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REVIEW OF SDG INDICATOR 4.a.2

4.a.2 Percentage of students experiencing bullying in the last 12 months in a a) primary, and b) lower secondary education

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Global Alliance to Monitor Learning

Abstract

Following the UIS's focus on indicator-centric workflows and the need for a stronger culture of reflection, the purpose of this document is to review the methodology of indicator 4.a.2[1] on the basis of its relevance, defined as (1) its link to the current research, (2) demand and use of the indicator data, (3) its coverage, and (4) its comparability across data sources and time. While the indicator's methodology is well-linked to prevailing research, no publications have been found that use the data, including UNESCO's own 2024 report on bullying, except for a few SDG midterm reviews. In addition, coverage is low due to the need to collect data from students, and comparability is hindered by changing definitions of bullying across time and how survey questions prompt responses about bullying. Potential updates to the methodology include:

1. Updating the UNESCO 2019 report on bullying data to include the most recent data, in order to publicize the data and reduce the analytical burden on researchers studying bullying

2. Explore innovative alternatives to the indicator including a policy indicator

3. Disaggregate the indicator into physical bullying and cyber-bullying (and potentially social bullying) in order to improve comparability across survey programs and rounds.

[1] Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

1. Background and purpose of the review

In line with the UIS's strategic goal of fostering innovation and strengthening its relevance, the purpose of this review is to assess the impact of indicator SDG 4.a.2 methodology and propose improvements. The UIS Medium Term Strategy (MTS) for 2022 to 2029 is guiding the institute towards providing data that is impactful and relevant to countries and various global agenda. As part of this strategic vision, an indicator-centric data production strategy was proposed (UIS/GB/XXVII/INF.5) which not only focused the data production workflow around indicators rather than specific data sources but also included periodic review of the impact of the indicator data. This is in line with a data production strategy update (UIS/PPC/XXIV/INF.2.REV 2023) which found that a lack of a reflective institutional culture was hinderance to innovation at the UIS.

Beginning in 2020, indicator 4.a.2 began incorporating data from international student learning assessments in order to increase coverage of the indicator. Originally, the indicator was based on two school-based surveys conducted by the WHO (HBSC and GSHS, see below) which asked students questions about the prevalence and their experience with violence at school. However, international student assessments also ask questions related to violence, in particular, bullying, which are generally representative national though of specific grades or age groups.

This review assesses the impact of SDG 4.a.2 under its current methodology on the basis of relevance (including link to global evidence and demand for the indicator), coverage and comparability. These three categories were selected as drivers of impact of the indicator. The institute's mandate is to provide impactful data that is demanded by countries and other organizations, and in order to be relevant, what the indicator is measuring would need to be well aligned with the global evidence on effective learning environments. Providing internationally comparable data is also a goal of the institute but also a driver of relevance in order to enable governments and others to benchmark and set targets, etc.

2. Current design

Definition: Percent of students subjected to bullying in the past 12 months (or alternative period as available in the source data) at the primary or secondary levels. Bullying is defined to include, when possible, physical, verbal and relational abuse. In effect, the definition relies on the one used by the data sources. This scope reflects current research on bullying as well as the definitions for major international student assessments.

Data sources: The indicator is currently calculated using data from (1) cross-national school health surveys which survey students within schools and (2) cross-national student assessment surveys which also survey students within schools. The cross-national school health surveys are the Health Behavior in School-Aged Children (HBSC) survey and the Global School-based Student Health Survey (GSHS), both of which are run or a

collaboration with the WHO. Estimates for the HBSC were obtained from UNESCO (2019) and estimates for the GSHS were obtained from GSHS *Country Fact Sheet* series (GSHS 2020). For student learning assessments, the current datasets are being used are (1) ERCE 2013 and 2019, (2) PIRLS 2016 and 2021, (3) PISA 2018 and 2022, and (4) TIMSS 2015 and 2019 (see Indicator metadata for more details).

