Online Tool for Visualization of the MLSS Data

Progress Report

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# Introduction

The objective of this progress report is to provide a clear picture of what the status of the development of the online dashboard is in relation to the conceptual design agreed during the inception phase (November of 2021). The report is thus divided into 3 sections: **Section 1** summarizes key points of the conceptual design of the data management system, content, and display elements of the dashboard as they were agreed in the inception phase of the project; **Section 2** presents the current state of the online dashboard in relation with its agreed design, this section also informs about the inputs that the Task Team is suggested to provide to enhance the content and design of the online tool; the workplan, next steps, and expected timeline to finalize the dashboard is contained by **Section 3**.

# Section 1: Agreed Design at Inception Phase

This section summarises the main conceptual and design elements that were agreed during the inception phase in November 2021. These agreements can be cross checked with the progress made that is presented in **Section 2**.

## Agreed Data Management System

* The understanding from the inception report is that the dashboard should enable the visualization of key MLSS indicators over time, enabling the browsing of key indicators by different levels (school, teacher, and student). But also, that it must facilitate administrators to add additional data from future rounds of the survey. The later is very important for the decision of which data management approach the dashboard should follow.
* The input of the dashboard will be the derived version of the data for each round of the MLSS. This approach will increase the chances of an effective integration of rounds over time and will reduce the chances of the dashboard crashing in the future.
* Once that the derived data is inputted, the online tool will check for the consistency of the file and variable names. This step will be implemented by a specific system that will confirm that the inputted round of the data does not exist in the system yet and that the variable names are consistent with the previous rounds (this will assure that visualizations over time can be conducted). The list of indicators and their names will be defined by the Baseline derived data. In the case of the data not passing the test (if the names are not consistent with previous rounds or if the data already exists), the online tool will inform the user about the problem, and this should be rectified by the off-line team. The consistency of the data across rounds is very important for the correct interaction of the tables. This means, that to visualise key indicators across time it is necessary that the Parent Keys (PK or ID) of the datasets are consistent over time. For example, the IDs of the districts, regions, and schools should be consistent across rounds for the system to be able to aggregate the data and create a longitudinal format. The same applies for the name, labels, and description of the indicators, any change in the system will affect the capacity to trace that indicator over time, or to identify that the indicator is the same across rounds.

## Agreed Elements and Content of the Online Tool

* Enable visualization of key MLSS indicators over time (across rounds) and across space (region/district).
* Additionally present background information on the MLSS and associated impact evaluations (provided by Task Team) including instruments, sampling, and interventions, Facility for administrators to add additional data for existing indicators from future rounds of MLSS/other sources,
* Facility for higher-level administrators to add new indicators in future, and
* Ability for administrators/’power users selected by administrators to extract visualizations for use in analytical outputs.

The detailed description of the agreed elements and content can be seen in **Annex 1.**

## Agreed Workplan

The agreed workplan is presented in Section 3.

# Section 2: Progress

The current version of the dashboard (as of March 3rd 2022) can be seen [here](http://198.211.96.106/). The sub-sections below describe the progress made in each dimension and inputs that are required from the Task Team to enhance of finalize the section.

## Home Page

Figure 2 below shows the current state of the [home page](http://198.211.96.106/index.html)

Figure 2. Home Page

Text

Description automatically generated

### Required inputs from the Task Team to finalize the home page

* Confirm that the image used is approved. In case of not being approved, provide the consultant with an image.
* Provide an intro text. The current text was taken from the TOR’s of this project. In case of the current text not being approved, the Task Team should provide a brief paragraph to replace the current one.
* Confirm that the logos used are correct. In the case of not being approved, the Task Team should provide them.
* Provide the email of the team/person responsible who will act as administrator of the site once it is deployed. A link to this person’s email will be added in the section *“contact administrator”* and the objective is for her to receive communication or questions from users.

### Pending actions from the consultant to finalize the home page

* Incorporate feedback and inputs from the Task Team

## Background Page

According to the inception phase, the objective of the background page is to present background information on the MLSS and associated impact evaluations including instruments, sampling, and interventions, Facility for administrators to add additional data for existing indicators from future rounds of MLSS/other sources.

