Culture and Classroom Reform: the case of the District Primary Education Project, India
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ABSTRACT Reform in teaching and learning forms one of the basic dimensions of educational reform. This study explores the impact of the reform process on teacher thinking and classroom practice in the multi-donor supported District Primary Education Project in Karnataka, India. Using both qualitative and quantitative methodologies, a variety of aspects dealing with teaching and learning are examined in order to understand the extent to which changes are taking place in the classroom. The study analyses the impact of four cultural constructs, which frame teaching and learning in India: holism as a shared worldview that encourages openness to regulation; the hierarchical structure as a regulative social framework; knowledge as discovered and attested collectively; and the ‘sense of duty’ that defines the role of the teacher (and student). The conclusion of the study is that while there are observable changes in the classroom in the use of instructional aids and activities during instruction, the essential characteristics of traditional practice, namely rote and repetition has not changed. Both teachers’ openness and resistance to reform are portrayed as embedded in the cultural construction of teaching and learning.

As the quality of education reflected in classrooms becomes more important in influencing student performance many countries are embarking on large-scale reforms in teaching and learning. Much has been written about the dynamics of large-scale reform in education especially teaching and learning in the developed world and in Anglo-European contexts. Teacher thinking research, mainly located in the West, begins to take seriously the implications of worldviews and frameworks that underlie teachers’ instructional practice for reform. However, the dynamics of educational reform in the developing world and in non-western cultures is scarce [1]. Moreover, the impact of reform on traditional ways in which teachers conceptualise and perform instructional tasks is not widely dealt with. Furthermore, the analysis of teacher thinking is limited in capturing the cultural patterning of teachers’ worldviews and frameworks.

This qualitative analysis of the thinking and action of primary school teachers in Karnataka, South India, immersed in a comprehensive programme of reform uncovers the complexity of educational reform within a non-western cultural context. The District Primary Education Programme (DPEP), which covers almost half the districts in India, attempts to transform instructional practices in primary school classrooms integrally through a holistic programme of pedagogical reform. In-service teacher training programmes in DPEP seeks to introduce a more active student centred pedagogy in place of the traditional pedagogy that

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upholds rote learning and memorisation. Teachers’ mental receptivity to reform evident in their reflections, and the extent to which they are able to implement in the classroom the new teaching methodologies are considered. Teachers’ acceptance and resistance to the new pedagogy conveys the way in which culture both enables and obstructs reform in teachers’ thinking and teaching.

### Culture and Pedagogy

An area of research often referred to as ‘teacher thinking research’ centred around the thought and action of teachers, informs this study. Teacher thinking research considers teachers’ conscious and explicit construction of classroom activity and the tacit or implicit frameworks that underlie their thinking and action in the classroom as significant to pedagogical reform (Day et al., 1993; Pajaras, 1992; Clark & Peterson, 1986) [2]. This is in contrast to earlier research and reform efforts that were based on an ‘ideal’ model of rationality, which assumed that teachers would be receptive to objective scientific knowledge about pedagogy and directly apply it to their teaching [3]. The lack of acknowledgment and appropriation of universal ‘best practices’ of instruction by teachers pointed researchers to powerful native theories and worldviews resistant to change that underlie teachers’ thought and action [4]. Teacher thinking research is primarily located in the Anglo-European world and rarely deals with how teachers from different cultures, especially developing countries, structure their actions in the classroom and the related frameworks and worldviews that underlie these actions. The dynamics of how teachers change and improve instruction within these contexts are rarely dealt with.

Pedagogy, which includes the way in which teachers think and act, differs across the world. Clarke’s (1995) review of teacher thinking literature identifies variation between teachers located in different parts of the world. Variations exist in the way teachers relate to their students; in the goals that teachers have for student learning; in the way teachers approach the curriculum and the textbook; in the way knowledge is communicated to students and in the way teachers interact verbally with their students. Alexander’s (2000) study of schools and classrooms from five countries (USA, UK, Russia, India and France) is based on primary data collected at the school and classroom level. India, while closer to the reality of Russian classrooms, had little in common with classrooms in the USA and UK. Knowledge communicated in the classroom was generally procedural and practical and most tasks given in classrooms were characterised by revision producing ‘ritual understanding’ (p. 349). The above studies suggest that in addition to a variety of factors related to the economic, political and demographic context that fuel this difference, teacher thinking and action, whether tacit or explicit, is funded and constructed by the culture that surrounds teachers.

If this is taken further, teachers, in addition to their professional knowledge usually acquired during pre-service training, use their lived and lifelong experience in a specific community and culture to construct their thinking and action in the classroom. Models that teachers hold are developed not only in their professional training but also through being a child, student and parent in a particular culture. In this socialisation process, a teacher becomes both the receiver and the user of a culturally defined model of pedagogy. Teachers thus become both recipients and sustainers of culturally defined pedagogical practices. Interestingly, even within the Western context, while teacher thinking highlights the role that teachers’ subjective theories, metaphors and personal philosophies play, the analysis of teacher thinking with reference to its embeddedness in the norms and values, in sum, the ‘culture’ of a particular society is not fully dealt with. Teacher thinking makes use of several
categories that form the basis of a cultural analysis of teachers’ thought and action (Clarke, 2001). For example, Elbaz’s work (1990) highlights the tacit nature of teachers’ thinking, and Tabachnick and Zeichner’s work (1986) highlights coherence and consistency evident in teachers’ thought and action. In spite of the use of categories such as taken-for-grantedness, coherence, and inconsistency in research, the influence of the larger framework of meaning or symbolic systems (Lisovskaya & Karpov, 1999) of teacher thought and action is left unexamined. Teacher thinking research, while recognising the cultural construction of teacher thinking, which gives rise to the differences in what occurs in classrooms, rarely includes detailed analyses of how culture constructs teachers’ thought and action. The location of teacher thinking and teaching in a larger meaning system and the implication of this embeddedness for reform in instruction has received limited attention.

