

How Can Impact Measurement and Evaluation in Teaching?

Dr. Shivaraj Kumar

Associate Professor, N.M.S.N.Das (P.G.) College, Baduan (U.P.).

Abstract- Quality of education is very essential in today's competitive environment in which there is an absolute need to improve the educational processes to adapt to the changing society. Educational measurement requires the establishment of a strong feedback chain, in which evaluation is a continuous process and is not abandoned until the end of the program of study. Measurement refers to the process by which the properties or dimensions of a physical object are determined. When used in the context of learning, it refers to applying a standard scale or measuring instrument to an object, series of objects, events, or situations that are accepted by those who are skilled in the use of tools or scales. On the other hand, evaluation is a complex process. Implicit in the idea of evaluation is 'value'. It includes certain procedures designed to provide information that will help us make decisions about a situation. Generally, any evaluation process requires information about the position under consideration. The way the tests are constructed and understood is critical to the process of evaluation. Various tests are designed to examine different qualities of intelligence and their assessment depends on how well these tests are understood. In other words, the clarity of a test, which includes the types of questions, is an important factor in determining its success and accuracy. In the present writing, an attempt has been made to give more information about measurement and evaluation in less words.

Key Words: Educational Psychology, Educational Measurement, Educational Evaluation etc.

Introduction- Measurement is a process of determining the characteristics of an object to determine how fast, long, dense, heavy, wide, something is. However, one can measure only physical features and if one has to measure those features which cannot be measured with the help of instruments. This is where the need for evaluation arises. It helps in setting values regarding policies, performance, method, techniques, strategies, effectiveness etc., of teaching. Measurement provides a solid basis for making an assessment, because you have something concrete to compare between items. In addition, evaluation has an important role in suggesting improvements in the learning and teaching process and changes in the curriculum.

Measurement in education has more administrative utility than evaluation. An evaluation process is useful in modifying and improving the learning system and instructional process. The process of measurement is more

precise and objective in approach as compared to evaluation. Psychologists and academics are mainly concerned with variables and characteristics. The process of measurement converts the variables into variations that are used to draw conclusions. For example, intelligence is quantified as IQ and the achievement variable is measured in terms of scores. This unit deals with the nature of measurement and evaluation in education. It discusses the role of teachers in the assessment program as well as the classification of educational objectives.

The measurement refers to the process by which the properties or dimensions of a physical object are determined. When it is used in the context of learning, it refers to, applying a standard scale or measuring instrument to an object, a series of objects, a phenomenon, or conditions that are accepted by those one who is skilled in the use of a tool or scale. E.L. Thorndike said that 'everything that exists in some measure or the other, and whatever exists in quantity is measurable'. The Encyclopedia of Educational Research explains measurement in more sophisticated terms, to measure means, 'to observe or determine the magnitude of a variant.'

In our daily life, we measure height, weight, miles traveled etc. The ranking of the contestants in the debate competition can be considered as a measure, the rating of human behavior comes under the measure. Therefore, 'measurement is to rank each group of persons or things in terms of numbers according to some established rules'.

James M. Bradfield defined measurement as 'the process of assigning symbols to the amplitude of an event in order to depict the state of an event as accurately as possible'.

J.P. Guilford defined measurement as 'the assignment of points to objects or events according to certain rules'.

According to Norman E. Grönlund, measurement results are some number or numerical value and a quantitative description of the pupils.

Measurement involves the process of quantification. Quantification indicates the extent to which a particular quality is present in a particular object. It has been observed that measurement in any field always involves three essential things: (i) identification and definition of the quantity, characteristic or variable to be measured. (ii) Determination of the set of operations by which the attribute or variable can be made conceivable. (iii) Establish a set of procedures for translating observations into quantitative descriptions of degree, extent or amount.

Measurement Types

There are two types of measurements: (i) physical measurements and (ii) mental measurements/psychological measurements/educational measurements.

(i) Physical Measurement: Physical measurement is the measure of something that has absolute existence. For example, we measure the height of individuals, the weight of rice, etc. Here, we directly measure the height or weight of a person.

(ii) Mental Measurement: Mental measurement is also known as 'educational measurement' or 'psychological measurement'. It is always relative and there is no absolute zero in terms of mental measurement. For example, to measure the intelligence of a person we have to take the help of intelligence tests which are subjective in nature. From their response we can know the level of intelligence of the person concerned. Mental measurement is both qualitative and quantitative in nature, and there are no fixed instruments for such measurement, i.e. the same set of instruments cannot be applied to different types of individuals.

