Chapter title - Teacher learning in Sudan: Building dialogue around teachers' practices

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Abstract

Little is understood about the ways in which individual teachers make sense of new ideas within their practice and how such experiences influence their beliefs about learning, particularly in low-income country contexts with different histories of teacher education and professional learning. In common with many countries in Sub Saharan Africa until very recently a considerable proportion of the primary school teachers in Sudan had received no formal training for their role. But as the Government implements a commitment to make teaching a graduate profession, many serving teachers are enrolled on part-time degree programmes.

Ten student teachers in the capital of Sudan, Khartoum, who were in the final year of their degree programme, were encouraged to take a series of photographs signifying changes in their practice over a period of several weeks. In a follow–up interview with researchers from the UK and Sudan each teacher was invited to select significant images from their set and discuss their intention in capturing that moment. In this chapter we explore the challenges and potential of using photography in this way in a cross–cultural research project and, drawing on Amartya Sen's capability approach (1999), we consider the extent to which its use enhanced our knowledge of how teachers develop a deeper understanding of new pedagogic approaches.

Introduction

Faiza teaches English and Arabic in a large girls' primary school in a village 10km south of Sudan's capital, Khartoum. The school consists of twelve single-storey classrooms arranged around a central, sandy courtyard. Classrooms are white-washed and clean, but dilapidated with pot-holed floors and not enough furniture – learners sit four or five to desks designed for two. Faiza doesn't have a teaching qualification, but she has been teaching for five years after graduating from secondary school. Next year she will enrol on a B.Ed. programme at the Open University of Sudan.

I am here to observe Faiza's lesson, but it is clear that my presence is a distraction. I sit on the chair that has been set out for me, to the side of the blackboard, facing the class. The pupils, all girls, all in white trousers, tunics and headscarves, sit in rows so tightly packed I couldn't sit at the back of the room if I wanted to. Their teacher, Faiza, stands by the board and raises her cane like a conductor to get their attention. She says to the class 'Today's lesson is about going to the butchers… but first we are going to sing a song for our visitor'. The learners stand and sing, "Head, Shoulders, Knees and Toes". Faiza requests that I join in so we sing it again (by now ten minutes have passed). Finally Faiza settles the class and writes, 'At the butchers' onto the board. She tells them to copy the title into their books. She writes a list of words underneath: 'beef', 'lamb', 'nice', 'expensive', 'pay' and tells the girls to copy the list. She reads out each word in turn and asks the learners to repeat it: 'beef', 'BEEF', 'again: beef', 'BEEF', 'again: beef', 'BEEF'. She continues the lesson: 'I went to the butchers and I asked for some [points to the word beef]'. Pupils, in unison: 'BEEF'.

(extract from a research diary, Alison Buckler, February 2007)

We have opened with this extract for two reasons. Two years before we embarked on the reflective photography project we discuss in this chapter, one of the authors was carrying out a different study, using different methods, but in schools very similar to the ones in which the reflective photography study was based. This extract is poignant because it reveals the

physical and pedagogical contexts of the majority of Sudanese classrooms, but also the difficulties an academic – particularly one from outside Sudan - faces in capturing these contexts without disrupting them. Attempting to minimise these disruptions and, equally critically, to position teachers as subjects of the research rather than objects, in a later project we carried out an inquiry where photography was central to the methodology - the inquiry described here.

Sudan and South Africa are the only countries in Sub-Saharan Africa to determine that teaching at the primary level should become a graduate profession and to take steps towards making this a reality. In the 1990s the Sudanese Ministry of Education implemented a range of initiatives designed to improve the quality of education, raise the status of teaching, and bring the curriculum in line with Islamic ideals and principles. The Open University of Sudan (OUS) was set up to facilitate the upgrading to graduate level of 140,000 primary school teachers through distance learning; 50 per cent of these teachers had no prior formal teaching qualification (UNESCO/IBE, 2012).

