Technical Guidance

Guide for Including Disability in Education Management Information Systems

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1. Introduction

Article 28 of the Convention on the Rights of the Child (CRC) recognizes the right of all children to receive an education, which is the basis of equal opportunity in life. It states that primary education should be compulsory and free to all, and that secondary education should also be made available and accessible to every child.

Unfortunately, history shows that children with disabilities tend to be excluded from the education system (WHO/World Bank 2011, UNICEF 2013). This issue is explicitly addressed in Article 24 of the Convention on the Rights of Persons with Disabilities (CRPD) which calls for children with disabilities to have access to "an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live. This includes the provision of reasonable accommodations to children's needs along with adequate support to maximize economic and social development."

A country cannot facilitate policy development and evaluation in regards to the goals of the CRPD unless it has relevant, high quality data capable of performing these tasks. This includes data on the experience of children with disabilities in the education system, but also on the structure and resources of the education system, as well. Thus, the Education Management Information System (EMIS) typically used for monitoring the education system in general, must be adapted to meet this objective. The goal of this document is to provide guidance on how EMIS and administrative data can be more inclusive, based upon a review of a number of EMIS's from around the world.

This document is structured as follows: Section 2 reviews the conception of disability embodied in the CRPD, as well as the concepts of reasonable accommodation and inclusive design. Section 3 provides a brief overview of EMIS's. Section 4 contains a review of how EMIS's from around the world include or do not include information related to disability and inclusion. Section 5 puts forth a series of recommendations for designing an EMIS that can be an effective tool in helping to implement and monitor the education goals in the CRPD. Section 6 reports on a field test in Tanzania that to see how the recommendations work in practice and raises a number of practical issues.

For each category of information – data on children with disabilities, data on the physical environment and materials, and data on human resources and services – a minimum set of questions for an EMIS is provided. These represent the questions that are necessary to have an acceptable level of monitoring of inclusion in a school system. Additional questions are also provided that could also be included if space permits to obtain a fuller picture of the inclusivity of the school system.

2. Disability, Reasonable Accommodations, and Universal Design

Social Model of Disability

The Social Model of Disability maintains that disability results from the interaction of a person's functioning and their environment. That is, a person may have an impairment – for example they cannot move their legs – but disability arises from barriers in the environment that prevent that person from participating in society, or in the case of this document from attending and succeeding in school. Therefore, the focus is not solely on the children's impairments, but also on the barriers in the school environment that prevent children with those impairments from getting an education.

This means that when collecting data on disability in the school system it is important to not only gather data on children's impairments or difficulties doing various activities, but also on the barriers in the environment that keep children with functional difficulties from attending and succeeding in school.

Moreover, when it comes to children's impairments it is important to recognize that they are not synonymous with a medical diagnosis. What matters in terms of receiving an education is a child's functioning – that is, what he or she is capable of doing, not what condition he or she may have. For example, some children with cerebral palsy have great difficulty walking or speaking, but some only have minor difficulties. Some may have cognitive delays but some may have no cognitive delays whatsoever. Simply knowing a diagnosis does not provide much information on their capacity to undertake various activities. Information is needed, not on medical diagnoses, but on the nature of children's impairments and the difficulties they have performing tasks necessary for learning in a school environment. Equally important is information on the barriers, supports, and services in that environment that either impede or facilitate their education.

Addressing the needs of children with disabilities thus requires several types of interventions. Some may be focused on the child – for example, medical rehabilitation, assistive devices, speech therapy, physical therapy, and counselling. Others are focussed on changing the environment to remove barriers to learning. This includes physical barriers but also attitudinal and institutional ones, including the lack of capacity of the education system to understand and address the needs of children with disabilities.

Universal design, accessibility, and reasonable accommodations

Universal design is an approach to building an environment that is usable to the greatest extent possible by every member of society, regardless of their physical, intellectual, or perceptual abilities. This is different than accessible design. In accessible design, modifications or add-ons are incorporated into designs in order to allow people with disabilities to participate. While such modifications can remove barriers they can still be limiting or stigmatizing as well as highlighting people's impairments. But in Universal Design, the notion of a full range of usability is incorporated into the entire design so that usability is maximized in a more aesthetic, less stigmatizing fashion.

A ramp added on to a staircase at the side of an entranceway is an example of accessible design. With universal design there would be no need for a special ramp. Major entranceways would be designed so that wheelchair users could enter the building on their own (see www.universaldesign.com). But even with accessible design it is important that particular standards be followed. Not all ramps are accessible. They must be designed properly.[1]

One issue with universal design, obviously, is that it is only relevant to newly built structures and environments, and so transforming schools into a fully universally designed system will take a lot of time. In the meantime, accessible design modifications could break down barriers in existing schools.

[1] See UNICEF (2011), Transitional Learning Spaces (TLS): Design and Construction in Emergency and also International Organization for Standardization (ISO), taking into account the local context. For example, International Organization for Standardization (ISO) 21542:2011 Building Construction – Accessibility and Usability of the Built Environment,

Reasonable accommodation is another strategy to address access barriers. Reasonable accommodations could include the addition of accessible design elements – like ramps. But they can also address an individual person's needs in a particular situation. For example, if a child in a wheelchair cannot enter a school and there is no money to build a permanent ramp, a reasonable accommodation could be a portable ramp that is taken out and used whenever the child wishes to enter or leave the school. This is an accommodation which meets the individual's child need to overcome a barrier, but does not address the accessibility of the school overall.

Data requirements for Article 24 of the CRPD on education

Data relevant for the monitoring children in regards to Article 24 of the CRPD include:

1) *Identification of Children with Disabilities.* These are children who have a physical or mental condition which can impede their ability to learn at school if they are confronted with an unaccommodating environment. Technically, these are children with impairments who can be disabled by an unaccommodating environment, but to conform to the parlance generally used by government statistical systems, they will be referred to as children with disabilities.
2) *Physical and Material Barriers to Learning.* These include physical access to school buildings, but also to the use of furniture, equipment, learning materials, and communication supports (e.g., Braille and audio books).
3) *Human Resources and Services.* These include the training of teachers, their access to support services to assist their teaching, and also support services designed to assist students.
4) *Measures of Student Success.* These include standard educational outcome measures that are used for all students, such as enrolment, attendance, repeating, dropping out, transition and graduation.

3. Education Management Information Systems (EMIS)

An EMIS consists of a process of collecting, aggregating, and reporting data to monitor and evaluate the functioning of an education system. It includes data collection forms and a system for the distribution and collection of those forms, and a set of standardized reports using these data that remain consistent over time in order to track the performance of the education system.

To be useful, data must be collected in a consistent, timely and reliable manner with well-defined, policy relevant indicators. It should serve the needs of every level of the education system – individual schools, school districts, and the Ministry of Education – both for budgeting and implementation purposes, but also as an evaluative tool to help in the development of new policies and procedures.

These data are usually collected by means of an annual school census, where schools are requested to provide information on students, teachers, and facilities. For students, data typically includes the number of enrolees, attendees, new entrants, transfers, and dropouts. Students are disaggregated by grade level and gender. The level of detail on students (for example, the reasons for dropping

out) varies. These data are often drawn from class lists, but when sending data to the next level, aggregate numbers are typically reported.

The quality of EMIS's vary, and they are often plagued by a variety of problems. These include:

- Lack of compliance by schools in filling out the forms in a correct and timely manner
- Lack of consistent historical data for monitoring trends
- Weak procedures for cleaning and validating data
- Low capacity of staff and infrastructure for maintaining EMIS and generating reports
- Insufficient procedures for wide and timely dissemination

This paper addresses how well the EMIS data collection forms incorporate information necessary for monitoring and evaluating how well the education system meets the needs of children with disabilities. It makes no specific recommendations for improving the underlying EMIS system, except to the extent that it addresses how the class lists used to generate the EMIS data should be structured to allow for the collection of appropriate data on children with disabilities.

It is important to keep in mind that an EMIS only collects data on children who are interacting with the education system. To the extent that children with disabilities do not enrol in school, they will not be captured in an EMIS. So while an EMIS can be a useful tool for monitoring the participation and success of children in school, and also the accessibility of the school environment, it cannot address the question of the enrolment rate of children with disabilities or the reasons for non-enrolment. A household based survey that includes a module on disability – such as the Multiple Indicator Cluster Survey (MICS) – is necessary for those purposes. The UNICEF operations manual on conducting a study for the Out of School Children' Initiative (OOSCI) provides guidance on how to examine this.

4. Review of EMIS's

EMIS data forms from forty countries were reviewed for this guidance note[2]. While not a random sample of countries, they do provide a fairly broad range of approaches to measuring these concepts. Examples from these forms will be used throughout the document. This section discusses how they address collecting data on children with disabilities and with aspects of the environment.

Data on Children with Disabilities

Nineteen of the 40 countries reviewed contained no data on children with disabilities, allowing for no monitoring whatsoever of their educational experience. Most likely, this is not unusual for EMIS's from developing countries around the world.

[2] Bangladesh, Barbados, Belize, Bhutan, Burkina Faso, Cambodia, Cape Verde, Central African Republic, Chad, Cote D'Ivoire, Democratic Republic of Congo, Ethiopia, Gambia, Ghana, Grenada, Guinea, Guinea-Bissau, India, Jamaica, Lao, Liberia, Malawi, Mali, Mauritania, Mozambique, Namibia, Nepal, Niger, Nigeria, Pakistan, Senegal, Sierra Leone, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines, Swaziland, Tanzania, Timor-Leste, Togo, and Uganda

Information on how data on disability was reported is shown in Table 1. The terminology used in the forms is replicated in the table. A discussion of appropriate language is included later in this report. Some terms in the table, such as “mental retardation”, are considered offensive.