The application of the principles of measurement in the field of education is known as 'educational measurement'. In the educational system, measurement is a quantitative assessment of students' performance in a given test. It can be used to compare the performance between different students and indicate the strengths and weaknesses of the students. It helps in classifying students into homogenous groups, providing educational and vocational guidance and providing remedial measures to low achievers. Measurement is a tool in the hands of educational psychologists to study human behavior. Educational psychologists take the help of various valid and reliable psychological tests to know the level of different symptoms within an individual. There are different types of such tests: IQ test, achievement test, attitude test, aptitude test, interest list, personality test, etc. The methods used for these tests are: observation, interview, checklist, rating scale, examination, cumulative record card and anecdotal record etc.

In teaching-learning situation, teachers should be competent enough to measure student's achievement, intelligence, attitude, aptitude etc. To develop competency among teachers in educational measurement, Abel has suggested the following measures:

1. Learn how to administer a test properly, efficiently and fairly.
2. Knows how to interpret test scores accurately and completely, but recognize their limitations.
3. Know how to select a standardized test which will be effective in a particular situation.
4. Know how to plan a test and write the test questions to be included in it.
5. Know the educational uses as well as the limitations of educational tests.

6. Know the criteria by which the quality of a test should be assessed and how to secure the evidence relating to these criteria.

Requirement of good Measuring Instrument

In order to measure psychological symptoms with validity and reliability, the measurement instrument or test must be far from aspects such as individual errors, variable errors, continuous errors and explanatory errors. The important characteristics of a good measuring instrument are as follows: It must be valid, It must be Reliable, It must be Objective, It must be usable and practical, It must be Comprehensive and Accurate, It must be easy to administer, It should be economical, It's scoring should be easy, It should be easily available, It should be good and attractive get up/appearance.

Evaluation

Evaluation is an act or process that assigns 'value' to a measure. When we are evaluating, we are making judgments about the suitability, desirability or value of something. In the teaching-learning situation, evaluation is a continuous process and is concerned with more than just the formal academic achievement of students. Evaluation refers to the assessment of the student's progress towards the stated objectives of the students, the efficiency of teaching and the effectiveness of the curriculum. Assessment is a broad concept that is not only related to the classroom examination system; but also assess the cognitive, affective and psychomotor domains of the students. The success and failure of teaching depends on teaching strategies, tips and assistance. Thus, evaluation approach improves instructional process. Glaser's basic model of teaching refers to this stage as the 'feedback function'. JM Bradfield defines appraisal as 'the assignment of symbols to a phenomenon' in order to characterize the value or values of an event, usually with reference to some social, cultural and scientific parameters. Wright Stone said, "Evaluation is a relatively new technical term that has been introduced to designate a much broader concept of measurement than is implied in traditional testing and examination. Hanna describes evaluation as 'evidence on change in behavior for all defined as 'the process of gathering and interpreting.' Classes use tests to assess according to symptoms. After receiving the answer sheet, the teacher assigns some marks to the answer sheet, this stage is known as measurement. So measurement is only related to quantitative description. After the measurement phase, teachers organize the students according to their achievements as first, second, third etc. This stage is evaluation. Hence evaluation is a philosophical and subjective concept. It includes both quantitative and qualitative descriptions and value judgments. Therefore, Evaluation = Quantitative description (measurement) and/or Qualitative description (non-measurement) + Value judgment.

Evaluation is a systematic process, It measures the effectiveness of learning that experiences provide, It measures how far the instructional objectives have been achieved, It uses some tools like test, observation, interview etc., It is a continuous process, This is a subjective decision, It is philosophical in nature, It includes quantitative description, qualitative description and value judgment, It receives data from measurements, It not only determines the magnitude, but also adds meaning to the measurement, It includes value and purpose.

Evaluation from an educational point of view Anything that needs to be evaluated has certain objectives and objectives, and through evaluation we assess how far these objectives have been met. From educational point of view, we can evaluate many aspects which are part and parcel of an educational system such as:

1. Evaluation of a school site (in terms of its location, building, hygienic condition, strength of students and teachers etc.) .
2. Evaluation of a school program (school curriculum, co-curricular activities, guidance programs etc.).
3. Evaluation of teaching methods (with reference to aims, objectives, suitability and efficacy).
4. Evaluation of the total program of instruction (with reference to cognitive, affective and psychomotor domains).
5. Evaluation of school administration; discipline, control, management and organization.
6. Evaluation of textbooks and other course material.
7. Evaluation of students' development etc.

The steps involved in the evaluation process take place in a hierarchy. These steps are: Evaluating, Planning appropriate learning experiences, Selecting appropriate learning points, Specification of desired student behavior, Identification and definition of specific objectives, Identification and definition of general objectives.

