

The previous chapters focused on the considerable challenges and constraints weighing on the education systems, not least that of achieving universal primary education. Now, the recruitment of teachers in sufficient numbers raises the equally important issue of their capacity to provide quality education. In this respect, concerns are justified in that performance in

Chapter 4

Which teachers for what kind of learning?

terms of quality of learning leaves much to be desired on the African continent. While situations vary from country to country, those countries considered to perform the best, such as Morocco, Tunisia and even South Africa, are seen to be at the bottom of international assessments and very far from the international average (UNESCO-BREDA, 2007).

Chapter 4

*Which teachers
for what kind of learning?*

Intuitively, the teacher appears to play a predominant role in that he/she is at the epicentre of the school learning process. In addition, quality education is often associated with specific teacher characteristics. Thus, for many people, quality education corresponds to teachers having a good academic level, a solid vocational training and a comfortable salary, preferably with civil service status. Naturally, these factors are to be taken into account but are not a measure of what pupils have learnt, which is the ultimate goal of education and so to be considered as the principal reference. In addition, the exact meaning of a good academic level, a solid vocational training, etc. needs to be defined. As a result, the characteristics of teachers cannot and must not be confused with the quality of learning. Research work on teachers aims precisely at indicating to what extent each of these characteristics has an influence on pupil learning achievements (section 4.2).

Besides, even from the teaching side alone, these characteristics are not the only factors coming into play. Indeed, can a properly trained teacher be expected to perform well if he/she is completely demotivated? In the same way, can a teacher obtain good results with pupils when he/she has to go away for several days every month in order to receive his/her salary payment? It is clear that some situations are complex and that requirements are not always fulfilled for ensuring quality learning. As a result, there are many parameters to be taken into account in striving to better comprehend the learning process and the role of the teacher in this process. These analyses bring to light the importance of some management issues (section 4.3).



1. Observable teacher characteristics and school learning achievements

The connection between teacher characteristics and school achievements is often the subject of clear-cut opinions on the part of the main stakeholders in education systems. However, the literature on this topic is definitely less conclusive than commonly circulating opinions. In spite of the prevalence of studies in developed countries (research in the USA by far dominates existing literature), research studies in the African context are becoming much more common now and enable interesting comparisons between different world regions. That said, it is important to have some criteria of appreciation as to the quality of the studies to avoid giving too much credit to those where methodology is overly weak (Bernard, 2007). We have thus made a reasoned choice here rather than an exhaustive review of existing studies.

1.1. What is the appropriate academic level for primary school teachers in Africa?

One of the difficulties in answering this question comes from the fact that a variety of academic levels are necessary in order to make comparisons. While this is the case in the African education systems, where it is not unusual to see teachers with only a primary school completion certificate side by side with teachers who have graduated from university (cf. Chapter 3, section 2.2.1), it is much less so in developed countries where virtually all teachers have graduated from tertiary education. This situation sometimes serves as an example in favour of a higher academic level: if countries that perform best use teachers coming out of university, why shouldn't Africa do likewise? This is not the best way of tackling the problem since it ignores the extremely different contexts and above all does not ask the right question, which should be: do pupils in African schools learn better when their teacher is a university graduate? If the answer is positive, then this is an argument in favour of recruiting graduate teachers. This must of course be counterbalanced by other arguments, including the availability of graduates in sufficient numbers and their cost. If the answer is negative, then the most appropriate academic level for primary school teachers still has to be identified.

We are to start with the situation in developed countries as seen through the results of two major studies conducted in the USA. After all, questions on the ideal academic level of teachers are common to all countries with the same idea of competition regarding teacher qualifications⁴⁴.

⁴⁴ France is a good illustration of this with the recent decision to implement a system requiring a Master's degree to become a primary school teacher.

Chapter 4

*Which teachers
for what kind of learning?*

In the first study, Rivkin, Hanushek and Kain (2005) use an extremely rich database collected by the Texas School Project of the University of Texas in Dallas. The Texas Assessment of Academic Skills (TAAS) has been administered each year since 1993 to pupils in grade 3 through grade 8. Data cover all pupils registered in Texan public schools. The authors have used data for three cohorts, each including over 200 000 pupils in around 3 000 public primary schools (elementary schools) and lower secondary schools (middle schools). The scale of these enrolments leads to much higher precision than the limited sample surveys generally available. The authors note that teachers with a Master's degree (five years after upper secondary completion) do not appear to perform better than their colleagues who have a lower academic level. In the second study, Krueger (1999) uses the STAR (Tennessee Student/Teacher Achievement Ratio experiment) project data and attempts to assess the impact of class size on pupil learning. In all, 11 600 children were involved in the experiment for only 80 schools. While the purpose of this study is about class size, the estimations given also provide interesting results as to teacher characteristics. On this point, Krueger concurs overall with Rivkin *et al*'s conclusions (2005): he does not observe any significant effect from the teacher having a Master's degree. These two studies concur with the observations of most research on the subject, which show that a higher university qualification does not automatically translate into better pupil learning achievements. This is a very interesting result in that it demonstrates that the rise in the academic level of teachers in developed countries does not necessarily correspond to criteria of effective teaching.

