-2-sierra-leone-research-report.pdf**. Key findings and learnings can be summarised as follows:

- Class teachers knew children in their class better than other teachers, and were therefore most suited to answer questions on functional difficulties.
- Overall, both tools were feasible for teachers to use in school settings. Teachers found the shorter WG-SS easier to understand and apply, while some concerns were raised about the length and complexity of the CFM-TV.
- The longer CFM-TV covers a broader range of developmentally important domains than the WG-SS, and consequently identified a larger proportion of children with a wider range of functional difficulties.
- Some teachers experienced difficulties in interpreting certain CFM-TV questions in the cognitive, behavioural, and psychosocial domains.
- Many teachers reported finding the response scales somewhat challenging, and needed support with this. They particularly struggled with the distinction between the 'some difficulty' and 'a lot of difficulty' options.
- There was a high degree of variability in the estimated prevalence of functional difficulty for the four schools using the CFM-TV. There was also a high degree of variability in prevalence levels reported by teachers within individual schools, particularly for those using the CFM-TV, but also for those using WG-SS.

Phase 3: Study objectives and research questions

The third phase of the study sought to better understand the relationship between the functional difficulty data generated by teachers, and other sources of information about disability in schools, as well as children's academic outcomes, and the outcomes of clinical assessment for disability. It also sought to explore the ways in which teachers had used the functional difficulty assessments to inform teaching practices.

The specific research questions answered by the third phase of the study are as follows:

i. What is the relationship between teacher-assessed functional difficulties in the domains of seeing, hearing and walking/climbing, and clinically diagnosed health conditions or impairments?

ii. In study schools, what is the relationship between functional difficulty data generated by the teachers, and disability data from other sources, specifically:
   a. data reported in the 2022 ASC.
   b. data recorded by Sightsavers in the inclusive education project delivered in these schools?

iii. What is the relationship between teacher-assessed functional difficulty in a child, and their school attendance and academic attainment?

iv. How did teachers participating in the study use the functional difficulty data they generated to support teaching and learning?

Methodology

Study design

Phase 3 of the study used a mixed methods design, collecting and analysing both qualitative and quantitative data.

Study settings and participants

Data for this phase of the study was collected in the second half of 2023. Data collection involved the same eight schools (four primary and four junior secondary) in Bombali and Karene districts in northern Sierra Leone where teachers conducted the functional difficulty assessments in Phase 2 of the study. Participants were teachers who had participated in Phase 2 of the study, children who had been assessed by teachers as having functional difficulties in the domains of seeing, hearing or walking/climbing in Phase 2 of the study, and the EMIS teams in Freetown and Karene district.

Data collection and tools

Data collection methods and tools used for each component of Phase 3 of the study are detailed in the following sections of the report.

Clinical assessment

Children identified by teachers during Phase 2 of the study as having 'a lot of difficulty' or 'cannot do at all' in seeing, hearing, or walking, were referred for school-based clinical assessment by specialist institutions. The purpose was to investigate the relationship between the difficulties identified by the teachers, and clinical diagnoses of specific health conditions or impairments. Although the WG-SS and the CFM-TV assessed difficulties in

additional functional domains, including cognitive, behavioural and psychosocial difficulties, children could not be referred as there was no clinical expertise for assessment in the study districts. As clinical screening was conducted nearly a year after functional difficulty assessment, some children had since moved on and could not be clinically assessed. Further, teachers had subsequently become concerned about seeing, hearing or mobility for certain other children not previously identified with functional difficulty. These children were also provided with clinical assessment.

Following clinical assessment, children were provided with required assistive devices and training on device use at school, or, where necessary, were taken to Makeni (the headquarter town for Bombali district) for further investigations, diagnosis and where possible, treatment, including provision of assistive devices.

Secondary data analysis

Review of disability data records

To compare functional difficulty data generated by teachers during Phase 2 of the study with other disability data, we obtained additional disability data from the programmatic records of the Sightsavers' Education for All project, operating in the schools in 2018-2022. Records provided information on the number of children with disabilities supported by the project, and the nature of their disabilities.

Review of academic performance and attendance in school records

Two types of school records were reviewed to extract data on children's attendance and academic performance. First, from each study school, we obtained daily attendance registers for the third term of the 2022/2023 academic year. Standardised attendance registers, with 70 rows, are used in all schools (Appendix 1). Each child is listed in a separate row of the register, with boys listed first, in alphabetical order, and then girls. Columns are used to capture attendance for each child twice daily, with attendance summarised on a weekly and termly basis. For each child, the termly attendance total, out of a total of 118 sessions, was captured.

Secondly, data was extracted on children's academic performance in three core subjects, English language, mathematics and general science. For children in primary grades 1-5 and junior secondary grades 1-2, results of the exams written at the end of the third term were extracted from class records. For children in primary 6 and JSS 3, scores from the external national examinations were used, and were collected from heads of schools or MBSSE when not available in schools.

Focus group discussions (FGD)

FGDs were conducted at each of the eight schools with the teachers who had participated in Phase 2 of the feasibility study – 65 teachers in total. The FGDs explored teachers' reflections on their experiences of using the WG-SS or CFM-TV tools and how they used the functional difficulty data generated in their day-to-day teaching practices. The FGD guide is included as Appendix 2. FGDs lasted 30-45 minutes.

In-depth interviews (IDI)

IDIs were conducted with the headteacher of one school, where the MBSSE had also piloted the WG-SS to collect functional difficulty data, and with the EMIS teams (director and ICT officers) responsible for the education data. The topic guide (Appendix 3) focused on their experience with the data, the usefulness of the data collected, and the capacities required to strengthen disability data collection in schools or scale up the use of WG-SS or CFM-TV.

Data analysis

Quantitative data were managed and analysed using Stata version 18. Qualitative data were transcribed verbatim and analysed thematically using Nvivo software.

Clinical data analysis

Child-level data from the vision, hearing and mobility clinical reports were collated into a single Excel spreadsheet, and then merged with the child-level functional difficulty data from Phase 2 of the study. Variables classifying referral and assessment status, and the results of the assessment, were derived for each individual child as applicable. Variables recording outcome of clinical assessment for vision included both the level of visual impairment (determined using the WHO criteria), and any ocular morbidities that were noted. Variables recording the outcome of clinical assessment for hearing included the level of hearing impairment (determined using the WHO criteria) and any infection noted. The determination of mobility impairment was taken directly from the clinical report.

Review of disability records

Education for All programmatic data for individual children was compiled into an Excel spreadsheet. This was then merged with the child-level functional difficulty data from Phase 2 of the study, to determine which children were still attending study schools at the time when the functional difficulty assessments by teachers were conducted. For children present in both datasets, disability information in the programmatic data was compared to the functional difficulty data from the study.

Review of school records

Percentage attendance was calculated for each child based on the number of sessions attended, out of a total of 118. Where registers had only been completed for part of the term, percentage attendance was calculated using the number of sessions in that part of the term only.

In addition to the attendance data collected from school registers, the analysis also makes use of an attendance variable collected directly from teachers during the functional difficulty assessment process. Teachers were asked to report for each child whether the child's school attendance was 'regular' or 'not so regular', or whether the child had left school altogether.

Children's exam scores, out of 100 for each subject, were also captured into an Excel spreadsheet, prior to merging with the Phase 2 dataset. Where the child did not have a score for a particular subject, this was set to missing. The child's overall score was calculated like by taking the mean of the three subjects. Where a child was missing a score for any one subject, no overall score was calculated.

In order to assess the presence of a relationship between type of functional difficulty and attendance or academic outcomes, while accounting for small numbers of children with functional difficulties in any single domain, domains within the CFM-TV were grouped into 'physical, sensory and communication' which contained the vision, hearing, mobility and speech domains, 'behavioural and emotional' which contained the accepting change, behavioural, making friends, anxiety and depression domains, and 'cognition and learning' which contained the learning, memory & concentration domains. Due to the small number of children identified as having functional difficulty by the WG-SS, and the smaller number of domains covered, no disaggregation by functional difficulty type was conducted on WG-SS data.

Chi squared and t-tests were performed to test the relationships between variables for statistical significance. Where sample size allowed, analysis considered children at primary and secondary levels separately, but this was not always possible. Similarly, where sample size allowed, analysis was conducted separately for boys and girls, but this was not always the case.

Qualitative data analysis

The coding was developed a priori based on the research questions and alongside reading the transcripts. Data were coded and analysed by one researcher and verified by another one.

Ethical considerations

Ethics approval for this study was obtained from the Sierra Leone Ethics and Scientific Review Committee on 17/10/2023. The data collection process and how the findings will be used were explained to all participants. Written informed consent was obtained from participants ahead of each FGD/IDI.

For clinical assessments of children, written informed consent was obtained from each child's parents or caregiver, and verbal assent from children. The outcomes of the clinical assessment were explained to parents or caregivers.

All personally identifiable data were removed prior to data analysis. Data were stored on secure servers and used on password protected computers. Only members of the study team had access to the data.

Results

Relationship between functional difficulty as assessed by teachers, and clinically diagnosed health conditions or impairments

Overview of functional difficulty data generated by teachers

During Phase 2 of the study, 35 teachers at 4 schools (2 primary and 2 junior secondary) assessed 1,738 children aged 5-17 years for functional difficulties using the CFM-TV. A further 30 teachers at 4 other schools (2 primary and 2 junior secondary) assessed 1,346 children for functional difficulties using the WG-SS. Full results of these assessments are presented in the **Phase 2 report**. Table 1 below provides an overall sample size, prevalence of functional difficulty (FD) using standard cutoffs ('a lot of difficulty' and 'cannot do at all'), and sample demographics.

Table 1: Overview of functional assessment data generated by teachers

	CFM-TV schools	WG-SS schools
Children aged 5-17 assessed for FD	1,738	1,346
N (%) with FD	259 (14.9%)	15 (1.1%)
N (%) with 'some difficulty'	1,302 (74.9%)[1]	351 (26.1%)
N (%) girls	844 (48.6%)	628 (46.7%)
N (%) in primary school	926 (53.3%)	575 (42.7%)

Vision domain

Of the 3,084 children in the study, 19 were identified by the teachers as having functional difficulty with vision (defined by response options 'a lot of difficulty' in seeing or 'cannot do at all'; 15 using the CFM-TV, and 4 using the WG-SS), and were subsequently referred for clinical assessment. Of these 19 children, only 7 underwent the clinical assessment (7 of those identified through CFM-TV, 0 through WG-SS) as 12 children (8 CFM-TV, 4 WG-SS) could not be located at the time of the assessment.

Of these 7 children, none were found to have visual impairment (VI) according to the WHO definition (12) (Table 2), however all 7 children displayed symptoms of ocular morbidity

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[1] For the domains of anxiety and depression (CFM-TV only), response option 'weekly' is treated as equivalent to 'some difficulty', and included here.

