Data Quality Control

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Overview

- Data Quality Control
- Types of Data Quality Control
- Sources of data quality issues
- Roles & responsibilities for DQC

Data Quality Control

- Controlling for the quality of data collected from schools is a critical part of the data collection process

- Data need to be of high quality so that decisions can be made on the basis of reliable and valid data

- A school census should collect relevant, comprehensive and reliable data about schools

- Data collection system should use well-defined procedures and processes that apply data control measures to ensure the quality of the data

Data quality control measures

Data control measures should apply at every stage of the data collection process:

- School level
- National, provincial and district levels

Data quality control can be done:

- before and during school census data collection
- during data entry and processing
- when analysing, interpreting and using the data

Types of Data Quality Control

- **Data Validation**
  - Is the data right?
  - How valid is the data?

- **Data Verification**
  - Do we have the right data?
  - Can we rely on the data?

Data Validation

Data validation is a process that follows prescribed rules about the value of data elements:

- data type
- range of values
- missing values
- consistency
- total cross-referencing

Data validation rules should enable correction of incorrectly entered data into EMIS or set an error flag for later follow-up

Data Verification

Data Verification is a process in which different types of data are checked for accuracy and consistency after data entry is completed:

- – check totals for micro-data

- – reconciliation of data sources

- – previous year comparison

- – consistency with different data sets

- – data auditing processes

Data verification should enable comparisons of aggregate data at each level of the education system, from schools, districts to national level

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Sources of Data Quality Issues

Main sources of data quality problems:

- – School records
- – Questionnaire and forms
- – Concepts and definitions
- – Data entry
- – Checking processes

Records
Forms
Definitions
Data entry
Editing
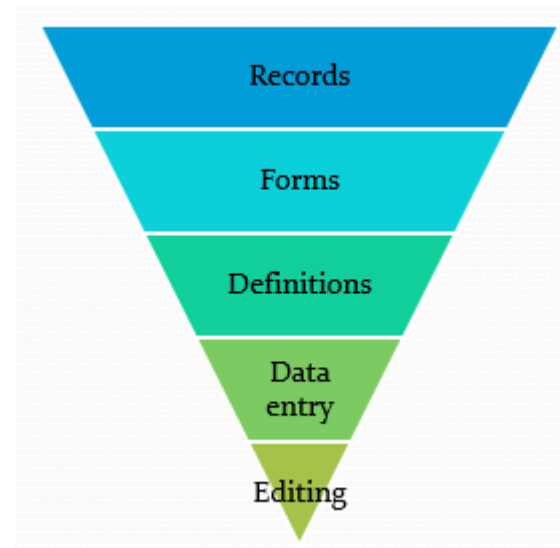
School records management

Schools should:

- apply records management standards and procedures

- maintain school records in a systematic and rigorous manner

Quality information is needed for

- school management

- school census questionnaire

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Questionnaire Design

Design the school census questionnaire

- to minimize socio-economic and cultural mis-understandings

- with clear structure, presentation and explanations, and concise instructions.

- based on feedback from testing and revise before finalizaton

Completing the questionnaire

- **School administrators** must understand the instructions for completing the census questionnaire
- **School principals** must carefully check and re-check the data for omissions and errors
- **District education officers** should train relevant school staff to complete the questionnaire

Education Office

Principal

School Admin

Data quality checks

Data quality checks should be done as close to the data source as possible:

At the school level, check:
- – data omissions
- – errors in calculations
- – inconsistencies in tables
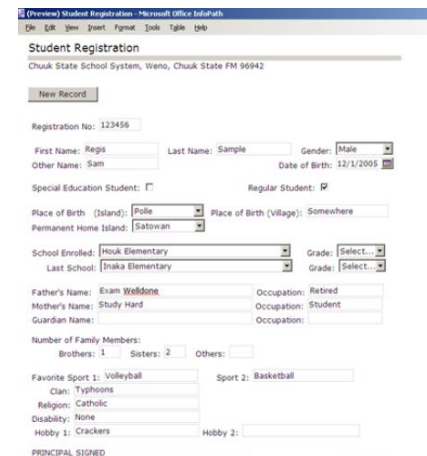
At the district education office, check:
- – late or missing responses
- – misunderstanding among school managers
- – data omissions and errors

