

Solving the Teacher Shortage Problem in Ghana: Critical Perspectives for Understanding the Issues

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Abstract

The problem of getting sufficient numbers of qualified teachers to staff classrooms is one of the most significant public policy issues facing many countries. In Ghana, the problem of teacher shortage has been a perennial one, necessitated by educational expansion as well as adverse socio-economic and political circumstances, and exacerbated by high attrition rate. Efforts to find a solution are still ongoing. This paper aims to contribute to the search for solutions to the teacher shortage problem in Ghana. The paper takes the view that before education policy makers think about whether to recruit more teachers or retain existing teachers, it is important that they clearly understand the complex nature of the phenomenon of teacher shortage. The paper, therefore, reconceptualises the phenomenon of teacher shortage, clarifying it by disentangling and explicating its constituent variables. It also discusses various policy options for addressing teacher shortages, and indicates the implications of those options for teaching quality and teacher status. The ultimate objective is to provide a framework for analysing the problem of teacher shortage in a more critical way so that any interventions would be more focused and appropriately targeted.

Keywords: Attrition, qualified teachers, teacher demand, teacher shortage, teacher supply

I. Introduction

The problem of getting sufficient numbers of qualified teachers to staff school classrooms is one of the most significant public policy issues facing many countries. In the United States of America it has become the practice of many states to declare teaching vacancies in counties every year by subject area, grade level and geographical location. The picture does not look different in the United Kingdom where it is reported that the nation faces an uphill battle to fill all classrooms with qualified teachers (Eurydice, 2002). Generally, among member countries of the Organization for Economic Cooperation and Development (OECD), quantitative shortages of teachers are reported (OECD, 2005). In the western world, therefore, the shortage of teachers thus seems to be a topic of discussion and research on a continuing basis.

Turning to the African continent, Nilsson (2003) analysed various country reports prepared for the 2000 World Education Forum in Dakar, and noted that many African countries face large shortages of teachers, which hinder their efforts to achieve universal primary education. He stated that to achieve EFA by 2015, African countries would need between 18% (Angola) and 84% (Malawi) increase in their current teacher supply, noting that majority of the primary teachers in most countries are unqualified according to the national requirements. In some countries the lack of qualified and experienced teachers is due to the high prevalence rate of HIV/AIDS: the number of primary teachers that died in 2000 in Zambia was equivalent to 45% of all teachers who were educated that year, and in Malawi 30% of teachers are infected (World Bank, 2002). In Nigeria Ladebo (2005) reports that primary teachers leave the profession early because of poor working conditions, and the desire for upward mobility. According to him, the problem has reached such an extent that “maintaining adequate levels of staffing and retention have been recognised as important areas of policy intervention for the primary education system in Nigeria” (Ladebo, 2005, p. 356).

The aforementioned international experiences are no less evident in the Ghanaian context, where Cobbold (2010) traces the problem of teacher shortage to the history of educational development in the country. In this connection, Cobbold’s review of events in some critical periods of the nation’s history would help to illuminate the problem. First is the period beginning from the 1970s to the early 1980s. This was a trying period during which the country experienced deteriorating economic climate caused by mismanagement of the domestic economy and external factors including sharp increases in world prices of petroleum and a sustained fall in the prices of the country’s major exports – cocoa, timber and gold. As a result, the real value of government spending on education dropped sharply from 6.4% of GDP in 1976 to 1.4% by 1983. Consequently, teachers’ salaries remained low and were not paid promptly (Nti, 1997; World Bank, 1996). Many teachers left the profession to seek greener pastures in other countries, especially Nigeria with the result that the percentage of teachers in first cycle schools dropped from 67.95% in 1978 to 59.49% in 1984. Those who left had to be replaced by untrained teachers whose proportion in the teacher workforce also rose from 32.05% to 40.51% in the same period (Pecku, 1998). It was estimated that in the early 1980s untrained teachers as a proportion of the total constituted 51% of primary and 25% of middle school teachers (Coclough & Lewin, 1993).

Another critical period was the time of the new education reform which began in 1987. The reform brought a restructuring of the entire pre-tertiary education system into primary (Year 1-6), junior secondary (Year 7-9) and senior secondary (Year 10-12). The primary and junior secondary levels were designated Basic Education, which was supposed to be free and compulsory. Pecku (1998, p. 46) describes the nature of the problem which confronted the Ministry of Education at the time the new reform was launched:

The number of qualified teachers was inadequate, but the number of junior secondary schools had increased. The seriousness of the situation becomes clearer when one realises that the first three years of the secondary system which had been transferred to the basic system required a higher level of teaching than the middle schools. Worse still the syllabuses were different from what the teachers were used to.

