



## Observation of teaching practices in relation to pupil learning (OPERA research programme, Burkina-Faso)

### *Executive summary*

Marguerite ALTET  
Afsata PARE KABORE  
Hamidou Nacuzon SALL

With Bakary DIARRA, Bamba Déthialaw DIENG, Salimata FAYE DIOP, Alphonse NAGNON, Baye Daraw NDIAYE, Innocents OUEDRAOGO, Mouhamadoune SECK, Mbaye SENE, Patrick DOMPY, Augustin KALAMO and contributions from PASEC/CONFEMEN

### I- Justification and objectives of OPERA

While looking for solutions to the crucial problems confronting education around the world, and especially in Sub-Saharan Africa, major international conferences and resulting decisions have highlighted and raised other problems. Jomtien 1990 raised the question of access to basic education; Dakar 2000 noted the commitment of the international community to achieving education for all by 2015; and more recently the Sustainable Development Objectives (2015) aimed to ensure access to quality education for all. Controversies and debates on the strategies to adopt and implement to meet the need for universal quality in lifelong learning all consider teachers to be the principal components of education systems.

OPERA (*Observation des Pratiques Enseignantes en Relation avec l'Apprentissage des élèves*: observation of teaching practices in relation to pupil learning) is a teaching research initiative that involves observing second and sixth year primary school classes (“CP2” and “CM2” respectively) in Burkina Faso.

The first aim of the programme is to describe, explain and understand what happens in class, how teachers teach and help their pupils to learn, and how they implement education system reform, particularly in Sub-Saharan Africa. The observations were carried out in 45 schools, 90 classes (45 CP2 and 45 CM2), and 3 main subjects (French, arithmetic and early learning). A total of 270 observations were made in phase 1 and half that number in phase 2. As well as written transcriptions, phase 2 classroom observations were recorded on video. The second aim of the research, which adopts Edgar Morin’s feedback principle, is the design and development of training tools and their dissemination in African countries that benefit from the *Initiative Francophone pour la Formation à Distance des Maîtres* (IFADEM: francophone distance training initiative for schoolteachers).

Overall coordination of OPERA was carried out by the Agence Universitaire de la Francophonie (AUF), in partnership with Burkina Faso’s secondary education, higher education and scientific research ministry (MESSRS) and national education and literacy ministry (MENA). Three professors and teacher/researchers from the universities of Nantes (France: M. Altet), Koudougou (Burkina Faso: A. Paré-Kaboré) and Dakar (Senegal: N. Sall) were in charge of scientific coordination and managed the work of their Burkinabè colleagues. A supervisory and evaluation committee consisting of two French professors (M. Develay from Lyon 2 and J. Wallet from Rouen) and a professor from Côte d’Ivoire (Aka Adu from Abidjan) completed the coordination structure. In Burkina Faso, the research was carried out by the LAPAME laboratory (Laboratoire de Psychopédagogie, Andragogie, Mesure et Evaluation et de Politiques Educatives) at Koudougou University in partnership with the Direction des Etudes et de la Planification (DEP) and the Direction Générale de la Recherche, des Innovations Educatives et de la Formation (DGRIEF), both departments of the MENA.

OPERA is connected to another training programme, the *Initiative Francophone pour la Formation à Distance des Maîtres* (IFADEM), a distance training initiative for schoolteachers jointly run by the Agence Universitaire de la Francophonie and the Organisation Internationale de la Francophonie. The aim is to facilitate the dissemination of research results and to strengthen the capabilities of university instructional research and design laboratories in other countries in the sub-region, with a view to developing similar new teacher training and supervision initiatives in those countries.

OPERA is jointly funded by the Agence Française de Développement (AFD), in the framework of its support for the IFADEM, and by the Global Partnership for Education (GPE).

## II- The question of teaching in global and Burkinabè contexts

### *Global situation of education, in particular in SSA*

Although it has had negative repercussions on the quality of education, hugely increased access for all, followed by the need for access to lifelong quality education to facilitate employability, has nevertheless been both desirable and hoped-for. Schools have been built in the furthest corners of SSA, leading to the large-scale recruitment of generally non-qualified teachers and thus falling short of the 2004 UNESCO quality requirement.

Local populations demand access to the benefits of education; they also put a great deal of pressure on the education system by demanding improved education in accordance with quality standards (UNESCO, 2005). Global development partners also put a lot of pressure on teaching and training systems to improve their performance. When combined, these pressures create a sense of urgency that leads to the wholesale recruitment of teachers without the required qualifications and without adequate professional training. SSA countries are not the only ones concerned: this is a global issue.

### *The education system and the question of teaching in Burkina Faso*

Recruitment of trainee teachers to be trained to IAC level [*Instituteur Adjoint Certifié*: first grade for a teacher graduating from training college] is carried out among holders of the *Brevet d'Etudes du Premier Cycle* (BEPC) on the basis of a proficiency test and/or psycho-technical tests that do not reveal the actual skills levels of the future teachers.

