Full Length Research Paper

Investigating equity through allocation of teachers

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Accepted 02 December, 2010

Although inequalities in education are relatively well researched, little attention is given to the inequalities in the educational resources used in education. This is clearly a short coming in the course of providing equitable education to all. One of the educational resources frequently used in discussion is teachers. However, not many researchers had evaluated it in terms of availability in a school. In this paper, allocation of trained teachers to schools is measured. Using Malaysian data from 1986 to 2006 and Gini coefficient, a well known measure of distribution, trends and patterns of equity is examined. By estimating the Gini coefficient, the study aims to enhance the understanding of resource inequalities and their drivers. Inequity is looked at two levels of education, that is primary schools and secondary schools. Initial results reveal that primary level’s equity is less desirable than secondary school’s. Much of it is due to introduction of “primary school integrated curriculum” and upgrading of non-graduate primary school teachers.

Key words: Gini coefficient, education, teachers, schools, equity.

INTRODUCTION

One of the basic human rights of every human being is entitlement to equal education access. Equity has been one of the issues in education ever since education was made public. Equity has been a prominent objective in many countries because the amount of resources allocated to education has been increasing from time to time. Rights to education can be viewed from the access of resources of education, to the outcome of education. One of the educational resources, availability of teachers, is often investigated.

Many investigations on the role of educational resources on student’s achievement had proven that, teachers play an important role. Teachers’ placement often contributes to the inequity in public schools (Krei, 2000). In spite of this, which characteristics of a teacher are important is still debated among the scholars. While some feel that teacher’s experience is important, others give prominence to teacher’s qualification because of its influence on a student’s performance. Realizing these arguments and administrative dilemmas, the Malaysian government through its Ministry of Education (MOE) had ensured that equity in education is given enough attention. Education is viewed by Malaysia as one of the general policies which could reduce inequality in the society (Snodgrass, 1980). This could be done by ensuring that, educational resources are distributed equitably. Allocation of teachers to schools, being one of the educational resources is controlled by MOE. Individuals who want to teach in Malaysian public schools must undergo training, either at the local universities or teacher training college before been posted to schools.

A brief review of teachers as educational resource in Malaysia

Among the resources of education, teachers are the most mobile (Brimley and Garfiled, 2005). This explains why teachers, received a lot of interest among researchers (Belfield, 2000). Teachers are an important input in an educational production function and it deserves a substantial amount of investigation into the economics of teacher inputs (Berne and Stiefel, 1984; Belfield, 2000). A lot of research using educational production function had used teachers as a proxy when evaluating the role of educational resources on students’ outcome. Besides the mobility criteria, teachers form the largest personnel in a school organization when it comes to discussion on school personnel. Therefore, much attention and thought is given when selecting and evaluating teachers in many
countries (Duke and Canady, 1991). In the case of Malaysia, MOE is entrusted in not only selecting potential teachers but also providing them with sufficient training. Trained teachers are an essential part of an education system. In fact, Vaizey (1975) sees it as the nucleus of an education system practiced in a country. Trained teachers are not only able to carry out teaching effectively but also ensure that student’s performance is brought up to the desired level. Thus, it is not surprising when a school’s quality is measured by the number of trained teachers in a school (Behrman and Birdsall, 1983). However, it has become increasingly difficult to retain teachers especially academically gifted ones, for many of them are leaving for greener pastures (Stinebrickner, 2001).

Gidwitz and Mc Gee (1999) claimed that sometimes “an environment of shortage of teachers” is created, so that the federal government would spend more on education. For example, many teachers in Malaysia prefer to teach in urban schools than rural. This preference of teaching in urban schools is not only occurring in Malaysia but also in other parts of the world. For instance, Fuller (1986) noticed that in Pakistan, only 31% of trained teachers waiting for posting were willing to teach in rural areas. Teachers usually like to teach in high socio-economic status (SES) schools (Scafidi et al., 2007). The chances of teachers transferring from a high SES school to a low SES is four times higher (Krei, 2000). The turnover rate at rural schools is higher than urban schools. Due to this mobility, many governments face the problem of posting teachers, thus jeopardizing the pupil-teacher ratio (PTR) in many countries. As a form of encouragement, government contemplates in giving extra allowance to teachers who are willing to teach at rural areas. This approach is not something new. In fact, in United States of America (USA), teachers were given “loan forgiveness packages” to attract people to the teaching profession (Gidwitz and Mc Gee, 1999; Hanushek et al., 2004). There are cases too where senior teachers are given monetary incentives to teach at certain needy schools in USA (Krei, 2000). One of the factors that contribute to why teachers prefer to teach in an urban school rather than a rural one is linked to the monetary aspect. Generally, urban schools have the capacity to offer higher salary than their rural counterparts (Downing and Peckham-Hardin, 2007). In countries where earning differentials exist among teachers because of a school’s location, teacher’s mobility increases. Zabalza (1978) in his doctoral thesis proved that, earning differences in teachers of the same qualification often request for a transfer to a school which is able to offer higher salary. In Malaysia, this should not occur because a teacher’s salary is not decided by a school. Instead their salary depends on their qualification and experience irrespective of which school they teach.