(Figure 1). Five had vernal conjunctivitis, one had vernal conjunctivitis and refractive error, and one had glaucoma and an ocular allergy.

Of the children not identified by teachers as having vision functional difficulty, 10 underwent clinical assessment (Figure 1). Of these, 3 were found to have moderate VI (Table 2). All 10 were found to have ocular morbidity (Figure 1). Three had vernal conjunctivitis, two had vernal conjunctivitis and refractive error, one had ocular allergy and refractive error, one had glaucoma and refractive error, one had glaucoma and ocular allergy, one had ocular allergy and inflamed pingueculum, and one had congenital iris dystrophy. Of the 10 children, only one had been assessed by teachers as having 'some' difficulty in the CFM-TV vision domain. This child was clinically assessed as having normal visual acuity, but ocular allergy and an inflamed pingueculum.

Figure 1: Flowchart outlining the pathway for clinical assessment of vision
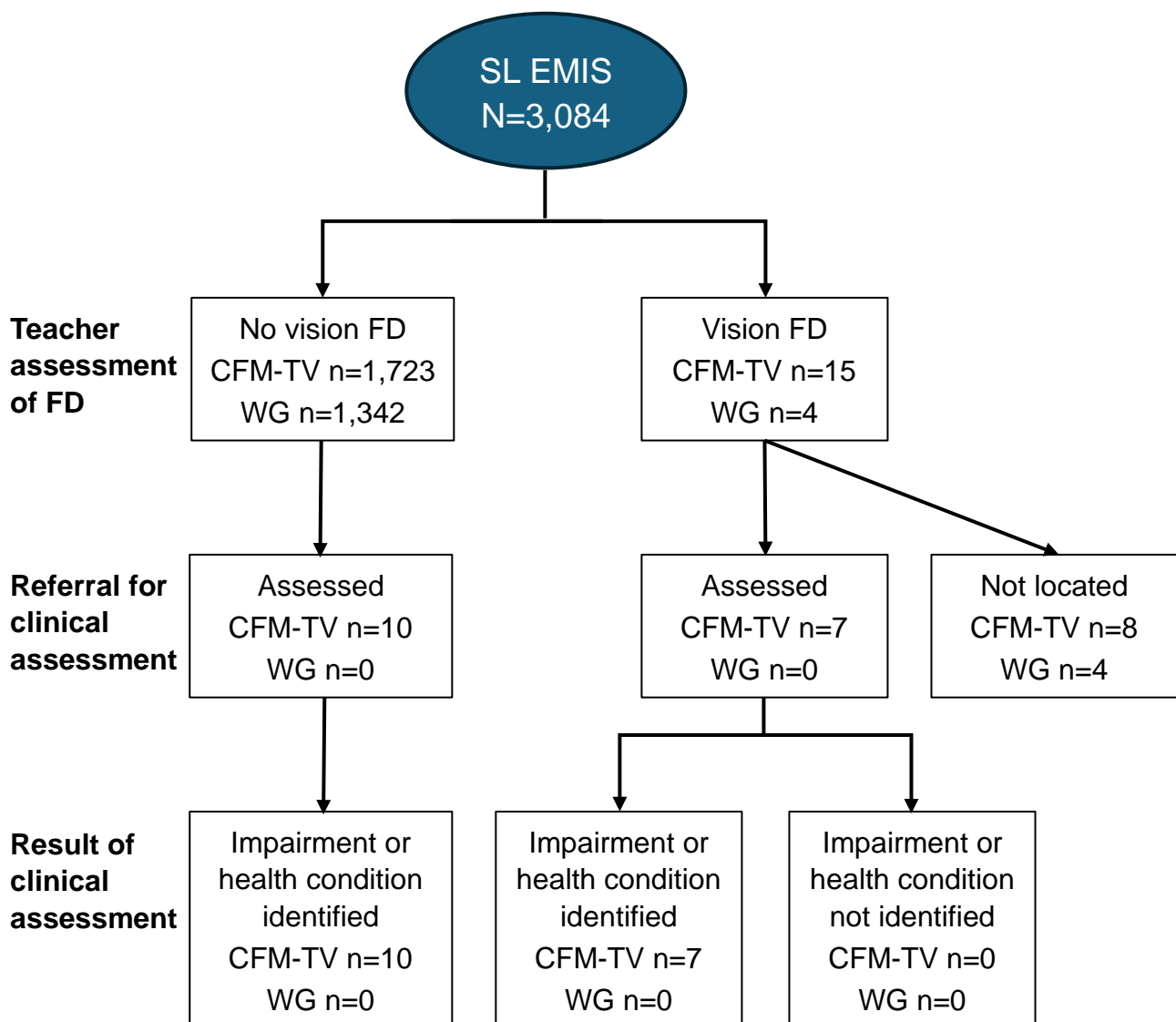
Table 2: Visual impairment in children who were clinically assessed

Visual impairment	FD N=7	No FD N=10
Normal (better eye can see 6/12)	7	7
Early (better eye can see 6/18 but not 6/12)	0	0
Moderate (better eye can see 6/60 but not 6/18)	0	3
Severe (better eye can see 3/60 but not 6/60)	0	0
Blind (vision <3/60 in better eye)	0	0

Hearing domain

Of the 3,084 children in the study, 6 were identified by the teachers as having functional difficulty with hearing ('a lot of difficulty' or 'cannot do at all') and were subsequently referred for clinical assessment (2 using the CFM-TV, 4 using the WG-SS). Of these 6 children, only 2 underwent the clinical assessment (1 CFM-TV, 1 WG-SS) as 4 children could not be located at the time of the assessment (1 CFM-TV, 3 WG-SS) (Figure 2).

Both children who underwent clinical assessment were found to have severe hearing impairment according to the WHO definition (13) (Table 3). Neither child was found to have an ear infection. One of the children had been recorded by the teacher as already wearing a hearing aid.

Of the children not identified by teachers as having hearing functional difficulty, 10 were subsequently referred by teachers and underwent the clinical assessment (Figure 2). Of these 10, 2 were found to have moderate and 8 found to have severe hearing impairment (Figure 2 and Table 3). None were found to have ear infections. Two of these children had been assessed by teachers as having 'some' difficulty in the CFM-TV hearing domain. Both were clinically assessed as having severe hearing impairment, without ear infection.

Figure 2: Flowchart outlining the pathway for clinical assessment of hearing

Hearing impairment	FD[2] N=2	No FD N=10
Normal (better ear can hear <26dB)	0	0
Mild (better ear can hear 26-30dB)	0	0
Moderate (better ear can hear 31-60dB)	0	2
Severe (better ear can hear 61-80dB)	2	8
Profound (better ear can hear >80dB)	0	0
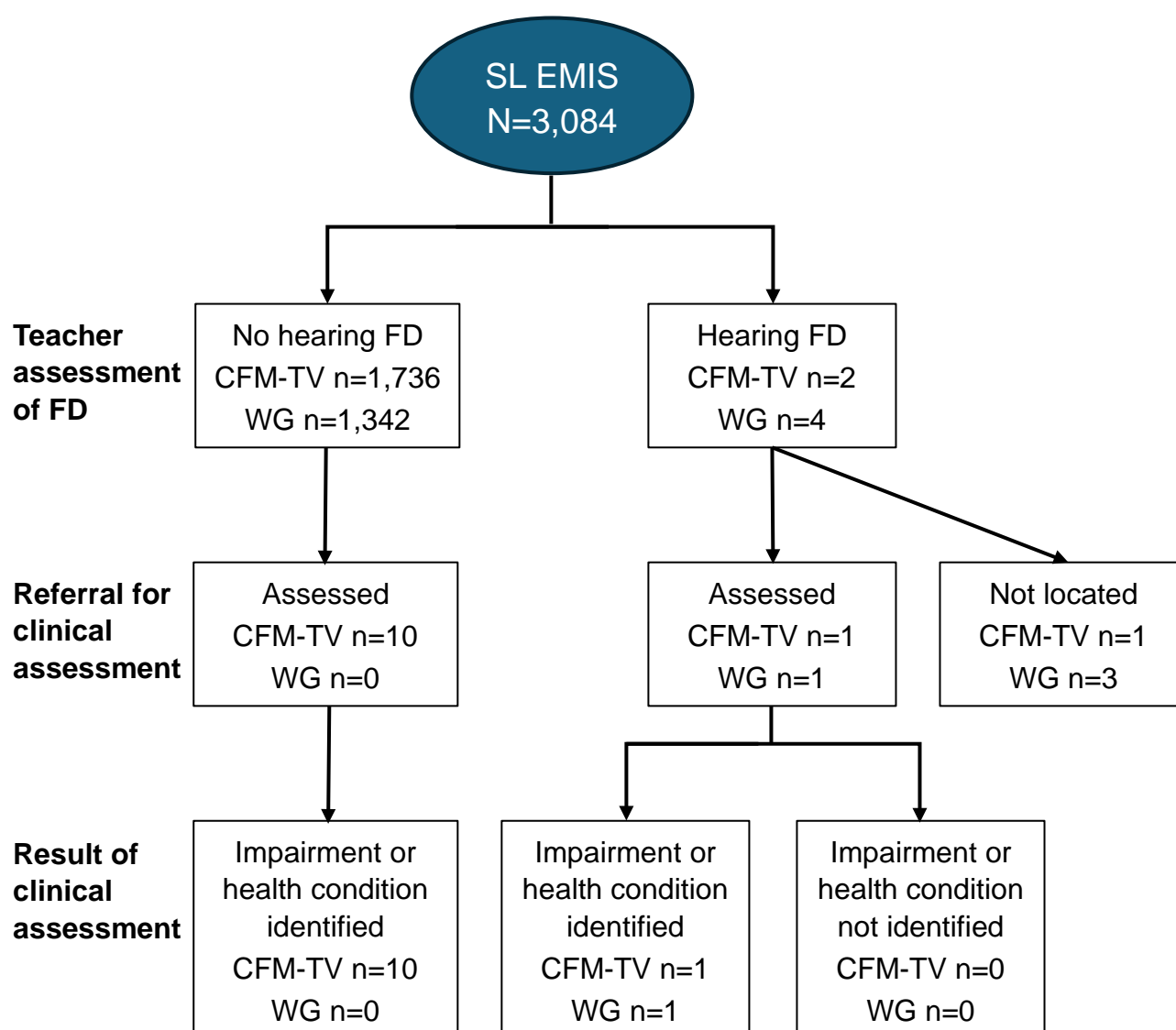
Table 3: Hearing impairment in children who were clinically assessed

[2] One additional child aged 18 was identified by the teachers as having hearing functional difficulty, clinically assessed and found to have moderate hearing impairment. This child is not included in tables and figures as they did not form part of the analytical dataset due to age.