Nevertheless, this initial observation does not give an indication of what is observed in the African context where academic levels are extremely heterogeneous. It is therefore essential to refer to studies conducted in this context. However, the results observed are very clear: they reveal that the impact of academic education on school learning achievements is moderate, or even nonexistent (Mingat and Suchaut, 2000; Michaelowa and Wechtler, 2006). This does not mean that teachers' academic education is not of use, but rather that the academic levels of teachers in the education systems—generally ranging from lower secondary to tertiary education—make very little difference finally to pupil learning achievements. Based on data from the CONFEMEN Programme for the Analysis of Education Systems (PASEC) for nine French-speaking countries⁴⁵, Bernard, Tiyab and Vianou (2004) show that “while the BEPC⁴⁶ academic level appears to be a minimum threshold, it emerges very clearly that beyond that level, the influence of the teachers' academic level on pupil learning in primary education is moderate.” It is nevertheless important to avoid making hasty generalisations, since, in some rare cases, it was seen that the *Baccalauréat* level could be the most appropriate. Thus, in Mauritania, different studies (PASEC, 2006; Jarousse and Suchaut, 2001) have demonstrated that 4th and 5th grade primary school pupils who have teachers with the *Baccalauréat* made more progress than those with teachers with a lower or higher academic level. However, this result is not valid in grade 2. It is therefore important to take national contexts into account even when fairly clear trends are seen to emerge.

45 Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Madagascar, Mali, Niger, Senegal and Togo.

46 Exam at the end of lower secondary education.



Thus, to address the question raised in the introduction to this section, studies do not confirm that teachers who have graduated from university are more efficient than teachers with secondary school level. On the contrary, in many countries, upper secondary education proves the most relevant. This result, which may be cause for surprise and which has sparked off a great deal of reaction over the past few years, must be explored further. It is true that a large number of studies are now available and that the accumulation of results makes the resulting trends relatively reliable. Even so, experience shows that the results are not always well accepted, probably because they are counter-intuitive. Different aspects must be taken into account in order to better understand them.

The first is psychological and concerns teacher motivation, which is quite clearly a determining factor. The more qualified the individual, the higher are his/her professional and social aspirations. It can thus be anticipated that a tertiary education graduate may have other aspirations than to become a primary school teacher. This is what Michaelowa's work (2002) tends to bring to light. The author demonstrates, in five French-speaking African countries, that teachers who have the *Baccalauréat* or who are university graduates are distinctly less inclined to declare that they would choose the job of primary school teacher if they had a choice in the matter, the impact of the other characteristics being controlled elsewhere. Once again, it is important to avoid a distorted view since this can in no case lead to the conclusion that all graduate teachers are demotivated. Michaelowa's results simply show that many of them are not satisfied with their situation as teachers. This dissatisfaction may be a source of discouragement for some, which could partly explain the previous results. This is an important aspect to be taken into consideration since a teacher recruitment policy for *Baccalauréat* holders or graduates could, in some contexts, have unexpected negative consequences in terms of school learning. It is easily understandable that someone who is feeling highly discouraged will not be very efficient in his/her work even though he/she is qualified.

Chapter 4

*Which teachers
for what kind of learning?*

A second dimension to be taken into consideration is the contribution of a university education for the profession of primary school teacher. A university curriculum usually corresponds to a specialisation in a given subject, and there is not really an obvious link between a specialisation in law, economy or the humanities, etc. and the communication of basic knowledge to children in primary school. Indeed, at this level of education, the teacher has to be polyvalent as he/she teaches all the subjects on the curriculum; the difficulty of his/her task is not to do with the complexity of the knowledge to be communicated, since this is elementary, but rather with the complexity of teaching children who are at the beginning of their schooling. It can therefore be imagined that a university graduate has no systematic comparative advantage compared to a secondary school leaver. Thus, the fact of being a specialist of 19th century authors, for example, does not automatically qualify someone to teach reading, writing and counting to primary school children. The pedagogical aspect takes precedence over the academic level for basic education; this is less true for upper secondary education. Naturally, a university degree reveals knowledge and capabilities that indicate an individual's potential, but it is not in itself determining.





One should not go to the opposite extreme by saying that just anyone is capable of teaching. The results presented demonstrate that there is a minimum academic level required for teaching in primary school and that this corresponds to 10 years of education. It is obvious that someone who does not master the basic knowledge to be taught in primary school cannot be a good teacher. It is precisely the fact that there are people in the education systems whose academic level is clearly insufficient that worries some educational stakeholders. This phenomenon has been studied by the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) by administering reading⁴⁷ and maths tests to teachers in their survey samples in 12 Southern African countries (cf. table 4.1). Eight levels were identified by SACMEQ; the two highest levels were considered as satisfactory for teaching. A lower level raises serious questions as to the command of the subject.

In all countries, on average the large majority of teachers are seen to be at level 8 (65%) or level 7 (28.1%) in English. Also, around 7% of teachers in these countries are seen to be below these levels and so do not have an adequate level of knowledge for teaching. There are however considerable differences from one country to another. In Kenya or the Seychelles, around 94% of teachers are at level 8 compared to 19.1% in Zanzibar. In Uganda and Zanzibar, over 20% of teachers do not have the required reading level for teaching while the proportion is below 1% in the Seychelles.

Table 4.1: Percentage of teachers per level of skills in English

Country	% of teachers with a satisfactory level			% of teachers with an unsatisfactory level
	Level 7	Level 8	Total	
Botswana	17.5	82	99.5	0.5
Kenya	6.4	93.5	99.9	0.1
Lesotho	36.3	59.8	96.1	3.9
Malawi	35.9	58.4	94.3	5.7
Mozambique	37.1	52	89.1	10.9
Namibia	34.1	58.8	92.9	7.1
Seychelles	5.8	94.2	100	0
Swaziland	20.5	76	96.5	3.5
Tanzania	51.1	46.1	97.2	2.8
Uganda	21.9	57.1	79	21
Zambia	15.7	82.4	98.1	1.9
Zanzibar	54.4	19.1	73.5	26.5
SACMEQ II	28.1	65	93	7