There were [also] concerns about the academic capability of the teachers themselves.

The dilemma that faced the National Planning Committee for the Implementation of the Reform was how to get enough teachers who had the depth of knowledge and pedagogical competence required of the new curriculum.

About a decade and a half of implementing the 1987 reform, a national study was conducted as part of efforts to address “the problem of making available an adequate number of trained teachers for instruction in schools” (Quansah, 2003, p. 1). The study found an estimated shortage of 40,000 trained teachers in the country’s public basic school system, with untrained teachers filling 24,000 of the vacancies. Government’s response to this finding was the introduction of a teacher preparation programme by distance. Dubbed “Untrained Teachers Diploma in Basic Education” (UTDBE), the programme targeted untrained basic school teachers who studied by distance using modules, with periodic face-to-face interactions with tutors to earn professional qualification for teaching in basic schools.

But the problem of inadequate teachers was not completely solved when another reform was launched. The 2007 reform renamed the junior secondary and senior secondary schools junior high school (JHS) and senior high school (SHS) respectively, with the duration of the later made four years. More fundamental changes made at the basic level included the official incorporation of kindergarten education into the mainstream school system, introduction of new subjects, and incentives to support the free and compulsory nature of basic school. These incentives included the payment of capitation grant to schools for the provision of instructional resources, introduction of school feeding programme in remote and deprived schools and supply of school uniform to such schools. The result of these new policies has been a massive increase in pupil enrolments, which requires a corresponding increase in teacher numbers.

In the midst of the crisis is a “revolving door” (Ingersoll, 2001, 2002) in that whereas only 9,000 teachers come out from the colleges of education every year, about 10,000 teachers also leave the classroom for various reasons; and many more intend to leave teaching before they retire (GNAT/TEWU, 2010). The problem is further exacerbated by the fact that after graduating from the colleges, and teaching for only three years many basic school teachers take advantage of the study leave with pay facility by the GES and upgrade their certificate qualifications to diploma and degree levels in the universities through full-time study on full salary. Unfortunately, the majority (about 70%) of such teachers do not return to the classroom after their studies (Cobbold, 2010; Sam, Effah & Osei-Owusu, 2014).

Successive governments have put in place various interventions, consisting mainly in recruiting and training more teachers through traditional (residential college and university training) and non-traditional modes (distance and sandwich courses). Up to the present, the need for professionally trained teachers has never been met by these interventions. Policy makers are still struggling to understand the nature of the country’s teacher shortages. The question often asked is, “Should we continue to produce more and more trained teachers or is something else needed to shore up the teaching workforce?” Educators have learned that increasing teacher supply is a necessary, but not sufficient, condition for solving our teacher workforce needs. It must also be noted that teacher shortages are less a function of how many teachers are produced than of how many are lost each year through turnover and early attrition, thus suggesting a focus on retention. Cobbold’s (2010) qualitative study of teacher retention policies in Ghana revealed laudable intentions behind the policies but poor implementation strategies. These lessons of experience suggest a shift from emphasis on recruitment and retention to something else.

This paper aims to contribute to the search for solutions to the teacher shortage problem in Ghana. The paper takes the view that before education policy makers think about whether to recruit more teachers or retain existing teachers, it is important that they clearly understand the complex nature of the phenomenon of teacher shortage. The paper, therefore, attempts to clarify the phenomenon of teacher shortage by disentangling and explicating its constituent variables. The objective is to provide a framework for analysing the problem of teacher shortage in a more critical way so that any interventions would be more focused and targeted. The paper begins by characterising ‘teacher shortage’ through a definition – what teacher shortage is, the different forms it assumes, how it is related to teacher demand and supply, and how it is assessed. Finally, the paper discusses some policy options for addressing teacher shortages, pointing out their implications for teaching quality and teacher status.