Teacher Education in Sub-Saharan Africa (TESSA) is a multi-country consortium of institutions involved in the provision of teacher education and professional development. Based at the Open University, UK, and funded by a range of philanthropic trusts, TESSA has created and supported the use of open educational resources which are free to access and can be used in and adapted for teacher preparation and upgrading programmes. These resources focus on five subject areas (Literacy, Numeracy, Science, Life Skills and Social Studies and the Arts (including music, painting, practical craft activities and dance) as well as a set of key resources and guidance for teacher educators relevant to Sub-Saharan African contexts. The resources offer structured learning activities for teachers to carry out in their classrooms, alongside case studies and subject knowledge, and are available in an easily downloadable form on the TESSA website (www.tessafrica.net). Traditional 'teacher-centred' practices and the hierarchical relationship between teachers and learners are challenged through the pedagogy modelled in these resources.

The Open University of Sudan was one of the original members of the TESSA consortium. The resources have been integrated into their distance mode three year Bachelors degree programme in order to improve the quality of the classroom practice dimension, attempting to bridge the 'theory/practice' divide experienced by many teachers in their training. (Murphy and Wolfenden, 2013a).

In this chapter we describe a small-scale research project which used reflective photography to explore primary school teachers' engagement with the TESSA resources in four Sudanese schools on the outskirts of Khartoum. These were typical semi-urban schools with large single storey classrooms around a large, sandy but tree-filled courtyard, like the one described in the extract above. All four schools were single-sex, with three girls' schools and one boys' school participating in the study. At all four schools, class sizes were between 30 and 40 pupils. Pupils sat on benches arranged in formal (and in some cases, fixed) rows of desks, facing a chalkboard but there are few other teaching resources. The ten teachers who participated in the study were all in the final year of their B.Ed programme with the Open University of Sudan.

Developing open educational resources for distance education

The TESSA open educational resources are deliverable at scale, but are also locally appropriate. They have been written, adapted and translated by academics from consortium institutions, linked to TESSA, including the Open University of Sudan. The academics have also been involved in researching and evaluating the use and impact of these materials.

In Sudan the resources were translated into Arabic and matched to the Sudanese school curriculum in order to comply with national policies, as well as to offer cultural authenticity

(Buckler and Wolfenden, 2012). Then, a subset of the resources was assembled in a handbook to support the teaching practice component of the Bachelors' degree programme. The fifteen teaching strategies in the handbook (listed in appendix 1) encourage development of practice in a 'pedagogy of mutuality' (Murphy and Wolfenden, 2013b), in which teachers are encouraged to recognise and understand pupils' points of view and value them, and pupils and teachers are engaged in coming together to understand each other's perspectives. This is modelled throughout the resources. Ten thousand copies of this handbook were printed and distributed among primary school teachers in the third and final year of their degree programme in 2009. The project reported here formed part of a larger set of activities, coordinated by the Open University of Sudan, to evaluate the use and effectiveness of this handbook.

Prior to this study we had some evidence that teachers were using the teaching strategies described in the handbooks. Surveys carried out by OUS with 200 student teachers found that all of them had tried at least one of the strategies. One third of the students surveyed reported using up to eight of the strategies, and one fifth more than ten strategies. These findings were confirmed through survey data from 200 OUS supervisors - part time staff who visit students on teaching practice to support and assess them (Zahawi, 2011).

But such data is limited, representing what Yates (2007) terms 'learning as consequence'; the teachers' development or change in practice is presented simply as a consequence of an input, the handbook. Such data shows that the deployment of the teaching practice handbook promoted particular strategies but reveal little of what Yates terms 'quality changes' (p.7), for example, the teachers' thoughts about how their teaching is changing, how their learning is developing, or the goals they are attempting to pursue through their use of the strategies.