**Basic training** for teachers is provided by the *Écoles Nationales des Enseignants du Primaire* [ENEP: state teacher training colleges] and *Écoles Privées de Formation des Enseignants du Primaire* [EPFEP: private teacher training colleges] whose programmes and training methods are modelled on those of the ENEPs. The duration of basic training at an ENEP has varied somewhat, from one to two years between 1985-1986 and 2012-2013. Training currently takes two years. The diploma awarded to ENEP graduates is the DFE/ENEP (*Diplôme de Fin d'Études des Écoles Nationales des Enseignants du Primaire*), which is the equivalent of the *Certificat Élémentaire d'Aptitude Pédagogique* (CEAP). Graduates have the title of *Instituteur Adjoint Certifié* (IAC) and they are deemed qualified to teach all primary classes from CP1 [first year of primary school] to CM2 [final year of primary school].

Certain private primary schools sometimes recruit teachers with no basic training. In this case, the teachers are known as *Instituteurs Adjoints* (IA) and spend five years teaching before taking the *Certificat Élémentaire d'Aptitude Pédagogique* (CEAP) exam. A teacher who passes this exam becomes an *Instituteur Adjoint Certifié*. Besides IAC, other grades exist in the primary teaching sector (acquired either through seniority or after passing an exam at the end of further training). IAC is thus the basic primary teaching grade, followed by *Instituteur Certifié* (IC), then *Instituteur Principal* (IP), the highest grade.

**Continued training** for schoolteachers is carried out via refresher courses, educational events, lectures, preparing candidates for professional exams, distance learning, and class visits. However continued training can be very difficult to implement because of logistical, financial or fuel-related problems, or problems of relevance.

## III- Theoretical and methodological choices

Research carried out within OPERA focuses on direct observation of actual teaching practices in the contexts where they take place, using various recording methods to gather information on what actually happens in language, arithmetic and early learning classes. The aim is not only to process self-stated practices (i.e. what teachers say they do when interviewed pre- and post-observation), nor to focus on expected practices (i.e. what is expected by the school), for which information has been gathered using questionnaires, but to observe how schoolteachers actually teach and foster learning.

To achieve this, the OPERA researchers developed an overall observation model of the same type as the CLASS tool (Hamre, B. et al., 2013).

The scientific coordinators decided to seek to identify the different factors likely to influence the learning process by observing the teacher's interactions, activities and talking time in relation to the pupils' activities and talking time. This involved applying, a posteriori, a broad observation and processing model comprising the three main categories or domains of observation that constitute the practice of teaching: the "relational", the "pedagogical" and the "didactic" domains, each divided into several dimensions.

Researchers always have to choose between two options when carrying out classroom observations. The first option consists of adopting an existing observation grid with pre-established categories, a ready-to-use grid with boxes to be ticked such as the Stallings method; the second option, the one used by OPERA, consists of recording observed elements exhaustively by choosing an entry point (for OPERA, verbal interactions and teacher/pupil talking time). Coding and processing was carried out afterwards using a theoretical categorisation that reflects the activity of the teacher and pupils via their interactions, in the three key domains that constitute the practice of teaching, taking the specific context into account. The observation model and the coding and processing grid defining "what to observe" were designed after an exploratory observation phase in 6 classrooms and after studying international literature relating to this field.

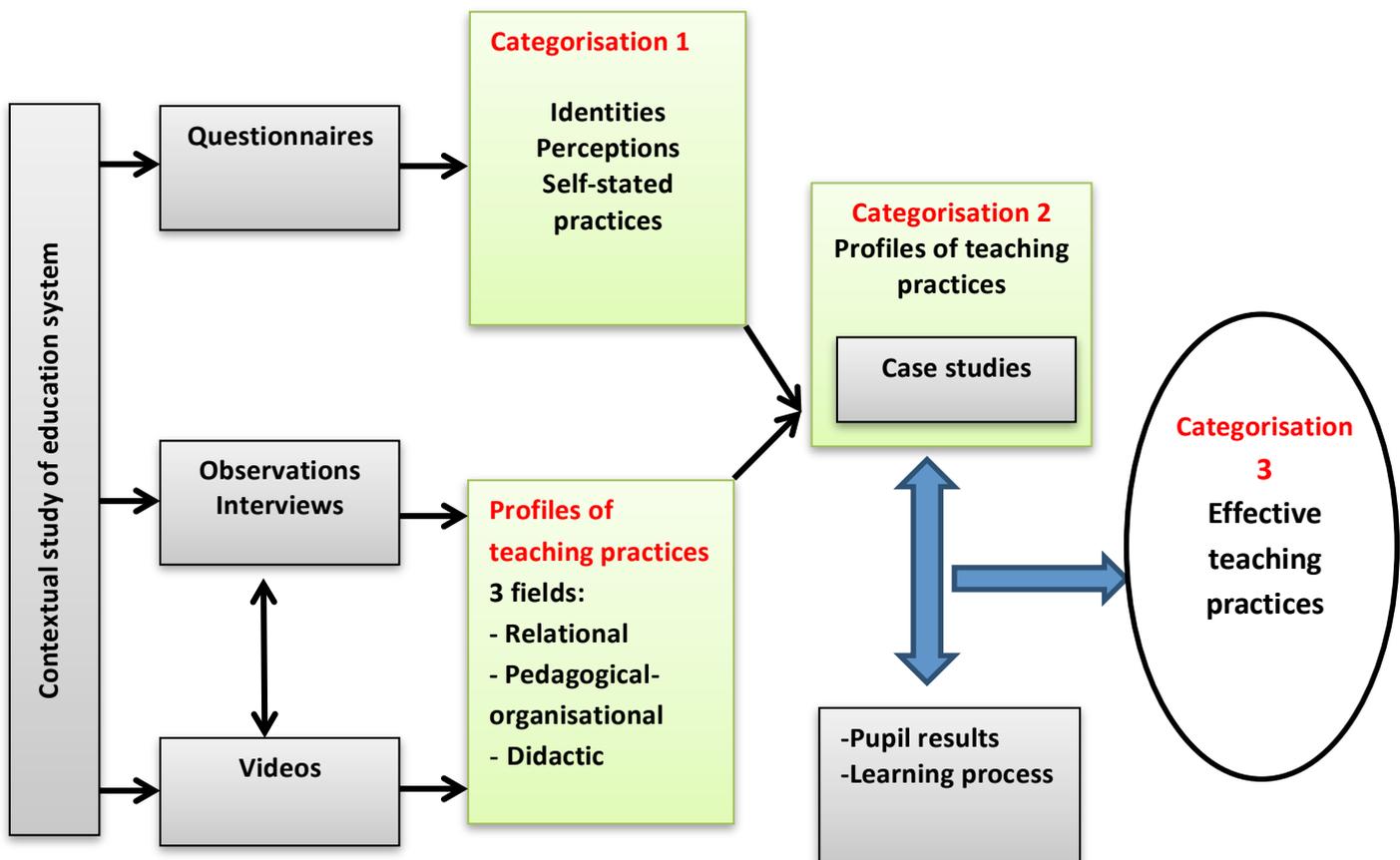
The theoretical apparatus and the analytical model consider teaching and learning to involve "interactive processes or functionally linked teaching and learning processes in real-life situations", according to the so-called "*contextualised interactive processes*" model (Altet, 1994); they focus on interconnected activities and teacher-pupil/pupil-teacher interactions in a teaching/learning situation set up in a given context, based on the identification of the three fields that form the framework for teaching practice (relational, pedagogical-organisational, and didactic-epistemic (relating to knowledge building)) (Altet, M., Vinatier, I., 2008) on the basis of records (transcriptions and videos) made of actual practices identified during classroom observations.

