ROLE OF DIAGNOSIS IN EDUCATIONAL PLANNING & INFORMATION NEEDS

Arun C. Mehta[1]

THE DIAGNOSIS

There are many stages of planning but *diagnosis* or *stocktaking* is the most important one. This is the first stage of planning and common to all the sectors of economy. It has got twin objectives of identifying educationally backward areas and focus and target groups, which need immediate intervention. The diagnosis exercise may also result into identification of a variety of problems and issues that a particular district is facing. The following points will emphasis need and importance of diagnosis exercise which is also known as stock taking exercise.

- Without a detailed diagnosis exercise, no meaningful planning can be undertaken at any level.

- The success or failure of any programme largely depends upon how effectively diagnosis exercise is undertaken.

- Diagnosis exercise plays the role of a doctor. With the help of data and information, the problems in the system are diagnosed that help the planner to prescribe medicine in the form of new programmes and interventions.

- If the diagnosis is not proper, it is not based on the present status of the educational development, existing information not properly and adequately utilized and past trends not studied, then the success of the programme is not ensured.

- It is only the diagnosis exercise through which educational problems of the districts/provinces can be identified.

- It is dangerous to prescribe solutions to the educational problems without (undertaking a rigorous diagnosis exercise) knowing real problems.

Objectives of Diagnosis Exercise

The diagnosis exercise has twin objectives of identifying educationally backward areas and focuses and target groups that need immediate attention and intervention. Diagnosis exercise helps in identifying educational backward areas/pockets in the district.

[1] Professor and Head (Former), Department of EMIS, NUEPA, New Delhi – 110016
For more details, refer Indicators of Educational Development, by Arun C Mehta available at https://www.educationforallinindia.com

The diagnosis exercise may also result in identification of a variety of problems that a particular system is facing.

- All these problems vary from district to district and within the district vary from cluster to cluster. The problems identified may be of different nature, such as:

    o low participation in primary classes

    o high dropout rate or low survival rates

    o teachers absenteeism

    o availability of only a few primary graduates

    o inadequate number of teachers who can teach mathematics and science

    o low percentage of trained teachers and non-availability of female teachers etc.

Not only the problems that would vary from cluster to cluster and District to District but the strategy to tackle problems would also vary. The problems can be identified only by undertaking disaggregated analysis of data. Therefore, analysis of data should be undertaken both at the micro and macro levels. Most of the variables are required to be analyzed both at these levels during the diagnosis. The other points that need special care are presented in the following Box.

Diagnosis is always undertaken in relation to the *objectives* and *norms*. Therefore understanding of the norms and financial parameters being used in Cambodia is non-negotiable (see Part II of the module). The broad objectives of the diagnosis exercise are therefore to:

Diagnosis: Broad Objectives

- Identify the educationally backward areas/pockets in a cluster/district;

- Identify focus group/target groups that need attention of planners (because of which the goal of universal enrolment has not yet been achieved in the district;

- Identify major problems and limitations in the education system; and

- Help the districts adopt realistic targets on different components of universal enrolment.

Type of Statistics available during Diagnosis

- *Quantitative & Qualitative variables*: Diagnosis is generally quantitative analysis of data but there are a few variables that also need to be analyzed during the diagnosis, which are quantitative in nature. Even a few qualitative variables need to be quantified by using simple statistics such as, averages, percentage, rate, ratio, index numbers etc.
- *Micro & Macro level*: Most of the information need to be analyzed both at the Cluster and District levels
- *Primary & Secondary data:* Diagnosis is generally undertaken by using data from the secondary sources. Primary information need to be collected on variables not having information.
- *Formal & Non-formal system of education:* Diagnosis should not confine only to formal education system but non-formal education (NFE) system and other from of education should also be considered while assessing availability of educational facilities and enrolment in NFE centers
- *Level & Stage-specific statistics*: While analyzing primary schooling facilities, all the schools/sections irrespective of type of school that are attached to should be considered. This should also be considered while analyzing enrolment data.
- *Time-series & Cross-sectional data:* Keeping in view the nature of the variable, time-series or cross-sectional data may be utilized. Information available for one year is termed as cross-sectional data and if available for two and more years is time-series data.
- *Recognized and unrecognized institutions:* In addition to information in case of formal system, wherever available, unrecognized institutions and enrolment in these institutions may also be considered. Similarly, information on Private as well as Government institutions should be analysed; and
- *Past, present and the future information:* Wherever necessary, past and/or present information be utilized. Past and present information may be utilized to know information in the future which plays important role in plan formulation.