Of the 21 countries with some recording of children with disabilities, all but three attempted to classify them by type of disability (see Table 1). Belize simply records whether children are in a special needs class, which gives no information on the type or severity of disability, and may also exclude children with disabilities who are not in special classes. Grenada records the number of children receiving itinerant or special needs services which has the same limitations as data from Belize, with the added complication that some children receiving itinerant services may not have disabilities. Senegal simply lists the number of children with disabilities, with no guidance as to what constitutes a disability.

Other countries did categorize children with disabilities, which can be done both by type of disability and by severity. Type of disability refers to the functional domain in which a child has an impairment – for example, seeing or moving around. The second group of countries in Table 1 tend to identify only children with severe disabilities. For example their questionnaires refer to blind and deaf children, whereas the countries classified as Type 3 ask about a broader range of severity. In Nigeria, for example, children are listed as having a vision disability if they are either blind or visually impaired. Namibia and India go further in actually separating children by the degree of visual difficulties.

Countries classified as Type 2 ask about intellectual disabilities (sometimes with inappropriate terms such as “mental retardation”) which probably excludes some children that would be identified by a question asking about learning disabilities, a term that is used by some of the countries classified as Type 3. Again, Namibia and India have separate counts for children with more varying degrees of intellectual disabilities.

Interestingly, no country in the sample attempts to separate children with physical disabilities by severity. Sierra Leone only refers to polio victims under the physical category although there are many more causes of physical disabilities including, for example, violence, accidents, and congenital conditions.

Several countries mention difficulties with speech, sometimes tied directly to hearing difficulties. While hearing difficulties are probably a major cause of speech difficulties, there are other causes. For example, autistic children or children with significant cognitive disabilities might also have problems with speech. Only Namibia had a question about behavioural disorders that could potentially identify children with psycho-social disabilities.

TABLE 1: Categorization of Children with Disabilities in Reviewed EMIS							
	Vision	**Hearing**	**Physical**	**Mental**	**Speech**	**Multiple**	**Other**
Type 1: No categorization							
Grenada							Receiving itinerant or special needs services
Belize							Special education class
Senegal							Handicapped
Type 2: Severe only							
Tanzania	Blind	Deaf	Crippled	Mental retardation	Dumb		Albino
Ethiopia	Blind	Deaf and Mute	Cripple	Mentally impaired	*Mute is mentioned in hearing category*		Other
Liberia	Blindness	Deafness	Other Physical handicaps				
Sierra Leone	Blind	Deaf/Dumb	Polio victim	Mentally retarded	*Dumb is mentioned in hearing category*		Others
Nepal	Blind	Deaf	Physical	Mental	Vocal and speech related disabilities	Deaf and Blind	
Type 3: Broader range of severity							
Cote D'Ivoire	Visual	Audio	Motor	Mental		Multiple	
Cape Verde	Visual	Hearing	Motor	Mental / Learning Disability		Multiple	Emotional
Burkina Faso	Visual	Audio	Motor	Mental			One-arm or armless

TABLE 1: Categorization of Children with Disabilities in Reviewed EMIS (continued)									
	Vision		**Hearing**		**Physical**	**Mental**		**Speech**	**Multiple**	**Other**
Ghana	Blind/Visual		Hearing and Speech		Physically disabled	Intellectually disabled			Blind and hearing	
Uganda	Visual		Hearing		Physically/Motor impaired				Multiple handicaps	Autism
The Gambia	Vision		Hearing		Physical	Mental		Speaking	Multiple impairments	
Nigeria	Blind/visually impaired		Hearing/speech impaired		Physically challenged	Mentally challenged		*Mentioned in hearing category*		
Malawi	Blind		Hard of hearing	Deaf	Physical impairment	Learning difficulties				
Bangladesh	Poor eyesight		Short of hearing		Physically handicapped	Intellectual/Mental		Problems in speech		Others
Swaziland	Visually impaired		Hearing impaired		Physical disability	Learning disability				Other impairment
Namibia	Partially blind	Totally blind	Hard of hearing	Deaf	Physical	Mild and moderate intellectually disabled	Severe intellectual disabled			Behavioral and/or ADD, Autism spectrum disorder, epileptic, Others
India	Blind	Low vision	Hearing impairment		Loco Motor Impairment	Mental Retardation	Learning disability	Speech impairments	Multiple	Cerebral Palsy, Autism
Other										
Timor-Leste	Uses Washington Group Short Set questions described in Box 1.									
No mention of disability: Barbados, Bhutan, Cambodia, Central African Republic, Chad, Democratic Republic of Congo, Guinea, Guinea-Bissau, Jamaica, Lao, Mali, Mauritania, Mozambique, Niger, Pakistan, St Christopher and Nevis, St Lucia, St Vincent and the Grenadines, Togo										

Some countries also mention specific conditions such as albinism, epilepsy, autism, and cerebral palsy. There are some rationales for doing this. For example, a condition such as albinism might be an impairment which is primarily important because of the cultural situation. That is, a child with albinism may only face social barriers to learning, and so for planning and monitoring purposes might need to be specifically identified. Any intervention for these children may be very specific. Similarly, there may be particular conditions, such as epilepsy, that require specific types of medication. It may be important for planning service delivery to know how many children need this specific intervention. However, care should be taken in asking about specific diagnoses. As stated earlier, a diagnosis often does not provide much information on a child's functioning. For example, children with autism and cerebral palsy both fall under a very broad range of functioning and can have very different needs. Also, children may not be diagnosed – or misdiagnosed – even though it is apparent that they have difficulties in school.

Timor-Leste takes a different approach, relying on the census questions developed by the UN Statistical Commission's Washington Group on Disability Statistics, as shown in Box 1. These do not ask about diagnoses and allow for a broader range of severity. Also, difficulties with self-care are not specifically identified as due to a physical or mental disability. However, it should be noted that these questions were not designed specifically with children in mind. They probably miss many children with developmental issues as well as some psychosocial issues. So while they probably can identify many children with sensory or mobility issues, they are to a degree lacking. For that reason the Washington Group and UNICEF have developed a set of questions along a similar vein that are designed specifically for children. These questions will be launched this year, and will also be adapted to be included in future rounds of the Multiple Indicator Cluster Survey (MICS),

Box 1: Timor-Leste and Washington Group Census Questions*

Does your child have difficulty seeing?

Does your child have difficulty hearing?

Does your child have difficulty walking or climbing steps?

Does your child have difficulty remembering or concentrating?

Does your child have difficulty washing themselves or putting on their clothes?

Does your child have difficulty with language, for example understanding what you say or being understood?

Response categories:

No, no difficulty

Yes, some difficulty

Yes, lot of difficulty

Yes, cannot do at all

* These are not exactly the Washington Group questions because they lack the lead in reference to a health condition, and they do not ask about problems seeing or hearing even when wearing glasses or a hearing aid

Data on Physical and Material Barriers to Learning

The EMIS forms reviewed for this guidance note contained very little information on the physical accessibility of schools for children with disabilities. Some data that came close was information on roads from seven countries. EMIS forms included items such as how far the nearest road was from the school and whether the road was passable during the rainy season. This pertains to access for all students, but is especially important for children with disabilities, in particular those with physical and vision difficulties.

At the same time, 24 of the 40 countries collected information about the physical infrastructure of the school, and several about materials and supplies. Some countries only asked a few basic questions but others had an extensive list about toilets, utilities, building materials, condition of facilities, types of rooms (e.g., medical room, computer room, and staff rooms), size of rooms, types of furniture, as well as equipment such as audio-visual equipment, fire extinguishers, water coolers, internet connections, musical instruments, etc. Only in Bangladesh was there any mention about provisions for children with disabilities in each of the school's rooms.

Toilets have often been cited as a major barrier to school attendance for children with physical disabilities. And while 21 countries asked specific questions about the availability of toilets for boys, girls, and staff, only one addressed the question as to whether these toilets were accessible to children with disabilities.

Data on Human Resources and Services

Extensive information is collected on most EMIS forms when it comes to the education, experience, and qualification of teachers. This includes type of training and degrees, subject certification, and years teaching. Some countries also collect information on teacher transfers and the reasons for teachers leaving their positions. As with physical facilities, however, training on inclusive education, or of supports to teachers dealing with issues that may arise with their students with disabilities, is not collected. Mention of services available for children with disabilities is also scant. The Gambia reports on whether there are assessments for various types of disability, but nothing about follow up services. Belize, Ethiopia, and Namibia record whether a child is in a special school or class. Presumably these children are getting some kind of special services, but they are not recorded in the EMIS. Ghana records a bit more detailed information, listing whether the school provides any children with hearing aids, glasses, wheel chairs, Braille, or "other".

The notable exception in the EMIS's reviewed for this note is India. If any children are enrolled in "Special Training" then the form asks for the following information:

a. Number of boys and girls enrolled with need of Special Training in current year
b. Number of boys and girls provided Special Training in current year
c. Number of boys and girls enrolled for Special Training in previous academic year
d. Number of boys and girls completed special training during previous academic year
e. Who conducts the Special Training (teacher, special teacher, both, NGO, others)
f. Where is Special Training conducted (on school, off school, both)
g. Type of Special Training conducted (residential, non-residential, both)
h. Number of teachers available for conducting special training

i. Number of teachers receiving training for conducting special training
j. Whether special training material to children is made available

While this information is useful it has a few drawbacks. First, it focuses on a model of special education, as opposed to inclusive education. That is, there is no recording of teachers trained to deal with children with disabilities as part of the general classroom, nor is there any information on aides or other class resources that can help teachers operate a more inclusive setting. This, of course, could very well be because those types of education efforts are not yet underway. However if a system is to move towards a more inclusive model, such information will be important to collect.

Second, no specific information is collected on what type of special training is being offered. Is it one-on-one tutoring? Is it physical, speech, or occupational therapy? Nor does it talk about the type of training that teachers have received. Inclusive education involves child-centered teaching and teachers must adapt each year to the particular students and situations they have in their class. One-off training or only pre-service training does not suffice. Access to on-going training and expert consultations are particularly important.