Teaching and learning activities implemented by teachers are analysed as acting as a form of pedagogical/didactic mediation on learning processes and conditions, on the activities of the pupils and on their cognitive mediation in context. The teaching/learning situation is where this dual teacher-student mediation is encountered; it is characterised by its interactivity. The processes are taken into account in an interactionist epistemological perspective that refuses to consider teaching and learning separately and which takes into account the act of mediation, the patterns of interactions between teacher and pupils, the dynamic of the learning situation, and the construction of knowledge.

**The overall observation model covers the three constituent fields in teaching.** Field 1 focuses on teacher-pupil relationships and class atmosphere. Field 2 focuses on the teacher's pedagogical and organisational interventions, on activities carried out, on classroom organisation and management, and on how conditions for learning are organised. Field 3 focuses on the didactic and epistemic management of learning programmes and content. These three fields comprise 11 dimensions. The fields and dimensions cover observables concerning not only the teacher but also the pupils and the way they react to the "relational", "pedagogical-organizational" and "didactic" elements. In terms of methodology, the research is based on data collected by/for OPERA from 8 sources:

- 1) The first source comprises data relating to the general context in which teachers work in Burkina Faso: the organisation of the educational system and its overall results from 2010-2011 to 2013-2014, teacher training and career management, and the administrative framework in which they operate.
- 2) The second source comes from questionnaires targeting the heads of schools observed by OPERA.
- 3) Data and information gathered from teachers is a contextual source; this data was gathered using the "teacher" questionnaire.
- 4) The main source of OPERA data is the observation of 270 teaching/learning sessions led by 90 teachers in three disciplines: French, arithmetic, and early learning. The 90 teachers were selected on the basis of data from 200 schools chosen by the PASEC for its new tests administered in 2014.
- 5) A second observation of what happens in the classroom was carried out in phase 2, which focused on a sub-sample of 41 teachers. These observations take the form of written notes and 60 video recordings.
- 6) Other materials: the teachers and a few pupils were interviewed before and after each session, helping us to understand what classroom activities mean to them.
- 7) Pupil results constitute the last source of data collected by OPERA. These are the grades obtained by pupils during the observation year (2013-2014).
- 8) Scores on the PASEC test administered in Burkina Faso during the academic year 2013-2014 are also considered as contextual data insofar as they describe the profiles of schools, teachers and classes.

The results obtained are processed according to an overall approach to using complete data from all these sources with the help of various types of statistical software (Excel, SPSS 23, N'Vivo, Transana) and comprehensive qualitative case studies. The data analysis process can be shown as follows:



Categorisation 1 is inspired by the model developed by Sall and his colleagues in 2010 for IFADEM (Sall et col., 2010a ; Sall et col., 2010b), which aims to develop professional profiles.

Categorisation 2 compares the processed observations with the professional profiles developed in categorisation 1 and seeks to identify **profiles of observed teaching practices**. This second categorisation also explores the extent to which teachers implement **active teaching** modalities (Altet, M. 1997, 2013), (Bruns and Luque, 2014).

