3. Information Technology (EMIS and GIS)

1) Development of EMIS in Asia and the Pacific Region

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1. Introduction

1) Outline
a) UNESCO and other agencies involvement in developing EMIS
b) Development of EMIS (Formal vs. Non-formal education)
c) LRC’s EMIS
d) Analytical tools and methods for utilizing EMIS information
e) Q & A

2. UNESCO and Other Agencies Involvement in Developing EMIS

1) Development of EMIS in Asia and the Pacific region
a) Most of the countries have already set up the EMIS
b) Under the authority of Ministry of Education
c) In Collaboration with National Statistical Office, Research Institutes
d) Sometime as autonomous organization
e) Mostly centralized system

2) Some EMIS authority in country
a) Bangladesh Bureau of Educational Information and Statistics (BANBEIS)
b) Education Planning Division (Bhutan)
c) Department of Planning (EMIS Resource Center) (Cambodia)
d) Statistics Division, Development and Planning Department, Ministry of Education (China)
e) Department of Education (Planning), Ministry of Human Resource Development (India)
f) National Institute of Educational Planning and Administration (NIEPA) (India)
g) Indonesia Educational Statistics Office of Educational and Cultural Research and Development, Ministry of Education and Culture (Indonesia)
h) Department of Planning and co-operation, Ministry of Education (Lao PDR)
i) Statistics and Computer Section, Ministry of Education (Nepal)
j) Research and Statistics Division, Office of Planning Service, Department of Education, Culture and Sports (Philippines)
j) Bureau of Policy and Planning, Ministry of Education (Thailand)
k) Educational Management Information Centre, MOET (Vietnam)

3) Technical Assistance of establishing and strengthening EMIS system in Member States
a) Cambodia (UNDP-UNESCO)
b) Myanmar (UNICEF)
c) Lao PDR (ADB)
d) Vietnam (EU)
e) Fuji (UNESCO, AusAID)
f) Vanuatu, Marshall Island
g) Papua New Guinea (UNDP-UNESCO, AusAID)

4) Development of Computerized EMIS and Decision Support System (DSS)
a) Dos based EMIS System in 1989
b) EMIS 2.0 training package
c) EMIS 2.6 (Fuji)
d) EMIS 2.6a IEIP training package
e) EMIS 1.1 analytical module package
f) EMIS 1.1a analytical module package
g) EG 1.0 integrated training software package for EMIS
h) Childinfo (Decision Support System)

3. Development of EMIS (Formal vs. Non-formal education)

1) Experience learned
a) EMIS in Formal Education
b) Two types of data collection style
   - Schools directly send to EMIS center and process centrally
   - Schools send to directly education authority, summarized and sent to province authority summarized and send to EMIS center
c) Central process system
   - Delay
   - Difficult to validate and follow-up
   - Over burden
   - Lack of information in district and provincial levels
d) Compiled from lower level of authority
   - Depend heavily on skill and performance of local authority
   - Required training/incentives
   - Unable to provide required facilities to local authorities
e) Parallel data collecting authority
   - Overlapping
   - Repeated data collection
   - Inconsistency data
   - Waste of resources
f) Lack of analytical skill and under utilization of collected data
   - Too much collected data
   - Unable to process
   - Analytical capacities and resources
g) Proper use of information technology
- Too much relied on computer
- Difficult to maintenance and update
- Complicated system
- Lack of training and documentation

h) Development of EMIS Application package
- User friendly
- Adequate documentation
- Adequate training
- Easy to update and maintain
- Compatible with other existing software packages
- Modular design

2) Development of EMIS in Nonformal education

Formal Education | Nonformal Education
- Already established | Relatively new
- Centralized authority | Different organization (Govt. NGOs, other Ministries)
- School based | Community based
- Well defined definition/norm | Own standard and norm (Local definition)
- Mostly intended for | More focused on policy formulation monitoring and

4. Development of LRC EMIS

1) Focus should be on:
   a) Programme monitoring and evaluation
   b) Daily operation
   c) Information dissemination for policy formulation and implementation

2) LRC data collection forms
   a) Form 1: Literacy facts and figures
   b) Form 2: Literacy classes
   c) Form 3: Post-literacy classes
   d) Form 4: Learners
   e) Form 5: Facilitators

3) Form 1: Literacy facts and figures
   a) Information dissemination for policy formulation and implementation
   b) Yearly
   c) Collection time
   d) Fix places or not

4) Sample outputs from Form 1
   a) Sex ratio
   b) Dependency ratio
   c) Household size
   d) Per-capita income
   e) Number of literate and illiterate population
   f) Literacy rate
   g) Number of literacy courses (by organizers)
   h) Qualitative information on living standard, languages, religions, community support
   i) Information on access to formal education

5) Sample outputs from Form 2
   a) Total numbers of classes per year

6) Sample outputs from Form 2 and 3
   a) Characteristics of literacy classes
   b) Characteristics of curriculum
   c) Characteristics of teaching/learning materials
   d) Characteristics of teaching/learning strategies
   e) Qualitative information on community/learner commitment, learning centers
   f) Qualitative information on monitoring and evaluation system

7) Sample outputs from Form 4
   Characteristics of learners
   Gender, age, marital status, income, educational experience, attendance, performance, social and occupational status

8) Sample outputs from Form 5
   Characteristics of facilitators
   Gender, age, marital status, qualification and teaching experience, social and occupational status

9) Data Organization
   a) Time series data
   b) Gross-sectional data
   c) Group data
   d) Summarized data
   e) Detailed data
   f) Conditional data

10) Output layouts
    a) Reports
    b) Indicators
    c) Graphics and charts
    d) Statistical analysis (quantitative and qualitative)

11) Basic measuring tools
    a) Scale
    b) Rate, ratio, percentage
    c) Use of graph
    d) Some useful tools in Excel

12) Education statistics and indicators
    Two types of data
    a) Stock (buck, total – looking at a time as it is)
    b) Flow (dynamic – show changes and compare over time and space)
    Stock data are known as “statistics” while most flow data are “indicators”.

5. Some Common Measuring Tools Used in Education Statistics and Indicators

1) Four levels of measurement
   a) Nominal scale, b) Ordinal scale, c) Interval scale, and d) Ratio scale

2) Basic measures
   a) Ratio, b) Proportion, c) Percentage, and 4) Rate
12) Representative index
   a) This index one of the indicators used for measuring disparities
   b) Designed to show whether any given group in the category is receiving more or less same share than it would normally shown.

13) Gender disparity index
   a) The ratio of the female to male adult literacy rates measures progress towards gender equity in literacy and the level of learning opportunities available for women in relation to those available to men. It serves also as a significant indicator of the empowerment of women in society.
   b) When the literacy gender parity index shows a value equal to 1, female literacy and male literacy rates are equal. A value less than 1 indicates that proportionately fewer women than men have basic literacy skills, and conversely, a value exceeding 1 indicates that proportionately fewer men have basic literacy skills.

14) Geni coefficient
   Provides a statistical basis for measuring the degree to which a particular characteristic is equally distributed throughout the system.