The current state of the background page can be accessed [here](http://198.211.96.106/about.html).

Figure 3. Background Page

Diagram

Description automatically generated with low confidence

### Required inputs from the Task Team to finalize the background page

* Provide text to populate this section. The content of the text should include all the information that the Task Team considers relevant for this section. For example, sampling, associated impact evaluations, etc.
* Confirm that the image used is approved. In case of not being approved, provide the consultant with an image

### Pending actions from the consultant to finalize the home page

* Incorporate feedback and inputs from the Task Team

## Dashboard

The objective of the dashboard is to enable the visualization of key MLSS indicators over time (across rounds) and across space (region/district). The current version of the dashboard can be accessed [here](http://198.211.96.106:3838/MLSS/dashboard/).

### Required inputs from the Task Team to finalize the dashboard

* Test its functionality and provide feedback to the consultant.
* Review and amend the labels of the targeted indicators. These labels are used for the dropdown selectors and on the overall text of the dashboard. To review and amend these, the consultant has developed a [collaborative sheet](https://docs.google.com/spreadsheets/d/1S2X-fXJ0hb5r0m5JUury7I7Yqg0IAPmISBec57RQYFU/edit?usp=sharing) that the Task Form can visit and update online. The labels can be amended in the column “label” for each level (school, teachers, students).
* Provide a description for indicators that may require it. This description will be displayed to help the users understand what the indicators intends to measure. The description can be added into the column “Description” of the [collaborative sheet](https://docs.google.com/spreadsheets/d/1S2X-fXJ0hb5r0m5JUury7I7Yqg0IAPmISBec57RQYFU/edit#gid=1306872261).
* Inform the consultant whether a specific page for tracking information at the district level is required or not.

### Pending actions from the consultant to finalize the dashboard

* Sense check that the indicators are estimated correctly. This will be done by tabulating each indicator separately on the data provided by the Task Team.
* Incorporate the feedback and comments provided by the Task Team.
* Once that the content of the dashboard is approved, the consultant will code a protocol to enhance its speed.

Figure 4. Dashboard

Table

Description automatically generated

## Administrators’ Page

The objective of the administrator’s page is to enable higher-level administrators to add new indicators in future.

This page includes a protocol that checks for the consistency of the file and variable names inputted by the administrators. It verifies that the inputted round of the data does not exist in the system yet and that the variable names are consistent with the previous rounds (this assures that visualizations over time can be conducted). In the case of the data not passing the test (if the names are not consistent with previous rounds or if the data already exists), the online tool informs the user about the problem, and this should be rectified by the off-line team.

Figure 5. Administrators Page

Graphical user interface, application

Description automatically generated

### Required inputs from the Task Team to finalize the administrators’ page

* Test its functionality and provide feedback to the consultant.
* Provide Midline and Endline data.

### Pending actions from the consultant to finalize the administrators’ page

* Add the Midline and Endline datasets
* Run a final test of its functionality

# Section 3: Workplan and Next Steps

This section presents the progress made against the workplan defined at the inception phase and describes the activities to be conducted by the consultant in the next phase of the project.

## Next activities

* Incorporate all the inputs and feedback described in Section 2.
* Sense check that the calculations made by the dashboard are robust.
* Write documentation of the users to navigate through the dashboard.
* Write documentation for administrators to update the data.
* Facilitate a workshop for administrators and users.
* Write final report.

As it was planned during inception, it is still expected that all the activities will be concluded by the end of March.

Figure 6. Workplan Agreed in Inception



# Annex 1. From the Inception Report: Elements and Content of the Online Tool

This section presents the sketch for the conceptual design of the online tool that was agreed at the inception phase.

* Enable visualization of key MLSS indicators over time (across rounds) and across space (region/district).
* Enable browsing of key indicators by level (school/teacher/student), topic (e.g., infrastructure, facilities, procedures, student profiles, learning outcomes),
* Additionally present background information on the MLSS and associated impact evaluations (provided by Task Team) including instruments, sampling, and interventions, Facility for administrators to add additional data for existing indicators from future rounds of MLSS/other sources,
* Facility for higher-level administrators to add new indicators in future, and
* Ability for administrators/’power users selected by administrators to extract visualizations for use in analytical outputs.