Categorisation 3 combines profiles of practices (categorisation 2) with data gathered from pupils, in particular assessment grades and averages and PASEC test scores, to identify **effective teaching practices**.

#### IV- The teachers: professional profiles

Processing the different data has three aims in terms of the categorisation of the teachers observed. The first categorisation identifies shared characteristics based on answers to the questionnaires for observed teachers and those for head teachers of the schools where the teachers are observed. It is based on their socio-demographic, academic and professional characteristics, combined with their perceptions of the teaching profession. The second categorisation combines the processed observations with professional profiles developed during the first categorisation. This second categorisation is the aim of the analysis of the observations; it serves as a tool to look for answers to OPERA's main question: *what happens in the classroom within different groups of teachers identified on the basis of common characteristics shared by those we have observed?*

This second categorisation seeks to identify **profiles of observed teaching practices**. It also explores the extent to which the teachers actually implement **active teaching** modalities in class (Altet, M. 1997, 2013 *Les pédagogies de l'apprentissage* (which focuses on the activity of pupils and the means of success); Aviation Civile Canada (ND); Sayko and Tuner (ND)), foster active learning, and encourage pupils to take a real and active part in developing their learning strategies.

The third categorisation combines the profiles of observed teaching practices (categorisation 2) with data gathered on pupils, in particular assessment grades. It attempts to highlight performance levels of groups of teachers whose practices are potentially effective (categorisation 3) both during the teaching/learning process and in terms of assessment results obtained by pupils.

### ***Categorisation 1: professional profiles***

The first categorisation results from processing teacher and head teacher questionnaires. It distinguishes between the 90 teachers who make up the initial sample observed in phase 1 and the 41 in the sub-sample observed in phase 2, chosen according to the likelihood of their taking part in the 2014 PASEC tests.

**Seniority:** out of 89 teachers in the sample of 90, 48 have more taught for more than 10 years. There are more women with a maximum of 10 years' teaching experience in CP2, and more men with over 10 years' teaching experience in CM2. In the observed sub-sample of 41, 22 teachers have taught for more than 10 years.

**Academic qualifications:** 77 of the 87 valid responses from the 90 teachers in the initial sample have the BEPC (39 woman and 38 men); 10 have a *baccalauréat* or higher (7 men and 3 women). This trend is the same for the 40 valid responses provided by the subsample of 41 observed teachers.

**Professional qualifications:** 63 of the 80 valid responses from the 90 teachers in the initial sample show that they have the CAP or CSAP and are thus *instituteurs certifiés*; one third are *instituteurs adjoints certifiés* who have the DF/ENEP or the CEAP. In the sub-sample of 41, 34 valid responses showed that 28 have the CAP or the CSAP (17 men and 11 women).

**Distribution according to perception of learning** is established according to gender and class taught, combined with responses to the question on the teacher questionnaire relating to how the teacher, as a "stakeholder in the educational process" (De Ketele, 1980: 135-159 ss), perceives learning:

The teachers in the initial sample are mostly, in terms of their perceptions, focused on learning and the learner (51 out of 82: 62.2%). Of 41 teachers observed (of whom 38 gave valid responses) in phase 2 of professional profile 2 ("seniority" and "perception of learning"), 14 are teaching-focused and 24 are learning-focused.

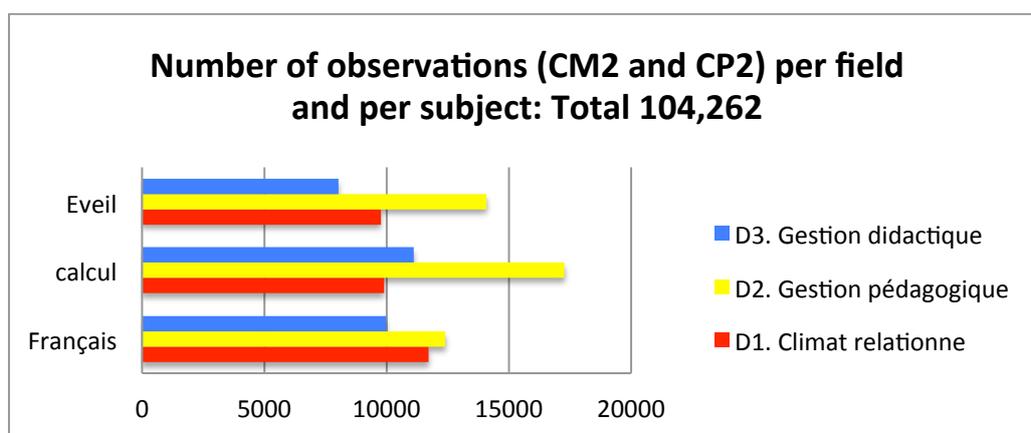
## **V- TEACHING PRACTICES OBSERVED**

***Profiles of teaching practices and performance levels of groups of teachers whose practices are potentially effective.***

All 90 teachers at the 45 schools were observed in the same period referred to as phase 1. Schools selected for phase 2 observations were those observed in phase 1 for which 2014 Burkina Faso PASEC test data would be available. 41 out of 90 schools from the initial OPERA database make up the sub-sample of classes for phase 2.