The disparity in the availability of teachers is also caused by the increase in the workload of teachers, which had prompted many to leave the profession. Petress (2007) is of the opinion that, retaining experienced teachers has become a heavy task for many schools’ administrators because they are unable to offer higher salary to compensate heavy workload. Since job opportunities are limited in rural areas, many senior teachers often leave the profession and migrate to urban area seeking greener pastures. However, this does not arise in Malaysia because the teaching profession is seen as a noble profession especially among female teachers.

The organization of educational administration in Malaysia is a highly centralized system (Ratnavadivel, 1999; Marzuki and Som, 2001; Musa, 2003). Its administrative structure has four distinct hierarchical levels. They are federal, state, district and school and they are represented by the MOE, state education departments, the district education officials and schools (Figure 1). MOE is responsible in allocating trained teachers to states. As shown in Figure 1, it is finally up to the district education official (DEO) in deciding which school a teacher is posted. Thus, in countries where education is administered through a central agency, like Malaysia, ensuring equality in terms of allocating teachers to schools falls on the shoulder of the agency that is, MOE (Levačič, 2000).

**METHODS**

The data used in this study are obtained from the Educational Statistics Year book for the period of 1986 to 2006. The number of teachers and enrolments for each state is obtained from this report. Enrolments and the number of teachers reported in this report are as of 30th June each year. Instead of using the number of trained teachers in a state, PTR is used. By doing so, the education quality in an area is captured. This is because PTR is often used as a measure of educational resources (Burke, 1999; Graddy and Stevens, 2005). PTR is the number of students divided by the number of full-time teachers assigned to a school (Lewit and Baker, 1997). The number of teachers included in the final count of PTR is based on the availability of trained teachers in a state.

There are trained and untrained teachers teaching in Malaysian public schools. Trained teachers are teachers who had undergone training at teachers training colleges. Although the benefits derived by students taught by trained teachers in influencing student’s achievement or learning process is not proven, it is the responsibility of every government in ensuring that every student is taught by a trained teacher (Hanushek and Luque, 2003). Untrained teachers are teachers who have the academic qualifications but not the necessary professional qualification that is, teaching certificate. PTR is computed through the following formula:

\[
PTR_i = \frac{Et}{TT} \tag{1}
\]

Where Et is the number of students enrolled in the state for the year t; TT represents the number of trained teachers teaching in the year-t.

There are various ways of measuring education equity. The conclusion on the level of equity in education depends on the
method used to measure it (Stiefel and Berne, 1981). One of the ways which is recommended by many experts is Gini coefficient (Ko, 2006). Education equity could be measured by using the Gini coefficient. There are two ways of calculating Gini coefficient (Thomas et al., 2001). They are the direct method and the indirect method. The direct method uses a mathematical formula to calculate the value of Gini coefficient, while in the indirect method the value is obtained by measuring the area between the Lorenz curve and the egalitarian curve (Figure 2). In this paper, both the methods are used. The formula we used to calculate the education inequality is also called the “Education Gini” coefficient (Lin, 2007):

\[
Gini_{ij} = \frac{\left( \sum_{t=1}^{N} \sum_{i=1}^{N} E_{it} \cdot PTR_{it} - PTR_{ij} \right)}{2 \left( \sum_{t=1}^{N} E_{it} \right)^2 \cdot PTR_{ij}}
\]

(2)

Where:

\[
PTR_{pt} = \frac{\sum_{t=1}^{N} E_{it} \cdot (PTR_{it})}{\sum_{i=1}^{N} E_{it}}
\]

(3)

\[PTR_{pt} = \text{mean of pupil teacher-ratio for the year-t}
\]

\[E_{it} = \text{number of pupils in state i}
\]

Education Gini is calculated for primary (GPS) and secondary school (GSS). Distribution is said to be equitable, if the value of Gini coefficient is less than 0.05 (Odden and Picus, 2000). In this study, the value of Gini education is converted to percentage by multiplying it with 100. Using Odden and Picus’s (2000) judgment, any value less than 5% is assumed to be equitable.