Measures of Student Success

EMIS's track students' experiences in the education system through enrolment, attendance, repeating a grade, dropping out, and graduation. They also often collect information on transfers and new entrants in order to better track their school population. In the EMIS's reviewed for this note, there was no instance of any of these measures being disaggregated by disability. One slight exception is that in a handful of countries sickness was listed as one of the reasons for dropping out of school. In Grenada, deviant behaviour and the irrelevance of the curriculum were also listed as possible reasons for dropping out. These are probably correlated with, but definitely not limited to, the presence of a disability. Deviant behaviour may be associated at times with psycho-social disabilities, and irrelevance of the curriculum, possibly, to students with significant learning disabilities.

5. Guide to Including Disability in EMIS Data Collection Forms

Data on Children with Disabilities

The minimal approach used by some EMIS's is simply to collect information on the presence of children with any disability, but this is not sufficient. Children with different types and degrees of disability face very different challenges and barriers. In planning on how to address their needs or evaluating how their needs are being met, lumping all children with disabilities in one category will mask important differences.

Obtaining information on children whose disabilities cover a wide range of support needs is important. Sometimes a minor impairment can be very disabling. For example, a child with vision problems correctable by glasses has a minor impairment, but if she lives in an environment where glasses are not obtainable and therefore drops out of school, that minor impairment has had a major impact on her life.

Countries with EMIS forms that refer to children with "disabilities", as opposed to children with "difficulties" or "special needs" risk missing children with minor impairments, even if those minor impairments can have significant impacts on education. The word disability usually conveys the impression that the condition is medically severe, and so can miss children with mild or moderate impairments.[3] This is the reason that The Tanzania National Disability Survey (2008), for example, does not ever include the word "disability" in any of its questions, but only asks about difficulties in doing various activities. One advantage of the Timor-Leste questions is that children with even minor difficulties in functioning are both identified and kept distinct from those with more significant difficulties. This allows for a more nuanced evaluation of how children are faring in the school system and which interventions could help various types of children. In Cambodia it was found that children bathing in dirty water had high incidences of ear infections which could potentially lead to permanent hearing loss, and were identified through screening as only having some difficulty in hearing (UNICEF State of the World's Children 2013).

Another issue pertains to the recording of children with multiple disabilities. The way many EMIS forms classify children as having multiple disabilities hides the types of difficulties they have. A child may have vision and mobility difficulties, or she may have hearing and intellectual difficulties. If the purpose behind the data is simply to count the number of children with disabilities, then this is not an issue. But if the goal is to plan for services then it is important to know how many children may need, say, Braille books. In addition, knowing the types of disabilities a child with multiple disabilities has can help the school system monitor if different types of disabilities lead to different outcomes, or spot patterns in disability prevalence that may indicate local causes of disability (e.g., dirty bathing water). Therefore a system which can identify both how many children have at least one disability, and how many children have each type of disability is preferred (allowing for one child to be double counted in the second instance but not the first, as can be seen in Table 2a).

It should be noted that the questions recommended here assume an EMIS system where teachers (or administrators) fill out an annual census. It would be more accurate to collect these data if records were kept on individual children.. In that case, class lists must be revised in order to allow for the information to be collected. However, this does raise the issue of privacy. If data on the disability status of individual children (or other sensitive information) is kept in school records there must be adequate safeguards on the confidentiality of that data. For example, in the Netherlands detailed information on children's special needs is kept in school records, but access is restricted. No one outside of the school is allowed access. When the data is reported for aggregation at the district level, identifying information on the children should not be reported. That should only be kept at the school level for use by staffs that are actually interacting with the children. When such individual records are kept it may be possible for the country to have more detailed assessments as part of the student record which would be preferable to a teacher sitting down to fill out a survey once a year. If that is the case, though, those classifications should still follow the general outline presented below.

[3] Mont, D. "Measuring Disability Prevalence," Social Protection Discussion Paper No. 0706, The World Bank (2007)

Recommended Questions

Table 2a provides a template for the minimum recommended set of questions to identify children with disabilities. These questions lessen stigma by asking about difficulties, as opposed to disability, and they classify children by both type and degree of disability. Finally, the method for accounting for multiple disabilities allows the system to track not only the impact of having multiple disabilities, but also how many children have each type of disability. Data is disaggregated by gender because studies have shown that disability can have a more significant impact on girls, and so the gender dimension needs to be considered.[4]

This form requires no calculation on the part of the person completing the form. If, for example, a boy has both vision and hearing problems, he will be counted as one of the children having vision problems and also one of the children having hearing problems. But he will also be counted as one of the children having difficulties in two areas. That way, the school knows how many children have difficulties in each functional area, and the data analyst generating the report can combine this information to calculate the total number of children with any disability.

If space permits, these data can be disaggregated by grade as well, and put into two tables as shown in Tables 2b and 2c.

These questions belong in the student information section where the number of pupils are recorded and are important for identifying children with disabilities. Once these determinations are made, this information can be incorporated in the other data elements from this section of the EMIS, namely new entrants, repeaters, transfers and dropouts. In most if not all EMIS's, that information is disaggregated by gender. It should be disaggregated by disability, as well. Children identified has having difficulties in Table 2a should be considered to have a disability.

The minimum level of disaggregation that should be done is shown in Table 3a. If space allows, then disaggregation by type of disability would be useful. Table 3b is an example.

Identifying children with disabilities can be quite complicated. When designing questions for household surveys and censuses, great care must be taken to make sure that respondents are interpreting the questions as asked. With administrative data, there is the ability to provide training to school personnel filling out the forms as to exactly what is meant by having difficulty performing a particular activity and to have that standard applied uniformly across students. Such training should take place in order to ensure that data collected from different schools is comparable and that the concepts are being understood in the same manner. This training could include standardized vignettes describing particular situations where a child would be considered to have no difficulty, some difficulty, or a lot of difficulty undertaking various activities.

[4] Rousso, H. (2003) "Education for All: a gender and disability perspective," Background paper* prepared for the Education for All Global Monitoring Report 2003/4: Gender and Education for All: The Leap to Equality

Table 2a: Recommended questions for EMIS form for children with disabilities														
Compared with children of the same age, how many children enrolled in school have difficulties in the following areas (a child can be counted in more than one area):														
	Vision		Hearing		Gross Motor (e.g., walking or climbing steps)		Fine Motor (e.g., writing or fastening clothes)		Intellectual		Communication (understanding and being understood by others)		Behaviour and socialization	
	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty
Boys														
Girls														
TOTAL														
How many children enrolled in school have difficulties in the following number of areas, as recorded above														
	1 area		2 areas		3 areas		4 areas		5 areas		6 areas		All 7 areas	TOTAL
Boys														
Girls														
TOTAL														

Table 2b: Sample EMIS form for children with disabilities by grade level

Compared with children of the same age, how many children enrolled in school have difficulties in the following areas (a child can be counted in more than one area):

	Vision		Hearing		Gross Motor (e.g., walking or climbing steps)		Fine Motor (e.g., writing or fastening clothes)		Intellectual		Communication (understanding and being understood by others)		Behaviour and socialization	
	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty	Some difficulty	A lot of difficulty
GRADE 1														
Boys														
Girls														
TOTAL														
GRADE 2														
Boys														
Girls														
TOTAL														

Table continues for additional grade levels.

Table 2c: Sample EMIS form for recording children with multiple disabilities								
How many children enrolled in school have difficulties in the following number of areas listed in Table 2b								
GRADE 1								
	One area	Two areas	Three areas	Four areas	Five areas	Six areas	Seven areas	TOTAL
Boys								
Girls								
Total								
GRADE 2								
Boys								
Girls								
Total								
Table continues for additional grade levels.								

Table 3a: Sample Form for Recording Experience of Children with Disabilities								
ENROLEES								
	Grade 1		**Grade 2**		**. . .**		**Grade 6**	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Students without disabilities								
Students with disabilities								
TOTAL								
This table is repeated for dropouts, new entrants, transfers, or whatever other category of students already collected by the existing EMIS form								

Table 3b: Sample Form for Recording Experience of Children with Disabilities at More Detailed Level								
ENROLEES								
	Grade 1		**Grade 2**		**. . .**		**Grade 6**	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Students without disabilities								
Students with disabilities in…								
Vision								
Hearing								
Gross Motor								
Fine Motor								
Intellectual								
Communication								
Behaviour and Socialization								
Multiple Disability								
This table is repeated for dropouts, new entrants, transfers, or whatever other category of students already collected by the existing EMIS form. Also each child can only be assigned to one type of disability. So if they have multiple disabilities they are only listed in the multiple disability category. Information from Table 2 can be used to look at what type of disabilities they are likely to have.								

A final issue is the manner in which these EMIS forms are completed. Are school personnel responding with aggregate numbers, or are they basing their computations on class listings? That is, do they refer to specific class lists where individual children are flagged as having particular difficulties? In that case they only have to sum up the information from existing lists. Or, do they only consider this question when filling out the EMIS form and are making an estimate based on their recollection. If it is the former, the data will be much more accurate. Another advantage of this method is that it identifies which children are in need of particular services within the administrative record.

Data on Physical and Material Barriers to Learning

In terms of physical barriers, there are two main issues: reaching the school and then accessing school facilities. Some key barriers to participating in school lie outside the purview of the education system, for example the quality of roads throughout the school district and the accessibility of public transportation. However, as physical access to the school is extremely important, all EMIS's should at least ask a set of minimum questions.

Recommended Questions

The minimum questions for school accessibility are found in Tables 4 and 5.

Table 4: Question on access into the school		
		Yes =1, No=2
Is the road leading to the school accessible to a student in wheelchair, including during the rainy season?		
Are there steps leading up to the main entrance?		
	If yes, is there a proper ramp in good condition usable by a person in a wheelchair?	
Is the main entrance to the school wide enough for a person in a wheelchair to enter?		