### Phase 1 (90 classes)

Overall, analysis of the 270 sessions observed in the 90 classrooms in 3 subjects totalled 104,262 observations. The following chart shows the distribution of these observations per subject and per field.



Observations per field and per subject

### ***Per subject:***

- 34,118 observations (33 % of all observations) were made for French and related subjects
- 38,252 observations (37 %) for arithmetic
- 31,892 observations (30 %) for early learning

**Per field**

- “relational aspects”: 31,379/104,262 observations (30.10%)
- “pedagogical-organizational, organizing conditions of learning”: 43,758 observations (41.97%)
- “didactic, centred on knowledge building”: 29 125 observations (27.93%)

**Results per field and per discipline**

- The highest numbers of observations for “pedagogical” aspects (17,264/43,758: 39.45 %) and “didactic” aspects (11,099/29,125: 38.11 %) were in arithmetic classes.
- “Relational aspects” got the most observations in French classes: 11,725/31,379 observations (37.66 %).
- The fewest observations were made on “didactic” aspects in early learning classes: 8,041/29,125 observations (27.61 %)
- Observations in the three fields are most evenly balanced in French classes.

Phase 2: 41 classes from the complete series (19 CP2 and 22 CM2)

**Per subject**

Overall, analysis of 120 sessions observed in phase 2 in 41 classes and 3 subjects (French, arithmetic, and early learning) totalled 64,261 observations. Per subject:

- 21,866 observations (34,03 %) in French classes (41 sessions observed)
- 21,931 observations (34,12 %) in arithmetic classes (41 sessions observed)
- 20,464 observations (31,85 %) in early learning classes (38 sessions observed)

In phase 2, arithmetic received the most observations, followed by French, then early learning.

**Per field and per subject**

Per field and per subject, the distribution of the 64,261 observations made during phase 2 in the 41 classes and 120 sessions observed (41 in French and arithmetic; 38 in early learning) is as follows:

- French received the most observations for “relational aspects”: 7,628/20,059 (38.03 %)
- Arithmetic received the most observations for “pedagogical” aspects: 10,160/26,039 (39.02 %)
- Early learning received the fewest observations for “didactic” aspects: 5,149/18,163 (28.35 %)
- The same imbalance for “didactic” aspects is observed in all 3 subjects.

**Categorisation 2: profiles of teaching practices.**

For categorisation 2, observations are combined with professional profile 2 from the first categorisation (seniority and perception of learning). Categorisation 2 reveals 3 teaching practice profiles:

- Set 1: less than "average minus standard deviation"
- Set 2: between " average minus standard deviation" and "average plus standard deviation"
- Set 3: more than " average plus standard deviation"

Schools	Level	Categorisation 2				
		Categorisation 1 Professional profile 2	Teaching practices profile			
			Relational 1	Rel. 2	Pedagogical	Didactic
CP63	CP2	NC	Average	Low	Low	Average
CP71	CP2	P21	Average	Average	Average	Average
CP58	CP2	P21	Average	Average	Low	Average
CP67	CP2	P22	Average	Average	Low	Average
CP80	CP2	P22	Average	Low	Average	Average
CP86	CP2	P23	Average	Average	Average	High
CM65	CP2	P24	Average	Average	Average	Average
CP83	CP2	P24	Average	Average	Average	Average
CP53	CP2	P24	Average	Average	Average	Average
CM83	CM2	NC	High	Average	Average	High
CM65	CM2	P21	Average	Average	Average	Average
CM64	CM2	P22	Average	Average	Average	Average

<b>CM71</b>	CM2	P23	Low	Low	Average	Low
<b>CM70</b>	CM2	P23	Average	Average	Average	Average
<b>CM86</b>	CM2	P23	Low	High	Average	Average
<b>CM81</b>	CM2	P24	Average	High	High	Average
<b>CM55</b>	CM2	P24	High	Average	High	High
<b>CM80</b>	CM2	P24	Average	High	High	Average

Distribution per category of observed teachers

### ***Categorisation 3: performance levels for teaching practice profiles***

The third level of categorisation of teachers involves establishing the level of performance of groups of teachers whose practices are potentially effective. Taking account of the second categorisation on observed teaching practice profiles, the third categorisation takes place in two stages:

- 1) During the teaching/learning process, and based on the observations made in class by OPERA, it explores the nature of the teaching provided according to whether it is active (engaging the pupils individually and collectively in active thinking and searching tasks, problem-solving, and productive activities) or passive (telling the pupils to carry out passive application, repetition and memorisation tasks);
- 2) At the end of the teaching/learning process, it cross-analyses the profiles of teaching practices (categorisation 2) with pupil grades (annual averages from the observation year, test grades and PASEC 2015 scores). The averages obtained by pupils in 2013-2014 serve as reference grades. The analysis divides the annual averages into 3 categories: **1** less than average and standard deviation; **2** more or less equal to the averages and standard deviation; **3** above average and standard deviation.

#### **In 19 CP2 classes, examining the active/passive ratio:**

- In French, the teaching/learning activities in the 19 classes observed was more active (in terms of pupil expression and output) in all but 2 classes.
- In arithmetic, 5/19 teachers had a more passive approach (demonstration and applications).
- In early learning, 6 teachers had a somewhat passive approach (whereas, like science, this is the discipline that requires the most activity, exploration and creativity; this shows that the early learning class is more of a language session than an introduction to science: see case studies in chapter VI below).