The entire diagnosis exercise can be divided into two parts, namely, General Scenario and Education Scenario. Population, administrative structure, number of villages and inhabited houses, climatic conditions, employment opportunities, main crops, industries, geographical map of the district vis-à-vis other districts, location of clusters etc, should form part of the general scenario.

Diagnosis Exercise: Scenarios

General Scenario

    Background information

    Demographic Scenario

    Literacy Scenario

Education Scenario: Universalization of Primary/Elementary Education

        Universal Access

        Universal Participation

        Universal Retention

        Universal Quality of Education

Education Scenario

The education scenario should focus on the educational development in the district in general and early-childhood education, literacy and primary/elementary/school education in particular. Indicators relating to different components of UPE, such as universal enrolment, access, retention and quality of education should be analyzed to know the status of educational development in the district and also to identify major problems and issues. Both the quantitative, as well as, qualitative variables should be analyzed so as the cross-sectional and time-series data. It may quite possible that information on a few variables required in diagnosis may not be available from the secondary sources. For that purpose, primary data is collected either on the sample or census basis. The planning teams (at different levels) should identify such data gaps and try to collect information on these variables before the plan formulation exercise is initiated (for details see Annexure)[2]. At the district level, the District Planning Team should be constituted to undertake the diagnosis exercise.. All those who are interested in the development of primary education (cluster/district) should be involved in the diagnosis exercise so as to take a comprehensive view of the educational development. The problems and issues identified during the diagnosis will be an important input to plan formulation and will also help to fix the targets on different aspects of universalisation.

---

[2] *Ultimately, all the villages in a district should undertake the diagnosis exercise, which in turn is then integrated to take stock of the overall situation first at the cluster level and then at the district and provincial levels. However, at present competencies to undertake such a task at village and cluster level may not be available. The diagnosis exercise at the village level may be divided into two parts, namely, school related information and village related information..*

The prime objective of the diagnosis exercise is to bring forth (with the help of indicators) the true picture of educational development and not to hide the real situation. Effective diagnosis exercise need information on a variety of variables. The data in its original form (raw) is of limited use and it cannot serve as a decision support tool. Therefore, the raw data needs to be converted in the indicator form with the help of simple statistics like *averages, percentage, rate & ratio* and *index numbers.*

Diagnosis Exercise: Non-negotiable Issues

- Analysis of data both at all levels;
- Analysis at the cluster/district levels that need additional attention;
- Wherever necessary, separate analysis be undertaken in case of boys and girls
- Separate analysis for minority and other segments of population.

Possible Sources of Data

- All possible sources of educational data that give minutest information about development of school education should be explored and analyzed.
- Data generated through the Government and Non-governmental agencies, if available both should be explored; and
- Data sources may include data generated through the
  - Research studies
  - Household surveys
  - Census operations
  - School development plans
  - Village education plans
  - EMIS etc.

As soon as the diagnosis exercise is over, the next stage of planning requires review of past plans, policies and programmes implemented in the district with respect to its objectives, strategies and major achievements. It would be useful for similar programmes in future. Generally, such programmes relate to the promotion of education of SC and ST population, participation of girls, drop-out, teachers' absenteeism, adult literacy etc. Reasons of failures and success of such programmes need to be thoroughly analyzed. This will help the planning teams in chalking out similar programmes in future.