2.1 The Meaning of Teacher Shortage

To speak of a 'teacher shortage' is to speak in relative terms, in that the meaning of the concept depends on the specific criteria used in a country's school system to define a 'teacher.' National differences in the work organisation for educational personnel mean that in some countries 'teachers' also take on significant non-teaching duties whereas in other countries various pedagogical, administrative and support functions are performed by specialised personnel other than teachers (Siniscalco, 2002). In its Indicators of National Education Systems (INES) project, the Organisation for Economic Cooperation and Development (OECD) uses a "statistical" definition of a teacher: "a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated to students enrolled in any educational programme" (Siniscalco, 2002, p. 46). Those whose concept of a teacher includes the qualification held by the teacher and/or the programme of preparation leading to that qualification would feel disappointed by this definition. The definition also necessarily excludes educational personnel such as principals, supervisors, activity organisers as well as those with teaching qualifications but not currently teaching; yet, most countries include these personnel in their reckoning of teacher supply.

The conceptual confusion compounds when we turn to the more important term, 'qualified teacher,' because of the different standards used. In a country like the USA, every state defines a qualified teacher quite differently, with varying requirements for knowledge of subject matter, pedagogy, curriculum, assessment, learners and learning (Darling-Hammond, Berry, Haselkorn & Fiedler, 1999, p. 197). The America 'No Child Left Behind' Act defines a qualified teacher as one who has full state certification or a pass score on state teacher examination and who receives professional development "which improves subject matter knowledge, aligns with standards, and improves instructional strategies based on scientifically based [sic] research" (Cochran-Smith, 2003, p. 96). Such a teacher would demonstrate competence in each subject area he/she teaches. At the same time, the Act grants states discretion in determining what a 'highly qualified' teacher is (Johnson, 2004). In this context, the term 'teacher shortage' would mean inadequate number of teachers meeting the standards either prescribed by the Act or determined by a state. Thinking along the same continuum, the OECD defines a teacher shortage as a "lack of teachers meeting the qualification standards established by education authorities" (OECD, 2002, p. 68). Thus, it is only when we have some agreed-upon criteria which define a 'teacher' and a 'qualified teacher' that the term 'teacher shortage' can be properly understood.

It must be noted, however, that in some countries such standards are embodied or assumed to be embodied in the pre-service education curriculum; they are therefore not separately assessed outside the formal assessment of the pre-service course. Such is the case in Ghana where teachers are regarded as professionals just on the basis of their success in the examinations conducted by their training institutions such as the colleges of education and the teacher education universities. Also, standards established by national educational authorities are sometimes inconsistent with what people who make education policies, for example, politicians hold, as such people "tend to draw on their own biographical (and sometimes sentimental) memories of schooling as children [and of teachers], instead of referring to broader histories of education as a public project, as they go about the business of formulating educational policy" (Hargreaves, 2000, pp. 156-157). Nevertheless, whatever the criteria used to define qualified teachers in a given system, a teacher shortage implies that such teachers are "not enough to maintain teacher workloads and class sizes that are considered appropriate" (OECD, 2002, p. 68). This paper takes a classical perspective of an occupational shortage and defines a teacher shortage as a situation where there is an insufficient quantity of people who are certified as qualified teachers to fill teaching positions at existing salaries and conditions.

2.2 Forms of Teacher Shortage

A shortfall of teachers does not always imply insufficient numbers of qualified teachers generally. It may also relate to particular subjects, levels of the school system, or geographical and socio-cultural locations. In Australia, for example, teachers in general are hard to recruit for positions outside the metropolitan and larger urban centres. Specifically, in all states and territories, vacancies for mathematics, science and information technology secondary school teachers have been hard to fill in rural and remote areas (MCEETYA, 2001, 2003). At the beginning of the twenty-first century, research by Murphy, DeArmond and Guin (2003) showed that the much publicised teacher shortage in the USA was not a national crisis but a regional problem: urban schools and those with relatively high populations of minority and low-income students bore the brunt of the shortage; and southern and western states were much hit than other regions. There was also difficulty in recruiting well-qualified teachers for inner cities and rural communities, where working conditions were poor and pedagogical demands were far greater (Darling-Hammond & Sclan, 1996). Similarly, Dolton, Tremayne and Tsung-Pine (2003) reported of a geographical mismatch of those seeking teaching jobs in UK and where the vacancies were. According to them, there were more vacancies in London and the Southeast, although many more trained teachers sought jobs in the North of England. In developing countries, and Ghana is a typical case, teacher shortages have historically been critical in primary schools and rural communities (Colclough & Lewin, 1993;

Lockheed & Verspoor, 1991).