#### **In 22 CM2 classes, examining the active/passive ratio:**

- In French, the teaching/learning activities were "active" in nature in all but 6 classes;
- In arithmetic, the ratio tends to be less favourable to active practices in 8 classes;
- In early learning, almost half the subgroup (10/22) tends towards passive activities.

#### **According to 2013-2014 annual averages**

- Of the 41 classes that took part in the 2 observation phases, 18 had pupil results (annual averages) for 2013-2014.
- The average for this sample of 18 classes is 5.53.
- According to the average, the 18 schools were divided into 3 categories:
- 1: class average less than 4.85 (sample average – standard deviation)
- 2: class average between 4.85 and 6.21
- 3: class average above 6.21 (sample average + standard deviation)
- Of the 9 CP2 classes, 2 are in category 3, 6 in category 2 and 1 in category 1.
- Of the 9 CM2 classes, 1 is in category 3, 6 in category 2 et 2 in category 1.
- According to 2013-2014 averages, 3 schools out of the 18 that had grades were in category 3 (2 CP2 and 1 CM2).
- 
- Use of Principal Component Analysis
- Comparing "pedagogical profile1" constructed using PCA with "professional profile2" obtained for the first categorisation made it easier to identify teachers who make a highly significant contribution. Of the 41 teachers whose data is valid, 6 are identified as making a highly significant contribution to the cross-analysis of pedagogical profile1 with professional profile2, all of them CM2 teachers.
- In terms of pedagogy, it is as if the facilitation of learning using questions is very present in CM2 classes but in a learning-centred approach, with more open questions and more activity encouraged from the pupils.

In terms of didactics, of the 4 teachers who significantly contribute to didactic profile1, 3 are learner-centred and all teach CM2 classes. Overlap between the didactic profile and the pedagogical profile is among the highest, as a teacher has both a pedagogical profile that facilitates learning and a didactic profile that focuses on taking knowledge into account: it is the balance between these two profiles and the relational profile that produces effective practices. This is what the results of the OPERA research show.

#### **Synthesis of “active”, “passive” and “transverse-organisational” aspects**

Overall, the CP2 classes observed were more active than passive in tone. 10 of the 19 classes are in the active sub-group and 1/19 in the passive sub-group. The CM2 classes observed seem to show a balance between active and passive. 10 of the 22 classes are in the active sub-group and 7/22 in the passive sub-group.

#### **According to the transverse dimension (“organisational” profile)**

**By setting the threshold for the total of observations at 15 % for the organisational dimension recommended by Stallings, in both CP2 and CM2, the organisational dimension is relatively large in each of the 3 disciplines.**

#### **Proposal for PASEC 2014 indicators on pupil skills levels in OPERA classes to guide discussions on teaching practices**

**Subject to methodological observations from the PASEC, bringing together PASEC data encourages us to attempt to limit teachers to classroom practices that are likely to be effective as a complement to the PCA analysis.**

These teachers are working in both CP2 and CM2 classes, and their effective practices are sometimes, but not always, dependent on the subjects taught.

## **VI- Case studies**

As a complement to the quantitative processing of the observations, the OPERA research opted for qualitative, comprehensive case studies that use a variety of sources to interpret and understand what is being observed and which take into account the meaning the people involved ascribe to their practices in interviews.

Using the processed quantitative data, several steps were followed to choose the cases to be analysed, based on a distribution of classes from phases 1 and 2 with 6 sessions observed per class (3 using video), according to the total number of observations per division/level (CP2 and CM2) in 3 clusters (upper, medium, lower concentration) in the 3 fields and the identification of the relative weight of relational, pedagogical and didactic aspects. The case studies were chosen from among the profiles of teaching practices established in categorisations 1 and 2 (seniority and conception of teaching/learning).

Analysis of each case study takes into consideration the entire informational chain of data gathered in relation to this case of teaching practice:

- Contextual data about the school and class;
- Socio-professional category of the teacher: data from teacher questionnaires and the head of the school where the teacher works;
- Analysis of declared practices: pedagogical and didactic choices, perceptions of learning;
- Analysis of session observation data: transcriptions of 6 sessions from phases 1 and 2, pre- and post-session interviews with the teacher; interviews with pupils at the end of the session.

Cross-analysis of a range of cases has, in comparative charts, allowed fine-grained qualitative analysis, providing an understanding of the processes observed and giving meaning to the statistical analyses. These comprehensive case studies make it possible to compare practices, to see the overlapping relational, pedagogical and didactic domains at work, to see the factors involved, and thus to identify and describe some of the characteristics of effective practices.

Analysis of these cases shows that the profile of an effective teaching practice corresponds to that of teachers who are involved: they are motivating, learning-centred and focused on pupil activity and have an encouraging, mediating, involvement-oriented style that establishes a positive relationship in class, a subtle balance between pedagogical and didactic aspects and between organisation/facilitation and knowledge building.

The major asset of these teachers is thus their ability to get pupils to take part in the lesson and to involve them in activities, by being enthusiastic and kind and by knowing how to communicate their enthusiasm to their pupils to create an atmosphere of working communication in the classroom and involve them in various tasks. The classes of these teachers are thus in the HIGHER group of results and average grades; and as for the PASEC scores, they are the highest recorded.