According to Clarke (2001), four cultural constructs representing the broader meaning system underlie pedagogical practices in classrooms in India. The four constructs are extrapolated from anthropological and psychological research done in India. This study considers the impact of these constructs on teachers’ attempts at reforming instruction. The first construct is a shared holistic worldview that supports the acceptance of regulation (Shweder, 1991; Marriott, 1990). In holism, since individuals are not autonomous but linked together in an interdependent system, context and social relationships drive the individual. Individuals are governed by rules of interdependence, which are context specific and particularistic. Most importantly for this study ‘members of organic cultures take an active interest in one another’s affairs and feel at ease at regulating and being regulated’ (Shweder, 1991, p. 154). Secondly, intertwined with openness to regulation is the conception of instruction as duty. In the Indian context there is a general belief in the natural order or Karma, which is a moral order. The theory of Karma is based on the notion that each person assigned to a caste is bound by the particular caste with its stipulated set of duties or *vanashrama dharma* [5]. Duty-based cultures enshrine some blueprint for how people should live. It is natural in so far as it ‘is an objective obligation … an imperative that tells us what we must do or must not do regardless of what we feel like doing. And that obligation is an objective thing (Shweder, 1991, p. 166).’

A third cultural construct defining teacher thinking and teaching is a social framework that is defined by structural and qualitative hierarchy (Roland, 1988). Structural hierarchy is based on the caste structure and the organisational structure operating within families, and qualitative hierarchy is based on the qualities possessed by the individual who holds a higher position. Both these types of hierarchy apply to the teacher-structural hierarchy in terms of the establishment of authority in the organisation of the classroom and qualitative hierarchy in terms of the teacher being more knowledgeable than the student. Students’ relationships to their teachers in the classroom display, at least superficially, the respect, esteem and even reverence demanded of a novice towards an expert. The relationship of the expert to the novice in both the structural and the qualitative hierarchy is nurturing, responsible and empathetic. A fourth cultural construct relevant here is knowledge as collectively accumulated, attested and transferred (Derne, 1995; Kurtz, 1992; & Kakar, 1979). An individual’s decisions and choices made are often constructed by the choices made by the community rather than by individual experience and perception. In this process an individual constructing his or her knowledge becomes less significant.

An outcome of the cultural constructedness of teacher thinking and teaching is the embeddedness of practice and its resistance to change. Teacher thinking and teaching as culturally constituted, on the one hand, captures the unconscious but constructive nature of pedagogy that is defined by culture. On the other hand, pedagogy as culturally constructed alludes to the ingrained and implicit dimensions of pedagogy, also defined by culture, that are
restrictive and confining. It can be argued that the importance given to the ‘reflective
dimension’ in the preparation of teachers (Griffiths, 2000), and to action research in ongoing
professional development (Rearick & Feldman, 1999) have evolved based on the impact of
teachers’ underlying knowledge and beliefs on instruction. Both the reflective dimension and
action research attempt to accentuate and transform teachers’ cultural knowledge and beliefs,
which are often tacit and resistant to change. Similar approaches to reform are evident in
Fullan’s (1993) notion of the importance of changing ‘mindsets’ (p. 6) when he probes the
depths of education reform. This study considers the way in which the four cultural
constructs outlined above impact on teachers’ attempts at transforming their own pedagogy.
Two of the constructs described, namely holism and conceptions of task as duty, appear to
be conducive to reform. In contrast, the significance given to hierarchy and collective
decision-making appear to be resistant to change.

It would be useful here to provide some idea of similar cultural constructs in other
societies. Kurtz (1992), in his psychoanalytic study of childhood, describes the ‘normative
individualism’ prevalent in the West which is ‘reflected, for example, in the popular political
notion that the state exists for the sake of the individual rather than the individual existing for
the state’ (p. 254). Shweder’s (1991) work in cultural psychology explores the ideas and
practices of two groups of people, one in India and one in the USA. According to Shweder,
as mentioned above, in India a duty-based code of living structures the thinking and actions
of people, whereas in the USA a rights-based code of living structures individuals. A
rights-based code upholds the freedom, preferences and way of life of the individual person
as long as it does not interfere with the rights of another individual.

In education, based on analysis of institutions, Broadfoot and Osborn (1993) found
differences between French and English teachers in the way in which they approached their
tasks with reference to children from disadvantaged communities. A universalistic norm
characterised teachers posturing as instructors in France while a tendency towards differen-
tiation characterised teachers in England. Thus, for example, a French teacher’s task in the
classroom was to help students reach a common standard; by contrast, English teachers
tended to adapt instruction to the needs of the individual child, thus setting different
standards for an inner-city child from those for a child from an affluent middle-class
background. Cummings (1999) describes certain core principles that characterise institutions
based on six geographical locations. The notion of an ideal person drives each of these
systems. The ideal person in an American context is one who is continuously developing,
whereas the ideal person in a Japanese context is an active member of the group. It is against
this broad theoretical backdrop that the current study explores Indian teachers’ ability and
willingness to adopt new teaching approaches. The next section describes the initiative that
was taken to bring this about.