Methodology: The methodology uses the estimated percent of students who have experienced bullying based on the definition of bullying used in the data source. Estimates from UNESCO (2019) for the HBSC data are defined as follows: "the percentages represent median prevalence of students who reported being bullied on one or more days… in the past few months prior to the survey, in countries/territories that participated in the HBSC" (UNESCO 2019: 66). For the estimates by GSHS (2020), they are the "percentage of students who were bullied on one or more days during the 30 days before the survey." For the international learning assessment data, the definition of bullying (including physical, social, cyber, etc.) varies as does the duration queried by the assessment. Whether the estimated prevalence of bullying is mapped to a primary or secondary level education is based on the grade or age group targeted by the assessment.

3. Relevance of the indicator

3.1 Is the indicator's definition well aligned with current research?

Bullying has emerged as an important policy issue for government given research on its adverse effect on both health and educational outcomes. The education and economic consequences of bullying has become a relevant policy issue for governments internationally (Morrow, Barnett, & Vujcich 2013; Peyton, Ranasingh & Jacobsen 2017; Phillips 2007). Bullying has been linked to poor physical and mental health (Moore et al. 2017; Wolke & Lereya 2015) including risk of depression, anxiety, loneliness, sadness and suicide (Moore et al. 2018; Kochel, Ladd & Rudolph, 2012; Livingston et al. 2019; Rigby and Cox 1996). Exposure to school-age bullying has also been linked to lower educational achievement (Brendgen 2018; Espelage & Colbert 2016) not only for victims but also aggressors, in part through lower attendance, increased dropout rates, and lower cognitive achievement (Juvonen, Yueyan Wang & Espinoza 2011; Konishi et al. 2010; Townsend et al. 2008).

Research categorizes bullying into physical-bullying, social-bullying and cyber-bullying, exploiting an unequal power relationship. Bullying exploits an unequal power relationship in which the bully harms or discomforts a victim (Olweus 1993; Woods & Wolke 2004). Bullying in the research goes well beyond physical abuse, to include verbal abuse and social or relational bullying including spreading rumors, public humiliation, shaming and social exclusion (Woods & Wolke 2004 in OECD 2019). More recently, cyber-bullying has become a common mode and form of bullying, utilizing technology including spreading rumors online or excluding someone from an online group (Hinduja & Patchin 2010; Smith et al., 2008; OECD 2017). Cyber-bullying is particularly problematic in that bully may have the

ability to remain anonymous in many cases and can occur anyplace or anytime, including outside school, depriving the victim of recourse or the ability to escape (Slonje & Smith 2008; Wang, Iannotti & Nansel, 2009). Prevalence of bullying depends on the child's age, country and cultural factors, relational factors, environmental factors and the type of study the child is enrolled (Chester et al. 2015; Craig et al. 2009; Saarento, Garandeau & Salmivalli 2015), and all children in all countries can be affected (Nansel et al. 2004). While the prevalence, causes and effects of school bullying has been studied in high income country contexts, there are few studies about school bullying in low- and middle-income countries (Biswas et al. 2020)

The definition of bullying currently for indicator 4.a.2 uses the definition implied by the different data-sources which, in turn, reflect closely the research on bullying at the time of their collection. The major learning assessments, including TIMSS and PISA, include questions about physical, verbal, relational abuse as well as cyber-bullying. Earlier rounds of some assessments and of the school-based health surveys, however, did not include cyber-bullying as this, at the time, was either not well recognized or not widespread due to the state of the technology. Where data sources differ is how bullying is asked and to what extent specific forms or modes of bullying are prompted (see discussion below).

3.2 Is the indicator data being used?

No publications have been found that use data from indicator 4.a.2 (apart from reposting of data series and some SDG midterm reviews) and the recent UNESCO report on bullying at school does not use the data; however, data from UNESCO 2019 study has been cited. A web search of indicator 4.a.2 did not reveal any publication that has used the indicator data, with the exception of websites that repost SDG data (e.g.: GEMR) as well as at least one SDG midterm review (for Pakistan). UNESCO's (2024) recently published report, *Safe to learn and thrive*, does not reference the 4.a.2 data. However, there are several publications that reference a UNESCO's (2019) study on bullying which presents bullying prevalence data and is one of the sources of data for the current indicator. The recent UNESCO (2024) report also cites this 2019 report but not the more updated dataset. Note that the data may be used but not published (e.g.: for internal documents) or may be published but not detected during this web search. The UIS does not require data users to share analysis or publications that use its data nor does it systematically track publications that use its data.