Source: SACMEQ II

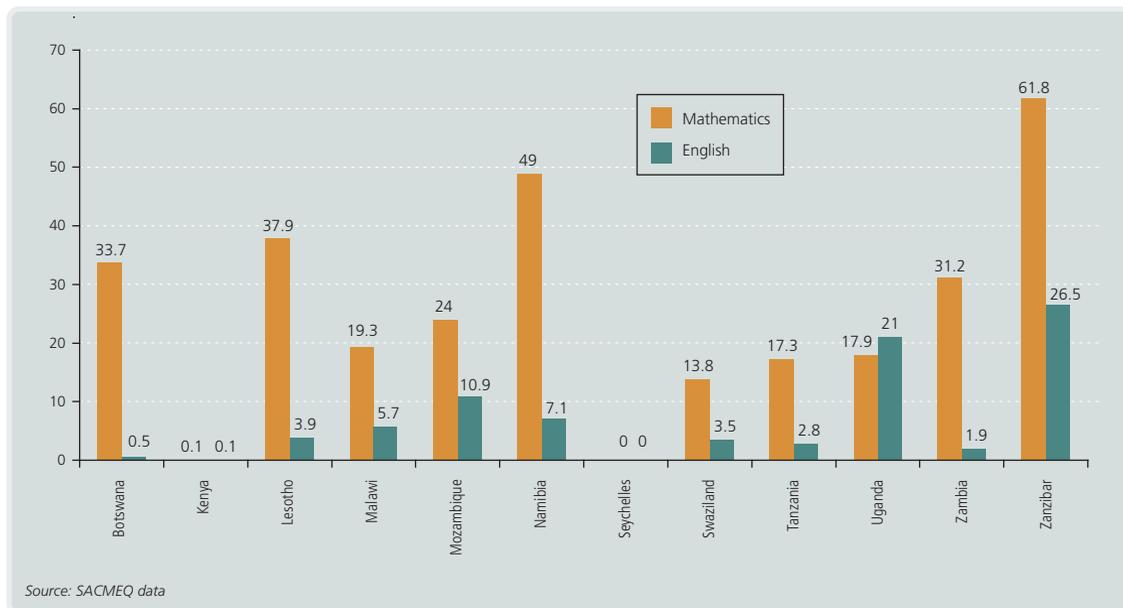
47 The term *reading* used by SACMEQ does not only refer to reading; it takes into account a broader assessment of the command of the English language.

Chapter 4

*Which teachers
for what kind of learning?*

Graph 4.1 indicates the proportions of teachers who do not reach the two highest levels out of the eight levels considered by SACMEQ in reading and mathematics, and thus provides us with an overall view. As a whole, this proportion is higher in mathematics (25.5%) than in English (7%). It is observed that situations can vary according to the subject. Thus, while similar situations are registered in Kenya and the Seychelles in both subjects with virtually no teachers below level 7, this is not the case in Botswana, Lesotho, Namibia and Zambia, where mathematics posed much more of a problem to teachers than reading.

Graph 4.1: Proportion of teachers not reaching levels 7 and 8 in SACMEQ tests



These results clearly demonstrate that there are some teachers in the African education systems without the minimum teaching requirements. It is true that the problem can take on different proportions depending on the country, since some countries are not at all concerned by it whereas others such as Uganda or Zanzibar are faced with a genuine problem. This observation is partly to do with the different categories of teachers mentioned in the previous chapter and especially community teachers who are recruited locally according to skills available in the community.



1.2. Teachers' professional training in question

In the previous section, it was stressed that a high academic level was not a guarantee for effective teaching in primary school education. Indeed, the pedagogical dimension is essential and implies specific training for the teacher. This is a more sensitive and complex area than that of academic education. There are diverging opinions on what a good professional training for teachers should consist of, and disputes between specialists can be quite difficult to follow: what training content? What share of practical and theoretical training? How long should training last? Once again, evaluations that relate the teacher's professional training to what pupils learn at school can help in gaining some perspective on this matter, which is at the origin of passionate debate.

In developed countries, as a general rule, every teacher has benefited from pre-service training, which is often identical for all. It is therefore very difficult to draw comparisons in order to identify the impact of professional training. The Bressoux, Kramarz and Prost (2005) study thus constitutes a particularly interesting exception in the framework of rich countries. The authors attempt to estimate the influence of primary school teachers' pre-service training on the achievements of third grade (CE2) pupils in France. They take advantage of a French specificity that allows young graduates to begin teaching without professional training. They take two categories of teachers: (i) beginners with no professional training (36 teachers) and (ii) beginners with professional training (66 teachers). The authors do not observe any significant difference between the two teacher categories in French, while there is a moderate gap, in favour of those who have been trained, in mathematics. This is certainly disconcerting, since pupils' learning achievements are hardly affected by the fact that their fledgling teacher has been trained or not. This raises questions as to the relevance of the professional training delivered and to the role of experience; however, this result is to be put into perspective with other results obtained in very different contexts.

Going over the different studies conducted on the African continent (Michaelowa and Wechtler, 2006; Bernard *et al.*, 2004; Mingat and Suchaut, 2000), there is seen to be a relative convergence of results, showing that pre-service teacher training has a very moderate impact, when this is not simply inexistent. These results also figure in a large number of studies including other developing countries. However, it is important to highlight the limits of the data on which these studies are based and which must be properly understood in order to correctly interpret the results.