The District Primary Education Programme

The District Primary Education Programme (Government of India, 1995) was established in
the early 1990s to achieve Universal Elementary Education in India [6]. It is now being
implemented in around 226 districts in 18 states in India. According to Alexander (2001),
‘DPEP is one of the most ambitious programmes of educational reform the world has ever
seen; in terms of international support, it is the largest (p. 45).’ Districts are chosen on the
basis of low levels of female literacy in the district and the programme targets more than half
the children in India. Girls and children from the Scheduled Caste or Dalit and Schedule
Tribe communities are given specific attention in the project [7]. DPEP focuses (Pandey,
2000) on improving access, retention, quality, decentralised planning and institutional
capacity building. More than half the project cost across the states is designated for improving quality that focuses on textbook revision and teacher training. This is the first large-scale effort since the introduction of Gandhi's notion of Basic Education in the mid-1900s to transform teaching and learning in classrooms in India. Karnataka, a southern Indian state, and one of the 15 states involved in the programme, is implementing the DPEP in 11 of its 26 districts. Karnataka has a population of about 45 million and the literacy rate is 63% (Government of Karnataka, 1999). Male and female literacy rates are 73% and 52% respectively. This study was conducted in Kolar, one of the DPEP districts in Karnataka. Kolar has 11 taluks or sub-districts and a literacy rate of 70% for males and 46% for females.

Teachers in the workforce go through intensive periods of training for a few weeks at the sub-district or block level at locations that are called Block Resource Centres (BRCs). During the course of the year, onsite professional support is provided once or twice a month by a coordinator who visits the classroom. The coordinator is supposed to observe classroom instruction and help teachers reflect on what was observed. Sessions are also held once a month at the cluster level at Cluster Resource Centres (CRCs). Teacher training attempts to transform pedagogy in the classroom that consisted of children watching, listening, copying, reading aloud or memorising textbook information. All these activities in the classroom were based on a hierarchical relationship between teacher and students characterised by fear and deference. Peer interaction was discouraged. ‘Joyful and activity centred learning’ in the new pedagogy is supposed to obliterate the spectre of rote learning prevalent across classrooms in the country:

A variety of interesting activities in the form of narration of events, peer group discussions, story-telling, drama, dialogue, question-answer, quiz, competition, riddles, word-play, debates during school functions and songs are to be organized for making language learning a joyful activity. Self-learning skills and functional use of language are also to be developed by encouraging the study of interesting children’s books, picture dictionary and peer group activities. (NCERT, 1991, p. 4)

Enhancing teacher motivation and transforming teachers’ discriminative attitudes are important dimensions of in-service training. Teacher training also attempts to initiate teachers in the use of instructional aids in the classroom in addition to a more active, student-centred form of teaching and learning. Teachers are trained to use low-cost and easily available instructional aids and they are given about US$10 each to create their own teaching aids.

Textbooks are based on the new curriculum, which trains students in a list of basic ‘competencies’ enumerated in the document ‘Minimum Levels of Learning’ (MLL). MLL is not based on any particular philosophy of education but on the need to raise standards of literacy in the country [8]. Minimum levels of learning, conceived according to the cognitive and developmental levels of the student, are expected learning outcomes to be mastered by every child by the end of a particular class or stage of education in three basic subjects—language, mathematics and environmental studies. Learning outcomes are also referred to as ‘terminal competencies’ and each competency is further delineated in terms of sub-competencies. MLL is considered to be rational criteria for judging the adequate provision of instructional aids and academic performance of primary education.

Research Design and Sample

The sample consisted of 234 randomly chosen teachers from four taluks or sub-districts in the district of Kolar. All teachers in the sample possessed a teaching diploma (a year of training after high school). Teachers in all four sub-districts attended intensive ten-day in-service
training in the theory and methods of MLL and some teachers attended a three-day in-service training focusing on the management and administrative aspects of MLL. Teachers were chosen from two sub-districts close to the administrative centre of the district, namely Kolar town, and from two remote sub-districts. Sub-districts close to the town have higher literacy rates than remote sub-districts (a difference of around 20%) and schools are likely to be better in districts close to town than schools in remote areas.

There were 144 male teachers and 90 female teachers in the sample. The average age of teachers in the study was 34, with an average experience of nine years. The average class size was 29 students. Male and female students were represented in equal proportions in the class. On average around 50% of the students in the class were Dalit/tribal students. Multigrade is a common phenomenon in Indian government schools. Classrooms in remote taluks have around three grades in the class while taluks close to the town have an average of two grades in the class. The study interviews teachers and observes classroom activity in order to understand the extent to which reform is effective for all students, females and Dalits [9]. Open-ended interviews were conducted with all the 234 teachers. In addition, teachers were observed instructing the class for one session [10]. The size of the sample allowed quantitative inference to be made. For a more in-depth qualitative analysis, classroom activity was described in detail and the interactions between teacher and students transcribed for a smaller sample of 40 teachers [11]. In the qualitative analysis, data was analysed by categorising and contextualising the data (Maxwell, 1997). The categorisation of qualitative data included the content of teachers’ understanding of the MLL methodology of instruction, and their perceptions of the difficulties in instructing female and Dalit students. The contextualising stage of the analysis, which is often interpretive, looked for connections between categories or themes within a single case and across the cases.

Cultural Constructs Conducive to Reform

The following analysis of the extent to which teachers have understood MLL and are able to implement MLL in the classroom illustrates two cultural entities—teachers’ openness to regulation and the perception of their task as duty. Both these entities enable teachers to appropriate the new method of pedagogy. The question of whether teachers perceive the new method of teaching and learning as different from the traditional method and the acceptance of the new method as viable are important, indicating initial conditions for teachers’ appropriation of the reform in instruction. In addition, the extent to which teachers have imbibed the three themes—demonstration with charts and objects; using activities such as action songs and drama; and impartiality towards students from disadvantaged backgrounds including Scheduled Caste, Scheduled Tribe and girls—that are dominant in in-service training is examined. And lastly, the extent to which teachers are able to implement the new method in the classroom is also significant.