Data entry checks

- Data validation should be incorporated into data entry systems using computers or online systems

- Automatic data validation systems can signal any data omissions and errors on-screen so that corrections can be made immediately

- Validation checks include:
  - blank or missing responses
  - out of range or invalid responses
  - inconsistent responses

Data analysis checks

Unusual or unlikely data can be found during data analysis and interpretation:

- **Data verification** checks calculate statistics to compare data between provinces, districts and schools

- Data inconsistencies can be detected during the **interpretation** of analytical results

- Data anomalies can be identified through an **independent review** of the analytical results

Roles and Responsibilities

Different levels of the education administration have specific roles in the data quality control and assessment processes:

- – Schools
- – Regional education offices
- – Ministry of Education
- – International agencies

Local

Regional

National

International
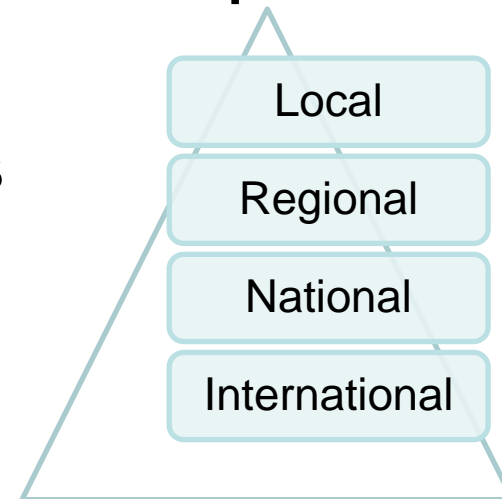
Role of Schools

Data quality control in schools is the role and responsibility of:

- **School inspectors** are responsible for checking that the school has a system for managing school records
- **School principals** are responsible for the accurate and complete completion of the school questionnaire
- **School administration** staff are responsible for gathering and recording the data in the school records

Completing the questionnaire

Errors may occur when data are being entered into the school census questionnaire due to:

- mismatch between the data requirements and school records

- mis-coding or mis-reporting of data

- not checking responses to questions

School Records → Census Questionnaire
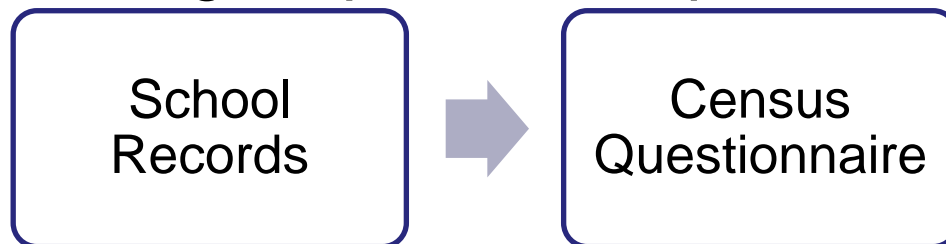
Role of Regional Education Office

The **Regional Education Office** is responsible for:

- ensuring all the schools in the region receive the school census questionnaire and return the completed questionnaires in a timely manner.

- providing assistance to schools to accurately complete the questionnaire

- monitoring school records and helping schools to improve their school records management practices.

Regional Office checks

Coverage check
- Check that all schools have returned questionnaires
- Contact and remind the schools that have not responded
- Assist schools that have not completed the questionnaire

Data check
- Check all pages, questions and tables completed
- Check explanations of data limitations
- Check totals sum to the detailed data
- Check the data is consistent in the questionnaire
- Check for unusual or illogical data

Feedback
- Provide feedback to the Ministry of Education about difficulties encountered during the school census.

Role of Ministry of Education

The **Ministry of Education** is responsible for

- designing, pre-testing and producing the school census questionnaire to collect data from the schools.

- maintaining register of schools and logging receipt of completed questionnaires from schools

- data processing of collected data into the EMIS system, including data entry and validation

Practical Exercise

- Develop rules for data validation and verification of your EMIS dataset

- Perform a data validation of your EMIS dataset

- Perform a data verification of your EMIS dataset