We wanted to understand these quality changes, how different social and environmental factors such as the teachers' settings and relationships with their learners influenced the capabilities they can develop when using the TESSA resources. Our own, and others' experiences of working with teachers suggests that the presence of an observer (Mtika and Gates, 2010), or a researcher (O'Sullivan, 2006), in a classroom can lead to distractions and to the lesson becoming a staged event. In this study our intention was to explore what reflective photography could offer us in addressing these questions. We hoped that this relatively new technique might reveal more about the processes of adaptation of the resources in use and stimulate greater reflective thinking by the teachers (Hurworth, 2003; Pink, 2001).

Introducing reflective photography

Reflective photography offers us a tool for considering interactions between teachers' and learners' actions in their classrooms and teachers' own sense of agency, identity and beliefs about teaching and learning, locating teachers within the bigger picture (Lunch and Lunch, 2006). We use the term reflective photography deliberately to distinguish it from what we envisage as the flatter hierarchy in the research structure of participatory photography. In this study the research goals and frameworks of analysis were determined by academics at the Open Universities of the UK and Sudan, rather than the teachers. Our goal was to capture moments of action in teaching and to capture teachers' reflection on these actions. As researchers we recognise that change processes in the classrooms of individual teachers are mediated by a number of relationships and interactions, for example, with the school community, government policies and training institutions such as OUS. Reflective photography was intended to offer us a way into teachers' classrooms as they themselves see them, providing a record of self-selected critical incidents, similar to a journal log or autobiographical entry but with fewer language issues and quality expectations which might inhibit participation.

The study was carried out by a team of researchers from UK and Sudan, who had been collaborating for three years and had developed an effective working relationship. However, none of the UK researchers were fluent in Arabic and so the language of communication in the study was English. Ten student teachers (eight female and two male) participated in the project. Participants were aged between 25 and 55 years, in the third year of their degree programme, and had 5 to 20 years of prior teaching experience. They were employed at four government schools on the outskirts of Khartoum, each working with a classes of between 30-40 pupils.

The sample was selected by our colleagues at OUS. Schools were selected for their typicality in the area around Khartoum, but also their ease of access to the university – acknowledging that schools near the capital tend to be better resourced and have higher attendance rates than more rural schools (Sudan Federal Ministry of Education, 2004). Schools and teachers were approached, informed and invited to participate in accordance with OUS ethics procedures which were adhered to throughout the study. At the start of the project we, as European researchers, were concerned about the viability of using photography in a culture where images of people are rarely displayed and there are differences of opinion amongst scholars regarding the permissibility of photography of humans. However, the ethics committee at OUS endorsed the proposal. Written consent was obtained from the head teachers and participating teachers following an introductory meeting with the Sudanese researchers who did not consider it necessary to obtain permission from parents.

The participating teachers were each given a disposable camera. Disposable cameras were chosen for logistical and resource reasons but also to eliminate the possibility of editing the sequence of photographs by the participating teachers. Interestingly, although the teachers were adept at using digital cameras and camera phones, the old fashioned technology of a disposable camera eluded them: OUS researchers had deliver technical training in how to wind the film on and activate the flash.

The teachers were asked to consider how they were using the ideas and strategies in the handbook and, over the period of a month, document moments of significant change or events in their teaching with a photograph. At the end of the month cameras were collected and the films were developed by the researchers. Each teacher took between eight and 25 photographs and a total of 134 photographs were developed from the ten student teachers.

Each teacher was then invited to discuss individually their photographs with the researchers. This discussion lasted approximately one hour and was conducted in Arabic and English with the help of an interpreter provided by OUS. We envisaged that the discussions would illuminate our understanding of the practices revealed in the photographs and the personal and environmental factors that were influencing these practices. The student teachers were invited to start by selecting and discussing three photographs that they considered particularly interesting in terms of their developing practice. The aim was to support teachers to render visible descriptions of their practice, and so provide both visual and spoken accounts of their practice: the photographs might be argued to create a point of focus around which 'people negotiate what matters' (Wenger, 1998: 93) through discussions which aimed to illuminate the experience of appropriating the tools and resources provided by the handbook.