Chapter 4

*Which teachers
for what kind of learning?*

Thus, in most of these studies, pre-service training is measured on the basis of duration. The difference is generally made between a long period of training (one year or more) and a short period of, or even no, training. Even so, a teacher who has benefited from one year of pre-service training recently, say in the last two or three years, will probably have followed a totally different training course from a teacher who benefited from training of the same duration 20 years ago. Indeed, it is easily conceivable that the content and methods of training courses change over time. However, the training variable usually used actually compiles the different training courses of same duration that exist (or have existed). Analysis therefore leads to estimating an average impact of all these training courses. Even so, the absence of a significant positive effect is not reassuring since it means that on average the training delivered has no impact on pupil learning. Besides, the analyst is not in a position to say whether some training courses have proved more effective than others. These results do not therefore make it possible to conclude that all teacher training is ineffective, as it has sometimes been distortedly put forward. For that reason, it is of use to have recourse to more specific surveys in order to more precisely address these issues. This type of study is still relatively unusual in poor countries and more particularly in Africa, even if the situation is gradually changing. PASEC is one of the few programmes to have conducted different studies, known as thematic studies, to handle specific topics such as the impact of teacher status and training.

In Guinea, two evaluations of the pre-service teacher training programme (FIMG) were conducted by PASEC in 1999-2000 and 2004-2005. The aim of this programme, with shorter training courses⁴⁸ focusing on professionalisation, was to train a greater number of teachers (2 000 per annum compared to a little over 700 previously) in order to address the challenge of universal primary education. The new training courses also allowed newly recruited teachers to be contract teachers. The evaluations attempted to compare FIMG teachers with other teachers who had benefited from three years of traditional training. The conclusions of the first evaluation concerning only the first two cohorts indicate very close results between the different teacher categories, slightly lower in grade 2 for contract teachers and virtually identical in grade 5 (PASEC, 2003). These results are all the more remarkable given that FIMG teachers had one year of professional experience at the most at the start of the school year while 85% of the other teachers had over five years of experience. As this evaluation was conducted at the beginning of the process, a second study was carried out in 2004-2005 in order to fine-tune the initial results. Its conclusions reinforce those of the previous study since they demonstrate that FIMG teachers tend to be more effective in grade 2 whilst the differences in their favour are not statistically significant in grade 5 (PASEC, 2006b). Overall, the outcome of this policy is very positive with a much greater number of teachers recruited and trained and a somewhat favourable impact on learning. The fact remains that status and training are inextricably connected in the context of Guinea and that the impact of one or the other cannot be distinguished. This also goes to show that professional training is part of a teacher policy and that it is useful to consider it in this perspective.

⁴⁸ Two categories of training were organized. The first included 3 months training, followed by a school year with responsibility for a class while benefiting from pedagogic support, and finally another 3 months training. The second category corresponded to 9 months training followed by a school year with responsibility for a class while benefiting from pedagogic support. This enabled two cohorts to be trained in one calendar year.



There is a genuine need today to better evaluate teacher training in order to identify the best practices for addressing the needs of the education systems. The case of Guinea is an example of the implementation of a teacher policy along with an evaluation process. It is, nonetheless, exceptional at the present time.

Professional training cannot be handled without talking about in-service training. However, even more so than for pre-service training, there are thorny measuring problems here given the diversity of in-service training. Thus the need for specific evaluations is even more pronounced here but unfortunately studies are scarce. One example is the study conducted by Jacob and Legfren (2004) in Chicago at the end of the 1990's. The authors prove pessimistic about the possible impact of continuous training on pupil performance. The public schools in Chicago, where less than 15% of pupils reached national standards in English were put on probation (i.e. 71 schools out of 489) and received financial aid for teacher training. The evaluation of this programme shows that the training appeared to be totally ineffective with a view to improving pupils' school achievements. This is of course a specific context and this result should not be generalized. The problem is that no studies of this type are available in African countries. According to PASEC results, continuous training is seen to have very little influence on pupil learning (Michaelowa and Wechtler, 2006). There again, continuous training programmes set up in the future will hopefully be accompanied by reliable evaluations in order to identify the most effective practices.

Research results converge and do not suggest that teacher training has a major influence on pupil learning. There again, it should not be forgotten that professional training is not the only factor involved in the learning process and it is even very closely connected to status in French-speaking countries as seen in the example of Guinea. Even so, the results do not deny that professional training has a purpose and they argue for a change in existing practices and for further research on this issue. The evaluation of training programmes is still in the very early stages whereas it could contribute much to the evolution of existing training models.

Chapter 4

*Which teachers
for what kind of learning?*

1.3. Does status make the teacher?

Chapter 3 highlighted the recent emergence of new teacher categories. Whether paid by parents or by the government, these new teachers raise many questions as to the quality of the education they actually deliver. They are often blatantly accused of degrading educational quality. Given the expansion of this category of teachers in many countries, their performance has become an increasingly sensitive issue, with those in charge of education and trade union heads alike sometimes taking a fairly extreme stand on the matter. Research results may well foster a convergence of the different opinions.

Bernard *et al.* (2004) have conducted analyses from the PASEC evaluations carried out in Cameroon, Madagascar, Togo and Guinea⁴⁹. The authors notice that “in most cases, pupils are seen to progress roughly in the same way whether they have a civil servant teacher or not.” When differences do come to light, these are moderate and not systematically in favour of one particular category. In another study carried out in Chad by PASEC, community teachers, who are recruited and paid by the communities⁵⁰, turn out to perform better than civil servant teachers in grade 2 and just as well as civil servant teachers in grade 5 (PASEC, 2005). The fact that teachers who are often less qualified and untrained obtain comparable or even better results than civil servant teachers seems difficult to comprehend at first sight. However, the authors of the study put forward two elements of explanation to do with actual teaching time. The first concerns the fact that community teachers are paid directly by the parents, which may reinforce regular attendance since any absenteeism may generate a loss of salary. The second is to do with the fact that many civil servant teachers have to travel to another locality from the one where they work in order to receive their salary; this sometimes involves several days of absence per month, when pupils are not being taught in the classroom and which penalises their learning. It would therefore seem that community teachers compensate for their lower qualifications by spending more time in school than their civil servant colleagues.