The grades and PASEC scores of the classes are coherent and confirm that the teachers whose approach shows a balance between the three domains (relational, pedagogical, didactic) and who offer their pupils a greater range of activities, have effective teaching practices with higher success levels among learners despite large class sizes whereas teachers who have an approach centred on passive learner behaviour, make little use of the didactic domain, and have a less friendly relational approach have among the lowest grades and PASEC scores and have little impact on learning behaviour.

## **VII- Summary, training possibilities and dissemination**

### ***Results: Identification of general characteristics of teaching practices***

In primary schools everywhere in Burkina Faso, teachers ask pupils questions and classes are participative: the researchers ascertained that the teacher asks questions and the pupil replies and repeats in order to learn. The teacher talks, while the pupil listens, responds, and commits to memory. Classes are mainly dialogue-based. This observation is mostly shown to be true in CP2 classes, where teachers ask a lot of questions and insist upon responses. They are sequences of simple questions of a low taxonomic level (knowledge and understanding). These questions are constantly used to call on the pupils to take part. Open questions allowing the pupils to express themselves were mainly observed in the 6<sup>th</sup> year.

Traces of goal-based learning have also been observed: in their basic training the teachers in Burkina Faso have only been prepared for this approach. For the teacher it involves defining the goals to be achieved, choosing the methods to achieve them, and setting up assessment procedures. The teacher thus uses a learner-centred but top-down approach, and the problem of goal appropriation is not solved.

This approach remains at a taxonomically low level in terms of goals: the activities offered by teachers are generally, taxonomically speaking, at an elementary level (knowledge, understanding, applying, repeating, remembering) and seldom reach the more complex levels (analysing, creating, evaluating) described in Bloom's taxonomy.

Characteristics of the three domains that make up teaching practice: although the influence of a positive atmosphere is important in the classroom, because it means the pupils are encouraged to take part and get very involved, the pedagogical domain relating to the management and organisation of conditions for learning is the one that has most observations. Teachers in Burkina Faso are very concerned with the pragmatic aspects of actions and interactions relating to the organisation and management of conditions for learning. On the other hand, observations are fewest when it comes to the didactic domain. The question of knowledge—of its construction, its appropriation and its absorption—does not seem to be a major preoccupation.

What is striking about the whole range of observations made in all the classes is the impact of a positive atmosphere and the lack of observations made relating to negative atmosphere, scolding, punishment, etc. Teachers often elicit responses from pupils, and the tone, expressions, gestures and movements of most teachers are encouraging: their presence and energy motivate the pupils. Some teachers lack involvement and presence, but only in the minority of classes observed. In these very large classes (60 - 130 pupils), most of the teachers manage to keep their pupils in order. They sometimes tell pupils to behave, but school rules play their part and classroom management is generally well organised. However little scope is given for individual or collective activity in tasks involving reflection, searching, or production.

Moreover, given the large class sizes, a lot of class organisation is called for and certain teachers choose to set up group work so that they are supported by good pupils designated as "group leaders": they thus shift from a traditional teaching mode (where all the pupils are seated on benches facing the teacher) to alternative approaches where the pupils sit in groups in semicircles around the group leaders. By the same token, relatively few metacognitive, differentiated or individualised practices were observed in classes due to the large numbers of pupils per class.

The OPERA researchers were thus able to show that by conceptualising and measuring the three domains that constitute the practice of teaching, they could characterise the practices and identify the ones that had most impact on pupils' results. The teaching/learning process, analysed based on activities and teacher-pupil interactions, is one of the entry points that make it possible to highlight the many factors that make a teacher effective. As Hamre and the OPEN network have also shown, these teacher-pupil interactions are the most important aspects of the teacher's work whatever the context.

This research on teaching practices in primary schools in Sub-Saharan Africa suggests that this three-domain model is robust enough to help us understand teaching and learning and functions in all contexts—be they European, American or African.

### ***Contribution of OPERA to the training and personal development of teachers***

For the OPERA researchers, genuine progress in the teaching and learning process must begin with an analysis and precise understanding of the contexts in which subjects are taught in class, of what is at stake, of the actual teaching practices used by teachers and of the interactions observed with their pupils. The researchers are convinced that the enhanced understanding offered by the research concerning the processes underlying teaching/learning practices will make it possible to design and provide conceptual analytical tools for teachers, teacher trainers and supervisors.

They can use them as category-building and interpretation tools, for example in training courses or teaching practice analysis (Altet, 1996, 2002, 2008, 2013; Paquay, Perrenoud) with a view to the professional development of teachers to help them adapt to change. The idea is to help them express their perceptions and focus on key professional practices, and to increase awareness of the way they work and their impact on learning. The idea is not to provide ready-made recipes or practical advice, but to make the teacher clear-sighted and thoughtful about what he or she does. It involves helping teachers to think about adopting alternative approaches to overcome the difficulties that have been observed.

By using and applying the results obtained by OPERA, analytical systems focusing on the practices put in place with the help of the research make it possible to build a new relationship with teaching practice and to develop, via a self-critical approach, a sense of professional judgment and a mindful, insightful and discerning attitude to a "praxis". This helps teachers to move away from preconceived opinions and false perceptions of learning.