Teacher Thinking

Acceptance and difference. Teachers’ openness to regulation and the importance of duty are represented in the majority of teachers’ (182) high level of acceptance or non-antagonistic relationship to MLL. Forty-eight teachers exhibited a medium level of acceptance and only about four teachers found it difficult to accept MLL. Teachers’ acceptance of MLL is based on children learning ‘easily through activity’ and with ‘joy’. The majority of teachers (169) saw MLL as unique or very different from traditional forms of pedagogy, while 61 teachers perceived a medium level of difference of MLL pedagogy. Again only four teachers felt the
methodology was no different from traditional pedagogy. The reasons described for thinking of the methodology as different coincide with trainers’ perceptions of the uniqueness of the new method conveyed during instruction. Interview transcripts suggest that teachers perceive this method as different because it seeks to dispel fear among children, and because the method insists on the use of demonstration and instructional aids during instruction. The following excerpts from interviews illustrate these views:

Now, understanding is improving. Before, children were frightened when they saw the teacher. By using teaching aids we get children involved—fear runs away. They are happy. They were frightened because we were not using teaching aids. Now children are coming to classes regularly with interest.

Before we followed the lecture method—we were teaching from the textbook. After the DPEP programme, children can understand very quickly because we are demonstrating in class. So even if children do not understand the language, from the demonstration he or she can understand very easily.

MLL is very different. In the previous method of instruction, we were not following the method of teaching through activity. Now, we are using activities for every subject. We allow students to participate in the activities. Before, in mathematics, we were required to write exactly as it is in the textbook. But now, while taking mathematics we are counting objects like flowers, leaves and marbles. After the child counts these objects we get the answer from the child.

_Demonstration and activity._ Interviews contain the meanings given by teachers to two dimensions of instruction in MLL: demonstration related to seeing and activity related to doing. Teachers’ words below summarise the importance of showing. ‘Children will understand when they see it themselves. For example, to create awareness about a particular tree, we should go into the field instead of showing charts and explaining.’ Demonstration contains two aspects. The first aspect deals with showing students actual objects in their environment:

We are to take children outside and show them ‘domestic animals’ like cock, hen, cow, goat, ox, dog, swan, crane, crow, pigeon, parrot, etc ... Some students do not know which is a goat. So we will show it to them ... The children may not have seen the banana tree. It is in the field somewhere. If we show children the tree and explain the features of a banana tree then the child will think the teacher is telling him new things.

And we also take children to the river. We will explain to them how people wash their clothes and vessels in the river. They wash cows and goats in the river and also bathe in the river. Then we will explain to the students the many uses of this water. If this water did not exist then we would suffer a lot. Also, this river provides fish, crabs and ducks that live in it. All this can be directly shown to children.

The second aspect of creating awareness is showing children charts and models.

Now by showing letters on plastic cards and using stories we have to teach. Then children will learn quickly. For example, vowels and consonants, we demonstrate by taking different letters and arranging them side-by-side. In Maths, 1,2; 1,2,3—like a ladder we write. This is ascending order. This is descending order. If a child does not know the picture or a thing we should draw the picture or thing on the blackboard and explain it to them, then children will identify the picture. We are demonstrating in the class. So even if the child does not know the language there won’t be a problem because they see the models.
Teachers have also understood ‘activity’ as important.

We were instructed to teach all the lessons in the school with activity and with the use of easily available things like tamarind seeds, and marbles. In mathematics, showing students a single seed, we say ‘one’, and two seeds we say ‘two’ and so on. Relating to units and tens we will use small sticks and tie it in ten bunches to show children the concept of ‘tens’. This helps to create awareness about numbers.

Teachers are able to describe and summarise competency acquisition using MLL dutifully according to the prescribed definitions and methods. In other words teachers were open to the ‘regulation’ of their pedagogy in the in-service training provided.

**Impartiality.** During training, teachers were instructed in the importance of being impartial towards all students in the class especially girls, Dalits and tribals. Teachers appeared to be quite consistent in indicating the usefulness of in-service training in making them aware of and transforming ingrained attitudes toward children from disadvantage communities. Because of training, they did not foresee any problems with the instruction of Dalit/tribal and female students. When persuaded to speculate on why Dalit/tribal and female students have problems in school they mention distance, illiteracy and poverty:

One thing is that Dalit/tribal students come from very far away. In the village there are no roads. When it rains students do not come to school since there are no roads and the paths are submerged in water … A few parents are illiterate and poor. They do not show much interest in the education of their child.

At mid-day the students go home for their lunch. Their mother and father will not be at home and will be out working in the fields. The student will then go to the fields for their meal. They will return to school only at 3 o’clock … The Dalits, sometimes they do not go to school. If we request them to be frank, the parents will respond by saying, ‘there is nothing to eat at home’. So they send their children to the fields for work.

Some girl students never come to school because their parents never send them to school. The reason is that elderly members in the family want the female student to care for the small babies or younger siblings while their parents go to the fields. Parents would say ‘let our small baby grow up, then we will send her to school’. Female students are also interested in household activities like fetching water and looking after babies. This leads to their irregular attendance and tardiness.

The main aspects of MLL, communicated to teachers during in-service training, is evident in their reflections. Demonstration, activity and use of instructional aids in teaching and the importance of creating a ‘joyful’ classroom represent innovative dimensions of pedagogy for teachers. The appropriation of these dimensions is manifested in teachers’ articulation of the new method of pedagogy conveying teachers’ responsive stance towards reform. Teachers’ responsive attitudes represent teachers’ openness to regulation and the perceptions of their task as duty. The question now arises as to the extent to which this thinking and new methodology is transferred into the classroom.

