



Measuring Efficiency: Looking at the Elementary School

JIGNESH P. MODI
Head Teacher,
Fatepura (va) Pri. School
Gujarat (India)

Abstract:

The terms “quality of education,” “school quality,” “school efficiency” and “school effectiveness” are often used interchangeably and associated with students’ levels of academic (cognitive) performance in examinations. The concept of ‘efficiency’ refers to the relationship between the inputs into a system (be it agricultural, industrial or educational), and the outputs from that system (be they wheat, vehicles or educated individuals). The present paper deals with the concept of efficiency at school level. Which are the factors that affect the efficiency? These are major concern of this paper.

Keywords: Education, Efficiency, Quality of education

1. Introduction

The problems of measuring efficiency in education, however, are considerable. Efficiency can be derived after taking account of observable phenomena. Observable phenomena are measured such as outputs and inputs and some form of relationship between these phenomena is specified. So, in context of efficiency analysis, two fundamental issues need to be considered. How should inputs and outputs of the school defined? And what values should be attached to this inputs and outputs? Let discuss efficiency of elementary school.

2. Defining the term ‘Efficiency’

The terms; quality, efficiency, and effectiveness of education features highly in debates. More often than not, these terms are associated with learners’ cognitive achievement, which is usually measured through examinations results. There is a considerable body of literature on the usage and meaning of the terms, quality, efficiency, and effectiveness of education (Fuller, 1985; World Bank, 1988, Abagi & Odipo, 1997). These terms have become increasingly popular in discourse about developing education in all over world. What is clear is that, the terms “quality of education,” “school quality,” “school efficiency” and “school effectiveness” are often used interchangeably and associated with students’ levels of academic (cognitive) performance in examinations. If achievement by students is low—as manifested in a school’s low test score in examinations, for example—the school is purported to be of low quality and, therefore, inefficient. Such a school would also be considered as not increasing students’ ability to contribute to the overall development of their society, and hence not effective. The donor community also tends to equate quality with efficiency. In this regard, World Bank-based studies usually focus on pupils’ academic or cognitive achievement (Fuller, 1985; Abagi & Odipo, 1997). So let the overlook the some important definitions of quality, effectiveness and efficiency.

Etymologically the term ‘quality’ means a high degree of goodness or worth. Webster's definition of quality is "the degree of excellence which a thing possesses". Harvey and Green, (1993) states quality refers to something distinctive and elitist, and, in educational terms is linked to notions of excellence, of ‘high quality’ beyond that to which most institutions or scholars can aspire. After analyzing many definitions of quality, Mukhopadhyay concludes that quality means something special, consistent, and

satisfying specified intentions. Quality is relative, transformative and sometimes perceptual. When we incorporate the concept of quality in education, it means excellence in education. How does any institution fit for propose i.e. educational outcomes and providing experiences?

According to Oxford Advanced Learners' Dictionary the term 'effectiveness' means: producing the result that is wanted or intended or producing a successful result. Effectiveness is the extent to which an organization or programme produces particular outputs (which are concrete and measurable; and which may not be measurable). Effectiveness involves achieving your worthwhile goals that support your vision and mission. An activity is effective when it leads to the output (or mix of outputs) that we want to achieve.

The concept of 'efficiency' refers to the relationship between the inputs into a system (be it agricultural, industrial or educational), and the outputs from that system (be they wheat, vehicles or educated individuals). According to Oxford Advanced Learners' Dictionary the term 'efficiency' means the relationship between the amount of energy that goes into a machine or an engine, and the amount that it produces. Another meaning of the term 'efficiency' means the ratio of the effective or useful output to the total input in any system. The concept of efficiency relates the outcome of a process to its input. A system is said to be efficient if a maximum output is obtained from given input, or if a given output is obtained with minimum input. Inputs and outputs have somehow to be valued so that they may be aggregated; and usually prices are used to perform this valuation function. Efficiency has thus to do with the ratio between output and input: How much do we get for what we put into the system? The analysis of efficiency thus deals with a comparison of costs and benefits. An activity is efficient when it leads to the output (or mix of outputs) with reference to inputs. The desired outputs of an education system are things like academic achievement, positive attitude and development of job skills. Cost refers to the level of input needed to get the output. A program is efficient when the desired mix of outputs is maximized for the given level of inputs (cost), OR, where inputs are minimized for the desired mix of outputs.

So, after looking at these definitions of the terms; the following implications can be derived.

- Efficiency compares effectiveness to cost.
- The concept of efficiency already includes the concept of effectiveness. So, if the any programme or activity is efficient, one can assert that it is effective.
- To improve efficiency, one cannot consider only the cost of an activity but also, must consider the quality and effectiveness of the activity.