The Indicators Report

In case of preparation of status report on educational development or a national/province/district report on the development, the first step is to prepare a list of indicators which are to be included in the report which should be linked to policy goals and

targets. While analysing policy goals, both long term and short-term targets should be considered which should also include goals and targets set out in the current plan. It should also be decided whether the presentation should show trend changes, variation in states and districts, rural and urban comparisons or whether comparison according to age and gender is required to include in the report or not. The report may cover all of these areas, which depends upon the type of information that is available. All the sources should be explored which may include Government and non-Governmental agencies collecting educational data both on regular and/or ad-hoc basis and on census or sample basis.

Once the area of analysis is finalized, the next important task is to identify indicators, which can be grouped under Demand, Resources, Access, Participation and Output indicators. Indicators relating to clientele population, access, participation and output should at least form part of the report, which may be supplemented by indicators relating to other areas. Thus, indicators such as, enrolment ratios distributed according to urban & rural areas, percentage habitations covered under schooling/NFE facilities, targeted and actual children enrolled should be computed and presented in the report. The appropriate selection of statistical tables has effective impacts. The design of display tables should aim at easy interpretation of the main areas of concern. Broadly, the following aspects should be considered while selecting type of indicators:

- Include information essential for highlighting policy-relevant trends and contrasts, not minute details that will obscure the main message;

- Present the net results, relegating the detail tables used for calculation to a separate technical reference section; and

- Highlight the magnitude of difference between comparative groups of the analytical variables.

The selected indicators can also be displayed through graphs, charts and thematic maps. The design of display of Tables should aim at easy interpretation of the main areas of concern. The Tables presented should have the number, title, year, unit in which data are presented and complete source of information. The consistency of data presented should be maintained throughout the document and Tables, once presented, should not be repeated. Every bit of information presented should be analyzed. The selection of a graph type should be related to nature and time frame of indicator so chosen. The presentation of statistical numbers through graphs and maps has become so common that they have become almost synonymous and found place in most of the reports. The transformation of numbers into graphs and maps has made statistics accessible to people who are not accustomed to reading tables. A graph presented should enable readers to see directly both overall pattern and details and it should be presented in such a fashion that they don't need to refer any other document/table for clarification. Both time-series and cross-sectional data can be used and graphs be created. For time-series related indicators, Line Graph, Area Chart and Bar Diagrams are most appropriate to create. For relational graphics, XY-Graphs may be used. In order to show regional variations, Thematic Maps

should be drawn which may depict either provinces or districts or any other micro unit. All this can be handled efficiently with the computers.

Comprehensive list of variables on different aspects of universalisation is presented. However, depending upon the situation, only core variables need to be analysed both at micro and macro levels.

Demographic Variables

- Total population, its age and sex, rural and urban distribution and minority and other segment of population

- Disabled population according to nature of disability

- Age-specific population: 3-5 (3+ to 5+), 6-11 (6+ to 10+), 11-14 (10+ to 13+) and 6-14 (6+ to 13+) years, boys/girls and rural & urban population. 15-35 year in case of literacy and adult education programmes

- Single-age population '6-year': boys/girls

- Population growth rates: total, 6-11 and 11-14 years, separately for boys and girls

- Density of population, sex ratio and average annual population growth

- Number of clusters in a district

- Distribution of Habitations according to clusters

- Number of villages/habitations distributed according to different population slabs

Literacy Variables

- Literacy rates: male and female and in rural and urban areas

- Literacy rates: 15-35 population

- Number of literates and illiterates: total and in different age-groups

- Gender-Parity Index: literacy and adult literacy rates

Access Variables

- Number (and percentage) of habitations having access to primary and upper primary schooling facilities within a distance prescribed in the policy. For example, generally it is 1 km. in case of primary and 3 km. in case of upper primary school.