Different Types of Measuring Scales

'Scaling' in the social sciences refers to the process of measuring. Scaling techniques are deployed in the service of assessing individual levels of addition, or satisfaction levels. Comparative and non-comparative methods of scaling are the most common expressions in the social sciences. With comparative scaling, objects are directly compared with each other. For example, 'Do you prefer drink Red or drink Orange?' In this case both will be leading brands in the beverage industry and the feedback received will allow market research to develop meaningful insights into the nature of market preferences. In non-comparative scaling, each item will be subject to scaling independently of the others. The questions constituted under this will be more subjective in nature. For example, it would ask a person to give the exact reason for preferring one drink over another.

Measurement Tasks Lee J. Cronbach (1949) classified all the applications of mental measurement under the following three main functions:

(i) Prognosis Functions- The first function of measurement is the Prognosis function. Tests reveal differences between people's performance in this movement. All judgments involve prediction when psychological testing is mentioned, for example, the IQ test that is given to students in school to predict their academic performance. The measurement provides the range of a variable whose specific purpose is predicting future behavior. The prognosis function consists of an administrative function such as classification, selection, promotion and up-gradation of students. College students ask counselors to help them choose the best course or job. Thus, guidance and counseling services are also based on the prognosis function of measurement i.e. the effectiveness of method, effectiveness of instruction and treatment evaluated on the basis of students achievement.

(ii) Diagnostic Function: The second major function of measurement is diagnosis. The prognosis function reveals the student's level with respect to certain characteristics, while the diagnostic function identifies student-learning weakness. Remedial instructions can be drawn up based on the diagnosis. It also implies prediction, but there is considerable justification in listing diagnosis as a separate function of measurement. Diagnostic work establishes a cause-effect relationship, but predictive implies a simple relationship. The instructional process can be improved by this act of psychological measurement.

(iii) Research Function: The third major function of measurement is the verification of scientific hypotheses of research. However, the use of measurement for research purposes does not mean much compared to prediction and diagnosis. This is because measurement is generally considered to be a perfectly valid measure of certain human characteristics. An investigator must treat test scores in this experiment; The score should be treated as an accurate quantification of the real and useful variables. Measurement provides a more objective and reliable basis for comparison than rough impressions. Thus, valid generalizations are made on the basis of accurate measurements.

Methods required for measurement

Certain tools and methods are necessary for both physical and mental measurement. The variation of the method may be due to the nature of the variables and the purpose of the measurement. The methods of measurement are as follows:

(i) Test: A test consists of a set of questions which have to be answered or acted upon. Tests are used to assess the ability or attribute in question. Psychological and educational testing is a standardized procedure for measuring one or more aspects or characteristics quantitatively or qualitatively by means of sampling verbal or

non-verbal behavior. The items of a test are ranked in increasing order of difficulty and its process of administration is standardized to ensure maximum objectivity. Psychological tests are used to know students' potential, diagnose weakness, predict future progress, and provide educational and vocational guidance. There are different types of tests: achievement test, intelligence test, attitude test, aptitude test, personality test, creativity test etc.

(ii) Inventories: Different inventions are used for different features. The list of interest is used to measure interest; Personality Inventory is used to measure certain traits on personality etc.

(iii) Observation: There are some traits like honesty, punctuality, perseverance, truthfulness etc., which can hardly be measured objectively through tests. Hence, here observation is an important technique of measurement. Observation can be participant observation or non-participant observation for accurate and scientific observation. One can also use observation schedules and other tools.

(iv) Interview: Interview is a face-to-face conversation between an interviewer and an interviewee or more than one interviewee. There are some things that a person does not want to express and they can be assessed only through interview. The interview schedule can be used and the interviewer can be successful in bringing out the inner feelings of the interviewee through a carefully planned interview, through a better personal support, and in a conducive environment.

(v) Checklist: A checklist consists of a series of items which require a response from the respondent. The presence or absence of an object can be indicated. Checklists are popularly employed for evaluation of studies, school buildings, textbooks, outcomes, instructional procedures, etc.

(vi) Rating Scale: Psychological traits are relative concepts. Therefore it is very difficult to make watertight compartments between them. Rating scales are used to evaluate the personal and social conduct of the learner. We take the opinion of teachers or parents or friends or judges on the scale of a particular quality or characteristic of a student. Rating scales can be used to assess: personality traits, tests, school curriculum, school exercises and other school programs.

(vii) Attitude Scale: Attitude refers to the inclination or feelings of a person towards an object, an idea, an institution, a belief, a subject or even a person. The Attitude Scale is used to measure this characteristic objectively with accuracy.

(viii) Projective Techniques: Projective techniques are very vague and subjective in nature. The subconscious and pre-conscious mind of the individual is reflected through projective techniques. For example, with the help

of Thematic Apperception Test (TAT) we measure the personality of individuals. Anecdotal record cards and cumulative record cards are also used for educational measurement and evaluation.