However, in terms of methodology, these studies had not been designed to analyse the impact of non-civil servant teachers on pupil learning achievements. This is why PASEC then conducted specific studies during the 2000-2001 school year (PASEC, 2004a,b). These studies dealt with the impact of contract teachers on pupils' school achievements in second and fifth grades of primary school. The selected survey protocol was based on matching contract and civil servant teachers. For the two grades considered, for each contract teacher surveyed, a civil servant teacher from a neighbouring school (as near as possible) was also surveyed. In the end, the samples group together civil servant teachers and contract teachers working in comparable conditions. In Mali, contract teachers tend to obtain better results than their colleagues in both grades but the gap is moderate in grade 5. In Niger, the result is less clear-cut since there is no significant difference in grade 2, while in grade 5 civil servant teachers seem to be more effective. Using the same data but by matching classes according to teacher status⁵¹, Bourdon, Frölich and Michaelowa (2006) do not

49 It must be pointed out that in Cameroon and Madagascar, at the time of the evaluation, non-civil servant teachers in public primary education were mainly employed by the communities. On the other hand, in Togo and Guinea, they were contract teachers. In addition, in the Madagascar and Togo samples, there are also private sector teachers.

50 The government now partly subsidises community teachers in Chad.

51 The purpose is to select control classes with a civil servant teacher and similar characteristics to the classes run by a contract teacher.



observe any significant difference in school learning achievements according to teacher status, whether in grade 2 or grade 5.

The latter studies, more sophisticated in terms of methodology, confirm the earlier results in that status is not generally at the origin of significant differences in school learning achievements and above all that there is no systematic relation between status and school achievements. These conclusions have sometimes sparked off strong reactions and it is true that they are contrary to popular opinion. However, the specific contexts connected to different status categories must be taken into account since they inevitably have an influence on teachers' investment and motivation. Thus, as far as the studies for Mali and Niger are concerned, the lack of temporal perspective must be taken into account since the studies were conducted only a short while after the contract teacher policy was set up on a wide scale. However, fairly pronounced differences in motivation can be noted between contract teachers and civil servant teachers (PASEC, 2004b), the latter seeming particularly dissatisfied with their professional situation in Mali. This dissatisfaction could contribute to explaining their lower performance. As contract teachers have very little experience, the question is open as to whether they will also show greater professional dissatisfaction over time.

All in all, it is still relatively delicate to precisely measure the difference in performance between teachers that can be attributed to status alone. The measures that are available cover different aspects; however, they do not prevent conclusions on the overall impact of the contract teacher policy on school achievements in the short term. Indeed, if this policy had had a strong negative impact on learning, as sometimes supposed, the previous studies would have demonstrated this. In the long term, it is riskier to give an opinion, all the more so as developments may vary from one country to another. The management of non-civil servant teachers has been diversified and now ranges from local management by the communities to centralised management and also management by the local authorities. Some types of management may possibly be more effective than others. New studies would be needed now that would benefit from hindsight, in order to better appreciate the impact of these new teachers and possibly the effectiveness of the different methods of management.

Chapter 4

*Which teachers
for what kind of learning?*

1.4. The role of teacher experience

If there is one teacher characteristic that results in a consensus as to its influence on school achievements, it is definitely experience. Nevertheless, while it is evident that an experienced teacher would make a better teacher than a beginning teacher, this does conceal some more precise questions: when does experience start making a real difference? In concrete terms, does this mean three, four, five, ten or fifteen years of professional experience? Are there thresholds when changes in terms of teaching effectiveness occur?

In order to answer this question with satisfactory precision, surveys are required with a large number of teachers for each category of professional experience. This is uncommon especially in the African context. Rivkin, Hanushek and Kain (2005), basing their observations on the Texas School Project database already mentioned, which respects this requirement, show that the effect of experience is particularly significant the first year. Thus, teachers with no experience have lower results than their colleagues; this remains true to a lesser extent for two to three years of seniority. However, it seems that there are no further benefits over and above three years. As for Krueger (1999), who bases his observations on the STAR project, he notes a low positive effect from seniority. Pupils who have a teacher with 20 years of seniority have results that are 3% higher on average than those who have a teacher with no experience. However, one of the difficulties in measuring the impact of seniority on school learning achievements comes from the fact that the most experienced teachers often work in "good" schools. In their study conducted in France, Bressoux *et al.* (2005) find precisely that senior teachers are in classes with better pupils and better conditions than beginning teachers. The statistical techniques used by researchers should make it possible to get around this problem; indeed, it is important to take the initial level of pupils into account in the studies in order to measure their progress over a period of time according to different characteristics including the teacher's seniority.

In the African context, fairly similar results are obtained. Michaelowa and Wechtler (2006) observe no impact in second grade of primary school; on the other hand, in grade 5, the teacher's seniority has an influence in French and mathematics, but this is moderate. However, no threshold was estimated in this study and it is therefore an estimation of the average effect of seniority.

The results of the research on teacher seniority confirm the common opinion on the matter. It does, however, seem that the very first years of teaching are the most significant.



1.5. Female teachers perform just as well as male teachers

Very specific attention is given to the topic of teacher gender on the African continent. This attention is probably the legitimate echo of questioning about the situation of little African girls in school and more generally of women's status in society. The slightest enrolment of girls in many African countries has led some international organisations to look into this issue. Besides, while everywhere else in the world girls generally have better results than boys in international assessments, results in Africa show comparable results between girls and boys, and even lower results for girls in mathematics (Bernard, 2006). Starting from there, some assumptions were formulated around the idea that girls learn better when their teacher is a woman whereas in many countries the majority of teachers are male. It is also sometimes reported that women feel more comfortable with very young children and should therefore make better teachers for the first grades of primary school. On the other hand, some people stress that women, due to their family responsibilities, are absent more often than men and that this is harmful to their pupils' learning. As almost always in the area of education, a multitude of contrary opinions intermingle. The results of the evaluations carried out clearly show that there is no systematic difference between men and women (Bernard, 2006); as a general rule, pupils learn in very much the same way with a male or a female teacher. In addition, contrary to popular opinion, it was not proven that girls learn better with women than with men. While these results certainly justify expanding female teacher recruitment, they do not justify setting up single-sex classes.