3.3 How many countries have data for the indicator?

Coverage of the indicator is quite low, with 32 percent of countries having primary school bullying prevalence rates and 37 percent of countries for secondary between 2017 and 2022. Across SDG regions, coverage is particularly low in Sub-Saharan Africa and highest in North America and Western Asia, reflecting the availability of international student learning assessments (**Table 1**). The current data does not include more recent GSHS countries (approximately 24 additional countries, though some of these would have data from student learning assessments and some may not report on bullying). The latest round of HSBC is also available; however, the microdata is embargoed until 2026.

Low coverage rates globally and for most SDG regions

Table 1. Percent of countries with data between 2017 and 2022 (latest data point)

	Primary	Secondary
World	32	37
SDG: Africa (Northern)	25	25
SDG: Africa (Sub-Saharan)	2	2
SDG: Asia (Central and Southern)	29	21
SDG: Asia (Eastern and South-eastern)	33	72
SDG: Asia (Western)	67	67
SDG: Latin America and the Caribbean	35	29
SDG: Northern America and Europe	54	72
SDG: Oceania	8	12

3.4 How comparable are data from the different sources?

There are notable differences in the average prevalence of bullying across data sources at the secondary level. At the primary level, the data source used are international student learning assessments and average estimates are approximately similar for each assessment with the exception of ERCE 2013 (**Table 2**) (which reflects how bullying was defined, see subsequent discussion). At the secondary level, there are substantial differences in average prevalence rates depending on whether the source is the WHO school surveys or the international learning assessment data, and within the latter, depending on which assessment programme. The school health surveys, GSHS and HBSC, have the lowest averages while TIMSS has the highest. Note that these averages include different countries.

There are also substantial differences in prevalence rates across data sources for individual countries. For example, comparing countries that participated in both TIMSS 2019 and PISA 2018 reveals that TIMSS estimates are much higher than those from PISA, for the same country (**Figure 1**). Similarly, TIMSS data results in substantially higher estimates than GSHS and HBSC within the same country (**Figure 2**). Figure for individual countries, as a result, tend to jump around across time, but the differences are a result of data source (**Figure 3**).

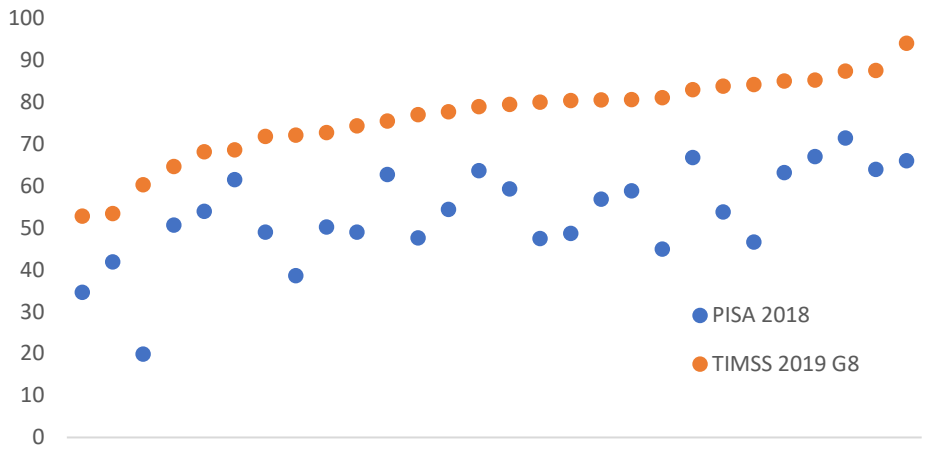
Large differences in estimates between data sources