**Teachers’ Action**

The analysis of classroom activity reiterated teachers’ willingness to be regulated and the perception of their task as duty. Teachers’ thinking extrapolated from the interviews with teachers, containing all the important aspects of MLL, is reflected in their instruction in the
TABLE I. Average number of interactions in the classroom

<table>
<thead>
<tr>
<th>Number of interactions</th>
<th>Mathematics</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total questions</td>
<td>59</td>
<td>44</td>
</tr>
<tr>
<td>Group answers</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Individual student answers</td>
<td>40</td>
<td>27</td>
</tr>
<tr>
<td>Questions to male students</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Questions to female students</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Questions to dalit/tribal students</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Questions to male dalit/tribal students</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Question to female dalit/tribal students</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
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classroom. Children in the classrooms observed were relaxed and without fear. Teachers dutifully performed two instructional practices consistent with what they perceived as epitomising the new pedagogy—activity and demonstration. Activities include games, singing with and without action, reciting with and without action, counting objects, picking up objects and pointing to information on charts. Teachers made use of a variety of instructional aids in the classroom. The average number of instructional aids used per class by the whole sample is 3.1. The mean for mathematics is 2.2 and for language is 0.9. The excerpt in Sequence 1 (see Appendix 1) illustrates the use of activity during instruction in the classroom. The excerpt is from a first standard mathematics class and portrays teachers using tamarind seeds, stones and marbles to instruct students in numbers. Students in the classroom are enthusiastic and involved with the activity. Demonstration or display includes using created or actual charts and objects.

Teachers are able to be impartial in their interactions allowing females and Dalit/tribal students to answer questions. Corresponding to teachers’ reports stating that they did not perceive any difficulties in instructing Dalit/tribal and female students, these students are seen to participate in classes. The quantitative count in Table I indicates the percentage of interaction between the teachers and the class, female students and Dalit/tribal students. Interaction here is confined to teachers asking questions and the students responding with the answer. The number of interactions with female and Dalit/tribal students is roughly proportionate to the number of students representing these groups in the class.

The above discussion suggests that holism, as a feature of Indian society with its regulatory trait, constructs teachers’ feelings of ease at being regulated by the state or the centre as it defines the contents and parameters of the new pedagogy. Regulation by the centre and the state does not produce any conflict or a sense of being imposed upon in teachers’ minds. Teachers also feel it is their duty to accept the directions given by people in authority and to follow their instructions by attempting to implement the new methodology in the classroom. Teachers’ thinking which reflected the importance of demonstration, and activity and instructional aids are evidently translated into practice in the classroom. In addition, the importance of impartiality conveyed in their thinking is portrayed in their impartial interaction with students.

Cultural Constructs Resistant to Reform

Two of the cultural entities discussed above—the hierarchical structure as a regulative social
framework; and knowledge as discovered and attested collectively—however, act as barriers to teachers’ (and probably the trainers’) appropriations of a meaningful activity-focused, child-centred pedagogy. All teachers in the sample were questioned on the extent to which they found MLL difficult to implement in the classroom. Less than a quarter of the sample said they did not find it difficult to implement MLL (45 teachers). More than half the teachers found it very difficult to implement the new pedagogy. A variety of reasons was proffered including the lack of support by community, the presence of multiple grades in the class and difficulties with language. It is likely that teachers also found it difficult to implement the new pedagogy because of the presence of cultural constructs resistant to change and unavailable for articulation.

Both teachers’ interviews and actions in the classroom reflect the dominance of the above two cultural constructs. In interviews, teachers are unclear as to what is meant by accommodating instruction to an individual child—accommodation that takes into account the experiences and knowledge of the individual child. Teachers say they were taught ‘how the teacher has to behave in front of children’. Correct behaviour included being friendly and impartial towards students, especially with reference to gender, intellectual level and caste background. Thus, except for establishing a cordial relationship with students, avoiding partiality and making students feel good, teachers’ words do not contain clear accounts of what it means to understand individual learning profiles of students, to adapt instruction to varying levels of student ability and to empower students from disadvantaged communities:

Before beginning the lesson, we must give a game to children. So children feel happy. With the enjoyable movement, we should teach a lesson to children. During language instruction, we must show attractive coloured pictures to the children. Children feel very happy. When they are happy, the child can say, for example, if the name of the flower in the picture is ‘rose’ or something else. So they know the name as well as the thing … They can see with their own eyes. While seeing they feel very happy.

The hierarchical social framework restricts teachers from fully appropriating the concept of going down to the child’s level, their prior knowledge, interests and needs.

The role of hierarchy and collective decision-making is particularly evident in the interaction between teachers and students in the observation of classroom practice. Only teachers ask the questions implying the importance of teachers’ authority and command over all valid knowledge. Teachers tend to begin the class by asking the whole class questions and then move on to directing questions to individual students. Their questions are usually ‘how’, ‘when’, and ‘what’. Teachers’ interactions with students rarely contain ‘why’ questions. Teachers respond to students’ answers by saying whether it is correct or incorrect. Rarely do teachers nudge students to provide a rationale for why they have said something incorrect or why they think it should be done in a certain way rather than another. Most significantly, out of the 8000-plus students observed, only 15 students asked a question in class. A student asked a question in three mathematics and 12 language classes. While teachers use activities during instruction, these activities are consistently repetitive as the excerpt in Sequence 2 (see Appendix 2) illustrates [12]. Both activity and demonstration are repeated again and again. Instructed by teachers, students identify numbers and letters many times over. Cooperative group learning, which would allow students to manipulate instructional aids individually is rare.