After this, the researchers selected one or two additional photographs that they found especially interesting for further discussion. Therefore, of the 134 photographs, a subset of 50 was subject to discussion and detailed analysis and is what we report here. Recordings of the interviews were subsequently transcribed in the UK and the images and the text were considered together to provide a commentary on each other (Banks, 1995).

In addition interviews were conducted with supervisors about their experiences with student teachers. Three supervisor interviews were carried out in 2009 and four in 2010 to provide greater contextual data for the enquiry. Insights from these interviews are discussed alongside the teacher data below.

Employing the technique of reflective photography in a cross-cultural collaboration presented a number of challenges, many of which were probably only partially resolved during this enquiry. We needed to negotiate through practical issues of differing perceptions of time, priorities and the purpose; colleagues at OUS were concerned primarily with the product of this enquiry – evaluation findings of the effectiveness of use of the teaching practice handbook. From our perspective, our collaboration provided an opportunity to develop our understanding of the use of the reflective photography technique and the understandings it revealed about pedagogic change in teachers' classrooms and other school spaces (Pryor et al, 2009). Dialogue through these diverse purposes surfaced our different histories of research involvement, particularly with qualitative methodology, and our different expectations of the autonomy which would be extended to research participants.

The photographs

Three levels of analysis were carried out with the total set of photographs but here we draw specifically on the sub-set of photographs discussed alongside transcripts of the teacher and supervisor interviews. Firstly, images were sorted and coded for their content (who was in the picture, what objects were featured, what appeared to be happening). The second stage recorded the appearance or discussion of strategies advocated in the OUS teachers' handbook and the third stage drew out any other common features across the photographs and transcripts, for example obstacles to change – both physical and conceptual.

Two thirds (32) of the photographs selected for discussion were taken outside the teacher's classroom, a higher proportion than in the entire set (approximately 50 per cent) suggesting that this change in location was something teachers were particularly keen to highlight. We knew from our previous work in Sudanese schools – as shown by the research diary excerpt above – pupils rarely move from their seat, let alone outside the classroom during formal lessons. The teachers' desire for us to see photographs that challenged this norm was interesting for us. Twelve of these 32 pictures showed activities other than formal lessons, for example, assembly or break time, or an extra-curricular club. While three of the pictures showed the participating teacher themselves, the majority did not: the images were predominantly from the perspectives of the teachers. Interestingly none of the photographs featured other teachers or staff members within the schools; we had no sense of interaction between teachers, sharing of experiences or support. From our analysis it is unclear to us whether this was an outcome of the briefing given to the participating teachers or a reflection of the way in which these teachers worked within their schools.

Of the fifteen teaching strategies OUS included in the handbook, twelve were shown in the photographs discussed. Those not featured were: 'mind maps', 'presentations' and 'the use of modern technologies'. By far the most popular strategies were 'group work' (thirteen images) and 'the use of the local environment' (twelve images); this resonates with findings from other TESSA investigations (Murphy and Wolfenden, 2013b) where teachers begin to involve pupils and connect pupils' subject learning to activity outside the school.

Another featured strategy was 'measurement and evaluation of learning' (six photographs) where shifts in teachers' practices emerged from the discussions rather than the images themselves. One teacher took a photograph which appeared to show her learners sitting a test; we were initially puzzled as to why she had included this image but prompted by the image she explained that this was an example of diagnostic assessment she had implemented after realising she could teach more effectively when she had a better understanding of what the learners had remembered from the last lesson. Other images

portrayed plenary sessions which teachers described as showing learners themselves explaining a concept to the class or learners sharing summaries from small group work during the lesson. Brainstorming usually as a whole-class activity led by the teacher, was another popular strategy pictured (six photographs).