In the case studies, the post-session interviews show that teachers who have little training, or only theoretical training, find it hard to judge their own teaching practices in a professional way, either finding them to be "adequate" or finding it difficult to be discerning because they are "satisfied" with everything they have done and thus do not think the slightest adjustment is required. They do not know how to express how they feel about their "personal performance" or the effect their teaching practices have on their pupils' learning.

This is why tools and interpretation aids focusing on perceptions and analysing teaching practices with the help of knowledge arising from actual teaching in Burkina Faso have been designed to help each teacher become aware of the complexity of teaching practices and understand how they work. A teacher's awareness that he or she could do things differently is the starting point for improving teaching practices; the tools also focus on the design of new practices.

The tools thus constructed are intended to increase teachers' professionalism by developing self-critical approaches resulting in a degree of clear-sightedness that leads teachers to question the efficacy of their own teaching practices. Change thus comes first from teachers, from their awareness of their own conceptions and actions, and from teacher trainers who pass on this research-based knowledge to help them to interpret and characterise their practices, increase their discernment, and reinforce their feeling of personal efficacy, which forms the basis of long-term professional development whose importance has been stressed by recent OECD research (Talis, 2014).

## **VIII- Conclusion**

The OPERA research initiative aims to improve the quality of primary education in Sub-Saharan Africa. By observing actual teaching practices in primary schools in Burkina Faso, it attempts to understand the reality of classrooms to identify practices that are effective with respect to pupils' learning—practices that can be developed and form the basis for teacher training programmes.

Conceived as a bottom-up research initiative, OPERA has endeavoured to gather data using tools jointly constructed by researchers and trainers: questionnaires, interviews, and an observation model to code and process observations gathered in two phases in arithmetic, early learning and French classes, with the help of audio and video recordings. This data was then statistically processed and analysed in stages, and based on quantitative processing it gave rise to comprehensive case studies. The following results concern teachers and decision-makers involved in the Burkina Faso education system and in the education systems of Sub-Saharan Africa in general.

The OPERA research made it possible to take for granted the fact that classes in Burkina Faso take place in an interpersonal atmosphere that fosters learning. However, from a pedagogical and didactic point of view, although genuine qualities have been observed, there is room for improvement in teaching, especially at the didactic level where structuring knowledge to improve learning—the ultimate aim of OPERA—is concerned.

It remains to be seen whether this level of recruitment and the nature of training allow teachers to step back sufficiently to ask themselves questions about what they do, about the relationship between their teaching and underlying learning theories, and about whether they are able to make adequate on-going adjustments with respect to the individualities and specific class contexts they encounter during their career, where overcrowded classrooms are the norm. At a pedagogical level, large class sizes are a constraint within which teachers must work, and they generally do this by using the question-and-answer technique, group correction, self-correction, or the regulation of exercises.

Some teachers also set up group work, using group leaders chosen from among the best pupils to manage the required task within the group and report results to the teacher; these attempts show that progress has been made in managing large classes, although they might usefully be further developed. These practices in such contexts are worthy of praise, especially organising the class into permanent sub-groups guided by the teacher (a method similar to the “mutual instruction” approach), with classroom furniture arranged accordingly.

Some innovative practices relating to group work in large classes, already used by some teachers, should be developed and shared, but the research has also made it possible to identify general limits, skills gaps to be taken into account in teacher training strategies, and competence-building approaches.

In summary and by way of example, the OPERA research suggests that the following avenues might be explored in terms of teacher training:

- Providing teachers with conceptual tools for analysing teaching practices and related training;
- Developing modules and training tools dealing with the management of large classes, pupil activities relating to complex tasks, the differentiation of the teaching and learning processes, teaching approaches specific to different subjects, assessment types and functions, pupil motivation, etc.

It should be noted that the potentialities of the OPERA research initiative in terms of the use of data and training avenues to be explored for teachers and their superiors do not end with the scientific report and the training tools produced at the end of the research period. OPERA has generated a very large quantity of information and data on teaching practices. The resulting OPERA database, freely accessible on the OPERA website, can be used for a wide range of research projects and publications, including in other educational research areas in the West African sub-region. The lecturers, researchers and students at the University of Koudougou, who were trained to observe teaching practices, have been the first to benefit from this.

This research carried out in a country of Sub-Saharan Africa is part of a movement led by researchers who conceptualise teaching by focusing on several constituent domains (relational, pedagogical-organizational, didactic-building knowledge), which allow them to identify and better understand the dimensions that influence the effectiveness of teaching practices with respect to pupil learning. Moreover, the approach to the teaching/learning process, based on activities performed by the teacher and the pupils and interactions between them, offers an opportunity to improve our understanding of the process, because like Hamre, the OPERA researchers believe that teacher-pupil interactions are among the most important factors at play in the practice of teaching.

The results of the OPERA research initiative, and its database, are an important resource for any researcher who wishes to explore this subject further. The dimension relating to pupil learning profiles, which has not been explored here, merits particular attention and remains a rich field of investigation for researchers interested in using the OPERA data. This would involve seeking solutions to the crisis affecting the quality of education systems—a crisis that concerns professionals all over the world who are convinced that teaching and teaching practices are the keys to a better future.

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