Mobility domain

Of the 3,084 children in the study, 6 were identified by the teachers as having mobility functional difficulty and were referred for clinical assessment (3 using the CFM-TV, 3 using the WG-SS). Of these 6 children, only 4 underwent the clinical assessment (2 CFM-TV, 2 WG-SS) as 2 children could not be located at the time of the assessment (1 CFM-TV, 1 WG-SS). Of the 4 children clinically assessed, 1 was found to have a mobility related impairment (Figure 3). This child was found to have a congenital deformity of the lower limbs (Table 4).

Of children not identified by teachers as having mobility functional difficulty, 7 were subsequently referred and underwent clinical assessment, and 4 of these were found to have a mobility related impairment (Figure 3 and Table 4). All four children were found to have contractures of the lower limbs. One was caused by poliomyelitis and one by a hip dislocation; causes were not specified in the other two cases. Of this group of 7 additional children who underwent clinical assessment for mobility (Figure 3 and Table 4), none had been recorded by teachers as having 'some difficulty' in the mobility domain using either tool.

Figure 3: Flowchart outlining the pathway for clinical assessment of mobility
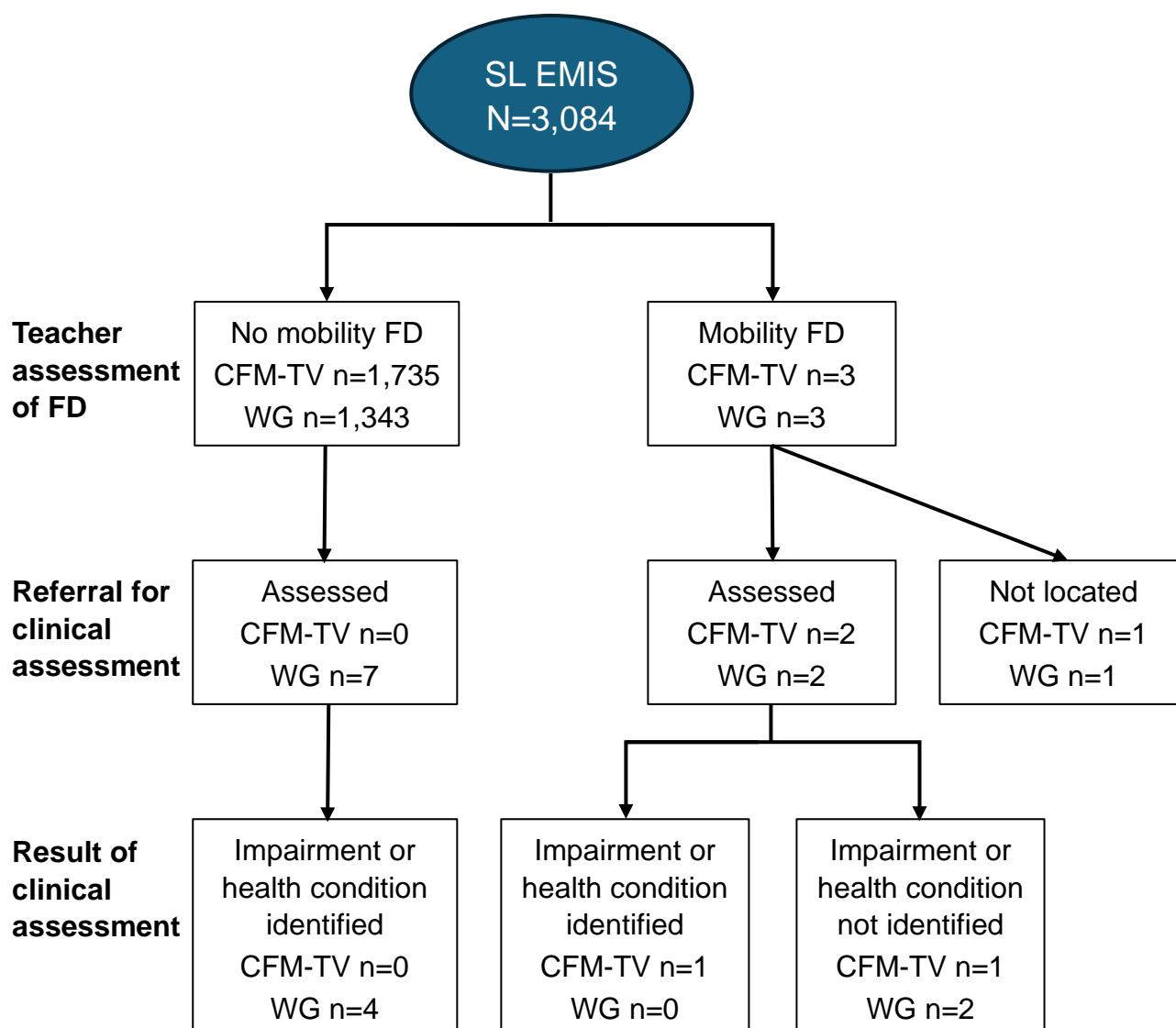
Table 4: Results of clinical assessment for mobility

Details	FD N=4	No FD N=7
Lower limb deformity	1	2
Polio	0	1
Hip dislocation	0	1
Cerebral palsy	0	0
No mobility difficulty	3	3

In the mobility domain, only 6 of the 11 children assessed were found to have a mobility related impairment. Vision problems were explored as a potential reason that a child might have appeared to have mobility difficulties in the absence of a physical impairment. However, none of the 11 children were reported to have functional difficulty in the vision domain, or identified with visual impairment. Only 1 of the children had been assessed by the teacher using the CFM-TV, and this child was not reported to wear glasses.

Children with multiple clinical assessments

Three children were referred for more than one of the clinical assessments. One child was identified by the teachers as having mobility functional difficulty, but on clinical assessment was found to have a hearing difficulty rather than a mobility difficulty. The teacher had not recorded any difficulty with hearing. The child was referred onward for hearing assessment and found to have moderate hearing loss. A second child was identified by the teachers as having vision functional difficulty, but was not assessed for vision as they could not be located at that time. They were later clinically assessed for mobility difficulties and found to have no issues with mobility. The teacher had not recorded any difficulty with mobility. A third child was identified by the teacher as having vision functional difficulty and found to have normal visual acuity but vernal conjunctivitis on clinical assessment. This child was then referred on for hearing assessment and found to have moderate hearing loss. The teacher had not recorded any difficulty with hearing.

Relationship between functional difficulty data generated by teachers, and disability data from other sources

Education for All programmatic data

The number of children identified with functional difficulty (using either CFM-TV or WG-SS) in our study was compared to the number of children recorded in the Education for All programme supported earlier by Sightsavers. This data, aggregated across all eight study schools, is shown in Table 5. A total of 10 children could be identified as present in both our study and the programmatic data. Four children were recorded in the programmatic data as having a vision disability. None of these children were identified by teachers as having a vision functional difficulty. One child was recorded as having a hearing disability in the

programmatic data. This child was identified as having a hearing functional difficulty by the teachers, using the WG-SS. Five children were recorded as having a mobility disability. One of these children had been identified by teachers as having a mobility functional difficulty, using the CFM-TV.

Table 5: Agreement between disabilities identified from programmatic data and disabilities identified by teachers, by domain

Domains	Children present in both datasets	Teacher FD assessment		
		Identified with FD	Identified using CFM-TV	Identified using WG-SS
Vision	4	0	0	0
Hearing	1	1	0	1
Mobility	5	1	1	0
Total	10	2	1	1

Attendance and educational outcomes for children with and without functional difficulty

Data completeness

Of the 1,738 children assessed using the CFM-TV, 1,509 (89.3%) and 1,082 (64.0%) had complete attendance and performance data respectively. Of the 1,346 children assessed using the WG-SS, 1,114 (83.4%) and 752 (56.0%) had complete attendance and performance data respectively (Table 6).

Table 6: Number of children with complete attendance and academic data

	CFM-TV schools	WG-SS schools
Children aged 5-17 assessed for FD	1,738	1,346
N (%) with complete attendance data	1,509 (89.3)	1,114 (83.4)
N (%) with complete academic data	1,082 (64.0)	752 (56.3)

School attendance by CFM-TV functional difficulty status

Attendance was measured using the teacher's assessment of whether the child attended regularly, as well as the percentage attendance extracted from school registers. In primary schools which used the CFM-TV, attendance of children with and without functional difficulty was broadly similar, using either measure of attendance. When disaggregated by sex, the percentage attendance for girls only was significantly higher for those with functional difficulty than those without (median = 96.6 vs 90.9) (Table 7).

Table 7: Attendance by CFM-TV functional difficulty status for primary schools, by sex

	Boys		Girls		Overall	
	FD no n=437	FD yes n=31	FD no n=425	FD yes n=28	FD no n=862	FD yes n=59
Teacher-assessed attendance: n (%)						
Regular	392 (89.7%)	29 (93.5%)	383 (90.1%)	25 (89.3%)	775 (89.9%)	54 (91.5%)
Not so regular	37 (8.5%)	2 (6.5%)	38 (8.9%)	3 (10.7%)	75 (8.7%)	5 (8.5%)
Left school	8 (1.8%)	0 (0.0%)	4 (1.0%)	0 (0.0%)	12 (1.4%)	0 (0.0%)
Percentage attendance from register: Median (IQR)						
	91.5 (78.8-96.6)	73.3 (61.9-96.6)	90.9 (78.0-96.6)	96.6** (93.2-100)	91.5 (78.8-96.6)	94.9 (67.8-98.3)

*$p<0.05$; **$p<0.01$; ***$p<0.001$; FD yes compared to FD no

In secondary schools using the CFM-TV, percentage attendance was significantly lower for children with functional difficulty than for those without. This pattern was evident among boys, girls and overall (boys: median = 69.5% vs 83.1%; girls: median = 79.8% vs 86.4%; overall: median = 76.2% vs 84.7%) (Table 8). No significant differences in teacher-assessed attendance were found.

Table 8: Attendance by CFM-TV functional difficulty status for junior secondary schools, by sex

	Boys		Girls		Overall	
	FD no n=307	FD yes n=95	FD no n=268	FD yes n=93	FD no n=575	FD yes n=188
Teacher-assessed attendance: n (%)						
Regular	274 (89.3%)	86 (90.5%)	257 (95.9%)	89 (95.7%)	531 (92.4%)	175 (93.1%)
Not so regular	32 (10.4%)	7 (7.4%)	11 (4.1%)	4 (4.3%)	43 (7.5%)	11 (5.9%)
Left school	1 (0.3%)	2 (2.1%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	2 (1.1%)
Percentage attendance from register: Median (IQR)						
	83.1 (69.5-94.9)	69.5*** (42.9-85)	86.4 (76.3-93.2)	79.8** (67.8-88.6)	84.7 (72.9-94.9)	76.2*** (57.1-88.1)

*$p<0.05$; **$p<0.01$; ***$p<0.001$; FD yes compared to FD no

When comparing children assessed in schools using the CFM-TV as having a physical, sensory or communication functional difficulty to those without a functional difficulty of this type, there were no significant differences in attendance (Table 9). This was the case for children in primary schools, junior secondary schools, and overall. Due to the small number of children with this type of functional difficulty, it was not meaningful to disaggregate further on the basis of sex.