1.6. Querying the teacher's role in the learning process

The connections between the principal characteristics of teachers, the ones most often mentioned, and school learning achievements have been looked at through the prism of the results of research. Even if general trends should not obscure the specificity of one or another country situation, it is useful to highlight convergences and question their significance. The major observation of research in Africa and in other regions of the world as recalled by Krueger (1999) and confirmed by recent work, is that, at the end of the day, the observable characteristics of teachers have only a moderate impact on school learning achievements. While this result is hardly subject to further debate amongst researchers since it is the fruit of so many studies, this is not so in the world of education, which is why we want to explain as clearly as possible here some of the results relating to training and status, etc. Complex situations need to be qualified in order to understand them but passionate debate hardly leaves any room for this. Nevertheless, the learning process is eminently complex simultaneously involving a multitude of factors, some of which cannot be measured, such as teacher motivation. Naturally, it is the political consequences of these results that are a source of concern for some. It is true that these results can easily be exploited in order to justify drastic cuts say in the financing of teacher training for example. This cannot be justified on the basis of the research results since

Chapter 4

*Which teachers
for what kind of learning?*

a moderate effect, as indicated by the studies, cannot be neglected in something as complex as the learning process, which is characterised by multiple interactions. Thus, the researcher will advocate for the improvement of existing training programmes rather than their elimination or “reduction.”

However, it is just as counterproductive to purely and simply reject these results, which is still too common. On the one hand, this means denying some of the realities of African education systems and so not contributing to addressing them. The example of the graduate teacher who had other aspirations than to become a teacher and who finds himself/herself in a remote rural area or with a class of 100 pupils and ends up totally discouraged, may contribute to explaining why the teacher's academic level does not always correspond to better pupil achievements. On the other hand, rejecting such interrogations will not allow other fundamental questions to be posed with a view to improving learning in primary school. Indeed, if we accept that the role of observable teacher characteristics is not as decisive as thought to be, then the question of the teacher's role in the learning process must be raised once again. Would it not be rash to consider that the teacher's influence is limited to the characteristics referred to in the previous paragraphs?



2. The teacher at the epicentre of the interactive learning process

The research results presented lead quite naturally to this question: is teacher impact limited to the observable characteristics already identified? It can already be said that many aspects elude research analysis; motivation has already been mentioned but relational qualities with children, charisma and teaching skills, etc. can also be mentioned. One of the first difficulties comes from the fact that most of these aspects are not directly measurable, so how can they be registered and their influence appreciated compared to the other factors involved in the learning process?

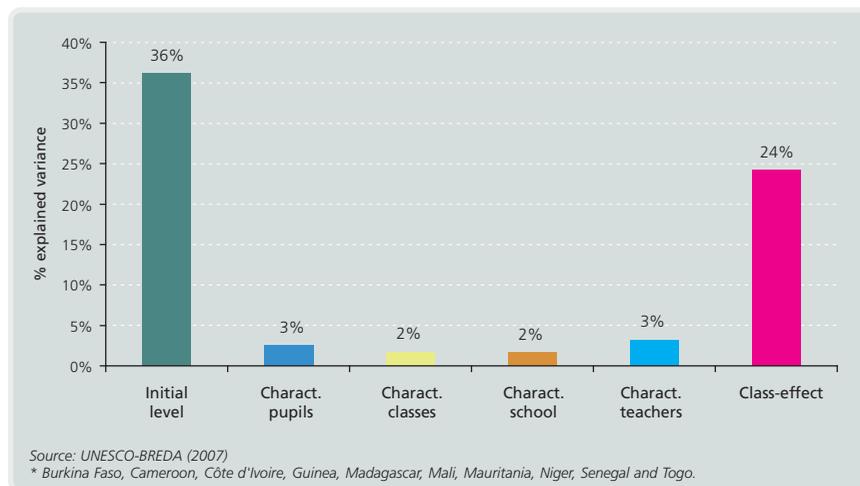
In an attempt to have an overall view of the learning process, it is useful to place the factors involved in this process in several categories and to measure the share of differences in results between pupils that can be explained by each category. In graph 4.2, six main categories of variables were considered. Their contribution to explaining pupils' scores over one school year was calculated in the second and fifth grades of primary school for ten countries having participated in a PASEC evaluation. The most important factor in explaining differences in results between pupils at the end of the year is seen to be the pupil's level at the start of the year (accounting for 36% of differences). This is of course not very surprising insofar as this variable incorporates the pupil's entire schooling history and a share of his/her personal characteristics (including his/her intellectual capacities). However, the pupil's other characteristics (gender, standard of living, age, repetition, etc.) are seen to explain a more limited share of the variance of scores (3%). This observation is also valid for the characteristics of classes (2%), schools (2%) and also for those of teachers (3%) in accordance with what was observed previously. It is important to avoid considering that the role of these categories is negligible; it is simply that their contribution to the quality of learning is more modest than what one might have imagined and above all that other aspects have a more decisive role. This is particularly disconcerting with regard to teachers whose training, status and seniority, etc. explain only 3% of the differences in results between pupils. It is evident that the teacher effect is not limited to these characteristics and that it is also the result of other vectors. This is partly what can be interpreted from observing the class-effect⁵² on graph 4.2 (24% of the explained variance). This effect indicates that the fact of being in one class rather than another, with identical context and pupil characteristics, translates into considerable differences in school achievements. This result highlights that there are strong inequalities across education systems, which certainly brings up sensitive issues for educational policy.