Aside from the entrance, another key feature of schools which frequently poses a barrier to children with disabilities is toilets (UNICEF State of the World's Children 2013). Therefore, collecting information on the accessibility of toilets is also vital, including for staff toilets because they could be a barrier to hiring people with disabilities as school personnel. Questions on toilets already exist in many EMIS's so in those instances only a small addition would have to be made to the form inquiring about accessibility.

The questions on toilets recommended by UNICEF in its WASH in Schools Monitoring Package are shown in Table 5. These include the recommended core questions plus two of the monitoring package's expanded questions – the one on teachers' toilets and accessibility – and an additional question on accessibility of the teachers' facility.

Table 5: Minimum questions on toilets for inclusion in the EMIS		
Does the school have any toilet facilities? (Yes=1, No=2)		
If yes…		
How many toilet compartments are there in the school for children?		
	Functional	Not Functional
Exclusively for girls		
Exclusively for boys		
For boys or girls (communal toilet compartments anyone can use)		
Are toilets accessible to children with physical disabilities? (Yes=1, No=2)		
Do teachers have their own toilet facilities separate from children? (Yes=1, No=2)		
If yes, are the teacher's facilities accessible to a person with physical disabilities? (Yes=1, No=2)		

If questions already exist on the EMIS asking about additional facilities, then accessibility should be addressed. This includes not only classroom settings but all facilities, including recreational areas, health clinics, or anything else on site. This could be done by adding an additional column to the form with a check off for accessibility. Table 6 uses an example from India, with an additional column added and shaded in.

Table 6: Adapted Table from India EMIS Form with Additional Column for Accessibility		
Particulars	Availability (0=Not applicable, Yes=1, No=2)	Accessible to Students with Disabilities (0=Not applicable, Yes=1, No=2)
Separate room for Asst. Head Master/ Vice-Principal		
Auditorium		
Separate common room for girls		
Staffroom for teachers		
ICT Lab		
Computer Room		
Room for indoor games		
Co-Curricular/activity room		
NCC/NSS/Scout and Guide room		
First aid/sick/medical room		
Staff quarters		
Integrated science laboratory		
Library		

Beyond adding a column on accessibility to already existing questions, it is also recommended to add questions that specifically relate to aspects of the accessibility of rooms in general. These are displayed in Table 7.

Table 7: Additional questions on physical accessibility	
How many classrooms are there?	
How many classrooms are accessible to a students with disabilities?	
How many floor levels are in the building?	
How many floor levels are accessible to students in with disabilities, either through ramps or an elevator?	
How many rooms have emergency exits?	
How many emergency exits are accessible to students with disabilities?	
Does the school have an evacuation plan for students with disabilities?	

In addition to physical structure there are also materials. These include instructional materials such as books and computers, and other equipment such recreational equipment or water coolers. Table 8 lists a series of material questions. Again, these are based on the fields found in the EMIS review but should be prioritized based on the local context. Some of these materials will be non-existent or very scarce in some settings and so do not warrant inclusion on the form.

It should also be noted that other UNICEF material recommends improved questions on a variety of facilities and materials – for example questions on water and hygiene in the WASH in Schools Monitoring Package. Where possible, these recommendations should also be adopted, including the recommended expanded questions on accessibility.

Table 8: Sample Questions on Materials for Students with Disabilities		
General Material or Equipment Does your school have …	Yes=1, No=2	Accessible (Yes=1, No=2)
Recreational equipment		
Water cooler		
Computers		
Blackboard		
Special Materials or Equipment Does your school have …	Yes=1, No=2	High quality =1 Average quality=2 Low quality=3
Braille books		
Audio books		
Hearing Loop		
Modified furniture		
Assistive devices for gripping (e.g., for pencils)		
Handrails		
Computer screen readers		
Large, easy to read signage		

Data on Human Resources and Services

Many EMIS forms ask for extensive information on staff. This includes not just aggregate numbers of staff but the specific qualifications of each staff member. Data elements include highest educational level achieved and type of degree, personal information on age and gender, employment history, salary scale, and number and type of classes taught.

The optimal strategy for including information on teachers' capacity regarding inclusive education would be to add additional columns to these forms that inquire about teachers' training, certification and experience (as seen below in Table 10). However, the sections for information on staff are sometimes quite extensive and adding extra columns to existing forms pertaining to specific training on special or inclusive education and experience with children with disabilities may cause difficulties in form layout. Therefore, the minimum acceptable questions on teacher capacity in the EMIS are found in Table 9.

Recommended Questions

Table 9: Minimum EMIS Questions on Teacher Capacity	
	Answer
In the past year, how many teachers received in-service training on teaching children with disabilities?	
Are there specialists for teaching children with disabilities in your school? (Yes=1, No=2)	
If yes, how many?	

Table 10 shows an example of collecting more detailed information on teacher capacity attached directly to the already existing staff sections of current EMIS's. It uses the current EMIS questions on teacher qualifications from the Nigerian EMIS. The shaded rows and columns have been added to the current form to allow for the collection on information related to the teachers' capacity to teach children with disabilities. The shaded option "7 – Special or Inclusive Education" is added to Nigeria's subject of qualification response list.

The education goal in the CRPD is inclusive education, but the understanding in most countries of what inclusive education and special education are, and how they are different, is limited. Therefore the headings of the additional columns refer to teaching children with disabilities, not special or inclusive education per se.

Table 10: Sample questions on teacher capacity integrated into current teacher staff information collected: Example adapted from Nigeria's form

Enter information on all teachers who: (1) are on the school payroll, whether they work at the school or are absent for a long time; (2) work at the school but are not on the school payroll

Gender M-Male F-Female

Type of Teacher 1-Principal 2-Vice Principal 3- Teacher

Source of Salary 1- Federal government 2-State government – on this school's payroll 3-State government – on another school's payroll

Present 1-Present or temporarily absent 2-Absernt for more than 1 month (maternity leave) 3-Absent for more than 1 month (sick leave) 4-Absent for more than 1 month (Training) 5-Absent more than 1 month (Secondment) 6-Absent more than 1 month (unauthorized)

Academic qualification 1-Below SSCE 2-SSCE/WASC 3-OND/Diploma 4-Degree/HND/Graduate

Teaching qualification 1-NCE 2-PGDE 3-B.Ed. or equivalent 4-M.Ed. or equivalent 5-Grade II or equivalent 6-None

Subject of qualification 1-English 2- Mathematics 3-Science 4-Business 5-Humanities 6-Technology 7- Special or Inclusive Education

No.	Name of teacher	Gender	Type of teacher	Source of Salary	Year of birth	Year of first appointment	Grade level	Present	Academic qualification	Teaching qualification	Subject of qualification	Tick box if teacher teaches subject of his/her qualification	Tick box if teacher also teaches junior secondary classes in this school	Tick box if teacher attended training workshop/seminar in last 12 months	Tick box if teacher received training on teaching children with disabilities in last 12 months	Tick box if teacher received pre-service training on children with disabilities
												☐	☐	☐	☐	☐
												☐	☐	☐	☐	☐
												☐	☐	☐	☐	☐

For more advanced school systems that are building supports for more inclusive schools, the questions in Table 11 could also be included.

Table 11: Extended questions on teacher capacity for more developed school systems	
Does your school have a resource room with staff trained on teaching children with disabilities? (Yes=1, No=2)	
Does the school have specialists that are available to consult with teachers who have problems concerning students with disabilities? (Yes=1, No=2)	
How many speech therapists work in your school?	
How many physical therapists work in your school?	
Are there specialists outside the school but in the school district whom your teachers can consult with on issues related to teaching children with disabilities (Yes=1, No=2)	

In addition to staff, there is the issue of services provided to the children. This can include a broad range of activities. Table 12 provides an extensive list. As always, they should be prioritized, limited, or supplemented based upon the local country context. Some of the services in Table 12 will not be available in certain countries and so it would not make sense to include them.

Table 12: Sample questions on services received from the school													
	BOYS						**GIRLS**						**TOTAL**
How many children have received …	Grade						Grade						
	1	2	3	4	5	6	1	2	3	4	5	6	
Special tutoring or assistance inside the classroom by an aide or other teacher													
Tutoring or assistance outside of the classroom													
Physical therapy													
Speech therapy – articulation													
Speech therapy – pragmatic language													
Occupational therapy													
Counselling													
Braille instruction													
Sign language instruction													
Glasses													
Hearing Aids													
Wheelchairs or tricycles													
Canes, Walkers, or similar devices													
Prosthetics													

Operationalizing the Questions

When designing questions for household surveys and censuses, great care must be taken to make sure that respondents correctly interpret the questions as asked. Small changes in the wording on questions can have a large impact on the data collected. The issue can be less problematic with administrative data because there is more of an opportunity to train school personnel on how to fill out the forms, and because those personnel will become more familiar with the forms over time. Therefore, it is recommended that school personnel are trained so they have a clear understanding as to exactly what is meant by having difficulty performing a particular activity and to have that standard applied uniformly across students. Such training should take place in order to ensure that data collected from different schools is comparable and that the concepts are being understood in the same manner. This training could include standardized vignettes describing particular situations where a child would be considered to have no difficulty, some difficulty, or a lot of difficulty undertaking various activities.

Teachers are very familiar with what children of a particular age are expected to be able to do within their cultures and can identify which ones are having difficulties that go beyond what is typical. For difficulties seeing, hearing, and moving these can are generally pretty straightforward. Problems with behavior are more difficult. Children can have behavioral issues because of certain mental health or developmental conditions, or they could have difficulties because they are experiencing various stresses at home that are not related to a particular impairment. For the purposes of measuring disability prevalence, this might create some false positives, but for the purpose of an EMIS it is not as problematic. These children are still having difficulties at school that require the special attention of their teachers and the school. Identifying these children, planning for them, and monitoring their outcomes is still an important role for the EMIS.