Table 9: Attendance by CFM-TV physical, sensory or communication functional difficulty status and school type

	Primary school		Junior secondary		Overall	
	FD no n=905	FD yes n=16	FD no n=748	FD yes n=15	FD no n=1,653	FD yes n=31
Teacher-assessed attendance: n (%)						
Regular	815 (90.0%)	14 (87.5%)	691 (92.4%)	15 (100.0%)	1,506 (91.1%)	29 (93.6%)
Not so regular	78 (8.6%)	2 (12.5%)	54 (7.2%)	0 (0.0%)	132 (8.0%)	2 (6.5%)
Left school	12 (1.3%)	0 (0.0%)	3 (0.4%)	0 (0.0%)	15 (0.9%)	0 (0.0%)
Percentage attendance from register: Median (IQR)						
	91.5 (78.0-96.6)	94.9 (78.8-96.6)	83.1 (68.6=91.5)	86.4 (67.8-89.8)	86.4 (72.7-95.8)	89.8 (72.0-95.8)

When comparing children assessed in primary schools using the CFM-TV as having a behavioural or emotional functional difficulty to those without a functional difficulty of this type, there were no significant differences in attendance overall (Table 10). However, among primary school girls, percentage attendance was significantly higher for those with a functional difficulty of this type than those without (median = 96.6% vs 91.5%).

Table 10: Attendance by CFM-TV behavioural or emotional FD status for primary school children, by sex

	Boys		Girls		Overall	
	FD no n=443	FD yes n=25	FD no n=436	FD yes n=17	FD no n=879	FD yes n=42
Teacher-assessed attendance: n (%)						
Regular	398 (89.8%)	23 (92.0%)	392 (89.9%)	16 (94.1%)	790 (89.9%)	39 (92.9%)
Not so regular	37 (8.4%)	2 (8.0%)	40 (9.2%)	1 (5.9%)	77 (8.7%)	3 (7.1%)
Left school	8 (1.8%)	0 (0.0%)	4 (0.9%)	0 (0.0%)	12 (1.4%)	0 (0.0%)
Percentage attendance from register: Median (IQR)						
	91.5 (78.8-96.6)	67.8 (61.0-98.3)	91.5 (79.7-96.6)	96.6** (93.2-100)	91.5 (78.8-96.6)	94.1 (66.1-100)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

By contrast, among children at junior secondary schools using the CFM-TV, those with behavioural or emotional functional difficulty had significantly lower attendance than those without this type of functional difficulty (Table 11). This pattern persisted for boys, girls and overall (boys: median = 67.5% vs 83.1%; girls: median = 77.5% vs 86.4%; overall: median = 72.9% vs 84.7%).

Table 11: Attendance by CFM-TV behavioural or emotional functional difficulty status for junior secondary school children, by sex

	Junior / secondary schools					
	Boys		Girls		Overall	
	FD no n=324	FD yes n=78	FD no n=296	FD yes n=65	FD no n=620	FD yes n=143
Teacher-assessed attendance: n (%)						
Regular	291 (89.8%)	69 (88.5%)	285 (96.3%)	61 (93.9%)	576 (92.9%)	130 (90.9%)
Not so regular	32 (9.9%)	7 (9.0%)	11 (3.7%)	4 (6.2%)	43 (6.9%)	11 (7.7%)
Left school	1 (0.3%)	2 (2.5%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	2 (1.4%)
Percentage attendance from register: Median (IQR)						
	83.1 (69.5-94.9)	67.5*** (37.3-85.0)	86.4 (76.3-93.2)	77.5** (61.9-88.6)	84.7 (72.0-93.2)	72.9*** (54.8-87.8)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

At schools using the CFM-TV, there were no significant differences in attendance among children with a cognitive or learning functional difficulty, and those without, at the primary or junior secondary level (Table 12). However, across all four schools, attendance was slightly lower for those with cognitive or learning functional difficulty compared to those without (median = 79.7% vs 86.4%). Due to the small number of children with this type of functional difficulty at primary school, data is not further broken down by sex.

Table 12: Attendance by CFM-TV cognitive or learning functional difficulty status and school type

	Primary school		Junior / secondary		Overall	
	FD no n=904	FD yes n=17	FD no n=706	FD yes n=57	FD no n=1,610	FD yes n=74
Teacher-assessed attendance: n (%)						
Regular	812 (89.8%)	17 (100.0%)	651 (92.2%)	55 (96.5%)	1,463 (90.9%)	72 (97.3%)
Not so regular	80 (8.9%)	0 (0.0%)	52 (7.4%)	2 (3.5%)	132 (8.2%)	2 (2.7%)
Left school	12 (1.3%)	0 (0.0%)	3 (0.4%)	0 (0.0%)	15 (0.9%)	0 (0.0%)
Percentage attendance from register: Median (IQR)						
	91.5 (78.0-6.6)	95.8 (78.8-96.6)	83.1 (69.5-93.2)	79.7 (64.4-88.1)	86.4 (72.9-95.8)	79.7* (66.1-93.2)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

School attendance by WG-SS functional difficulty status

At schools using the WG-SS, there were no significant differences in attendance between children with functional difficulty and those without (Table 13). This pattern persisted across both boys and girls. Due to small numbers, it was not possible to meaningfully break this down by school type (primary or junior secondary).

Table 13: Attendance by WG-SS functional difficulty status for all school types, by sex

	Boys		Girls		Overall	
	FD no n=702	FD yes n=9	FD no n=614	FD yes n=6	FD no n=1,316	FD yes n=15
Teacher-assessed attendance: n (%)						
Regular	603 (85.9%)	7 (77.8%)	567 (92.4%)	2 (33.3%)	1,170 (88.9%)	9 (60.0%)
Not so regular	77 (11.0%)	2 (22.2%)	32 (5.2%)	4 (66.7%)	109 (8.3%)	6 (40.0%)
Left school	22 (3.1%)	0 (0.0%)	15 (2.4%)	0 (0.0%)	37 (2.8%)	0 (0.0%)
Percentage attendance from register: Median (IQR)						
	88.1 (79.7-93.3)	93.3 (78.0-100)	88.9 (80.0-94.9)	98.3 (87.1-100)	88.1 (80.0-94.9)	95.8 (79.7-100)

Academic performance by CFM-TV functional difficulty status

In primary schools using the CFM-TV, academic performance was statistically significantly better among children with FD compared to those without functional difficulty. This was true across all learning areas considered, and was evident for both boys and girls (Table 14).

Table 14: Academic performance by CFM-TV functional difficulty status for primary schools, by sex

	Boys		Girls		Overall	
	FD no n=320	FD yes n=24	FD no n=308	FD yes n=22	FD no n=628	FD yes n=46
Performance: Median (IQR)						
Language arts	43.0 (28.0-55.0)	56.0*** (43.0-68.0)	41.0 (27.0-55.0)	50.0* (39.0-64.0)	42.0 (27.0-55.0)	55.0*** (40.0-66.0)
Maths	45.0 (27.0-56.0)	50.0* (40.0-70.0)	43.0 (27.0-53.0)	60.0** (38.0-66.0)	45.0 (27.0-55.0)	60.0*** (40.0-66.0)
General science	48.0 (28.0-59.0)	60.0** (40.0-71.0)	45.0 (27.0-57.0)	60.0** (40.0-68.0)	45.0 (27.0-58.0)	60.0*** (40.0-68.0)
Overall	45.2 (27.3-54.5)	60.3*** (44.8-66.5)	44.5 (28.3-53.7)	59.3** (36.7-62.0)	45.0 (27.7-54.0)	59.3*** (42.0-64.0)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

By contrast, in junior secondary schools using the CFM-TV, academic performance was similar for those with and without functional difficulty (Table 15). The only statistically significant difference observed was in language arts, for girls and overall, where children with functional difficulty had a significantly lower median score than those without (girls: median – 50.0 vs 52.0; overall: median – 51.0 vs 52.0).

Table 15: Academic performance by CFM-TV functional difficulty status for junior secondary schools, by sex

	Boys		Girls		Overall	
	FD no n=138	FD yes n=67	FD no n=136	FD yes n=67	FD no n=274	FD yes n=134
Performance: Median (IQR)						
Language / arts	52.0 (50.0-57.0)	52.0 (47.0-57.0)	52.0 (48.0-57.0)	50.0** (45.0-53.0)	52.0 (49.0-57.0)	51.0** (46.0-55.0)
Maths	61.0 (50.0-75.0)	63.5 (52.0-75.0)	57.0 (50.0-74.0)	58.0 (53.0-63.0)	59.0 (50.0-75.0)	60.0 (52.0-67.0)
General science	57.0 (50.0-70.0)	57.0 (51.0-78.0)	57.0 (51.0-69.0)	59.5 (52.0-73.5)	57.0 (50.0-70.0)	58.0 (52.0-74.0)
Overall	60.5 (53.0-65.7)	58.0 (52.0-64.0)	57.3 (50.8-65.0)	56.3 (52.3-61.3)	58.2 (51.7-65.3)	57.0 (52.3-62.3)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

Across schools using the CFM-TV, there were no differences in performance between children identified with a physical, sensory or communication functional difficulty, and those without this type of functional difficulty (Table 16). This pattern was consistent for all subjects and school types. Data was not further disaggregated by sex due to the small number of primary school children with this type of functional difficulty.

Table 16: Academic performance by CFM-TV physical, sensory or communication functional difficulty status and school type

	Primary schools		Junior / secondary		Overall	
	FD no n=663	FD yes n=11	FD no n=366	FD yes n=42	FD no n=1,029	FD yes N=53
Performance: Median (IQR)						
Language / arts	43.0 (28.0-55.0)	49.0 (40.0-64.0)	52.0 (48.0-57.0)	50.0 (43.0-52.0)	50.0 (37.0-56.0)	49.5 (40.0-60.0)
Maths	45.0 (28.0-56.0)	50.0 (32.0-66.0)	59.0 (51.0-75.0)	61.0 (55.5-75.0)	52.0 (35.0-62.0)	60.0 (46.0-69.0)
General science	46.0 (27.0-59.0)	58.0 (28.0-70.0)	57.0 (51.0-71.0)	56.5 (52.0-62.0)	52.0 (40.0-63.0)	58.0 (51.0-63.0)
Overall	45.3 (28.0-54.7)	52.7 (31.3-67.3)	58.0 (51.7-64.3)	56.0 (52.8-61.0)	51.3 (38.3-60.0)	54.7 (45.0-63.0)

At primary schools using the CFM-TV, children with behavioural or emotional functional difficulty had higher academic scores than those without this type of functional difficulty (Table 17). Median scores in language arts and overall were statistically significantly higher for boys with behavioural or emotional functional difficulty than for those without. General science and overall scores were statistically significantly higher for girls with behavioural or

emotional functional difficulty than those without. Aggregating across boys and girls, children with behavioural or emotional functional difficulty had significantly higher scores in all subjects than children without.