Why Measurement and Evaluation required in education

The process of evaluation consists of the following three aspects: (i) Quantitative measurement (ii) Qualitative assessment (iii) Teachers' opinion. In quantitative measurement We often make quantitative measurements through tests. performance of the students. It usually happens that it takes more time to teach a unit than to test it. The achievement of students usually depends on the nature of the test like teacher-made tests, standardized tests, etc. But the achievement also depends on the physical and mental health of the student, their level of preparation and motivation during the tests. Marks obtained by students in various subjects in terminal examinations and expressed in percentage of marks obtained is an example of applying quantitative measurement. This type of measurement provides information about the overall achievement level of the students, but does not help us understand the individual performance of a child and the difficulties faced by them. Therefore, quantitative measurement has its limitations and thus needs to be supplemented by qualitative assessment.

In qualitative assessment statement refers to the observations made by the teachers and the records maintained by them which are related to various aspects of student's personality and performance in the school. A systematic record of statements by teachers about special achievement or exceptional ability or exceptional behavior of students in a non-academic field is one of the examples of qualitative evaluation statement.

The opinions of teachers Teachers form opinions about students on the basis of their conclusions drawn from quantitative measures and qualitative descriptions of students' behaviour. The teacher's opinion obtained on the basis of qualitative and quantitative measurements gives a comprehensive picture of the progress of the students.

Importance of Continuous and Comprehensive Evaluation In the modern era it is not enough that one is good only in academics. There are lots of opportunities for those students who somehow could not perform satisfactorily in academics. These activities need to be assessed on regular basis and are classified into scholastic and non-scholastic areas. In order to check the level of achievement and performance in both scholastic and non-scholastic areas, it is imperative that continuous and comprehensive evaluation is practiced in schools.

Evaluations should be used on a regular basis to monitor individual progress and to show each student's achievement level in academic and non-scholastic areas throughout the year. With the help of this type of evaluation, it can be assessed whether the objectives mentioned in the curriculum have been achieved or not.

Objectives are set to improve the students not only in the cognitive domain but also in the affective and psychomotor domains. This is because these domains complement each other and the absence of any one of them can create a feeling of lack in a person's life.

The assessment of achievement and performance in all three areas is a "comprehensive" assessment. Students' learning is an ongoing process that results from their continuous learning in both formal and informal settings. They go through a variety of experiences such as teaching, learning, practical observation, self study, etc. The expected behavioral changes in children are reinforced by their direct participation and self-learning. Objective records of such changes need to be maintained from time to time. They are a major part of continuous evaluation.

It is clear that students Behavior modifications observed in the personality of the child are to be assessed continuously. These modifications may be related to the development of intelligence, emotions and practical skills. The purpose of assessment in school should be to assess these modifications, whether formal or informal the terms of the practical objectives consistently and widely through the techniques. The techniques used may be in writing examination or observation test, group work or individual work. Provision will have to be made for their periodic evaluation. During the teaching-learning process, it is most important to aim for continuous and comprehensive assessment, whether using formal or informal assessment. These assessments can be based on observations that are made individually or in a group by asking oral or written questions, taking into account the student's overall progress.

The National Curriculum Framework of school education sets out the social and qualities that all children, regardless of their educational qualifications, need to develop. In other words, even if the student is not able to compete academically, he/she can explore other abilities like arts, humanities, sports, athletics and music etc. Excelling in any field can boost the confidence of the students manifold and even motivate them to put more efforts in the curriculum study. With the help of this revolutionary assessment system, students can finally understand that their competition is with themselves and not with others.

Not only children, but teachers also benefit from such assessment as they are encouraged to make important decisions regarding the learning process, efficiency, quality assurance and accountability. Continuous and Comprehensive Evaluation helps to empower teachers in the following ways: They get pointers on how to improve the evaluation process, They can devise ways to help students master competencies that students are lagging behind through planned remedial steps, They can select and deploy media such as audio visual aids for teaching in classrooms, especially subjects which can not be understood purely with theoretical education.

In short, the following are the reasons why continuous and comprehensive evaluation is important for improving the overall education system in India: To ensure that learning in schools is not just about rote methods, To ensure that examinations, the system is more flexible and tests a wider range of capabilities , To ensure that the curriculum enriches the individual as a whole apart from promoting academic learning, To ensure that classroom knowledge is relevant to life outside as well.

So evaluation is a process of judging the value or value of a product or products, which may be achievement, aptitude, interest, skill or other aspect of a student's personality or method of teaching and learning. There are many types of evaluation. These include formative, summative, placement and diagnostic evaluations etc.

Conclusion

So, with the above discussion, you must have understood that Evaluation is an essential part of the educational system which includes measurement. It helps in improving teaching and learning, setting objectives, setting learning experiences and assessing learner performance.

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