- Number (and percentage) of habitations according to population norms having access to primary and upper primary schooling facilities. Generally, population norm in a habitation is 300 and more in case of primary and 500 and more in case of upper primary schools

- Number (and percentage) of (un-served) habitations not presently served by primary and upper primary schooling facilitates as per the norms
- Distribution of habitations according to availability of private unrecognized primary and upper primary schools
- Habitations distributed according to availability NFE centres and other type of (alternative) schooling facilities
- Percentage of rural population served by primary and upper primary schooling facilities as per the state norms at the cluster and district levels

Number of Institutions

- Number of institutions by type, level, management, sex (boys/girls/co-educational), courses and location, capacity and utilization of existing institutions
- Number of pre-primary schools
- Ratio of primary to upper primary and upper primary to secondary schools
- Primary and upper primary schools by management: government and private managements
- Type of primary and upper primary (private) school: missionary, trust/society, corporate management etc.
- Schools by year of establishment
- Distance of primary school from the nearest upper primary school and vice-versa
- Distance of upper primary school from the nearest upper primary school
- Distance of upper primary school from the nearest secondary/higher secondary school, Cluster Resource Centre, pay centre, clsuter and district headquarters
- Type of primary schools: primary only, primary with upper primary, primary with upper primary and secondary; primary with upper primary, secondary and higher secondary
- Type of upper primary school: upper primary only, upper primary with primary, upper primary and higher secondary; primary, upper primary and higher secondary etc.
- Number of feeder primary schools for upper primary schools and upper primary schools for secondary schools
- Private unrecognized schools providing primary and upper primary education (if any)
- Distribution of schools by number of sections
- Institution: Teacher ratio and average sections per school

Physical Facilities, School Buildings

- Availability of school buildings and ownership: no building, rented building, own building with year of construction
- If no building, location of school: tents, open space, religious place etc.
- Type of school building: thatched, semi-permanent (*kuchha)*, pucca etc.
- Condition of school building: need new building, need major repairs, need minor repairs and need no repairs
- Distribution of schools by availability of boundary wall
- Distribution of schools by number of sections; 1 section only, 2, 3, etc.
- Schools distributed according to enrolment size: up to 25, 26-50, 51-75 etc.
- Distribution of total number of classrooms (with size) in school building: 1 only, 2, 3, 4-6, 7-10, 11-5 & 16 and above
- Average number of instructional rooms (grades and sections) in schools and seating capacity
- Schools distributed according to availability of separate room for head master and staff room
- Distribution of schools according to area (land) available for new/additional construction and up-gradation
- Number of school buildings proposed, undertaken and constructed during the last 3 years
- Number of additional classrooms proposed and constructed during the last 3 years
- Number of renovations (of school buildings) proposed and undertaken during the last 3 years
- Expenditure incurred on account of civil works (buildings, additional rooms and renovations) to total education expenditure at different levels
- Availability of Hostel facilities with intake capacity and actual enrolment
- Role of community and VEC in constructing school buildings and additional rooms, if any
- Information regarding agency identified for building construction and role of other departments, like rural development in maintenance and construction of school buildings

Ancillary Facilities

- Safe drinking water
- Electricity connection
- Availability of toilets
- Separate toilet for girls
- Play grounds

- School boundary
- Mats of students
- Benches/chairs for students
- Desks, chairs and tables for teachers
- First aid kits
- Immunization facilities
- Provision of regular medical check-up

Teaching-Learning Facilities (required mostly in case of upper primary and higher schools)

- Blackboard
- Chalk and dusters
- Mathematics and Science kits
- Charts (health), globe and maps
- Mini tool kits
- Bell
- Pin-up board
- Music instrument
- Children's book
- Book bank
- Textbooks
- Library: subscribing magazines, journals etc; reference books/dictionary/encyclopedia
- Utilization of library: average number of readers, issues etc.
- Games equipments
- Play materials
- Audio-visual aids
- Review textbook policy and grade-specific number of students who received free textbook according to subject

Teachers

- Total number of teachers
- Teachers' posts sanctioned, in position and vacancies
- Number of teachers by sex: male/female
- Schools distributed according to number of teachers: no teacher, 1 teacher, 2, 3, 4, 5, 6, 7-12, 12-21, etc.
- Educational qualifications of teachers: below matric, matric/secondary, higher secondary, university graduate, post-graduate and above