Table 17: Academic performance by CFM-TV behavioural or emotional functional difficulty status for primary school children, by sex

	Boys		Girls		Overall	
	FD no n=325	FD yes n=19	FD no n=317	FD yes n=13	FD no N=642	FD yes N=32
Performance: Median (IQR)						
Language / arts	43.0 (28.0-55.0)	56.0** (41.0-70.0)	41.0 (27.0-55.0)	50.0 (26.0-65.0)	43.0 (28.0-55.0)	55.0** (40.0-66.0)
Maths	45.0 (28.0-56.0)	50.0 (40.0-70.0)	45.0 (27.0-54.0)	60.0 (35.0-60.0)	45.0 (27.0-55.0)	60.0** (40.0-63.0)
General science	48.5 (28.0-59.0)	60.0** (40.0-71.0)	45.0 (27.0-57.0)	61.0* (40.0-68.0)	45.0 (27.0-58.0)	60.0*** (40.0-70.0)
Overall	45.3 (27.3-54.7)	59.3*** (44.7-65.7)	44.7 (28.3-54.0)	58.0* (36.7-62.0)	45.0 (28.0-54.3)	58.7*** (40.7-64.0)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

In junior secondary schools using the CFM-TV, children with behavioural or emotional functional difficulty had broadly similar academic performance to those without this type of functional difficulty (Table 18). The only difference observed was in general science scores, where children with behavioural or emotional functional difficulty had significantly higher scores than those without functional difficulty. This was true for girls, boys, and overall.

Table 18: Academic performance by CFM-TV behavioural or emotional functional difficulty status for junior secondary school children, by sex

	Boys		Girls		Overall	
	FD no n=152	FD yes n=53	FD no n=157	FD yes n=46	FD no N=309	FD yes N=99
Performance: Median (IQR)						
Language / arts	52.0 (49.0-57.0)	52.0 (47.0-57.0)	51.0 (47.0-55.0)	50.0 (46.0-53.0)	52.0 (48.0-57.0)	52.0 (47.0-56.0)
Maths	60.0 (52.0-75.0)	65.0 (52.0-75.0)	58.0 (51.0-72.0)	57.0 (52.0-64.0)	59.0 (51.0-75.0)	60.0 (52.0-70.0)
General science	57.0 (50.0-69.0)	60.0* (52.0-81.0)	57.0 (51.0-65.0)	63.5** (57.0-78.0)	57.0 (50.0-68.0)	62.0*** (52.0-79.0)
Overall	59.7 (52.8-65.5)	60.7 (52.3-65.0)	56.3 (50.7-53.7)	59.3 (53.7-63.0)	57.3 (51.7-64.3)	59.7 (53.0-64.0)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

In junior secondary schools using the CFM-TV, children cognitive or learning functional difficulty had significantly lower performance in language arts, general science and overall scores than those without this type of functional difficulty (Table 19). By contrast, there was no difference in academic performance in primary schools between children with cognitive or learning functional difficulty and those without. Due to the small number of children with this type of functional difficulty in primary school, data was not further disaggregated by sex.

Table 19: Academic performance by CFM-TV cognitive or learning functional difficulty status and school type

	Primary schools		Junior / secondary		Overall	
	FD no n=664	FD yes n=10	FD no n=366	FD yes n=42	FD no n=1,030	FD yes N=52
Performance: Median (IQR)						
Language / arts	43.0 (28.0-56.0)	50.0 (43.0-55.0)	52.0 (48.0-57.0)	50.0* (47.0-53.0)	50.0 (36.5-57.0)	50.0 (46.0-54.0)
Maths	45.0 (28.0-56.0)	48.5 (27.5-63.0)	59.0 (51.0-75.0)	59.0 (52.0-63.0)	51.0 (35.0-62.0)	58.5** (50.0-63.0)
General science	46.0 (27.0-59.0)	58.0 (28.0-60.0)	58.0 (51.0-71.0)	52.0*** (50.0-55.0)	52.0 (40.0-64.0)	52.0 (50.0-57.0)
Overall	45.3 (28.2-54.7)	48.8 (32.7-61.3)	59.7 (52.0-65.0)	54.7** (50.0-57.3)	51.3 (37.0-60.0)	54.5 (48.7-58.0)

*p<0.05; **p<0.01; ***p<0.001; FD yes compared to FD no

Academic performance by WG-SS functional difficulty status

In schools using the WG-SS, girls with functional difficulty had significantly higher scores for maths, general science, and overall, than girls without functional difficulty (Table 20). For boys, and overall, there was no difference in academic scores between those with functional difficulty and those without.

Table 20: Academic performance by WG-SS functional difficulty status for all school types, by sex

	Boys		Girls		Overall	
	FD no n=400	FD yes n=8	FD no n=339	FD yes n=5	FD no n=739	FD yes n=13
Performance: Median (IQR)						
Language / arts	52.0 (50.0-57.0)	51.0 (43.0-52.0)	52.0 (50.0-55.0)	52.0 (52.0-58.0)	52.0 (50.0-57.0)	52.0 (51.0-52.0)
Maths	57.0 (50.0-65.0)	45.0 (36.0-75.0)	55.0 (50.0-65.0)	75.0* (70.5-75.0)	56.0 (50.0-65.0)	75.0 (45.0-75.0)
General science	59.0 (50.0-70.0)	56.0 (44.0-95.0)	56.0 (49.0-68.0)	90.0* (75.0-95.0)	58.0 (50.0-70.0)	85.0 (56.0-95.0)
Overall	56.2 (50.2-65.0)	44.0 (43.7-74.0)	54.0 (48.7-63.3)	72.3* (67.8-74.0)	55.0 (49.7-64.3)	70.7 (44.0-74.0)

*$p<0.05$; **$p<0.01$; ***$p<0.001$; FD yes compared to FD no

Qualitative data from the interviews and FGDs with teachers and other stakeholders

Data from the FGDs and IDIs were analysed thematically and grouped under three broad teams: i) Reflections on the tools and data collection processes; ii) the use of the data collected at the school and district levels; and iii) recommendations on how the data systems and processes could be improved.

Reflections on the tools and data collection processes

The FGDs with the teachers were conducted nearly one year after school-based assessment. This allowed teachers to reflect on the processes and challenges they experienced during the data collection, but also on how they have subsequently been able to draw on learnings to inform teaching practices. During Phase 2 of the study, we conducted interviews and FGDs with a small number of teachers participating in the initial teacher training and the first small scale pilot used for the cognitive testing of the tools. However, for the majority of the 65 teachers involved in functional difficulty assessment across eight schools, the discussions reported here were the first opportunity to reflect on the data collection processes and the tools they used.

Overall, the teachers found both tools useful for assessing difficulties experienced by the children they were teaching. Those teachers, who used the WG-SS pointed out that the tool was short and easy to apply:

> "The questions were straightforward ...making it easier to provide responses." (FGD, Makulon Community JSS, 14/11/2023).

Those teachers who used the CFM-TV reported more challenges. The tool assessed difficulties across 12 functional domains and included 18 questions; it took teachers some time to assess each child in the register. Some domains such as accepting change, controlling behaviour, making friends and experiencing anxiety and depression were new to the teachers; they required some practice to assess them with confidence. But despite these challenges, most teachers found the information generated by the tool very useful.

> "…though the tool appeared difficult because it was long, yet it had vital information that we need on children." (FGD, Wuror Memorial JSS, Rokulan, 15/11/2023).

Teachers did note that they felt the tools excluded some children with known disabilities or impairments. In particular, teachers noted children with kyphosis, sickle cell and epilepsy.

Teachers spoke about the advantages of identifying functional difficulties through observation, rather than by directly questioning children about their difficulties. Teachers emphasised that children might be embarrassed if asked directly about difficulties, or might be too shy to tell teachers that they were struggling. One teacher explained about how their approach to identifying disabilities had changed due to participation in the study:

> "My experience gained was how to capture information on children with disability in a way that the child cannot even notice that he /she is being assessed. This way the person cannot be embarrassed. I never had this ethical skill before, because in the past I will approach the persons outrightly by saying who is here that has any disability." (FGD, Makulon Community JSS, Makulon, 14/11/2023)

One teacher did say that she continued to assess for functional difficulties by asking children to tell her if they had trouble with hearing or seeing. However, a colleague then responded to suggest that observation was also important, as children might be shy to express their difficulties:

> Teacher 1: "As for me. I do ask a general question, who is here that does not hear well. Please put up your hand. Then maybe one or two will raise up their hands and I will set them aside. Next, I will ask, who are those that are here and cannot see well when I write on the board, then they too will raise up their hands." (FGD, St Pauls Primary, Kamalo, 18/11/2024).

> Teacher 2: "There are some children who do not see well and even when you ask, they are shy to say so. But by observing them maybe from the back seat where he/she may be sitting you can see him/her displaying actions in trying to see what is written on the board. " (FGD, St Pauls Primary, Kamalo, 18/11/2024).

In several schools, teachers commented that the process of assessing each child on their register was helpful particularly in identifying those children who had less evident or visible difficulties:

"So when you look at a child and you see the way he/she walks is not normal, then you say ah this one has a problem. But then those with minor or hidden disabilities you will see them walking but you cannot identify them even though they have some problems. So, it was only when we went for that training and the use of the assessment tool, that we were able to know the minor disabilities that cannot be seen easily." (FGD, Roman Catholic JSS, Binkolo, 20/11/2024).

Strategies used to identify functional difficulties

Teachers explained that their familiarity with the children helped them to complete the assessments, and that they used a range of strategies to determine a child's level of functional difficulty in each domain. The majority of teachers used their knowledge of the children and observations they had made in the class throughout the school year, noting that behaviour in class is a good indication of potential functional difficulties. Teachers drew on the manner the child participated during lessons, how they asked and answered questions, and how they read and copied notes from the blackboard. Teachers also drew on information shared with them by children's peers and families.

Teachers often reported identifying the presence of a difficulty through observation of a child's behaviour and performance in class, and then using other strategies and information to confirm the nature of the underlying functional difficulty. While difficulties with walking could be easily seen, other functional difficulties required more careful observation of a child over a period of time to identify.

One teacher explained their process as follows:

> "Based on the limited or non-participation of a child in class you can identify those with problems or intellectual difficulty… when you have those that are responding and then some are not, you are moved to take the next step and find out why a certain child cannot always answer questions. This can suggest to you that such a child must have a problem." (FGD, Roman Catholic JSS, Binkolo, 20/11/2024).