Collective decision-making is evident in interaction and in the limited inclusion of
students or teachers’ experience in the class. Teachers sometimes used experience as an introduction to the lesson, as illustrated in the two examples in Sequence 3 (see Appendix 3). However, appropriating students’ knowledge as an integral part of instruction was missing. For instance in Example 2 in Sequence 3, the use of subtraction and addition by students in the market, a common experience in villages, is not used to explain mathematical concepts. In the cultural framework described earlier, the collective construction of knowledge and decision-making become very important. The community and family determine what students ought to know and understand and connections between valid knowledge determined by the community is rarely connected to school knowledge. Therefore, on the one hand, the experience and knowledge gained outside the classroom by the student become irrelevant to what is taught inside the classroom. On the other hand, what is learnt in the classroom is treated as separate and disconnected from the lived reality of the student.

Cultural construction in teachers’ thinking thus prevents a fundamental alteration of traditional practice. Students continue to receive information and learn it through repetition. The above discussion of the thought and action of teachers portrays the ways in which culture constructs pedagogy and the role of culture in the pedagogical reform process. On the one hand, certain dimensions of culture, in this case openness to regulation and the perception of their task as duty, enables the change process. On the other hand, certain other cultural constructs, namely hierarchy as a social framework and the collective construction of knowledge, limit teachers’ appropriation of the new pedagogy [13].

Discussion

The District Primary Education Programme is a very significant programme of reform in the developing world. About 800,000 teachers across the major states in India have received some form of in-service training and ongoing professional support as described above. The short duration in-service training offered to teachers at the Block level was seen in the early 1990s as the most appropriate way of retraining the large number of primary education teachers already in the workforce. The ongoing professional development at the Cluster level was designed with the objective of reinforcing and supporting teachers’ attempts at changing traditional pedagogy.

The implications of the cultural construction of teacher thinking and teaching are distinctively conveyed by this study. On the one hand, the study illustrates the potential that short-term in-service and continuous support for teachers has for pedagogical reform. Openness to regulation, the conception of their task as duty and possibly the hierarchical social framework allows teachers to be receptive to reform programmes outlined by central authorities. The impact of both in-service and professional development in DPEP is evident in the fairly consistent use of instructional aids and activities in the classroom. Teachers who formerly used only the textbook for instruction were now using a variety of objects and activities to help their students learn. In fact, the use of teaching aids and activity appears to dominate teachers’ thinking and action almost to the point that teachers feel understanding can only be successfully brought about by performing an activity or by looking at a chart or object. Most importantly, teachers are able to dispel fear in the classroom.

On the other hand, the cultural construction of teacher thinking and teaching indicates the importance of appropriately designing in-service programmes and continuous support for teachers. Teachers’ use of instructional aids, activities and demonstration during instruction have not integrally transformed teaching and learning in the classroom. They have skillfully integrated ‘activity and joyful learning’ into their traditional rote method of instruction where knowledge is transferred \textit{en bloc} and memorised. Knowledge continues to be ‘given’ in
demonstration and activity and learning continues to be based on repetition. During instruction, though transformed with activity and demonstration, teachers remain primary players in the classroom. The teacher continues to be the primary player in that he or she continues to be in control and define the parameters for student participation as portrayed especially in their interrogation and enabling of student learning. Similar incorporation is evident in Osborn et al.’s (1997) study of teachers’ beliefs and goals in France (universalistic) and in England (differential), a follow-up of the Broadfoot and Osborn (1993) study mentioned earlier. Teachers in both countries were participants in the programme of reform which attempted to provide comparable opportunities for children from lower social class backgrounds. In this study, French teachers tended to incorporate the importance given to the individual child into their framework of universalism and English teachers’ incorporated ‘entitlements’ (p. 384) for students from disadvantaged homes into their focus on the individual student’s specific problems and limitations. Cohen’s study (1990) of Mrs. Oublier, a primary school teacher in California, also found that this teacher believed that her instructional practice had been truly transformed, whereas she had actually rather skilfully integrated new practices into her traditional methodology.

The limited impact of new ideas about teaching and learning could be attributed in this instance to the influence of culture on the teacher trainers and the creators of the training modules. Alexander (2001) refers to the teaching and learning in DPEP as ‘selective, inflexible and restrictive’ (p. 48), which can be conceived of as evolving from both conducive and resistive cultural constructs [14]. Trainers appeared to select dimensions of the reform that they understood and could fit easily into their own world views. Hierarchy in the culture caused trainers to communicate inflexibility in their approach tacitly and the notion of collective decision-making necessarily involved a restrictive view of the student [15]. Teacher trainers instructed teachers with the content of the reform pedagogy using traditional instructional methods and knowledge given during the training programmes. Teachers in the in-service training modules were not involved in active learning; they rarely asked questions, nor did they engage trainers in discussion or argument. Most importantly, teachers’ experiences in the classroom were not validated and unpacked with reference to the new instructional methodology. In a similar way to teachers’ limited perceptions of children as learners, teachers’ capacities and experiences were not considered during training.

It is likely here that the objectives of both in-service training and ongoing professional development have not been sufficiently thought through. The focus of the training was on instructional aids, activities and joyful learning. These were understood to be ends rather than means to an end. Perhaps the move to using instructional aids in the classroom, albeit in a traditional fashion, could be considered a natural development for teachers who were used to traditional forms of instruction focused on the textbook. In the next phase of teacher training, it will be important to ensure that in-service training moves teachers further along the continuum of reform to consider the quality of student learning that nurtures student thinking, transfer of skill and creativity [16]. In-service training must facilitate the growth of teachers from the rather narrow aim of helping teachers create and use instructional aids and activities in the classroom to using activities and instructional aids in such a way that it facilitates students to understand and think easily and naturally. In order for teachers to enable students to think, transfer skill and be creative, students’ experience and prior knowledge must be brought into the classroom. In-service training must help to initiate teachers to interact with students in such a way that this is allowed to happen.