Another very important issue is translation. Section 7 describes the procedure used for translation for the Tanzanian field test, which is considered a better practice than simple translation, even with back translation.

6. Guide to Including Disability in EMIS Reports

Reporting on disability within the EMIS report consists of four parts: First, the reporting on the presence and experience of children with disabilities, second the accessibility of physical structures and materials, and the training of school personnel, and finally the types of services received by students.

Children with Disabilities

Table 13a displays a basic breakdown of boys and girls enrolled in school who have any disability by grade level. The numbers for this table come from Table 2a. The percentages come from dividing those numbers by the total number of children (boys, girls, or both) in the school. Table 13b shows the corresponding, but more detailed, table that could be generated if instead of using the questions in Table 2a, the EMIS included the breakdown by grade level in Table 2b and 2c.

Table 13a: Reporting template for children with disabilities enrolled in school			
	Boys	**Girls**	**Total**
Number of children with disabilities			
Percentage of all children with disabilities			

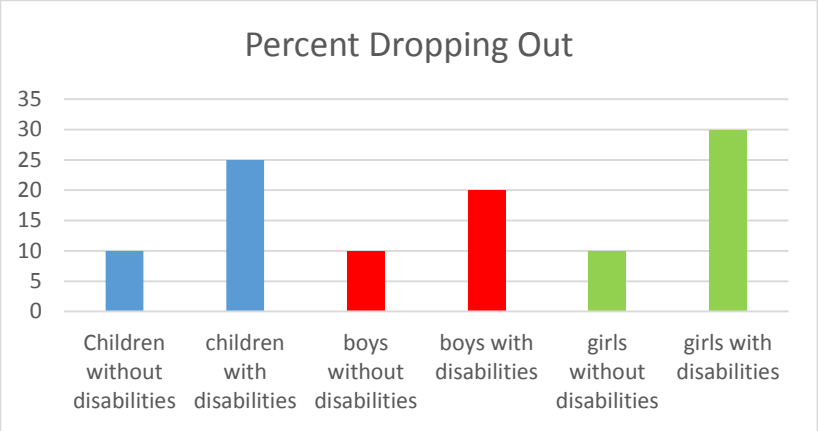
Table 13b: Reporting template for children with disabilities enrolled in school system by grade							
	Grade						
Children with disabilities	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
Number of boys with disabilities							
Number of girls with disabilities							
Percentage of all boys with disabilities							
Percentage of all girls with disabilities							
Number of children with disabilities							
Percentage of all children with disabilities							

Table 14 provides a breakdown of children by type and degree of disability, based on Table 2a. In Table 14, children with low support needs are those listed with some difficulty in Table 2a, whereas those with a lot of difficulty are considered to have high support needs.

Table 14: Reporting template for type and degree of disability of children enrolled in school							
	Vision	Hearing	Gross Motor	Fine Motor	Intellectual	Communication	Behavioural and Social
Boys							
Number							
Low support needs							
High support needs							
Percent							
Low support needs							
High support needs							
Girls							
Number							
Low support needs							
High support needs							
Percent							
Low support needs							
High support needs							
All							
Number							
Low support needs							
High support needs							
Percent							
Low support needs							
High support needs							

Tables 13a, 13b, and 14 are for children enrolled in school and represent the minimum level of reporting required for an EMIS. However, as explained earlier children with disabilities face many barriers when it comes to both attending and succeeding in school. Therefore, if the extended tables are used to collect data, these tables should also be replicated for attendees, dropouts and repeaters. In addition, during the standard reporting for dropout and repetition rates, disaggregation should be made not only by gender, but by disability, and by type of disability. An example bar chart for dropouts is shown in Figure 1, but could be replicated for new entrants, promotions, repetitions, or whatever other indicator is already being collected and analysed by the current EMIS system.

Figure 1 -- Example of Chart Showing Dropout Rates by Gender and Disability



In the hypothetical example in Figure 1, children with disabilities have a 25 percent dropout rate compared with only 10 percent for those without disabilities, and while boys and girls with disabilities are both more likely to drop-out than their non-disabled peers. The effect is bigger for girls, consistent with the hypothesis that disability has a bigger impact on girls than boys.

Physical structures and materials

The two primary indicators of physical accessibility are the entranceway and the existence of accessible toilets. An example of reporting indicators for the accessibility of school entrances are shown in Figure 2. The left most bar shows the percentage of schools having a year round accessible road. The second bar splits schools between those without steps and those who have steps but also have ramps. In both cases, steps pose no barrier to people with mobility issues. The third bar reports on the number of schools whose entrances are wide enough to accommodate a wheelchair. The final bar reports on the percentage of schools that meets all three conditions -- a year round accessible road, no barrier due to steps, and an adequately wide entrance -- thus having fully accessible entrance.

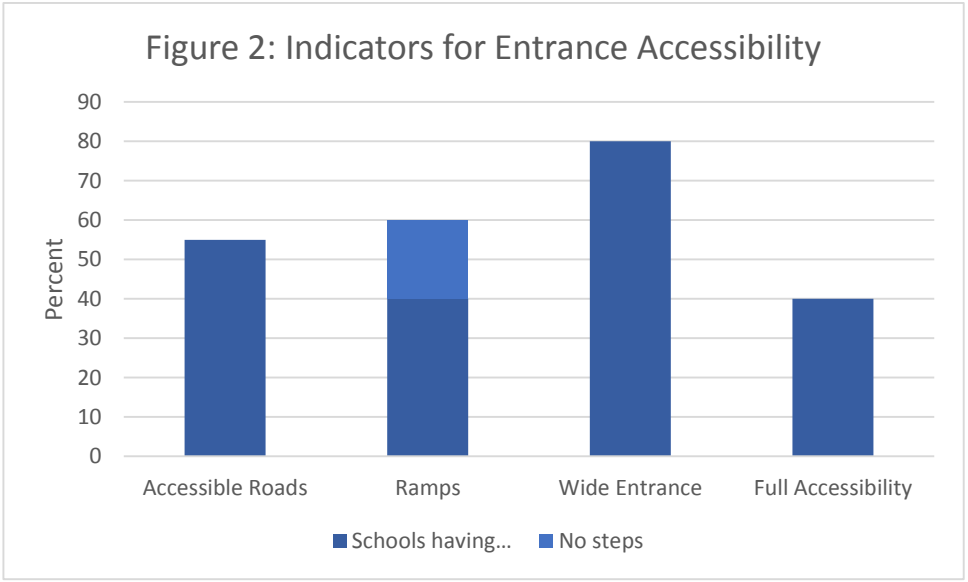
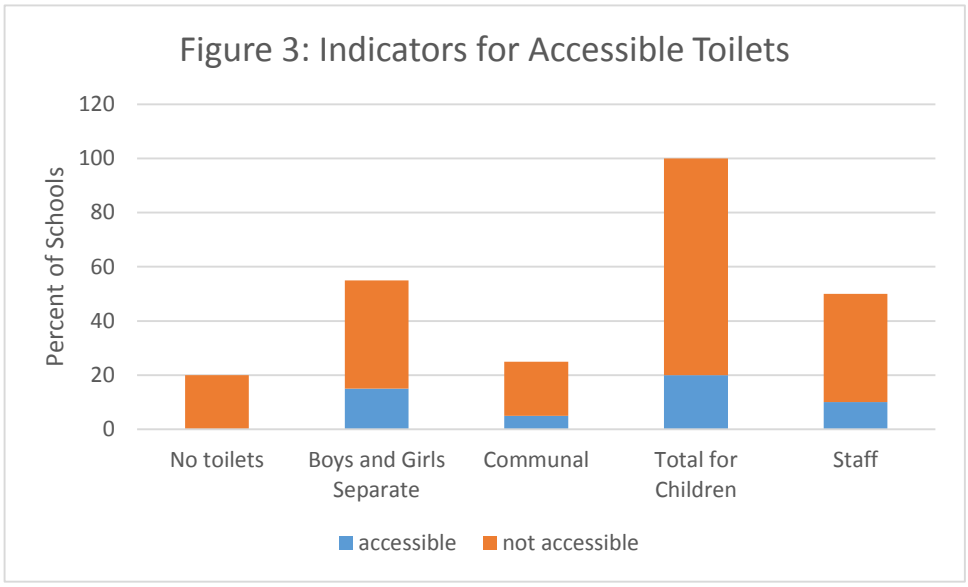
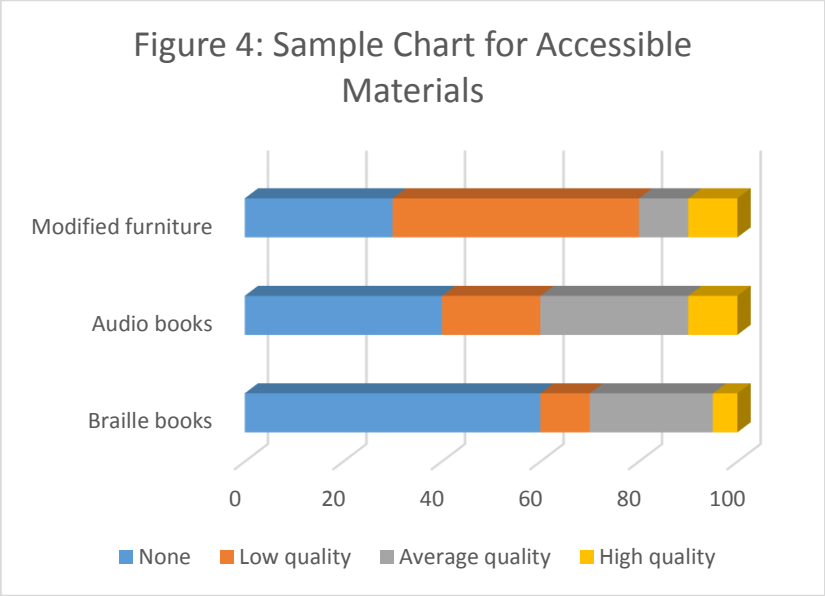


Figure 3 displays the information about toilet accessibility for students captured in Table 5. This figure would be provided in addition to the standard reporting for average number of toilets for children. Availability of accessible toilets is broken down by gender and by students as compared with staff. The first bar shows the percentage of schools with no toilets. The second bar shows the total number of schools with gender differentiated toilets, broken down by accessibility. The third bar is the percentage of schools with communal toilets broken down by accessibility. The fourth bar is the sum of the first three, showing what percentage of schools have toilets that children with disabilities can use and what percentage of schools have no facilities for children with disabilities. The final bar refers to toilets for staff.