The specific classroom behaviours that teachers observed differed somewhat for different functional difficulties. For identifying difficulties with seeing, several teachers referred to noticing that children struggled to see or copy from the board. Some teachers observed that children with difficulties in seeing would turn their heads and sometimes even move from their seat to get a better view of the blackboard. This was how one teacher explained how she decided that the student they assessed had difficulties in seeing:

> "I came to identify her [a female student] by the way she copied notes from the blackboard. She always bows her head when writing. I observed her several times and I tried to inspect her notebook. That was when I realized that what she writes was quite different from what was on the board." (FGD, Makulon Community JSS, Makulon, 14/11/2023).

In identifying difficulties with hearing, teachers often referred to instances in which children didn't respond to questions asked by the teacher, particularly when they were otherwise attentive. Those with hearing difficulties might also stare at the teacher continuously, as if they wanted to get more attention. Some would ask the teacher or other children many questions; this was usually noticeable and disruptive:

"During lessons, I often see this healthy-looking child asking his colleagues what I was saying. On some occasions, he will tell me that he did not understand, and he was always that one that does not understand. At first, I thought that this was a disruptive behaviour. I visited his parents to discuss the child's behaviour and that was when I learnt that he has a hearing impairment." (FGD, Roman Catholic Primary, Mapaki, 17/11/2023).

This example also highlights that teachers sometimes used information shared by parents to confirm the presence or details of a functional difficulty. Additionally, in some schools, parents were asked about children's disabilities during the interview and admissions process, and teachers were able to draw on this information. Teachers noted however that this information was usually limited to challenges with seeing, hearing and mobility.

"For some of us who were in the interview during new intake, we do question them [parents] and we have records of their responses. This also has helped us to be able to identify some of the children with functional challenges. Especially those that are physically challenged and have pass through the interview, have been identified and documented." (FGD, Roman Catholic JSS, Binkolo, 20/11/2023).

Teachers also identified functional difficulties by observing how students behaved with one another. For example, one teacher explained how she identified a child with hearing difficulties during the class registration, when she observed how other students prompted the child to respond:

"I was calling the register in class, I called her name three times, but she did not respond until her colleagues tapped her and then she shouted, 'present'. So, I came to automatically know that she has a problem of hearing (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Students also sometimes shared information about their peers with a teacher, resulting in a teacher becoming aware of a child's difficulty. Another teacher spoke about how reports of problematic behaviours made by a child's peers enabled them to identify the presence of a behavioural functional difficulty:

"As for me what helped me to assess the child without personally asking her was through colleagues in class. Through the frequent report by her colleagues brought to my attention. Each time they report her to me I do advise her but then she keeps doing the same thing again and again. So, this was how I identified her that something was wrong with her." (FGD, Wuror Memorial JSS, Rokulan, 15/11/2023).

The use of the data on functional differences in the classroom

The majority of teachers across the study schools said that the functional assessment of children in their class registers influenced their classroom practices and the way they interacted with the children following the assessment. Teachers spoke about the important of **recognising individual differences in learning**, and how recognising children's differences enabled them to adapt their teaching practices to meet children's needs.

Being able to recognise different ways in which children learn in the classroom came up as a discussion point in several schools. Teachers noted that the training and the pilot helped them to better understand that some children learnt new concepts fast, while others required more time to understand the same topic. Teachers highlighted a link between disabilities and the manner and pace children learnt and noted that disabilities that could be identified easily were easier to manage in the classroom compared to those that were hidden. Many teachers said that before they had the training on the Washington Group Questions, children's difficulties in learning, resistance to accept change, making friends, and feeling sad or anxious had been often attributed to stubbornness. The training and assessment process helped the teachers to better understand individual differences in learning and take measures to support slow learners:

> "On the side of learning, there are some children that are fast learners, some are slow learners whilst others are average learners. So, if you can understand these different types of children in class, it will help you handle them well." (FGD, St Pauls Primary, Kamalo, 18/11/2023).

This teacher spoke about the importance of ensuring that all children, whatever their functional challenges, can benefit from teaching:

> "As for me, I do implement my skills when I teach by bearing in mind that I should ensure that those with functional challenges should equally get the same knowledge from what I am teaching." (FGD, Makulon Community JSS, 14/11/2023)

Teachers specifically identified several ways in which they adjusted their classroom practices and activities to meet children's learning needs, drawing on their knowledge of children's functional difficulties. Many teachers described using a combination of these six strategies to meet the needs of a particular child, and of iteratively testing different approaches to see what worked. Importantly, several teachers gave examples from the current academic year, of children who were not part of the group that they assessed during the pilot of the assessment tools.

Changing seating arrangements for children with functional difficulties. This classroom adjustment approach was mentioned by several teachers as an effective way of helping children with functional difficulties to learn. Seating adjustments were mostly directed at children with seeing and hearing difficulties and the aim was to bring the child closer to the teacher and the blackboard. Some teachers observed that many children with functional difficulties often preferred to sit at the back of the classroom, so that they would avoid being picked or pointed at for assignments or to answer questions.

This is how one teacher explained the change she made for the student with difficulties in seeing:

> "…I could not read ... what she was writing in her notebook as it was far different from the notes I had written on the blackboard. So, I asked her why she was not copying the notes correctly and she told me that her eyes were painful. I had to bring her to the front of the classroom. After putting her in front, I realized that she started copying the notes on the board correctly." (FGD, SLMWBO Primary, Kambia, 13/11/2023).

In another school, the teacher observed that a child had difficulties with walking. The child appeared to be uncomfortable and often lost attention, when sitting too close to other children. The teacher rearranged the seats to allow for more space around that child:

> "In dealing with one child who had a mobility challenge, I tried to ensure that he sits conveniently in class with enough space around him. This is because when other pupils are too close to him, pressing on his feet, he becomes uncomfortable and will not pay attention. But when he sits freely, he can listen and concentrate on the lesson well." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Adjusting handwriting on the board. A number of teachers also referred to making changes in how they wrote on the board, to assist children in seeing and identifying letters more easily. Teachers spoke about ensuring that their writing was 'bold' and large, avoiding cursive writing. One of the headmasters who periodically observed teaching methods in his school made the following comment on the changes he observed:

> "… upon realizing that some children have eyesight problems, he (the teacher under observation) had to change his handwriting to be in bigger fonts and separated letters, rather than joining them." (FGD, SLMWBO Primary, Kambia, 13/11/2023).

Changing teaching styles. Several teachers said that following the knowledge acquired from the training on the use of the Washington group tools, they realized that they needed to change their teaching methods to help all the children, and especially those with functional difficulties.

Many teachers said that they started speaking slowly and loudly enough for all children to hear, which was important for children with hearing difficulties. Some teachers said that they started using more demonstrations to help children with functional difficulties to learn new concepts faster. One teacher, for example described how he helped his student with hearing difficulties to learn the key concepts in agriculture:

> "When [I am] teaching, he [the student] opens his eyes wide and stares … When I am teaching agriculture for example, I do demonstrations of what I am teaching. … then you … see him nodding … to show that he is following what you are saying." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Another teacher spoke about offering a child with speech and hearing difficulties alternative ways to participate in class:

> "This year I have a child… with a speech and hearing problems… So, when I teach, I will demonstrate with some actions to help her to understand what I am explaining. For instance, in teaching multiplication, let's say 2x2, I will collect stones and use them to demonstrate my calculations. She knows how to write and writes well... When I ask question, I encourage her to write the answer for me on the board because of her speech problem and this is working well." (FGD, SLMWBO Primary, Kambia, 13/11/2023).

Addressing stigma and discrimination. Teachers at all schools spoke about how the training in using the Washington Group Questions and participation in the study had helped them enforce rules against stigma and discrimination of children with disabilities and supported them in promoting greater inclusion of children with disabilities in the classroom.

One teacher described how their work to support inclusion had changed the behaviour of children in the classroom:

> "Yes, I found out that when it was time for the children to take their seat in class, all those without any challenge will decide to sit together in one side of the classroom and the one with challenges of hearing, or movement and others will be left to sit alone. This way, the children who are well don't want to mingle themselves with the other children who have difficulties. But we are sensitizing them and are now sitting together and sharing ideas. But before this time, they were neglecting them with the view that they are not worth anything." (FGD, St Pauls Primary, Kamalo, 18/11/2023).

Several teachers spoke about how ensuring children feel safe and supported at school is key to ensuring they continue to attend school, and that they engage in learning. Without addressing stigma and discrimination, children may try to hide their difficulties, meaning that they cannot be supported in learning:

> "There are even some when you are talking, they will make as if they are hearing and understanding because he/she does not want you to detect his/her problem. They are afraid of being labelled disabled, so those are the things." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Enforcing rules against stigma and discrimination was important in supporting children with functional difficulties in learning:

> "Yes, I just want to add that the other way we do assist them is by creating rules or laws in the school which does not encourage provocation. So, this is one thing that helps them to be comfortable within the school environment. Because if they feel discourage, they may not continue to learn, their confidence will be affected." (FGD, Roman Catholic JSS, Binkolo, 20/11/2023).

Pairing children with functional difficulties with other students. Some teachers explained that during the Education For All project, supported previously by Sightsavers, Inclusion Champions were encouraged to pair up children with disabilities with other children. The idea (referred to as a 'buddy system') was to encourage other children to befriend children with disabilities, stay close to them and to assist them in class whenever necessary. The buddy system however stopped working in most schools, when several Inclusion Champions moved from the project area. Following the training on the Washington Group Questions some teachers decided to re-establish the buddy system to ensure that children with functional difficulties received assistance from their peers in the classroom:

> "If a child is physically challenged in the class, you then get a friend who will always be at the side of that child to assist him or her. We have a good number of these children who cannot even copy well … without help. But with their friends with whom they are very close, they can come together and aid those who are slow learners. So, you create a buddy for children with disabilities." (FGD, Roman Catholic JSS, Binkolo, 20/11/2023).

Patience and extra time. Patience was identified as an important factor in the teaching and learning process. It emerged that in the past, teachers had little patience with children with disabilities who exhibited what was often referred to as stubbornness and disruptive behaviour. With the new knowledge about functional difficulties, especially those that could

not be easily identified, many teachers recognised that they had to be more patient in teaching and classroom management to ensure that every child could learn confidently:

> "We should have more patience with them and consider that they are not stupid, but they are functionally challenged. We should encourage them and advise other children not to provoke them or laugh at them." (FGD, Makulon Community JSS, Makulon, 14/11/2023).

Some teachers also decided to allocate additional time and additional support to help children with functional difficulties to catch up on lessons:

> "… by class participation you will know the child that is a slow learner. You must give extra attention to that child … by asking what the problem is. And once you are told of the problem, then, you must make some extra time to help that child and where possible to also monitor the progress of that child." (FGD, Roman Catholic JSS, Binkolo, 20/11/2023).