⁵² Technically, this effect is measured by introducing indication variables identifying each class in the statistical model.

Chapter 4

Which teachers
for what kind of learning?

Graph 4.2: The influence of the different categories of factors in the learning process in 10 sub-Saharan African countries*



The central question is to know what is actually behind this residual measure or class-effect. The most commonly admitted assumption in developed countries is that this effect is attributable to the teacher, i.e. the teacher-effect (Bressoux, 2000); the measure would take into account unobservable teacher characteristics such as his/her charisma, motivation and teaching skills. As the teacher is associated with the class, it is indeed tempting to assimilate the class-effect to a teacher-effect. That gives a glimpse of the major role played by the teacher in the learning process.

However, several aspects are to be considered. The first is a conceptual issue as highlighted by Bressoux: "(...) there is no teacher effectiveness *per se*. (...) This effectiveness is only ever the product of an interaction between a teacher and pupils" (2000, p.143). The author reminds us that the production of knowledge is not the single fact of the teacher but also lies with the pupils⁵³. Bressoux specifies: "Understanding the teacher-effect as the product of interaction means that one can envisage the teacher's art of doing as not always meeting with the conditions required to fully exercise it" (2000, p.144). This boils down to considering the teacher-effect as not only attributable to the teacher and is therefore not strictly speaking a teacher-effect.

Beyond these conceptual interrogations, we can also come back to the assimilation between the class and the teacher and explore this in the African context. Concrete examples enable us to identify new limits. For example, it is fairly usual for teachers to be informed somewhat belatedly of their assignment and so to be unable to reach the school where they are assigned in time for the beginning of term. This delay can be up to several weeks for remote areas and this teaching time will not be made up for and so will obligatorily penalise school learning. But should this situation be

⁵³ We are close to the concept of coproduction here as developed by McMeekin (2003) where the teacher and the pupils are co-producers of the educational product.



considered as a teacher-effect when it will be visible in the analysis as a class-effect? Another example, which is also very frequent, is that teachers are absent, sometimes several days a month in some areas, as they have to go and receive their salaries in the regional capital when their school is in a remote area. There again, the teaching time that is lost penalises the pupils, but is this a teacher-effect or an administration-effect? Another example concerns pupils in rural areas who, during the harvest period, are in the fields rather than in the classroom. There again the learning time that is lost will have repercussions on school learning achievements and will be included in our class-effect. However, its origin has nothing to do with school and it would be more appropriate to speak in this case of the harvest-effect...

This last point brings us to the distinction between what is a result of the environment and what is a result of the school itself. In this respect, the question of the pupil's family context must also be considered and especially how the standard of living is measured. In PASEC type evaluations, the information is collected from the pupil and is thus relatively imprecise. Consequently, the class-effect could incorporate effects to do with the composition of pupils and in fact convey differences between communities⁵⁴. Effectively, this class-effect seems to be constituted of many different components that are specific to the African context. This is probably to be linked to the fact that the measures obtained with the PASEC data are much higher than those observed in developed countries. Table 4.2 presents the results of comparable studies conducted in the USA and in France under the label "teacher effect." One must of course be very careful with comparisons since there are differences between studies⁵⁵ and it is therefore preferable to take only the orders of magnitude into consideration.

54 This conclusion should however be qualified. The value-added models used in these analyses include the pupil's initial score, which conveys his/her school and extracurricular history, so it can be thought that this variable absorbs part of the effect connected to the pupil's environment. That the class-effect incorporates part of the community influence cannot however be totally excluded.

55 Cf. Bernard (2007).

Chapter 4

Which teachers
for what kind of learning?

Table 4.2: Results of studies on class-effects in the USA and France

Authors	Country	Subject	School grade	Class-effect
Armour <i>et al.</i> (1976)	USA	English (reading)	6	7%-14%
Goldhaber and Brewer (1997)	USA	Mathematics	10	12%
Hanushek (1971)	USA	SAT*	2-3	9%-13%
Hanushek (1992)	USA	Vocabulary	2-6	16%
Hanushek (1992)	USA	Reading	2-6	10%
Murname and Phillips (1981)	USA	Vocabulary	3-6	10%-21%
Rivkin, Hanushek and Kain (2005)	USA	Reading	3-7	8%
Rivkin, Hanushek and Kain (2005)	USA	Mathematics	3-7	14%
Rowan, Correnti and Miller (2002)	USA	English (reading)	3-6	3%-13%
Rowan, Correnti and Miller (2002)	USA	Mathematics	3-6	6%-13%
Nye, Konstantopoulos, Hedge (2004)	USA	Reading	1-3	>7%-7%
Nye, Konstantopoulos, Hedge (2004)	USA	Mathematics	1-3	12%-14%
Mingat (1984)	France	Reading	1	16%
Mingat (1984)	France	Mathematics	1	12%
Mingat (1991)	France	French and Mathematics	1	14%
Bressoux (1995)	France	Reading	3-5	11%-13%
Bressoux (1996)	France	French	3	1%-11%
Bressoux (1996)	France	Mathematics	3	14%-19%

Source: Bernard (2007)

* Scholastic Aptitude Test—this university admission test has the disadvantage of being sat on a voluntary basis. It therefore corresponds to a selected sub-group of the population.

These results are seen to be considerably lower than African figures since the average in grades 2 and 5 is 24% in PASEC data whereas none of the above studies reaches that figure. The average is more in the region of 10% with slightly higher results for French. This tends to confirm that the class-effect is not limited to a teacher-effect, since there is no explanation *a priori* for the major differences in teacher-effects from country to country⁵⁶. At the same time, this shows the limitations of this measure, and this is valid for all contexts. Strictly speaking, this class-effect cannot therefore be a teacher-effect, and can even be a very mediocre measure of it in some contexts. On the other hand, it invites us to look at the learning process as a complex highly interactive process in which the teacher plays the central role. The teacher interacts with his/her pupils but also with the school environment and the administration.