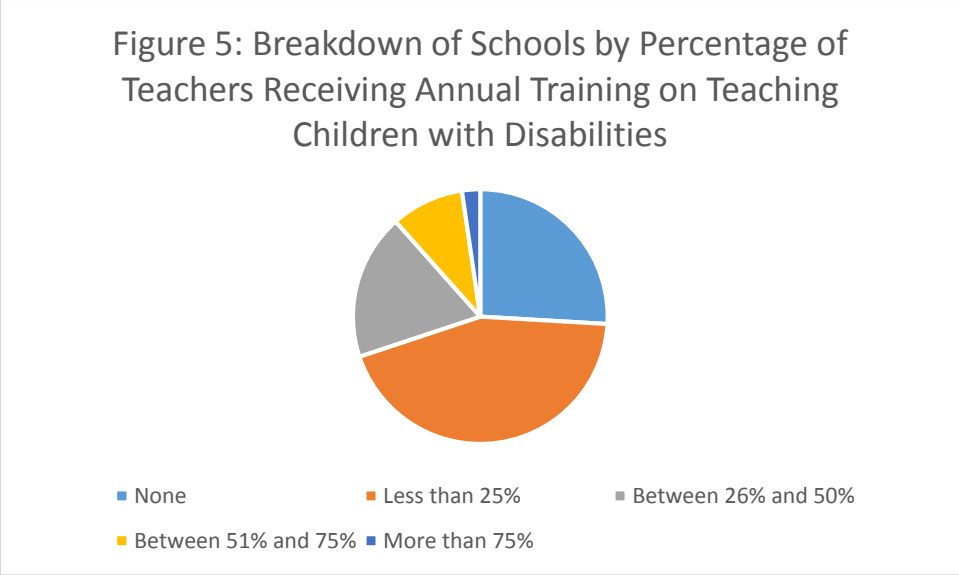


These represent the core indicators for physical structures, but if additional information is collected – as shown in Tables 6 and 7 – then that information should be reported, as well. If the Table 6 approach – simply adding a column for accessibility to existing tables measuring facilities – then that data can be displayed as currently reported, only disaggregated by whether the facilities are accessible or not. If special information on accessibility is collected, then that data should also be reported. For example, if the questions in Table 7 are used, the EMIS report should include information on the average percentage of rooms in each school that are accessible, the average percentage of floors that are accessible, and the percentage of rooms with emergency exits accessible to children with disabilities, as well as the percentage of schools with an evacuation plan that includes provisions for children with disabilities.

Reporting on materials – for example the type of information found in Table 8 – can be done as found in Figure 4. Only three items from Table 8 are included in the figure. Notice that they are organized from most available to least available in order to more quickly scan the figure to see where the biggest needs are. Obviously the elements in the table should be chosen that are appropriate for the local context.



School personnel



The minimum set of recommended questions on school personnel for the EMIS found in Table 9 can be used to compute the average percentage of teachers with training on teaching children with disabilities and also the percentage of schools that have specialists for teaching children with disabilities. However, averages can some time mask inequalities, so it would also be a good idea to look at the distribution of schools by how many teachers are receiving such training. An example is shown in Figure 5. This figure could be replicated separately for urban and rural areas, or by region to see if there are significant differences across school districts.

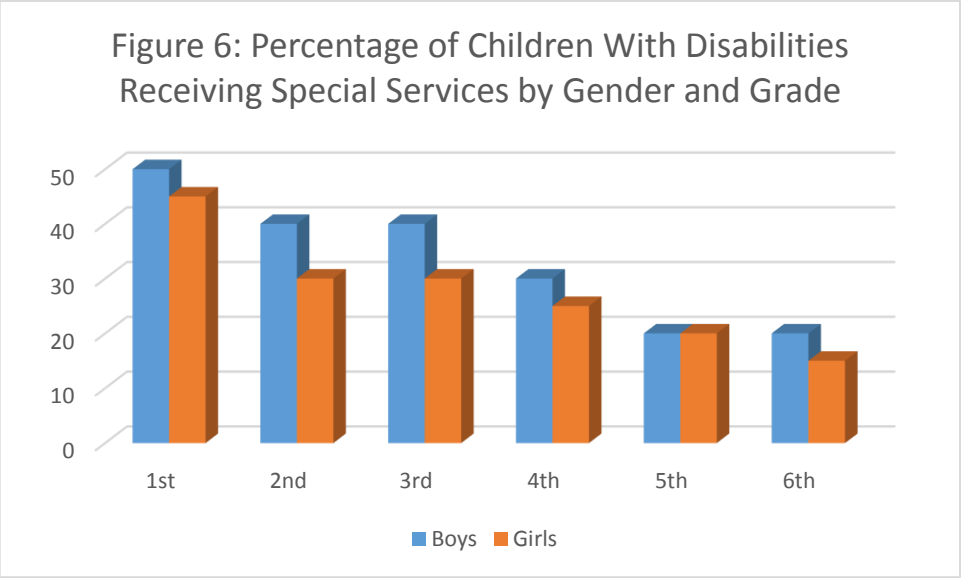
This type of figure can also be generated by using Table 10, which can also be used to determine how many teachers are specifically trained as special education teachers. But the true advantage of Table 10 is that by keeping a teacher by teacher record of training it will be easier for school administrators to track who has been trained and manage training schedules.

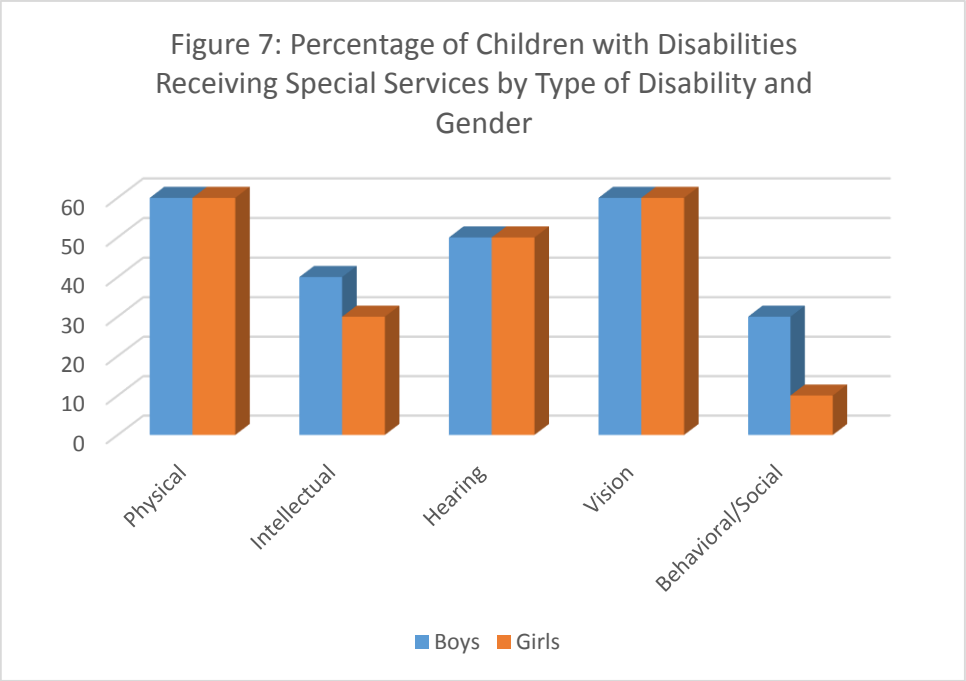
For school systems collecting additional information, with questions such as those in Table 11, additional reports should be made outlining the prevalence and distribution of schools whose teachers have access to additional consultations and specialists.

Services received

Data on services received should be disaggregated as much as possible in order to ascertain if there are particular barriers to receiving those services based on age and gender. It is also important to consider the type of disability. Some services– for example prosthetics, hearing aids, speech therapy, or prosthetics -- only apply to children with particular impairments. Other services could apply to all children – for example, special tutoring inside or outside the classroom – but might be more often deemed appropriate for some types of children, for example those with learning disabilities.

Therefore, a first cut of the data should look only at the percentage of children with disabilities– by grade level and gender – who receive any type of service. An example of this is shown in Figure 6. Then, another chart could be made for the receipt of services by type of disability, as shown in Figure 7. In this example for Figure 7, the gap in services by gender is only evident for intellectual and behavioural disabilities. Once again, also disaggregating these by rural/urban or by region could help determine if services are reaching children in all areas. Of course, a table should also be included showing how many children receive each type of service in order to see if any particular type of service is not being provided commensurate with the number of children with the type of disability that that service is supposed to support.





7. Tanzania Field Test

The approach outlined in this report was tested in Tanzania in conjunction with the Government of Tanzania, the UNICEF country office and the DFID funded EQUIP-Tanzania in 2015. The Government of Tanzania wanted to upgrade its data on disability in an effort to better develop, implement and monitor more inclusive education policies.