Use of data on functional difficulty beyond the classroom

In a context where disability awareness is limited, parents may be unaware of their child's difficulties or may be reluctant to acknowledge that their child has functional difficulties. Teachers at four of the schools said that using the assessment tools helped them in talking about children's difficulties with parents:

> "There was even one of such [child who cannot hear] in my class and before then I had thought he was only being stubborn and refusing to answer my questions in class. So, when I got to know that he had problem with his ears and cannot hear well, I was the one that told his parents who also did not know and was feeling the same [that the child was simply stubborn]. So, I told them if they didn't believe they should take him for check-up. After the medical check-up, it was confirmed to be true." (FGD, St Pauls Primary, Kamalo, 18/11/2023).

Teachers spoke about how sharing information with parents enabled children to feel more supported at school, at home and in the community:

> "But with this knowledge we can go to the parents that this child can do better if given the kind of care and opportunity to learn." (FGD, Wuror Memorial JSS, Rokulan, 15/11/2023).

Experiences with using the WG-SS as part of the Annual School Census

Education stakeholders interviewed explained that when the class teachers in the selected eight schools were assessing functional difficulties as part of the Sightsavers research study, the MBSSE organised its own pilot of the WG-SS to collect disability data in one of the primary schools in Karene district. This school was one of the eight schools included in the Sightsavers study. Disability data in this school were collected using the WG-SS electronically on a tablet, alongside the 2022 annual school census.

Only one tablet was provided to the school, and only the headteacher was trained in relation to the MBSSE pilot. The training provided was fairly short, and primarily technical in nature,

relating to use of the tablet and processes for entering and uploading data. The headteacher entered the data in the tablet, in consultation with other teachers, which increased his confidence in the quality of disability data collected. Challenges encountered during the pilot related to access to the device, and uploading completed forms. The headteacher received telephonic support during data collection when these challenges arose, but in person support was not available.

Recommendations for improving data collection systems and processes

Study participants proposed several recommendations on how to improve the systems and processes used during the Sightsavers study Phase 2 for collecting data on functional difficulties among children attending schools. The key group of recommendations related to the training of teachers involved in the data collection.

First, teachers recommended to **increase the number of days for the training** from three to five to fully cover the content and to have more practical sessions to practice the assessment. Teachers mentioned identification of hidden disability, anxiety and depression, and appropriate use of the response options as areas where additional training time would be helpful.

Second, teacher proposed to periodically **organise refresher trainings** to maintain teachers' knowledge on functional difficulties and disability and to upgrade their assessment skills. Teachers interviewed specifically wanted refresher trainings focusing on the challenges experienced during the assessment, as one teacher explained:

> "Those that were not able to capture all the information or materials in the first phase of the training will have an opportunity to understand it better and do it for themselves even afterwards without asking for help from others (FGD, SLMWBO Primary Kambia, 13/11/2023).

Study participants also wanted to have **a training manual**, which could be used for reference during the assessment and for future training sessions.

Another teachers' recommendation was **to involve community members in future training sessions**. Teachers from several pilot schools noted that community members, including parents, Community Teachers Associations and School Management Committees, were important stakeholders in managing the welfare of children with disabilities; they required good knowledge of children's functional difficulties and needs:

> "The reason why we are including the community people is because, they 'own' these children. They are with them for most of the hours of the day, so it will be nice for them to know that some of their children have challenges which they as parents should learn to manage well and know how to treat them." (FGD, Wuror Memorial JSS, Rokulan, 15/11/2023).

Teachers interviewed also said that they wanted **greater involvement of teachers in the Annual School Census**. They argued that participation of the teachers, who knew children well would improve the quality of the ASC data, particularly disability data:

"If teachers, especially those who have been trained, are involved in the school census, the Ministry will have correct information on children with disabilities." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Other recommendations for improving disability-inclusion and data use

Teachers who participated in disability data collection additionally requested **further training on disability-inclusive teaching strategies and materials**, to support them in meeting the needs of children who were identified with functional difficulties.

"But then we lack the skill to actually help them to learn. So not actually having these training is a very big problem, because the other children will succeed whilst those with functional challenges will not be able to understand anything at the end of the day." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

One teacher also highlighted a need for guidance on appropriate accommodations for children taking national exams. At two different schools, teachers said that due to disability-inclusive approaches, the numbers of children with functional difficulties at the schools had grown, meaning that the school needed additional support in meeting their needs:

"We are now experiencing a situation where any little difficulty affecting children in the community are now brought to the school for assistance through enrolment. So, the school is now carrying the burden of helping children with functional difficulties. So, I am thinking if there is a way that the ministry can help us with a place, which we can call on to be able to get assistance… get access to required care and medication for these children with health challenges." (FGD, SLMWBO Primary, Gbendembu, 9/11/2023).

Teachers across most schools also requested guidance and support in relation to onward referral for clinical assessment, treatment and assistive devices. They highlighted that this was important for teachers and parents in understanding children's needs, and ensuring children could remain in education.

"Another thing we will want to be improved on is the provision of school materials or assistant devices for children with disability such as hearing aids." (FGD, SLMWBO Primary Kambia, 13/11/2023).

Teachers also expressed a need for support in working with parents to ensure that they saw the value of education for their children with functional difficulties, and supported these children to stay in school:

"There is also this case of [child name] who has passed the BECE to go to SSS. She is now putting pressure on her father to take her for the admission interview SSS. Her father came to me recently and said that he is taking [her] out of school because accordingly to him, she will not be able to truly learn and achieve anything. He said he has taken her to Freetown for treatment but hearing problem is still the same. So, he is taking her out of school." (FGD, Agricultural JSS, Kalangba, 16/11/2023).

Discussion

Comparison of functional difficulty assessment data with findings from clinical assessment

In our study, in the vision and hearing domains, the children identified by teachers as having functional difficulties who were clinically assessed were all confirmed to be experiencing a health issue. However, severe levels of impairments, which could be considered disabling, were found more accurately in the hearing domain, where all referred and clinically assessed children were found to have hearing impairment. In the vision domain, no child was identified to have a visual impairment by the WHO definition, although there were a couple of children, which had refractive error in one of the two eyes. Only one child had an eye condition which would not usually be self-limiting.

The data from clinical assessments of children who had been identified with functional difficulties with walking or climbing was less clear. Clinical examination only confirmed an impairment for one of the four children reported to have a functional difficulty in this domain. Reasons for this are unclear. It is possible that some children might experience difficulty in walking or climbing due to developmental difficulties or other conditions which might not be identified during a physiological examination. The possibility that vision difficulties might be behind reported mobility challenges was explored, but we did not find any evidence to support this. It is also possible that there was simply a higher rate of teacher error in responses to this question.

Our small sample size does not allow us to explore any differences between clinical assessment of children identified with functional difficulty through the CFM-TV as compared to those identified through the WG-SS. Given the close similarity in the questions for the seeing, hearing and mobility domains across the two tools, it seems likely that the children identified by either would be similar. However, in the CFM-TV, the questions are preceded by question about whether children wear glasses, use hearing aids, or use mobility devices. As teachers did report finding the skip patterns triggered by these questions somewhat confusing, it is possible that this would have impacted responses in the CFM-TV. Any potential impact of this could be managed by using an electronic version of the CFM-TV, in which the skips would be automated.

Our findings from the clinical assessment of children identified by teachers as having functional difficulties in the areas of seeing, hearing or walking/climbing need to be treated with some caution due to data limitations. Small sample sizes were further reduced by the difficulties in locating children for clinical assessment, meaning that only small numbers of children were clinically assessed. One of the reasons for the difficulty in locating children was that clinical assessment took place a year after the functional difficulty assessments. It is also possible that some children may have experienced substantive changes in health or impairment during this time.

While we do present some data from clinical assessment of children who were not initially identified as having a functional difficulty by teachers during Phase 2 of our study, these children are not representative of this group as a whole, as they were selected for the

screening due to concerns about their vision, hearing or mobility. We are therefore not able to assess the total number of children with disabilities who were not identified by teachers during the functional difficulty assessments. The referral of these additional children for clinical screening does suggest that some difficulties with functioning may not have been recorded by teachers in the WG-SS or CFM-TV, but we do not know why this is the case. It may have been that the concern only became apparent after Phase 2 of the study was completed, that teachers failed to record difficulties in functioning by accident, or it might also relate to the specific wording of the questions in the WG-SS or CFM-TV. It is worth noting that the largest additional number of children were referred for hearing assessments, but that all but one of these children were attending a single school. Reasons for this concentration of children with hearing impairment are not known, but may relate to the history of support Sightsavers had provided to children with disabilities at this school.

Comparison of functional difficulty data with other sources of disability data

Our examination of child-level Education for All programmatic data allowed us to assess to some extent whether children with known disabilities were identified by teachers as having functional difficulties. For the domains of vision and mobility, these children were generally not identified by teachers as having functional difficulties. Reasons for this are unclear, and merit further exploration. It may be that disabilities or impairments of some children had been clinically resolved or addressed through the Education for All programme, and that children were not experiencing any functional difficulty at the time of Phase 2 of the study. It may also be the case that teachers weren't aware of the disability, or of any difficulty in functioning. Only one child with hearing impairment included this analysis, meaning that no conclusions can be reached about this domain.

Relationship between functional difficulty, and school attendance and educational outcomes

At junior secondary level, children with functional difficulties identified through the CFM-TV had lower attendance than those without functional difficulties. This relationship was particularly prominent among the group of children with emotional or behavioural difficulties, who had significantly worse attendance than those without this type of difficulty. Potential reasons for this relationship are unclear, and it is possible that teachers are more easily able to identify emotional or behavioural difficulties among children with better attendance. At the primary school level, girls with functional difficulties identified by the CFM-TV have better attendance than girls without. We did not find any relationship between attendance and functional difficulty identified through the WG-SS. This may be because the WG-SS doesn't include the emotional or behavioural domains, which appear to drive the relationship between attendance and the CFM-TV. It is also true however, that the smaller number of children identified through the WG-SS means wider confidence levels on estimates, reducing the likelihood that a relationship would meet the criteria for statistical significance.

The relationships between functional difficulty and academic outcomes in our data were very unclear. At primary school level, children with functional difficulties identified by the CFM-TV had better academic outcomes than those without. This was most evident for the group of children with behavioural or emotional difficulties. Girls with functional difficulties identified by the WG-SS performed before than those without, but given small numbers, this finding needs to be treated with caution. Reasons for the patterns found are unclear, particularly given that the findings are counter to what would be expected on the basis of most existing evidence. Additional research to better understand why children with emotional or behavioural difficulties might be outperforming their peers would be helpful in interpreting this evidence.