Awareness, agency and achievement: teacher learning and capabilities

Analysis and discussion of our data uses a framework that draws on the Capability Approach (Sen, 1999). Rather than evaluate what a person has, the capability approach evaluates what a person is able to do or be, and the freedom – or capability – they have to achieve valued objectives. While the capability approach has traditionally been used to frame issues of human welfare (focusing on the pursuit of things that enhance personal well-being) it can also be used to frame teachers' work - that is, to understand the pursuit of things that are valued in their teaching. In a previous study, Buckler (2012) conceptualised three symbolic capability spaces in which teachers' work can be located. These three spaces – awareness, agency and achievement – signify a progression from thinking about change, to making change happen and we use these here to support our analysis of the teachers' images and discussions. We focus on the images and aspects of the teachers' practice which have been particularly illuminated through the use of reflective photography and we illustrate this with nine photographs (figure 1) from the study and associated narrative from the discussions with the participating teachers.

The awareness space

This capability space involves teachers' cognition and comprehension of the classroom activities in the handbook and understandings of the methodology underpinning these activities. The handbook activities challenge traditionally dominant pedagogic approaches and classroom behaviours. The photographs and discussions reveal the way the teachers are beginning to embrace this pedagogy modelled in the TESSA resources. For example, the teacher pictured in the first photograph in figure 1 positions himself as a learner, describing himself becoming a more competent and confident practitioner, taking greater interest in his students' achievements, whilst the second teacher considers that the approach encourages all her learners, positioning them all as thinkers and recognising their autonomy:

Photo 1: Lesson planning: 'Here I am at my desk preparing for class. Honestly, before I didn't think about preparing… not because I didn't care, I just didn't see why it was important… It makes the lesson easier for the students to follow… It tidies my thoughts… and helps me to know whether the lesson objectives have been met' (male teacher).

Photo 2: A class brainstorming session: 'I used brainstorming in my classes before I began my B.Ed course but now I know more about why it helps students. They are able to express the aspects of their knowledge they feel are important. When the weaker students see the others anxious to answer, it breeds their competitive spirit and encourages them to work harder' (female teacher).

Many images, and their accompanying discussion, showed very small but meaningful movements in teachers' practices. Starting from the familiar and comfortable these teachers were slowly experimenting with aspects of a more participatory pedagogy. Several teachers used their images to talk about how they were attempting to relate their teaching to their learners' experiences: 'my view of good teaching has changed into one that thinks that good teaching involves the interaction with local society' (male teacher). This space of growing awareness was made visible through the reflective photography approach: many photographs showed learners sitting in rows but through the discussion we were able to understand how this seemingly traditional arrangement represented a departure for the teachers; learners sitting in mixed-ability groups to support peer collaboration or learners

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cooperating in tackling a different kind of activity, a departure from the usual transmission method of teaching from the blackboard.

The agency space

This capability space is used to discuss factors (personal, social and environmental) that facilitate or obstruct the teachers' abilities to pursue and achieve valued objectives. In their interviews supervisors expressed concern that the teachers might not have enough time to set up the activities in their lessons, but this was not raised by the teachers in their discussions. Practical facilities in the school were limited and none of the teachers took photographs of 'using new technologies': electricity in the schools was limited to the head teachers' offices which contained an overhead light and a fan and, while the teachers all had mobile phones, these were relatively basic models which weren't internet enabled. The crowded nature of the classrooms also proved to be an obstacle: large numbers of learners and fixed, linear desks and benches, for example, made some strategies more challenging to enact. These classroom-based obstacles, however, prompted the teachers to move lessons outside into the compound:

Photo 3: Working in groups outside: 'This is group work but actually this isn't the class for which I was using the handbook. I just took them outside because I was doing group work with them and there was more room' (female teacher).

Photo 4: A religious culture class: 'We are learning about a special type of ablution Muslims can do when they need to pray but there is no water. I was trying role play to teach this but in the classroom there was no space to gather the students' (female teacher).