An important aspect of facilitating the above process is to enable teachers to reflect more effectively on their attempts at reforming practice. In DPEP the ongoing professional development is weak and the reflective dimension is rarely nurtured and strengthened either
during visits by coordinators to the schools or during teachers’ monthly visits to the Cluster Resource Centres. Much has been written about reflection and action research in the West (Griffiths, 2000; Rearick & Feldman, 1999; Zeichner, 1994). Shaeffer (1990) specifically problematises reflective practice in developing countries. He has identified several issues which have been dealt with elsewhere (Clarke, 2001) namely the difficulties in defining the content of reflection, the individual nature and assumption of autonomy of reflective practice and the time and costs involved. To this list could be added the issue of whether world views related to instruction are available to a teacher to be reflected upon. As has been argued in this paper, the embedded and tacit dimensions evident in this analysis may not be easily available to teachers for reflection. Reflection and action research that addresses cultural constructs that inhibit integral reform in teaching and learning, specifically hierarchy and collective decision-making in this case, could be considered as critical content for professional development. Such constructs, if unavailable to teachers themselves, would need to be unpacked by the ‘outsider’ or the ‘other’. Furthermore, in cultures that in general nurture a group identity rather than an individualistic one, it is possible for reflection to be a group process rather than individual and autonomous. The openness to regulation which is characteristic of holistic societies could nurture group reflection, thus making this whole process less time consuming and expensive.

Any cultural analysis can be an emotive subject related to issues of authenticity and power (Hoffman, 1999). Be that as it may, since teaching and learning forms the bases of any educational reform programme, a cultural analysis—or the unwrapping of the black box of teaching and learning that reveals the different elements and complexity within—is critical to understanding instructional practice and hence, successful reform. Teaching and learning in nation states embody particular institutional cultures. Teachers also embody dimensions of local or micro-culture, in addition to institutional culture, as displayed in this study. Admittedly, these cultural patterns evolve and at intervals change and adapt, some more frequently than others. According to Cummings (1999), development of education in different countries follows a linear or cyclical pattern. In some countries a combination of both is evident; for example, cyclical linear or parallel cyclical linear. Whether cyclical or linear, educational reform that deals with teaching and learning must take into consideration the cultural patterning of how teachers teach and students learn. Any reform thus necessarily involves chiselling away at the edges of traditional cultural models that limit instruction while retaining dimensions that enrich student learning.

**Conclusion**

The study attempts to unravel the impact of large-scale educational reform, specifically with reference to teaching and learning in a developing country, namely India. A case study of Kolar in the District Education Project found that the training given to teachers in the district did have an impact on teachers. A wide variety of instructional aids and activities is now being used by teachers during instruction, a phenomenon rarely evident in classrooms before the commencement of this project. The influence of the teacher training component, however, has not been successful in transforming the essential nature of teaching and learning in the Indian classroom. Instruction continues to be teacher centred with teachers asking the questions and students dutifully responding. The limited impact of the reform is also seen in the predominance of repetition and the infrequent inclusion of student experience during instruction.

Fullan (1993) advocates the importance of changing mindsets in the ‘change process’. This study concurs with this point by portraying the way in which teachers’ and trainers’
mental frameworks lay down parameters for change. Similarly, in teacher thinking research the importance of teachers’ and trainers’ underlying philosophies and theories in the process of reform are conveyed. However, as this study indicates ‘mindsets’, ‘mental models’ and ‘underlying frameworks’, are themselves culturally constructed and evolve from culture. Understanding the cultural construction of teaching and learning could facilitate the creation of teacher training modules that target specific and critical areas to change. On the one hand, this study portrays the cultural dimensions of teachers that are open and receptive to the change process. On the other hand, this study presents embedded cultural dimensions that are resistant and antagonistic to the change process. Those designing teacher training modules need to consider how the cultural dimensions of teacher thinking and teaching relate to the intended objectives of the training and to revise training accordingly so that teachers can engage fully with the intended reform.

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NOTES

[1] Dyer (2000) lists the studies that have been done on the implementation of large-scale reform in developing countries. These studies include London’s study (1993) in Trinidad and Tobago; Dyer’s work in India (2000, 2001) and Warwick & Reimers (1995) in Pakistan.

[2] The International Study Association on Teacher Thinking (ISATT) provided a forum for nurturing an international interest in teachers’ thinking. In the USA, the National Institute for Education and the American Educational Research Association were responsible for initiating this field of study.

[3] This approach is epitomised by the ‘process-product’ paradigm that dominated the field. Studies within the process-product framework attempt to identify pedagogical behaviours or isolated teaching ‘skills’ that could produce positive student outcomes (Gage & Needels, 1989).

[4] Many scholars have reviewed this research. Ross et al. (1992) categorise teacher thinking research into ‘cognitive process research’, such as work on teacher decision-making evolving from the process-product paradigm, and ‘teachers’ practical knowledge and theories’ from curriculum research and teacher education. Fernstermacher (1994) identifies Ross et al.’s second category into two strands. The first strand consists of a broad range of teacher beliefs concerning their work—subjective theories, metaphors, personal philosophies and images. The second strand, emanating from Donald Schon’s (1983) notion of the reflective practitioner, examines ways in which teachers contemplate and rethink their classroom tasks.

[5] Hinduism has a four-fold caste structure (Brahmins, Vaiśhyas, Kṣatriyas and the Sudras) and the minority populations in India are often influenced by this social structure. For example, at an explicit level ‘caste’ continues to be operative within the Christian community in India.