2.3 Teacher Demand and Supply

Whether there would be a shortage or surplus of any economic good or service, including teacher labour, is determined by the interaction of the demand for, and supply of, that good or service. Hence, the teacher labour market can be thought of within a traditional demand and supply framework. If we accept the validity of this premise, the difficulty associated with defining teacher shortage and the various forms it assumes would reflect in definitions of teacher demand and supply adopted in different countries. In general, the demand for, and supply of, teachers speak to both quantitative and qualitative issues. Demand for teachers deals with the number and skills of teachers needed by educational systems to meet the needs of the school-age population, and the supply of teachers relates to the number and distribution of skills of teachers willing and available to teach in the current school system (Santiago, 2004, p. 527).

The factors which are found to be most influential in the teacher demand and supply equation also vary from country to country. Generally, however, the demand for teachers depends on the following factors or a combination of some: compulsory school starting and ending age; school retention rates; size of school-age population; student enrolments in schools; pupil-teacher ratios; teaching load of teachers; required learning time for students; use of teaching support staff; use of technology and distance learning; students' preferences over elective courses and over educational programmes; and, in the specific case of public school teachers, parents' preferences between private and public schools. Some of these factors are affected by changes in government policies and priorities (Dolton et al., 2003; MCEETYA, 2003; OECD, 2002; Santiago, 2002, 2004)

In a teacher labour market model formulated by Zabalza (cited in Dolton et al., 2003) the supply of teachers is restricted to the number of qualified people actually teaching. But Dolton and his colleagues think this does not give an adequate idea of people who could teach. Consequently, they widen the teacher supply net to include, in addition to the current supply, two other variables. The first is the potential supply – defined as those who are qualified to teach but do not enter teaching (pool of inactive teachers – PIT). The second is the number of those who have left teaching but can be enticed back into the profession (pool of recoverable teachers – PRT). The supply of teachers is also likely to be influenced by the numbers of recent graduates of teacher preparation programmes; entrants from alternative routes; teachers' resignation and/or retirement rates; patterns of extended leave by currently employed teachers; relative earnings on offer in teaching and other careers; other labour market opportunities; and varying relative non-pecuniary conditions of work (Dolton et al., 2003; Santiago, 2002, 2004; Senate, 1998). In a world of globalisation and open economies, overseas migration also affects the supply of teachers. It is pertinent to observe that though certain factors are often categorised as demand or supply factors, there is hardly a factor that falls neat under one of the two. For instance, attrition affects both demand and supply of teachers.

As already noted, demand and supply factors interact in complex ways, and the relative weight of each factor in influencing teacher shortage (or surplus) would vary from country to country and, even in the same country, from year to year. This makes the task of “anticipating teacher demand and supply...one of education policy's most complex puzzles” (Darling-Hammond et al., 1999, p. 193). In trying to unravel this enigma, various countries use different models, depending on what factors are considered critical in their contexts, to assess the future teaching environment. The Department for Education and Employment in the United Kingdom (now Department for Education and Skills), for example, uses three interrelated models which capture net attrition, intake for initial training and highest teacher qualification by subject, to analyse teacher supply and demand for England and Wales (DfEE, 1998 cited in Dolton et al., 2003). This approach may reflect England's high teacher attrition rate (9%) among OECD countries (OECD, 2002).

The variations in models and their underlying assumptions used by different agencies, sometimes in the same country, make the compilation and collation of accurate data on teacher demand and supply difficult. Siniscalco (2002) notes that in many countries, data on some aspects of teaching are either non-existent or inadequate, making international comparison problematic. Her list of the aspects of teaching which tend to be most difficult to collect international data on include direct measures of the qualifications of the existing teaching force, in-service teacher training programmes, total teachers' workloads, class sizes, the competitiveness of teachers' employment conditions, teacher learning achievement, and teacher participation in school-level decision making.