Teacher experiences with functional difficulty assessment

Teachers provided generally positive feedback about the feasibility of using both the WG-SS and the CFM-TV, and reported value in the process of systematically thinking about each child and any difficulties they might be experiencing. Teachers reported making use of the data they generated to inform and strengthen their teaching for greater disability inclusion. They also reported that they become more aware of disability and the need for disability inclusion as a result of participation in this process. This was an unexpected and positive study outcome, and aligns with findings in other early evaluations of the CFM-TV (14). This finding may stem in part from the fairly comprehensive training provided to teachers, which included some more general disability-inclusion content. However, even if this is the case, the persistence of the effect over time is noteworthy, given that our interviews with teachers were conducted a year after the initial training and assessment. The potential value of these tools when used by teachers in bolstering disability awareness and inclusion in teachers' practices merits further exploration. Teachers' greater awareness of the difficulties faced by their students was accompanied by a greater awareness of their need for training and support in disability inclusive education. This is an important consideration in relation to decisions to increase the scale of use of these tools.

In speaking about their use of these tools, teachers did appear to conflate the terms 'functional difficulty' and 'disability', and to use them interchangeably. Washington Group question sets were designed for collection of population statistics, and not for the identification of individual children with disabilities – but when used by teachers in classrooms, it seems inevitable that the tools will start to be used at the very least as a form of disability screening, and may at times be (mis)understood as diagnoses of disability. In this study, teachers did appear to clearly recognise the need for onward referrals for clinical assessment, and did not appear to view their own assessments of students' difficulties as definitive diagnoses of disability. In any broader use of these tools in classrooms by teachers, it will be crucial to ensure that teachers, and all stakeholders involved, including children themselves, and their parents and caregivers, are able to understand the limitations of the assessments made by teachers, and the role that clinical assessment has to play.

In this regard, there are important challenges to address in terms of access to onward clinical screening and assessment services. In this study, we were not able to provide any clinical screening or assessment for the majority of children identified with functional

difficulties using the CFM-TV, due to the lack of the relevant clinical services. This does raise ethical concerns. In scaling of the use of this tool, referral and assessment pathways and capacity need to be considered.

Teachers' positivity about the value of the process, and their confidence in their use of the tools, needs to be juxtaposed against some of the concerns in relation to data quality and accuracy raised in the quantitative part of this report. There may be substantial value in the use of these tools by teachers, but this doesn't mean that they are an adequate substitute for clinical screening and assessment of children, or can be relied upon for disability data in isolation. Our quantitative data suggests that a number of children with disabilities were not identified through the functional difficulty assessment process. This raises additional questions about the frequency of functional difficulty assessment, who should have access to functional difficulty data, and how this should be stored, and shared within the school, and also with parents or caregivers.

Conclusion

Teachers participating in this study provided positive feedback about the value of the process of functional difficulty assessments, notwithstanding the additional requirement on their time. Teachers reported finding the data generated through this process valuable, and that they used it to strengthen their teaching to support greater disability inclusion. While the findings of this study have been broadly positive in relation to the feasibility and value of the use of the CFM-TV by teachers in schools (or indeed, such use of the WG-SS), it has also identified a number of challenges and constraints. These relate to needs for training on the tools themselves, as well as in relation to disability inclusive education, understanding and communicating clearly both the value and limitations of functional difficulty assessment data, the need to identify and capacitate pathways for clinical screening, referrals and assessment processes, and exploring in more details issues around frequency of tool use, and data use, storage and sharing. Additional research to better understand the implications of using the CFM-TV in classrooms, and on its performance when used as a screening tool, will be critical.

Appendices

Appendix 1 – Key features of a school/class register

...............Term   20.......   Class...................................   Department.................

No	Fees paid			Games fees paid	Name (in mixed schools, girls in red)	No in admission register	Age	DOB	1 Week ending.........					Column continues up to week 12	Weekly totals					Total attendance for term	Brought forward	Total
	Le	c	Rec No.						M	T	W	T	F		1	2	3	4	5			
1									\/	\/	\/	\/	\									
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4									\/													
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70									\/													

Appendix 2 – Guidelines for FGD with teachers

Objective - assess experiences/viewpoints of teachers in data collection, analysis, and utilization of data to inform practices in the classroom.

Based on your involvement in assessing functional difficulty of children in your classrooms and findings shared with schools recently.

1. What are your individual experiences of using WG-SS and CFM-TV to collect FD data in your classrooms?
2. What areas would you like included in the training package to help teachers collect quality FD?
3. Think about a specific child who had FD in your class last academic year. How did you assess that child?
    a. What specific FD domain were you dealing with?
    b. How did you become aware of the difficulty experienced by the child?
4. As class teachers, please with us, using specific examples, how you have used FD data in the classroom to improve practices, including your interactions with children?
5. How will you use available data to provide further support for children with FD outside the classroom/school?
6. Before that assessment in December 2022, you collected data on children with disability. What is the link between functional difficulty data collected using WG-SS and CFM-TV and disability records you kept in the school?
7. As class teachers, what role would you like to play in assessing FD of children in your classroom in the future?
8. What will be your preference for future assessment in terms of smartphone/table- and paper-based questionnaire? What are the reasons for your preference?

9. What recommendations would you propose to ensure that functional disability data collected is of high quality?

Appendix 3 – Topic guide for IDIs for various respondents

IDI guidelines for headmaster of 2-BKP (Aim - explore the experience of the 2-BKP headteacher in using both online and paper-based WG-SS question sets to assess FD of children).

1. Can you tell me about the training you received to prepare you for the annual school census and for piloting the WG-SS last year?
    a. Who provided the training? (MBSSE? EMIS?)
    b. Was there specific training for piloting WG-SS? Was it part of broader ASC training?
    c. What was covered in the training?
    d. What was the mode of training?
    e. How long did the training last?
    f. Who was trained from your school? (Headteacher only, other teachers, anyone else?)
    g. How well did you feel the training prepared you for completing the WG-SS online form?
    h. Do you recommend any changes to the training? Any additional content?
2. Can you please describe in detail how the WG-SS questions were answered for the ASC pilot?
    a. Any paper records or purely electronic?
    b. If any paper records, where stored? How long?
    c. If electronic, how many devices were used in this school? Who else used the devices?
    d. Individual level forms for each child, or any aggregation? Anything on register? Where did list of children assessed come from?
    e. Who completed the forms? Headteacher, other teachers?
    f. What was the role of class teachers in responding to the WG-SS questions? Completing forms, providing information, being consulted?
    g. How was it decided who should complete the WG-SS question set?
3. What was your experience in using the tablet to complete the WG-SS?
    a. Power, ease of application, internet connection.
    b. Support from MBSSE or other sources? From whom and what kind of support?
    c. Any supervision from MBSSE, checks on the data or questions about the data?
    d. Could you see the data you had captured?
    e. Were you confident in the quality of what was in the system?
    f. Did you have any feedback or access to the data after collection?
    g. What happened to the tablet itself after data collection was completed?
4. Thinking about your experiences with completing the WG-SS using paper forms and using a tablet, which did you prefer overall, and why?
    a. Strengths & limitations of tablet-based, particular challenges.
    b. Strengths & limitations of paper-based, particular challenges.
    c. Preference for future data collection and why?
5. Do you have any other suggestions or recommendations that could improve data collection in schools using the WG-SS?

IDI guidelines for Deputy Director of EMIS (Aim – a) understand the rational and decisions that led to piloting WG-SS in 2-BKP and identify potentials, b) challenges for using the electronic version of WG-SS, and c) quality of data produced).

2. What motivated you to pilot WG-SS for collecting functional difficulty data in 2-BKP, Kambia?
   a. Motivation for piloting WG-SS?
   b. How was 2-BKP selected for inclusion in piloting WG-SS?
   c. Were any schools included? How many in Bombali and Karene districts? Other districts?
   d. How were they selected? Levels of schools included (primary, JSS) ?
3. What was the rationale for using the electronic version of WG-SS on tablet, rather than the paper-based version?
4. What training was provided ahead of data collection?
   a. Who was trained?
   b. Who delivered the training?
   c. Mode of training and duration?
   d. What topics were covered in that training?
   e. Was it part of broader ASC training, or separate?
5. What arrangements were made for supervision and quality control during data collection?
   a. Who provided support?
   b. What was the role of EMIS ICT officers during data collection?
   c. What was the role of School Quality Assurance Officer (SQAO)?
   d. What types of support was available? What was requested by headmaster of 2-BKP?
   e. Any routine monitoring visits? Routine data checks?
   f. Specific quality assurance processes?
6. What were the outcomes of the pilot?
   a. How much data was collected?
   b. Challenges encountered? At 2-BKP and elsewhere?
   c. Any lessons learned?
   d. What was the quality of the data generated?
   e. Has the data been used? How? Plans for future use.
7. How has this pilot influenced your plans for collecting FD data during the 2023 annual school census?
   a. What are you plans for collecting child level disability data?
   b. What system is used to host data on EMIS?
   c. Can EMIS in its present state hold child level data?

8. What are your recommendations for collecting functional difficulty data in schools in the future?

FGD guidelines for district-based ICT staff (objectives - a) understand the rational and decisions that led to piloting WG-SS in 2-BKP, b) identify potentials and challenges for using the electronic version of WG-SS, and c) quality of data produced).

1. What motivated MBSSE to pilot WG-SS for collecting functional difficulty data in 2-BKP?
2. How was 2-BKP selected for inclusion in piloting WG-SS?

      a. How many schools were covered by the pilot in Karene district?
3. What was the rationale for using the electronic version of WG-SS on tablet, rather than the paper-based version?
4. What specific training was provided for the headteacher in 2-BKP ahead of data collection?
      b. What topics were covered in that training?
5. What form of support/supervision was provided for the headteacher during data collection?
      c. During your supervisory visits, what challenges did the headteacher encounter during the pilot exercise?
6. What lessons did you learn from this pilot?
7. How did you receive the WG-SS data from 2-BKP?
      a. In what format did you receive the data?
8. After analysing the data, what can you say about the quality of data generated from 2-BKP?
      b. How does the WG-SS data from 2-BKP compare with data from the ASC?
9. How do you plan to use the data generated from 2-BKP and from other schools where WG-SS was piloted?
10. How will your experience of piloting WG-SS affect planning and data collection for the 2023 annual school census?
11. Are their plans in the future to host child level FD data on EMIS?
12. What are your recommendations for collecting functional difficulty data in schools in the future?

IDI guidelines for district-level education authorities (Objective- assess experiences/viewpoints on data collection, analysis and how data will be used to inform planning and resource allocation).

1. Please tell me your experiences of participating in planning for data collection on child FD in schools.
2. Specifically, how would you evaluate the contribution of WG-SS and CFM-TV to collecting data on functional difficulty of children in schools?
3. Based on findings shared during the reflection workshop, how do you think data collected by WG-SS and CFM-TV will contribute to the following areas.
      a. planning in the education sector,
      b. resource allocation and,
      c. providing support for children with functional difficulty in schools?
4. What do you think about engaging class teachers in assessing the FD of children in their classrooms in the future?
5. What questions from the tools used by Sightsavers would like to see included in the school census form?
6. What recommendations would you propose to ensure that functional disability data collected is of high quality?

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