Table 2. Average estimates of percent of student experiencing bullying by data source

Primary-level	
ERCE 2013 G6	41
ERCE 2019 G6	76
PIRLS 2016	76
PIRLS 2021	71
TIMSS 2015 G4	76
TIMSS 2019 G4	74
Secondary-level	
GSHS	34
PISA 2018	55
PISA 2022	55
TIMSS 2015 G8	75
TIMSS 2019 G8	78
HBSC	28

Estimates of bullying using TIMSS tend to be higher than PISA

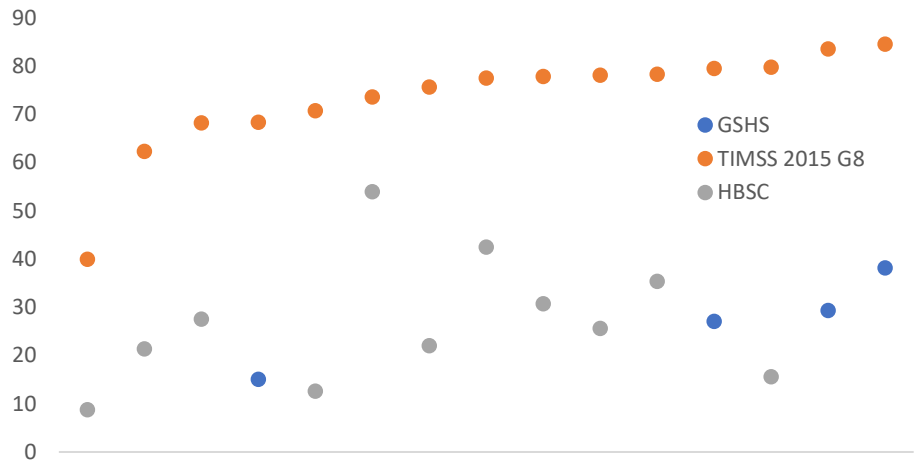
Fig 1. SDG 4.a.2 estimates from different sources by country



Each column of points represents different estimates for the same country

Estimates using TIMSS tend to be much higher than GSHS or HBSC

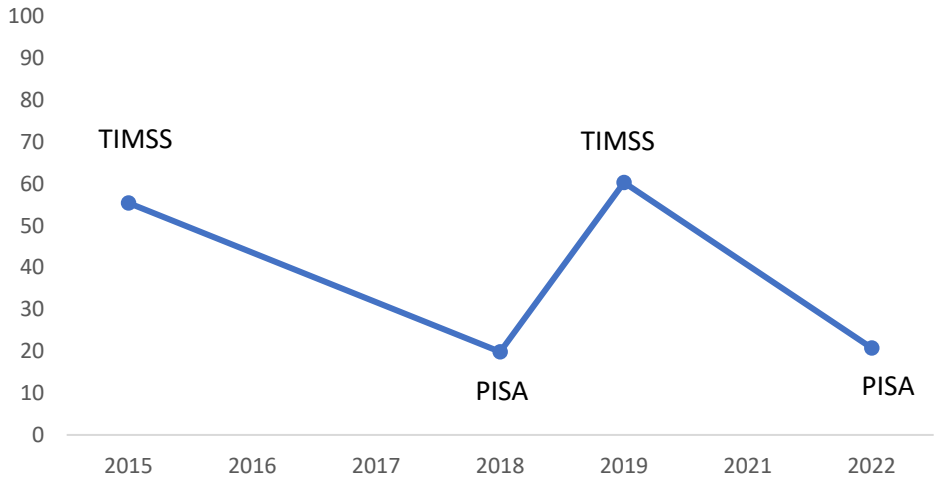
Fig 2. SDG 4.a.2 estimates from different sources by country (2013 to 2016)