In terms of content, it suggested for the Task Team to define the final set of indicators that will be part of the online tool. The tables presented in Annex 1 can be used to facilitate the prioritization process for each to the school, teacher, and student levels. The ideal scenario, for a friendlier user interface (UI) would be to define the subset of indicators that are more likely to be of interest for the audience of the dashboard.

Thus, the content of the dashboard is expected to be decided by the Task Team and formalized during the initial stages of the development and programming process in January 2022 (see work plan). To improve the user experience (UX) of the online tool, it is suggested to design a basic but effective interface that enables an easy navigation of the dashboard.

**The idea of suggesting a simple user interface is that there is a trade-off between easy navigation and volume of features that the dashboard enables the user to interact with**. It is methodologically suggested to stand with a simple but effective UI that allows the users to easily navigate through the different components without causing difficulties or confusions when the data is queried, and the indicators are browsed at the different levels. In this sense, the more filters, dropdown options, and items in menus, the more likely is for the user to get lost between the different components of the online tool.

Examples of how the elements of the dashboard could look like are presented below:

* + 1. **A home page** **that briefly introduces the MLSS** and the objectives of the online tool, this page will include the logos of the participating organizations and two buttons to direct the user to the dashboard and to its background information.

Figure 7. Proposed Design of the Homepage.

Graphical user interface, text

Description automatically generated

The content, including the introductory text and the logos, displayed in the home page will be provided by the Task Team during the development phase of the online tool.

1. **Three separate pages to visualize indicators over time**, enabling the analysis to be conducted at the region and district level, and allowing the user to browse key indicators. These pages will present the data at the school, student, and teacher level respectively.

Since there are many alternatives to visualize the indicators over time, the decision of which visualization to use will also be decided during the programming phase. The figures below are examples of what can be possible in terms of layout and UI.

Figure 8. Proposed Design of the Visualization of Indicators.

A picture containing graphical user interface

Description automatically generated

It will be possible to add more visualization choices for the user. For example, the ability to display the distribution of any indicator or to select which round of the survey to inspect.

Figure 9. Example Of Alternative Visualizations.

Graphical user interface

Description automatically generated

For the students’ level, the online tool will be capable to allow the users to compare indicators between girls and boys over time. These indicators could be displayed longitudinally or by round of the MLSS. The figure below shows an example of how the information can be displayed at the student level to enable a comparison of outcomes between boys and girls:

Figure 10. Example Of Possibilities To Compare Between Girls and Boys

Timeline

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Another feasible possibility is to display the distribution of outcomes to allow a more. Implementing this possibility is very important for the effective communication of the outcomes because it turns out that, in some cases, the average and the standard deviation could hide important attributes of the data. Thus, displaying the distribution of the outcomes will serve as an alternative for when the mean numbers are not enough.

The figure below shows an example of how the distribution of an outcome can be displayed in the dashboard:

Figure 11. Example of showing the distribution of outcomes.

Chart, histogram

Description automatically generated

1. **A page to present background information** of the MLSS. This information, that will be provided by the Task Team, can include things like instruments, sample, etc. Apart from static text, this page can include links to external websites or other resources that can help to contextualize the importance and scope of the MLSS. The content of this page will be discussed at the beginning of the design phase.

Figure 12. Proposed Design of the Background Information.

Graphical user interface, application

Description automatically generated

1. Finally, a very important requirement of the online tool is that it should facilitate administrations to add data for existing indicators from future rounds of the MLSS. The suggested approach is to create **a specific page that is password protected**. Only users with the right set of credentials will be able to access this page. Once the password is validated, the administrators will be able to load more data into the system. To reduce the risk of the data not being in the right format, the administrator will be able to download a guide that will include the detail information about the necessary conditions that the data needs to meet to be accepted. These conditions, as it was explained in the section above, will be things like format of the file, variable names, etc.

Figure 13. Suggested Design for the Administrators Page.

Graphical user interface

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