In more general terms, the class-effect measure indicates very significant differences in effectiveness between classes in a great number of African countries. The question remains open as to the composition of this class-effect and future research must unquestionably give more attention to this aspect since it clearly appears that the major leeway for improving learning quality has still to be identified. One often-mentioned avenue is school time (Bressoux, 2000; Bernard *et al.*, 2004; UNESCO-BREDA, 2007), but few empirical studies are available to quantify its impact on

⁵⁶ Measure bias specific to each study can mechanically provide limited differences such as second order noise but cannot justify substantial gaps.



learning, particularly in the African context. Duflo and Hanna (2005) were able to show the positive relation between the time of teacher presence and school achievements in a study carried out in India. There is however a lot of road still to be covered to better apprehend this variable in the empirical studies. This will of course not be the only avenue to be explored; the question of school time is moreover often connected to local management, which must also be considered as a survey priority. One of the unresolved issues is to do with the capacity of observing what can, and what cannot, be attributed to the teacher in terms of school time.

The analyses referred to in this section underscore the central role of the teacher in the learning process, especially through the different interactions he/she has with his/her environment. However, these results also speak in favour of taking the complexity of the learning process into account. They show that the interdependence and interactions between factors are somehow the driving force of this process. Use of the term "teacher-effect" is therefore questionable as it refers to a single causality (that of the teacher) that does not properly report on the reality of school learning. Nevertheless, the teacher is indeed seen to be at the epicentre of these interactions and so he/she must be given key importance when looking into pupil learning. That said, it is not a case of only considering his/her specific characteristics but also of placing special attention on the relations he/she maintains with his/her professional environment. Some points raised such as postings and salary payment come under the everyday management of the education system. If we extend the reasoning through to harvest time in some rural areas, then the school calendar that is ill adapted to local constraints can also be considered as a management issue. The connection between the management of the education system and pupils' school achievements is not always very obvious but it does come through as a major element here.

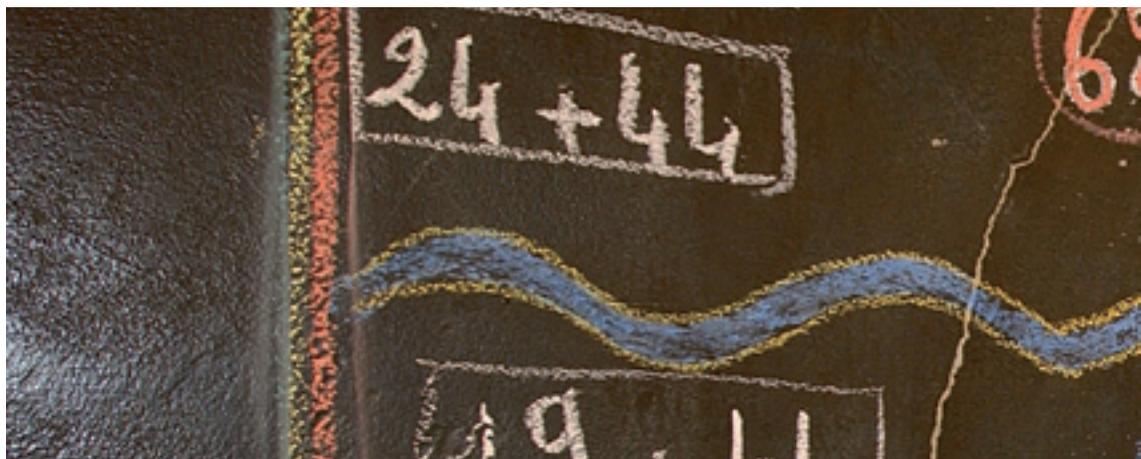
Chapter 4

*Which teachers
for what kind of learning?*

3. Management issues

The different results presented in this chapter encourage us to take a fresh look at the teacher's role in the learning process. Without challenging the teacher's central role, the research highlights that the observable characteristics of teachers such as training, seniority, status, etc. play a less decisive role than generally supposed. On the other hand, as the teacher is at the heart of the interactions involved in the learning process, he/she appears as a central player. It is therefore essential to give greater importance to teachers' relations with their professional environment. This leads to considering management matters as key issues for the learning process and so for the quality of education.

Thus, the interactions between different factors must be taken into account when appreciating the effect of the observable characteristics of teachers. The results of the studies reveal that the most appropriate level of recruitment for primary school teachers is situated between 10 and 13 years of education, especially in view of motivation phenomena resulting from the teacher's academic level, university graduates often having other aspirations than that of becoming a primary school teacher. It emerges that teacher recruitment criteria should not be limited to the academic level but should also give major importance to the candidates' motivation.





Concerning professional training, the mixed results seem to suggest that this does not always occupy the position that it should. The example of Guinea shows that a shorter and much more professional-oriented training course can give interesting results. Specific evaluations are still lacking at present in order to better appreciate the effectiveness of the different forms of professional training. In addition, the studies conducted on the impact of status on school achievements are fairly complex. The fact of being a civil servant or a contract teacher does not necessarily translate into differences in pupil achievements. There are of course differences according to national contexts but not systematically to the advantage of one or another category. The argument that non-civil servant teachers would be less effective than their civil servant counterparts has not been confirmed by the empirical research. This leads to a number of questions on the incentives and motivations of one and the other category to be discussed in the following chapter. As status is closely connected to teacher salary, training and seniority, it is clear that all considerations given to this topic must be situated within an overall perspective.