Each column of points represents different estimates for the same country

Time series can jump around due to different data sources

Figure 3. SDG 4.a.2 (prevalence of bullying) data for Republic of Korea



Currently the methodology uses the definition implied by the questionnaires and there are several important differences between these definitions that would limit comparability of the data. For example, the prevalence of bullying in ERCE 2013 is much lower than ERCE 2019 as discussed previously; however, the ERCE 2013 questionnaire on bullying did not include cyberbullying whereas ERCE 2019 did. In other words, the increase in bullying prevalence would be in part due to the change in the methodology but also by the fact that cyberbullying became increasingly possible with the proliferation of technology in the last decade. As noted above, estimates using TIMSS data are substantially higher than those of PISA for the same country despite being a year apart. However, there are differences in the definition of bullying between these two assessment programs: both include physical, social (e.g.: being excluded) and cyber bullying in their definition; however, the TIMSS questionnaire asks specifically about the sharing of embarrassing photos online whereas PISA 2018 and 2022 mention only in the opening description that bullying can happen online but does not explicitly ask about it. Finally, the school health survey questionnaires, which had lower estimates of bullying prevalence, did not include cyber bullying for the survey rounds of the data currently included. However, the GSHS and HBSC now include cyber-bullying in their latest survey rounds. Also, the GSHS data asks about bullying in the past 30 days while the student assessments asked about bullying in the current school year or over the past 12 months. Overall, differences in how students are asked about bullying (e.g.: explicitly including cyberbullying and prompting specific types of bullying versus defining bullying broadly and asking if it has been experienced) create limitations on comparability, and remedying this may require disaggregating the indicator into specific types of bullying (e.g.: physical, social, cyber) in order to result in more comparable data.

4. Potential updates to the methodology

4.1 Increasing use of indicator data

Indicator data was used previously when it was presented in a UNESCO report: updating this report with all available data sources may result in more use of the indicator data. As discussed before, no publications have so far been found that uses SDG 4.a.2 data provided by the UIS (with the exception of reposting of this data, e.g.: on the GEMR website). However, the UNESCO (2019) report on the prevalence of bullying has been used including by UNESCO's recent (2024) report on bullying and cited through blogs. Updating the UNESCO (2019) report to provide a global update on bullying may help improve the ease of use of the indicator data, especially by organizations or authors who are do not have resources, time or expertise to analyze the 4.a.2 data and draw conclusion.

4.2 Increasing indicator coverage

Coverage would be improved marginally by (1) updating the dataset with the latest GSCS / HBSC data and (2) potentially web-scraping for countries that do not participate in these surveys. As discussed previously, there are new data provided by both the GSCS and HBSC surveys programs. However, many of the participating countries also participate in international learning assessments, and as a result, these would only add a few additional

countries with more recent data. Also, the current indicator dataset uses estimates of the HBSC from the UNESCO (2019) report, which aggregates female and male bullying prevalence (no aggregates are provided by HBSC); for the new data, either this methodology would need to be replicated or updated and applied to previous rounds as well (e.g.: by weighting prevalence according to the proportion of girls and boys in school). Countries that do not participate in these two global health surveys (or international student assessments) may have bullying figures estimated either through one off surveys or national data, and searching for additional data may provide some additional data.

Given that measuring prevalence requires interviewing individual students, data collection is costly: innovative approaches including working with social media providers or creating a policy indicator may be required. For example, social media providers may have the means to detect bullying on their platforms and be able to report a type of indicator. Alternatively, a policy indicator might need to be developed that (a) reflects what international research has shown to be effective at reducing bullying prevalence and (b) comparing policies to this research. However, cyber-bullying is a relatively new phenomena and the impact of mobile-phone or device bans in schools have not been thoroughly researched.

4.3 Improving comparability across time and data sources

Given the differences in definition of bullying and question prompts between data sources and years, disaggregating the indicator into type of bullying would improve comparability. For example, having two indicators, physical bullying and cyber bullying, could be constructed from the different data sources that prompt for these specific behaviors. Given that physical bullying was the focus of earlier data collection, this would allow for better across-time comparability as well. To explore this proposal further, the indicators could be easily constructed from the existing data sources.

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