3. Types of efficiency

In educational setting, it is useful to think two types of efficiency: Internal Efficiency and external efficiency. An educational system is internally efficient to the extent that it uses available resources for improving the quality and increasing the quality of education in the best possible ways. Indicators of internal efficiency would include student achievement, grade repetition and drop out, teacher preparation, quality of content and adequate instructional materials. In short internal efficiency is concerned with whether the components of the education systems fit together in the most cost-effective way. Education economists define internal efficiency as comprising "the amount of learning achieved during school age attendance, compared to the resources provided,... the percentage of entering students who complete the course is often used as (its) measure" (Abagi & Odipo, 1997).

External efficiency is concerned with the extent that educated students receive and contribute to sustained economic and social development of the country. Key indicators of external efficiency include whether students they have the skills that employers require (e.g. Can they get the job?) or, alternatively, whether students have adequate preparation to enter the next level of schooling.

4. Efficient School

UNESCO (1998) has defined efficient school in following manner. Efficient school can be defined in terms of three commonly found factors. First efficient schools are those which obtain good outcomes, in terms of examination results. This operational definition makes it easy to quantify efficiency because examination results are a measurable entity. However, it may have negative implications as far as the school processes are concerned. In order to be efficient, schools may tend to be examination-oriented, which is hardly a welcome feature, especially at the primary level. Secondly, efficient schools are those which are well managed. This definition focuses on internal management of the school. It starts with the belief that any school is efficient where the interaction between different stakeholders is cordial and mutually reinforcing so that the teachers are the happy to teach, parents are willing to send their children to school and children enjoy the learning process. Thirdly, efficient schools are those which give good results at a reasonable cost, affordable to the society as a whole and to the different individuals in the society. In this definition, it is the cost and equity considerations which are dominant. A closer look at these definitions indicates four dimensions of efficiency, namely, focus on outcomes, favorable internal managements, cost effectiveness and equity. Needless to add, all these four dimensions should be an integral part of an efficient school. So, theoretically, efficient school related factors comprises of academic performance, participation of students in sports and other competitive events, repetition rate / dropout rate of the school, favorable internal managements, cost effectiveness, equity etc...

5. Factors that Affect Efficiency

There are many factors, which affects efficiency of school viz. mainly teacher related factors, student related factors, household based factors, community based factors; and school based factors. Sorojini (1993) identified the positive impact on enrollment and retention of primary students due to increase in input such as construction of school building, supply of materials to schools. Nessa (1994) was found that home and individual variables like father's education and occupation, mother's education are correlated with academic achievement of primary school students. It was also found that the high achievers were taught by parents, while the low achievers were taught by private tutors. Osokoya has identified six variables which contribute 53% altogether to the prediction of transition rate of Nigerian pupils from the primary to secondary school. The teacher: pupil ratio made the largest contribution of 17%; followed by parent's education attainment 9.1%, learning resources available at school 8.06%, school location 7.6%, parent's occupation 5.8% and education facility available at home 5.5% in that order. The study was conducted on community participation and school effectiveness indicates that there is positive correlation between the community participation and the school effectiveness (Kumar, et al., 1998). Ramachandran (2003) identified the factors which facilitate or impede successful primary school completion. Active PTA/ school education committees, actual teaching time satisfactory – more than 1 hour 20 minutes a day and at least 35 minutes per period, female teacher who is regular are highly influencing positive factors which facilitate successful primary school completion. Teacher – pupil ratio very high, above 1:40 and in many areas 1:65; punishment – harsh, teacher exhibits prejudices, actual teaching time very low- less than 45 minutes a day and less than 20 minutes per period are highly influencing negative factors which impede successful primary school completion. After reviewing related literature, the following factors are listed, which affect efficiency in elementary schools.

6. Household based factors

1. Total numbers of family members
2. Father's, mother's education
3. Occupation of father or guardian
4. Duty others than education performed by pupils
5. Time spent on education
6. Child labour as default activity

7. Per capita income of the family
8. Land owning
9. Mother's work force participation
10. Time utilization of pupils i.e. Time spent on domestic (Household duties) or paid work
11. Household attitudes

7. Community based factors

1. Initiation ceremonies & trend.
2. Gender issues and socialization
3. Religious factor

8. School related factors:

1. Number of children in the class
2. Total attendance in class for the year
3. Direct costs of schooling – Actual costs of schooling
4. Incentive programme of the government to reduce direct costs
5. Planning and implementation of curricular and co-curricular activities
6. School physical resources and its maintenance

9. Community participation – related factors:

1. Involvement of PTA, MTA, SMC members
2. Involvement of parents
3. Non-members involvements in school activity
4. Direct involvement of members of different committee in school activity

10. Teacher related factors:

1. Contact hours
2. Teacher's years of service in school
3. Occupation of teacher's spouse
4. Number of children teacher has
5. Level of language studied by teacher
6. Distance between school and teacher's home
7. Administrative workload on teacher
8. Teachers training
9. Teachers qualifications and experience
10. Combination of staff
11. Teacher's attitude
12. Classroom dynamics
13. Sexual harassment

11. Educational policies and institutional processes:

1. Limited budget
2. Political will
3. Poor management
4. Monitoring and feedback

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