**FINDINGS**

After examining the cross-time pattern of the allocation of teachers to schools in Malaysia, the study found that GPS and GSS differ in terms of value (Figure 3). The fluctuations for primary schools are more compared to secondary school’s education Gini. Using 5% as the accepted level, the value of education Gini for secondary schools displays that, MOE had managed to distribute teachers equitably since 1998. On the other hand, for primary schools, the equity level fluctuates. On the whole, the fluctuation can be examined in two trends. They are when MOE realizes that inequity in primary schools occurring followed by efforts on reducing the inequity level. MOE implemented a new curriculum known as primary school integrated curriculum (KBSR) on a trial basic at 305 primary schools, selected throughout the country in the year 1982. The following year KBSR was implemented in all the public primary schools in Malaysia (Keow, 2008). The goals of this new curriculum is “…to ensure the holistic development of pupil. This development encompasses aspects including intellectual, spiritual, physical, emotional, talents, character, social, aesthetic values…. “(Primary School Integrated Curriculum, 1991).

Implementation of KBSR took its toll on many schools. Teachers had to be sent for refreshable courses to accommodate the new approach suggested in KBSR. For example in the KBSR, teachers are expected to carry out their teaching and learning in a more pupil-centred method (Keow, 2008). The duration of some of these course were short while some were long. When the duration of the courses was longer than 42 days, a school is allowed to hire a temporary teacher, who is not necessarily trained. This could have contributed to the availability of trained teachers in a school because MOE compiles data at interval period. At the time of collection, untrained teachers are accounted for, instead of the teachers who were undergoing training. However, by the following year almost all the teachers had undergone the necessary “retraining” to implement KBSR. This explains the value improvement in the following years.

Secondary school Gini coefficient is less volatile than primary school’s. This is because MOE has more time to take the necessary steps in providing teachers to secondary schools. For example, in the year 1987, the value of education Gini for primary school is way below the accepted standard that is 12%. However, for secondary schools an extreme value of education Gini occurs in the year 1995, 8 years after 1987. This is
because primary education in Malaysia is 6 years, while the secondary education could be broken up into two tiers. They are the lower secondary education known as Form 1 to 3; and upper secondary education known as Forms 4 and 5. In all public secondary schools, the subjects taught in Form 1 to 3 are almost similar, while at upper secondary schools, it depends on the availability of resources such as the expertise of the teachers and the policy of MOE. Therefore, if the causes of inequity of secondary schools were further broken up into two, that is, lower secondary and upper secondary, most probably education Gini for lower secondary would be within the accepted level and not for upper secondary.

Most of the teachers teaching in secondary schools are graduates, while teachers in primary schools are either certificate or diploma holders.

Since 2005, MOE had embarked on raising the teaching profession by upgrading all non-graduate teachers into graduates. This is done by sending teachers without degree to universities. It is hoped that by the year 2010 all teachers teaching in secondary schools would possess at least a basic degree and at primary schools, non-graduate teachers would either be upgraded or would have retired. This exercise of upgrading teachers had caused an inequitable situation at primary schools. As shown in Figure 3, GPS value was within the equitable level, but after 2002, it began to display an inequitable level. Nevertheless, it did not stray very far from the accepted standard. This could be attributed to the fact that, the number of non-graduate teachers pursuing their degree did not affect the availability of trained teachers in a school. Much of the
disruption was minimized because MOE encouraged its teachers, in acquiring a degree on a part-time or distance learning mode.

Conclusion

The evidence in the case of MOE’s methods of allocating teachers had proven that, its efforts had ensured that the level of equity in education depends on the level of education examined. Although the value of education Gini is not very far from the accepted standard that is, 5%, MOE had embarked on efforts not only in reducing the equity level but also upgrading the academic qualification of the teachers. At the same time, MOE had not only succeeded in achieving equity in education, especially in the distribution of teachers but also in raising the quality of education. This can be seen by comparing Malaysia’s PTR with its neighbours (Figure 4).

REFERENCES