The templates included earlier in this report served as the basis for the field test. In order to ensure that these questions could be used appropriately in Tanzania, the questions were tested

Testing Procedures

A training manual was developed as a brief guide to the understanding of the concept of inclusive education and the incorporation of disability data in EMIS forms. The manual highlights the main challenges emerging from disability data collection in the EMIS forms, and pinpoints some approaches for ensuring quality disability data are collected through those forms. From this manual, the reader can be able to understand how teachers can best identify children with disabilities in schools in order to meet their diverse learning needs. It also provides some guides on other information to include in the EMIS form and some tips for teachers on how to differentiate children at risk of being disabled, (those with difficulty in basic activities), as well as identifying key aspects of the school environment and the infrastructure that can potentially create barriers to children with

disabilities. The guide provides some key guidelines on how the teachers can interpret what is asked on the EMIS forms. The training manual guided teachers on what and how the data can be collected in schools. After preparation of the training manual guide, it was used in the training of the researchers who participated in the pre-pilot study (cognitive testing).

The first stage in testing the proposed templates was to hold a series of cognitive tests. The aim of the cognitive testing was to investigate how respondents understand the questions according to their intended design and if those respondents can provide accurate, valid answers based on that intent. As a qualitative method, the primary benefit of cognitive testing is that it provides rich, contextual insight into the ways in which respondents 1) interpret a question, 2) consider and weigh out relevant aspects of their experience in relation to the question being asked and, finally, 3) formulate a response based on that consideration.

In cognitive testing the QUESTIONS are being examined, not the CHILDREN. The study involved a small, purposively selected sample, so there is no reference in the results to variance or standard errors or whether the sample is representative of the population. No effort is made to estimate the prevalence of disability or the factors associated with disability. Instead, a cross section of different types of respondents — this case, teachers — are asked these questions and then probed via a qualitative interview to better understand how they are interpreting and answering the question to see if the question is working as intended.

A workshop was held in March 2015 to train research assistants on cognitive testing methods, i.e. conducting focus groups aimed at getting a better understanding about how teachers would interpret and respond to the proposed questions for the EMIS on disability. The proposed questions were in English, but the focus groups were in Kiswahili, so after receiving training on disability and the purpose of the proposed template, the researchers were divided into two groups to independently translate the questions. Then the entire group reconvened to share their translations and agree upon the final translation. Participants then received training on a field guide for conducting focus groups, after which they conducted focus groups with teachers from the area around Dar es Salaam. Five of the researchers led the discussions and the other researchers took notes. The focus groups were also recorded. The research teams then wrote and submitted a report, based on a template with which they were provided.

In order to expand the sample of teachers and interview teachers from other areas within Tanzania, UNICEF and the Ministry of Labour collaborated with the EQUIP-T project. Some of their staff – trained at the March workshop – conducted 10 focus groups in the in outlying areas where EQUIP-T is working and where teacher capacity was thought to be very different then in and around Dar es Salaam.

After the cognitive testing was completed and the EMIS template was adjusted, including adding questions on accessibility to the already existing questions about infrastructure, materials and services, it was then field tested. Basically, wherever the EMIS form previously asked about the presence of some type of infrastructure an additional column as added for teachers to check yes or no as to whether it was accessible to children with disabilities. Field testing took place under the auspices of both UNICEF and the Ministry of Education (MOE) in some districts and EQUIP-T in others, as described below.

Cognitive Testing Results

This section of the report evaluates how well each question worked according to both the MOE and EQUIP-T cognitive testing. Detailed findings can be found in the cognitive testing reports submitted by the UNCIEF and EQUIP-T teams. This section summarizes their results.

Seeing

In both focus groups run by the MOE and EQUIP-T, teachers had a firm and consistent sense of what it meant for a child to have either some difficulty seeing or a lot of difficulty in seeing. Children were considered to have some difficulty seeing if they had red or puffy eyes and needed to sit close to the backboard. Children with a lot of difficulty were said to not be able to see even if near the blackboard, and to even have problems walking. However, teachers did report that it was at times difficult to identify children with no, little, or a lot of difficulty seeing because of the large class sizes and the fact that parents did not inform them of difficulties. This means that if the EMIS is administered very early in the year, children with some difficulties seeing may not be identified. By later in the year when teachers have had more experience with the children, the identification rates should improve.

Hearing

As with seeing, teachers had consistent views on what constitutes some versus a lot of difficulty hearing. “Some difficulty” was associated with needing to be able to speak more loudly, focusing on the speaker’s mouth, asking their peers for information, not following instructions, and answering different questions than the ones being asked. Children with a lot of difficulty hearing also could not speak properly, always copied from their fellow students, and had ears that oozed fluids. However, teachers in the EQUIP-T sample felt that teachers may have difficulty in categorizing children for two reasons. First, because teachers are likely to think students are just stubborn and not attribute their problems to hearing. They also felt that girls tend to hide their disability because they are afraid it might hurt their chances of marrying. So the concepts were clear, but teachers were concerned about how teachers might complete the forms

Physical disability (gross and fine motor)

Teachers in both samples felt that distinguishing some difficulty from a lot of difficulty when it can to gross motor activities was not problematic. Children with some difficulties were seen to have difficulty walking or climbing stairs but could generally do it on their own. Children with a lot of difficulty were seen to need special assistance either by people or through devices such as wheelchairs or stretchers. Once again, though, they felt that large classes might make it hard for teachers to identify all children with some difficulties in this area

Albinism

Teachers in both the EQUIP- T and MOEVT sample were able to clearly distinguish the level of difficulties that a child with albinism was experiencing. While others had smooth skin which was not causing any problem to their daily routines, some of them had skins with scars or wounded. Likewise, there were some children with albinism who had a better vision compared to others. Availability of assistive devices, such as sun screen lotion was the main determinant of the extent of difficulties that a child was experiencing.

Intellectual Disabilities

Teachers in the MOE sample described children with some difficulties as having problems and learning more slowly but eventually being able to do the work, compared to children with a lot of difficulty who are not able to do their work. The EQUIP-T teachers also said that children with a lot of difficulty also have strange behaviors like wetting their pants or being very jumpy and inattentive. Teachers felt that making these distinctions was not difficult.

Communication

As with intellectual disabilities, teachers were consistent in their opinions about what constitutes some or a lot of difficulty in this area, and had no problem making the distinction among their students. One thing of note, though, is that some teachers felt that some of the difficulties had to do with use of vernacular language as opposed to Kiswahili.

Behavior

With the exception of one focus group, teachers also reported no difference in conceptualizing the difference between some and a lot of difficulty in this area and identifying them. At times though, they attributed behavior problems not to the child his or herself but how the child was raised.

Summary of Cognitive Testing Results

Overall the questions worked well. The domains of gross motor, intellectual, communication and behavior seemed to have no problems. Hearing and Vision had problems to the extent that teachers in large classrooms may have difficulty in noticing whether children had these difficulties, but if classes were smaller would not have such a problem. The same is true for children with minor difficulties in fine motor skills.

The variance in interpretation of a lot of difficulty in these functional domains was much smaller than in the interpretation of some difficulty. And given the natural variation among children in activities – especially in regard to learning and behavior – these results suggest that only children with a lot of difficulty are considered to have a disability. That does not mean, though, that the form should be changed to ask about difficulties in a yes/no fashion. Including a scaled response serves two purposes. First, it more clearly identifies those with a lot of difficulty. Second, it does allow for analysis of children with more moderate difficulties that can be used to improve education in the classroom. Overall, the form would be filled in more accurately if administered later in the year after teachers had more time with their students. Since it is administered at the beginning of the year, it may be that students especially those with some difficulty seeing, hearing, or doing fine motor activities will be under-identified. However, it could be that having teachers focus on collecting such data might raise their awareness in trying to determine the reasons their students are not performing or behaving up to expectations regardless of whether they have a disability or not. In the end, the conclusion is that the designations in Table 1 are basically well understood and would lead to significantly improved disability data collections as compared to previously used methods.

Field Test Results

UNICEF, the MOE, and EQUIP-T conducted field tests in several regions throughout Tanzania in a few dozen schools. Research assistants attended an orientation workshop on 24th July, 2015 at the

Tanzania Institute of Education (TIE). Eighteen (18) research assistants were trained on the procedures for administering the questionnaires, and getting a better understanding of how teachers would interpret and respond to the proposed questionnaire on disability in the EMIS. On 26thJuly, 2015 all research assistants started a journey to the field and on 27th July, 2015, they reported to the Regional Administrative Secretary's (RAS) with the letter of introduction from the Ministry of Education and Vocational Training (MOEVT) which helped them to process the research permit and introduced them to the school authorities.

Sampling of the schools

Districts educational officers supported the team of researchers in the identification of the schools that were selected via stratified sampling. Identified schools were grouped on the basis of their location (urban and rural), ownership (government and private), and specialization (inclusive and non-inclusive). Sixty (60) primary schools and 36 secondary schools from six districts (Tabora and Moshi municipal, Mbeya rural, Makete, Ilala and one district from Zanzibar) were selected for the study The EQUP-T team ran a similar procedure in 32 schools in Lindi and Kogoma.

Questionnaires

The study used a questionnaire similar to the EMIS form that is commonly used by the MOEVT, but integrated with the proposed disability questions. The respondents were teachers who were able to read and write in Kiswahili. Respondents were able to reflect the given questions in the questionnaires at their own pace.

Focus Group Discussion

Focus group discussion with the teachers and head teachers was held after the completion of the questionnaire to provide a reflection on the nature of the questions, responses given and challenges faced in identifying and categorizing students with disabilities. Data obtained from the focus group discussion helped in reflecting the challenges and recommendations of teacher's ability, knowledge of identifying and categorizing the students with different types of disabilities. A total of 60 and 36 primary and secondary school teachers respectively participated in the focus group discussion. In every FGD there were 5 to 7 participants. The focus group discussions were audio-taped so that the researchers could listen carefully to the responses later after the interview. Moreover, using a tape recorder was considered important so the reseacher could concentrate on what the respondents were saying rather than writing notes. It allowed sufficient time to focus in detail and think about the next question and how to ask it in light of the respondents' previous responses.