One of the supervisors was concerned about how, in some schools, the changes in classroom practice advocated in the handbook were likely to be perceived negatively by teachers who were not part of the upgrading programme, and that this reaction could inhibit student teachers from visible experimentation in their classroom practice. This is a particular issue in the type of Sudanese schools in which the project was carried out. Classrooms are built around a central courtyard, the windows have no glass in them, and doors and shutters are left open to ensure a breeze. Teachers' practice is, therefore, very visible to the whole school. None of the teachers we interviewed, however, voiced this concern, on the contrary, the pride they felt at being enrolled on the B.Ed programme and the status this conferred on them, gave them confidence to make their changes visible; this was also evidenced by the photographs in which teachers asked colleagues to take the picture in order that they 'feature' in the activity.

The symbolic space of agency, then, also captures teachers' freedom to overcome local barriers and make proactive decisions that challenge the traditional practice within their school context. This agency appeared to lead to further shifts in their teaching – taking the class outside the classroom to make space for group work legitimised the possibility of employing more physical resources, for example, trees, and the sun, alongside the abstract representations used previously:

Photo 5: A lesson about the sun as an energy source: 'I took the students outside so they could look at it and feel the heat of it. And in this picture the students are learning how to plant a tree and how it grows. So my teaching is becoming more practical in all ways' (female teacher).

The achievement space

This capability space explores the teachers' thought processes and decisions as they choose to pursue particular activities, as well as their evaluation of the success or otherwise of these activities. Teachers' reactions to their experiences with the strategies, whilst tentative, were aligned with the views of a supervisor who claimed:

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> *'the nature of students has changed, they are more open minded, exposed to the world… if a teacher has this handbook he will be able to reflect a better impression on the students and they will think he is a better teacher' (male supervisor).*

One teacher talked at length about how her lessons have become more investigative and purposeful, with learners taking responsibility for their own learning relevant to their own interests:

Photo 6: Student investigation: 'I set them an exercise and they had to work together to find the answers… in the past I would tell them the answers but I wouldn't know if they understood or remembered… if the students research for themselves it teaches them how to find knowledge. They are less bored and less distracted… and it reflects their own hobbies too, for example I want to start bringing newspapers in so they can research in them, they can see that learning can happen anywhere not just in a textbook' (female teacher).

A key finding located in the achievement space, and one that we believe would not have been possible to capture without the use of reflective photography, concerns the changes teachers achieved outside formal lessons. The photographs and discussions revealed a more holistic approach to their interactions with the learners, extending beyond timetabled lessons into more informal activities such as clubs (photo 7) and other scheduled interactions for example the assembly shown in photo 8.

Photo 7: The science club: 'This is not a lesson, it's a science club. Students are learning parts of a tree. Now I am even using practicals outside my classroom teaching, I am becoming a more practical teacher in everything I do.' (female teacher).

Photo 8: Assembly time: 'I usually just lecture in assembly but I thought I would use real examples… it was more interesting for the students… My use of real life examples is spreading outside the classroom!' (male teacher).

The analysis revealed teachers adapting ideas from the handbook as they shifted their understanding of their relationship with their learners: 'the training is helping me to understand how students feel, and how important it is not to make students feel weaker by pointing out what they don't know but making them feel stronger and making them feel they can achieve anything'. Another teacher talked at length about a photograph that showed her involving her learners in her lesson planning:

Photo 9: Preparing for class with student support: 'I asked them to point out what parts of the lesson they like. They chose the ones that included activities… I think that involving students in the preparation is an important change… it shows me what their preferences are so I can find better ways to get the information across' (female teacher).

Conclusion

As external researchers we had considerable initial reservations about the acceptability of reflective photography in a culture which is traditionally resistant to the use of human images. However Sudanese colleagues raised no such challenges to the use of photographs, and all our collaborators appeared comfortable with photographing teachers and pupils in and around classrooms. More problematic for us, as UK researchers, was the nature of our relationships with colleagues at the Open University of Sudan and with the teachers in Sudanese schools. Although we held the funding, we jointly developed a way of working which attempted to position the student teachers as co-researchers. But the project was deeply institutionally situated; the teachers were all students at OUS and the OUS researchers were leaders of the degree programme and, therefore, ultimate arbiters of the teachers' progress on the programme. This lent an asymmetry to the researcher-researched relationship which was difficult to disrupt, and limited the teachers' ability to negotiate the activity. Working in two languages made this more difficult; transcriptions of the teacher