2.4 Analyzing and Assessing Teacher Shortage

Various measures may be used to indicate, analyse or assess teacher shortage. Wilson and Pearson (1993) note that in the USA teacher shortages are generally indicated by the vacancy rates, the simplest measure of which is the number of unfilled vacancies for teachers. The authors are of the view that of this number, what is of greater interest for policy purposes is the number of *difficult-to-fill* vacancies, that is, those that have been *unfilled for a significant period of time*, or the *proportion of positions filled by teachers without full certification status*

(emphasis in original). Wilson and Pearson argue that “vacancy rates” is not a perfect indicator because it does not take into account ‘hidden’ or ‘suppressed’ shortages – defined as staff without relevant qualifications teaching in specialist subjects. But even if these out-of-field positions are reckoned and incorporated in the vacancy brackets, they would still not reveal, in a perfect way, the extent to which school systems face problems in recruiting teachers. “It is thus important to look also at the flows out of the teaching profession, through such indicators as *attrition rates, characteristics of leavers, or reasons for leaving the teaching profession*” (OECD, 2002, p. 69; emphasis in original). Commenting on attrition rates in particular, the OECD observes that the generally large size of the teacher population means that an apparently insignificant percentage rise in the attrition rate can have major consequences for the numbers of replacement teachers that need to be recruited.

Boe and Gilford (1992) suggest that rather than evaluating teacher supply and demand in terms of gross numbers, it would be worthwhile to think in terms of specific qualifications and characteristics of the teaching force. In particular, they propose that the prospect of teacher shortages must be examined in relation to the distribution of qualified teachers among schools of different features and locations. Other variables recommended for assessing quantitative and qualitative inadequacies in the teaching workforce are the years of experience of the current stock of teachers and their levels of participation in professional development activities; and the age distribution and relative salaries of teachers (OECD, 2002; Santiago, 2004). The last two factors merit comment because of their relative prominence in analysis of the current teacher labour market in many countries.

The age profile of the current teaching workforce of a country provides a basis for assessing how acute retirement-related supply shortages are likely to be. There is no single rule about what is an appropriate proportion in each age-band, given that typical entry and exit ages vary by country. However, within each country, a growing percentage of older teachers can potentially create staffing difficulties through increased retirement rates. At the same time a substantial proportion of younger teachers is symptomatic of an inexperienced workforce. Hence, the age structure of the teaching workforce has become an issue in many countries. In Europe, it was reported in 2002 that a little over 20% of the teaching population would reach retirement age in the next decade and 45% over the next 15 years. This meant that several countries faced the task of gradually replacing a large proportion of their practising teachers (Eurydice, 2002; Johnson, 2002). While Australia’s teacher labour market was considered to be “broadly in balance” around the same time, there was concern over the “significant tranche of...teachers [who] are aged over 50, and may retire in the next five to ten years” and the “limited numbers in the 35-45 age range, which would cause a major gap in the ‘experience’ of the teaching workforce as older teachers retire” (MCEETYA, 2003, pp. 4, 5).

Besides the aforementioned consequences, an ageing of the teaching workforce can have other effects. Firstly, it generally has budgetary implications since in most school systems there is a link between pay and years of teaching experience. Secondly, although a more experienced teaching workforce can bring benefits to schools, it can also be the case that additional resources are needed to update skills, knowledge and motivation among those who have been teaching for a long time. Thirdly, unless appropriate action to train and recruit more teachers is already underway, long term shortages are likely if the proportion of teachers retiring remains high or continues to rise (OECD, 2002).

Of the factors related to the attractiveness of the teaching profession, salaries have often been used to explain the development of shortages. The assumption seems to be that if salaries for teachers are lower, they may look for higher salaries outside teaching and vice versa. However, salaries are not usually defined the same way. While teachers tend to compare their salaries with that of other occupations, governments tend to express teachers’ statutory salary as a ratio of GDP per capita (OECD, 2002). Thus, both approaches arrive at relative salaries but the reference points are different. Some have argued that using statutory rather than actual salaries precludes financial benefits other than salaries; that the reference point, GDP per capita does not reflect salary levels in comparable occupations; and that a more appropriate indicator should compare teachers’ actual salaries and other benefits with those of workers in other professions requiring similar qualifications and at similar age levels (OECD, 2002, Santiago, 2004). Others such as Liang (2000) and Lopez-Acevedo (2004) maintain that an objective comparison of teachers’ salaries to that of other occupations as a means of assessing the effects of salaries on teachers’ career decisions, should take into account numbers of hours worked per week (this translates to hourly wages) and length of vacation or leave period. The debate notwithstanding, salaries feature prominently in the explanatory equation for teacher shortages.