- Specialization of teachers: language, social science, mathematics, others
- Distribution of teachers according to subject they teach
- Percentage of trained teachers
- Type of training received: elementary teacher training/B.Ed. or equivalent/other training, frequency of in-service training received, institutions provided training
- In-service training requirements and areas of training required
- Teachers by employment status: ad-hoc, temporary, regular
- Distribution of teachers involved in multi-grade teaching
- Distribution of teachers teaching other levels i.e. primary, upper primary, secondary
- Percentage of teachers having access to teaching aids & utilization (by item)
- Percentage of Teachers who give class work regularly, sometimes, not at all
- Percentage of teachers who give home work regularly, sometimes, not at all
- Percentage distribution of teachers using no teaching aids, teachers' guide, dictionary, other books than textbooks, map, globe, charts, flash boards, science kit, mathematics kit etc.
- Percentage distribution of teaching time in the class on discipline, talking to class, students copy from board, group work, give problems and exercises, correction and feed back, other activities, help to individual child
- Percentage of time allocation to activities other than in class on planning and preparation for class, correction of tests/home work extra classes, tuition, feedback to students on performance in tests etc.
- Details of academic support that the teacher receives from Principal, other teachers in school, from school complex head/teacher
- Percentage of teachers staying in the village where schools are located
- Distribution of teachers according to monthly gross salary
- Percentage of teachers according to teaching experience in years: up to 5 years, 6-10 years, 11-15 years, 16-20 years, 21 and above
- Attrition rate among teachers
- Training activities of NIE
- Number of teachers receive teaching learning grants

ENROLMENT

- Growth in enrolment (aggregate): boys/girls at least for the last 3 years
- Enrolment in pre-primary classes
- Grade-specific enrolment (Grades I to VIII): boys/girls at lest for last 2 years
- Enrolment distributed by Type of school: boys, girls and co-educational, by Management: government, and Private Management

- Schools distributed according to enrolment size: up to 25, 26-50, 51-75 etc
- Gross, Net and Age-specific enrolment ratio
- Details of enrolment drive campaigns, if any
- Entry rate separately for boys and girls
- Average enrolment/school, pupil-teacher ratio, average enrolment per section/grade, student per classroom and teacher classroom ratio
- Average attendance rates at primary and upper primary levels of education separately for boys/girls
- Number of primary school graduates

RETENTION & TRANSITION RATES & QUALITY OF EDUCATION

- Grade-specific number of repeaters: boys and girls
- Retention rate at primary and elementary level: boys/girls
- Grade-to-Grade (Grade I to VIII) promotion, drop-out and repetition rates: boys/girls/
- Transition rates: primary to upper primary and upper primary to secondary level: boys/girls
- Indicators of internal efficiency: input/output ratio, years/graduate, wastage on account of repetition and cohort drop-out and survival rates
- Graduation (completion) rates at primary level: boys and girls
- Distribution of schools by achievement levels in primary and upper primary grades: boys/girls, language, mathematics etc.

FINANCIAL PARAMETERS

- Total expenditure on education in the district
- Expenditure on primary, upper primary and elementary education during last 2 years
- Percentage expenditure on primary and upper primary education to total expenditure on education during last 2 years
- Expenditure on account of salaries of teachers and non-teaching staff and its percentage to total expenditure
- Percentage expenditure on education to State Domestic Product
- Per pupil cost at primary and upper primary level of education
- Per capita expenditure on education
- Expenditure by school type (boys/girls/co-educational)
- Per school expenditure by management (government/local body/ private)
- Per student expenditure by type (independent/integrated) and management of school (aided/unaided)

- Number of schools received school grants & its utilization
- Number of teachers received grants for teaching-learning aids & its utilization

MISCELLANEOUS VARIABLES

- Distribution of schools inspected last year: 0,1, 2, 3 4 & above
- Schools distributed by number of school working days
- Schools distributed by instructional time per grade per week
- Time spent per month outside by Head Master
- Time spent per month on administrative activities by Head Master
- Average number of days the teachers involved themselves in activities outside school such as election, census, immunization etc.
- Distribution of schools according to availability of PTA/MTA/VEC
- Schools distributed by frequency of staff meetings