Results

Teachers were able to categorize various types of disabilities both in primary and secondary schools in both Mainland and Zanzibar. It was noted during the data collection process that teachers often had problems filling out the forms because of their knowledge of their students' capabilities. A strong recommendation is that in order quality data on children with disabilities in schools to be collected, more attention must be paid to assessing, or at least being able to focus on, children's

individual difficulties. As shown below, though, this can be difficult in very large classrooms. There is a need for a close collaboration between heads of schools, class teachers, discipline masters, parents and the children. Information about disability should be filled by a team of teachers rather than a headmaster or head teacher filling it up alone, as a headmaster is not capable of knowing information about each individual student.

The main point of the field test was not to generate results about disability per se, but to get a better understanding of how the questions worked. The results are therefore not representative of the region, but indicative of the kind of findings one might expect. Table 15 shows the number of children with disabilities identified in the schools taking part in the field test in each district by gender.

Table 15: *Number of Children with Disabilities in Sample, by District and Sex*

	Girls	**Boys**	**Total**
Mbeya	71	84	155
DSM	393	320	713
Moshi	158	187	345
Tabora	173	179	352
Makete	25	13	38
Zanzibar	311	297	608
Lindi	103	170	273
Kigoma	85	113	198

Overall, the results showed a lack of accessibility to school infrastructure, and few teachers trained in special or inclusive education. Tables 16a and 16b provide an indication for Lindi and Kiogoma.

Table 16a: *Percentage of Schools with Accessibility Facilities*

Type of facility	Primary Schools		Secondary Schools	
	Lindi	Kigoma	Lindi	Kiogoma
Road	10	0	33	0
Main entrance	20	20	66	100
Ramps	0	0	.	.
Toilets	10	20	16	100

Table 16b: *Number of Children with Disabilities and Teachers with Training on Disability in Primary Schools, by gender and district*

	Lindi		Kigoma	
	Male	Female	Male	Female
Children with disabilities	80	52	69	52
Teachers having attended training on disability	4	1	93	43
Teachers specializing in various disabilities	4	2	7	8

But as stated, those results cannot be used to make strong inferences on a representative level so they are not discussed in detail. In fact, some schools (e.g., in Kigoma) were selected because they were known to have more experience with children with disabilities, which is most likely the root cause behind their higher rates of teacher training. Still, Table 3 shows that a majority of primary schools surveyed in the Lindi and Kigoma districts are substantially lacking in accessibility. Secondary schools fared much better in this particular sample. The results in Kigoma, in particular, demonstrate that models of accessibility presently do exist in the country. Table 4 shows the difference between schools with no emphasis on disability in Lindi compared to the Kigoma schools that were selected because of their experience. In Lindi, few teachers have such training. Again, these results are only suggestive. It must be stressed that no inferences should be made about all of the schools in these areas because of the nature of the sample. More important is the experience and reaction of the teachers filling out the surveys. In that regard, several key issues emerged.

Understanding of the questionnaires

There were two issues with regards to understanding the questionnaire: First, understanding the questions identifying children with disabilities, and second, understanding the notion of accessibility.

In schools with a focus on special needs there was no problem in understanding the disability identification template. In some other schools there appeared, at times, to be more problems interpreting the questions by respondents than by the participants in the cognitive testing. This is not surprising since in the field test the questions were not asked by an interviewer with subsequent group discussion, but instead were answered by respondents individually based solely on the written form. For this reason the “some difficulty” category became more problematic. This re-enforces the conclusion from the cognitive testing that only those children with a lot of difficulties should be considered to have a disability. This also highlights the need for training on the EMIS form. It should be kept in mind, though, that if this is not a one-off event, then teachers will gain experience in using the form so that answer accuracy will hopefully increase over time. Some teachers expressed confusion over what was meant by accessibility – or that the answer was difficult to capture with a yes/no answer. For example, the form asked about availability of the number of services then at the end asked if they are accessible. However, sometimes one service may be available and accessible to students with certain kind of disabilities not all of them. Given the range of possible services – and the limited extent to which they are currently offered – it would probably be best to limit the number of services asked about. The accessibility of those services could serve as a proxy for the

attention to inclusion. As the school system develops and more services are available, the form could be either modified or expanded.

Ability to answer child questions

Some teachers reported that they did not know their students well enough to answer the questions, often resulting from having large classrooms. This will mean that the EMIS form will be under-identifying children with disabilities that are not highly visible. This will be exacerbated if the form is distributed at the beginning of the year. Of course this is not a new problem with the EMIS.

Respondent burden

*T*eachers were concerned at the length of the questionnaire. Once they realized the amount of time it took they relaxed but the initial impression was that it would be too burdensome. Without encouragement from the testers – which would be the case in a real life implementation of the EMIS form – there would probably have been more non-responses or more cursory attention to filling out the form. They also felt some of the questions were repetitious. To increase response rates and accuracy it will thus be a good idea to streamline the form. The tradeoff between collecting less information accurately and with a greater response rate would outweigh trying to get a more complete set of indicators.

Overall Findings for the Tanzania case

The results of the cognitive and field testing indicate that the new template for identifying children with disabilities should be incorporated into the Tanzanian EMIS, as translated by the cognitive field testing team. Identifying children by type of difficulties is superior to asking about disability or particular conditions, such as blindness. Teachers, when focused, have fairly consistent views of what constitutes some or a lot of difficulty in various functional domains. For the English version see the introduction.

However, while this concept was clearly understood in the cognitive testing, there were some problems in the field test, which is actually much closer to the conditions under which the EMIS forms will be completed. In the field test some teachers responded that they "didn't know who had a disability." This actually suggests a problem with how the field test was conducted, as the teachers were not to be told that they were identifying children with disabilities, but rather to identify children with difficulties in various functional domains. This demonstrates a strong need for training on the new form, but hopefully over time teachers will become familiar with it so that accuracy will increase. Both the training and the attention to children's difficulties will hopefully raise awareness about children's individual difficulties in school.

As stated above, another problem is that due to large class sizes and the early timing of the annual census, teachers may not have a great deal of familiarity with students' difficulties. Therefore, to the extent the EMIS could be delayed and class size decreased, the accuracy will increase. This will matter more for children with more moderate difficulties and "invisible" disabilities (e.g., developmental delays vs. physical impairments). Of course, the ability to do this depends on both resources available and on the other intended uses of the EMIS. Delaying the annual census might

also mean that children with disabilities who drop out early in the school year are not captured at all in the EMIS.

When it comes to questions on accessibility of structures, materials, and services, a long list of questions is off-putting. Also, at present the expectation and capacity for accessibility in Tanzania is low. In addition, for overall monitoring purposes a long list of items that are accessible is difficult to summarize. Therefore, it makes more sense to limit the data collection on accessibility to the core templates found in UNICEF's EMIS guide. This would improve the response rate, the quality of the responses, and the ability to generate simple indicators to track accessibility. The items in the core accessibility questions are among the most important and among the more straightforward issues to address. Improvements in these areas could also be seen as a proxy for other improvements in accessibility as it would demonstrate the school's willingness to take on the issue of accessibility. As the large majority of schools build accessible entrances and toilets, other questions about the accessibility of infrastructure and materials can be added or substituted. The core accessibility are included earlier in this document. It is also very important to inquire about teacher training and to distinguish between receiving some form of training during the course of the year, versus having received extensive pre-service training. Therefore, two columns should be added to the teacher information template: one indicating whether a teacher received in-service training that year, and one indicating whether a teacher has been certified in the area of special or inclusive education. Reporting on all of these issues within the EMIS should be standardized and kept simple, both to reduce burden and for ease of comparing indicators. This would not preclude more detailed analysis for both planning and evaluative purposes, but would focus standard EMIS reporting on key, easily digestible indicators.

Recommendations for Tanzania

Based on the assessment, pre-pilot and field piloting of the new and modified disability tables, the following are some of the recommendations for strengthening data and inclusion of children with disabilities in education.

1. The proposed child identification templates should replace current disability questions in the EMIS.
    a. Trainings and clear instructions should be provided on the new forms, including an emphasis on identifying children with difficulties, not with disabilities.
    b. Only children with a lot of difficulty in at least one functional domain should be considered as having a disability for reporting purposes.

2. Collection of the EMIS form should be delayed as long as possible in the year in order to improve accuracy of responses. However, distribution of the form could be circulated earlier in order to raise awareness and focus the teachers' attention on identifying individual children's difficulties

3. One of the objectives of EMIS data is to provide information on the number and needs of children who are in school. There are no data collected for the children who are out of school. There is a need for the MOEVT to create a system similar to EMIS for tracking the children with disabilities who are out of school. The understanding of the children who are out of school, especially children with disabilities is of great importance for budget planning and policy development.

4. The core questions on access to school and toilets should be added to the current EMIS form. As schools become more universally accessible in these areas the EMIS could be expanded and/or modified to start capturing more information on accessibility.

5. For the teacher portion of the EMIS questionnaire, two columns should be added: one for whether the teacher received in-service training on special education or inclusion, and one for whether they have a degree or Certification in that field.

6. The reporting templates shown earlier in this report should be adopted as regular tables in EMIS reports.

7. The National Population and Household Census or other household surveys in Tanzania should incorporate the UNICEF/WG childhood disability module and through geo-coding link it to the information on EMIS censuses.

8. Despite the good data provided in the BEST report, there is a need to avoid the overlaps of the information provided in EMIS. For example the Ministry of Education could think of producing yearly EMIS data instead of overlapped data, while they are collected yearly. For comparison purposes, only few tables can present the difference between the current situation and the previous years.