3. Addressing Teacher Shortages: Policy Options and Quality Concerns

When teacher demand exceeds supply, it is rarely the case that a significant proportion of positions will remain unfilled, unless the situation is not very critical or resources are not immediately available. Authorities would always ensure that teachers are present to staff almost all classrooms, even if that requires the lowering of standards (Darling-Hammond et al., 1999). Governments usually respond to inadequate supply of teachers by using one of two broad options: increasing the workload of the available teachers or adding to their number (ILO,

1991a, 1991b). These are referred to respectively as demand-side and supply-side tools (OECD, 2002; Santiago, 2002).

3.1 Increasing Teacher Workload

Increasing the workload of teachers involves increasing class sizes and/or the average number of classes assigned to each teacher and lengthening teachers' working hours in return for salary increase. A variant of this policy is the "double-shift" system whereby schools run classes for one contingent of pupils in the mornings and another in the afternoons. This implies a lower level of investment in equipment and fewer teachers, and has the added merit of coping with the lack of infrastructure and teaching-learning materials. Such overloading approaches have often been adopted by developing countries; needless to say, they can "eventually drive qualified teachers into other professions, particularly as general working conditions and real salary rates continue to deteriorate" (ILO, 1991b, p. 17). A study by Mont and Rees (1996) furnishes corroborative evidence. The study found that in United States high schools, above-average class sizes correlated with teacher resignation rates.

3.2 Increasing the Number of Teachers

The second policy tool, which is increasing the number of teachers, involves employing both monetary and non-monetary incentives to make teaching more attractive and more flexible to enter. One measure is to lower teacher qualification standards by employing less qualified people without full certification or asking certified teachers to teach subjects in which they have no qualification, referred to in the literature as out-of-licence and out-of-field teaching respectively. Some countries recruit retired and foreign teachers. Another option is to restructure teacher education programmes and certification processes to produce more teachers at short duration and minimum cost. Countries such as Indonesia, Madagascar, Nicaragua and Thailand (ILO, 1991a) and the USA (Darling-Hammond, 2000) have tried it, but the quality of teachers produced through those alternative training and certification routes, as compared to teachers trained by the traditional routes, is widely debated among researchers.

Another supply-side policy discussed in the literature (OECD, 2002; Santiago, 2002) is the reduction of the average class size as a way of improving the working conditions, thereby attracting more teachers. It is argued that this could eventually result in quality learning. However, research by Hanushek (2000) and Hoxby (2000) show that across-the-board reductions in class size have negligible positive impact on student learning, and increase in class size has negative effect. The difficulty here is that class size is both a demand and supply factor and, therefore, any policy that seeks to use class size either as a demand-side or supply-side tool has to contend with its nondescript and ambivalence nature.

The OECD (2002) cautions that any decision to adopt particular policy options to combat teacher shortage should take account of the interrelated nature of the problem: that is, teaching quality is likely to suffer in the event of teacher shortage. This is because a teacher shortage raises not only quantity but also quality issues, though the concept of 'qualified' teachers is related to, but not synonymous with, 'quality' teachers. The immediate effect of meeting a shortfall in teacher supply by increasing class sizes or employing unqualified teachers is the likelihood of a lowering of quality of teaching and learning. Also, the use of less qualified teachers not only jeopardises the quality of education but also devalues the status of the profession. One of the most trenchant indictments against the teaching profession and which has hindered its gaining full professional status in many countries is the large number of unqualified staff, even in a developed country such as the United States. This has had a deleterious effect on how the public perceives teachers and on teachers' own bargaining power, especially in developing countries. As the teachers in Cobbold's (2010) study voiced their concerns about a career in teaching, they bemoaned their social position and related it to the presence of untrained teachers in the profession, arguing that it creates a cycle of poor teaching, low standard of education, poor public perception of teachers and increased attrition rates. There is, thus, an inherent danger in staffing schools with unqualified or underqualified teachers in that much as this measure could be an "unavoidable expediency during a transitional period," a long-term application of it could be detrimental to the education system as a whole (ILO, 1991a, p. 14). The OECD also notes that in light of the large size and diversity of the teaching force, policies that target specific groups of teachers are more likely to be effective than "one size fits all" policies (OECD, 2002). Thus, for instance, policies aimed at retaining teachers and thus curb teacher shortage in Ghana could focus on beginning teachers, or teachers with higher academic qualifications who, like their United States counterparts (Murnane & Olsen, 1990), have been found to be at higher risk of leaving. Others contend that to arrive at positive results,

...government policy must pursue two lines of action: first, the recruitment of sufficient numbers of new teachers with the necessary qualifications and, second, further training courses for employed but underqualified teachers. Any lack of co-ordination between these two lines of action can be counterproductive (ILO, 1991a, p. 17).