interviews were undertaken after translation into English, and were, therefore, not easily accessible to the student teachers. Undertaking and sharing transcription in Arabic as well as English might have worked to enhance trust within the relationship (Clarke and Otaky, 2006) but was unfortunately precluded by limited resources. Language difficulties also restricted our understanding of how the teachers were making sense of the political, economic, cultural and ideological influences in their professional lives.

However, images have great potential to mediate inter-cultural collaboration in such difficult contexts by providing helpful starting points for negotiation and discussion. We found reflective photography worked at two levels to reveal and deepen our collective understanding of teacher learning. Firstly the use of the images enabled us, as researchers, to gain access to diverse moments of teachers' practice, the rich reality of teaching as embedded in the school and wider community. Traditional classroom observations frequently omit observation of teachers' practice in less visible spaces - the assemblies, teacher preparation and activities beyond the formal classroom - and inevitably shift the dynamics within the classroom. Reflective photography made visible these physical spaces, and also the symbolic spaces in which teachers' values shift, their capabilities are enhanced and their practice develops.

Secondly teachers and researchers are positioned to see how learning emerges from actions within the school through the provision of opportunities to literally 'see' teaching in action, something we suggest has the potential to support teachers' development of their teaching capabilities, through changing awareness of different aspects of their teaching (Korthagen, 2010). Physical ownership of the cameras allowed the teachers control over which aspects of their developing practice they wished to share with outsider researchers. Unlike classroom observation, where teachers become the 'object' of the research, the teachers are able to exercise agency at two points within the research process through reflective photography; choice of incidents they record as photographs, and selection of particular moments (images) for focused discussion.

The composition and timing of the photographs offered us, as researchers and teacher educators, glimpses of how teachers are negotiating ideas from their professional development programme into their practice through changing and deepening participation in the social practice of the school. Through analysis of the photographs and discussion, we have begun to understand which ideas they are valuing, as their beliefs about teaching and being a teacher are being reformed through experience. This afforded us some small insights into the factors that support and hinder such engagement and shape each teacher's approach to teaching. The enquiry revealed that teachers recognised, and were beginning to engage with, the pedagogy modelled in the TESSA resources; the discourse around learning included recognition of the learners in their classrooms as knowledgeable, and the need to connect learning in school to the community and environment outside the school. Teachers were expressing pleasure with increased learner motivation and engagement and this evidence of change in their pupils was fostering sustained change in their own practices. This analysis was supported by reports made by supervisors on their visits during the teaching practice, although interestingly supervisors suggested that they considered the extent of engagement with the new practices and techniques to be rather greater than indicated by the teachers themselves.

For the teachers the enquiry provided opportunities for reflection and dialogue on practice, as they are confronted with their chosen representations of their learning in what we hoped was a non-threatening and non-judgemental situation. This potential of reflective photography to support critical understanding about reality which then supports effective action, as advocated by Freire (1970), is an area we would like to explore further in future projects. Perhaps the value of the reflective photography is not the technique itself, but is rather the opportunity for teachers to engage in critical dialogue with supervisors and researchers. Such dialogue has historically rarely occurred in this context.

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Appendix 1: Teaching strategies encouraged in the TESSA and Open University of Sudan student teacher handbook

1. Working in large or multiple classes.
2. The use of group work.
3. The use of mind maps.
4. The use of brainstorming
5. Lesson planning.
6. Measurement and evaluation of learning.
7. Use of the investigation in the classroom.
8. The use of scientific research in the classroom
9. The use of dialogue and role-play and drama
10. The use of questions to provoke thinking
11. Story telling.
12. The use of explanation
13. The use of presentations
14. Use of the local environment as a source
15. Use of modern technologies.