Seemingly a balanced strategy, the above policy appears to prescribe solutions without diagnosis of the problem. Like all other human and social problems, it is important to find out the causes of any shortfall in teachers before crafting appropriate policy strategies to deal with it. In general, however, the most effective approaches appear to be those that have been implemented as part of a global strategy that looks not simply at the immediate problem but at ways of making teaching an attractive profession in the long-term.

It would appear then from the preceding analysis that teacher shortage is a complex issue. It is more than a simple imbalance between demand and supply: understanding it requires equal understanding of country-specific contexts which may be rooted in history, culture, politics, as well as in economic and educational policies. It also requires awareness of the implications of the different policy alternatives open to governments and school systems confronted with staffing problems. Finally, it demands that researchers provide clearer definitions of concepts used in studies on teacher shortages. On this matter, I share Linda Evans's (2002) view that researchers should define, or formulate clear interpretations of, key concepts used in their studies to permit identification of conditions and factors that circumscribe a particular study, and facilitate recognition of what does or does not constitute or represent the phenomenon being studied.

Conceptual distinction of this kind is essential to examination and understanding of processes and influences, which, by providing the key to formulating implications for policy and practice, constitute the rationale for study.... [W]ithout it, there is no commonality in relation either to language or understanding, and so the meaningfulness of the research is diluted, its credibility undermined and the applicability of its findings questionable (Evans, 2002, pp. 127-128,129).

Understanding the teacher shortage situation in Ghana and formulating appropriate policy strategies to deal with it require such conceptual clarity.

4. Conclusion and Contribution

This paper has provided a critical analysis of the complex phenomenon of teacher shortage. It has been established that while teacher shortage is the outcome of the interaction between teacher demand and teacher supply, the variables in the teacher demand and supply equation are many and interact in diverse ways. Some variables, though, are not very significant in the Ghanaian context. For example, the phenomenon of teacher education graduates from colleges of education not taking up teaching positions is rare in Ghana, though often a certain proportion of those who receive rural postings would seek alternative posts in urban public schools or private schools, sometimes using health problems as a reason (Hedges, 2002). The incidence of returning teachers is also uncommon (this happened only in the early 1980s when some teachers returned from Nigeria); as are mid-career change or casual relief teachers. Thus, one cannot confidently talk of a 'reserve pool' in the Ghanaian teacher labour market. Finally, whereas the majority of the country's health personnel and some secondary teachers migrate to other countries, notably the United States and Britain, basic school teachers are rarely involved in international migration probably due to the low academic and professional background of many of them.

The current models of making projections on future teacher demand and supply for the basic level (Lewin, 2002; Quansah, 2003), and which are currently guiding recruitment and retention policy in Ghana, are based on relevant variables. These include average student-teacher ratio, school enrolment rates, growth of the school-age population, number of trained and untrained teachers, average number of teachers graduating from the colleges of education each year, number of teachers approved for study leave each year, and the attrition rate (estimated at 5%). However, these variables do not exhaust all the possibilities in our specific context. The analysis made in this paper, first calls for a clear definition of a qualified teacher which would be used consistently in all discussions of teacher shortage in Ghana. Secondly, the paper introduces into the teacher demand and supply equation other important variables which have not been considered in Ghana. These include:

1. number of teachers who are qualified to teach but do not enter teaching (pool of inactive teachers);
2. number of recent graduates from all teacher preparation programmes (not the colleges of education only);
3. teachers' resignation and/or retirement rates;
4. number of unfilled vacancies according to subjects, level of school system (kindergarten, primary, junior high) and geographical or socio-cultural locations;
5. number of difficult-to-fill vacancies (vacancies that have remained unfilled for a long time) according to subjects, level of school system and geographical or socio-cultural locations;
6. number of vacancies filled by teachers with full professional status but teaching subjects outside their field of expertise (out-of-field teaching);
7. characteristics of teachers who leave the profession, and their reasons for leaving; and
8. the age profile of current teachers.

Data on the above variables are needed to build comprehensive teacher data systems which can form the basis for appropriate teacher workforce strategies that address the interrelated factors of recruitment, distribution, quality and retention. This way, we would avoid one dimensional solution to the problem of teacher shortage in

Ghana.

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