[6] Education in India is a concurrent item in that it comes under both central and state governments. The Central Government plays a greater role in secondary and higher education, leaving primary education to the auspices of the individual state. DPEP, however, is a centrally sponsored scheme with the Centre’s share of funding procured from multilateral and bilateral sources such as the European Union, the World Bank, the Department of International Development, the Netherlands embassy and UNICEF.

[7] Dalits is a name that the Scheduled castes (or Harijans) have claimed. It means ‘broken’. The Scheduled castes (SC) stand outside of the fourfold caste structure described above and constitute about a fifth of the Indian population. The education of the SCs and Scheduled tribes is targeted in the DPEP, in addition to working children and children with disabilities. The Tribal population in India is about 7%.
The early conceptions of MLL can be found in UNICEF-assisted projects of the late 1970s called ‘Primary Education Curriculum Renewal’ and ‘Developmental Activities in Community Education and Participation’. There is considerable rethinking of the concept of MLLs at various levels with reference to its focus on ‘minimum’ and the artificial structuring of learning into levels. However, most states continue to subscribe to MLLs.

Kennedy (1999) suggests that classroom observations constitute the most useful indicator of ‘complex learning’. However, since this method is expensive and time-consuming, interviews and questionnaires can be used to capture similar information. It was possible to use both observation and interviews in this study.

Two observers were present in the classroom as each teacher taught a mathematics and language unit. One observer described, in detail, all activities that took place in the class and the second observer registered the actual words used by the teacher and students. Both observers’ accounts were verified by the audio-recorded account of the class. Overlooked classroom activity and interactions were later transcribed from tape. The presence of the audiotaped record of classroom teaching negates the need for inter-observer reliability checks.

It can be argued that the observation of one class is insufficient to provide enough data on classroom practice. In addition, the criticism is also made that teachers will be at their best or their worst because of the presence of observers in the classroom. Due to the large sample it was impossible to observe more than one class. In response to the latter point, it can be argued that irrespective of whether the teacher is at her best or worst, because instruction is culturally constructed, it will be embedded practice that will be displayed in the classroom. In other words, the range of best and worst will be confined to embedded practice.

In the other states in which DPEP is being implemented, while no study has been conducted, the general impression is that teachers appear to be using the same instructional aids as are demonstrated during training. This situation is interesting since each teacher is given the grant to encourage creative use of instructional aids in the classroom. Teachers are unable to create and make use of instructional aids creatively and are instead imposing a certain uniformity in the aids employed in their teaching. In Karnataka, however, as this study indicates, a variety of aids was used.

It is likely that there are many more cultural constructs in which pedagogy is embedded. This study is limited to the four constructs in the analysis of teacher thinking and action because these constructs are dealt with extensively in anthropological studies on Indian culture.

Dyer’s discussion (2000) of similar in-service training, which preceded DPEP, also points to the delivery mechanism as being flexible and structured. Master trainers trained teachers by using the method of lecturing and the textbook as instructional material.

According to Alexander (2001) the restrictive view is related to Piaget’s developmental trajectory, conceptualising the child as an individual who initiates his or her own development by interacting with surrounding objects and ideas. While the restrictive view may have parallels with Piaget’s developmental approach, nevertheless the restrictiveness in teacher training is attributable more to the constructs in Indian culture than to Piaget. Knowledge of the developmental theories of Piaget and Vygotsky is restricted to the intellectuals in India and these theories have not really influenced curriculum and pedagogy.

‘Thinking’ refers to the encouragement of students to understand fully what is going on in the classroom; ‘transfer of skill and creativity’ refers to the creative application of skills learnt in the classroom to students’ own lives. Thinking, transfer of skill and creativity are conceivable within the parameters of pedagogy related to MLL.

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APPENDIX 1

Sequence 1: Activity in a First Standard mathematics class

[The teacher sits on the floor with tamarind seeds]

T Pick out one tamarind seed.
M/da/tri [The student did the action correctly]
T How many?
G One.
T Pick out one stone.
M/da/tri [The student did the action correctly]
T How many?
G One.
T Pick out one marble.
M/da/tri [The student did the action correctly]
T How many?
G One. [The teacher then takes out marbles and lays them on the floor]
T Pick out two marbles
M/da/tri [The student did the action correctly]
T How many?
G Two.
[The teacher takes some stones and lays it on the floor]
T Pick out two stones.
M/da/tri [The student did the action correctly.]
T How many?
G Two.
T Pick out two Tamarind seeds.
M/da/tri [The student did the action correctly.]
T How many?
G Two.

[The teacher then instructed students to open their workbooks and to show the numbers to each other.]

T: The teacher;
M: Male student
F: Female student
da/tri: Dalit/tribal student
G: Group answer by the class.

APPENDIX 2

Sequence 2: Interaction illustrating the participation of students in a mathematics class

T The teacher calls a student, shows him a hundred sticks and requests him to make a group of ten sticks.
M/da/tri The student does what is asked.
T How much is it?
M/da/tri Ten.
T The teacher calls another student, and requests him to make a group of ten sticks.
F da/tri The student counts the sticks and makes a group.
T How much is it?
F/da/tri Ten.
T The teacher calls another student and requests her to make a group of ten sticks.
F/da/tri The student does what is asked.
T The teacher calls another student and requests her to make a group of ten sticks.
F/da/tri The student does what is asked.
T The teachers calls another student and requests her to make a group of ten sticks.
F/da/tri The student does what is asked.
T The teacher calls another student and requests him to make a group of ten sticks.
M/da/tri The student does what is asked.
The teacher calls another student and requests him to make a group of ten sticks.

The student does what is asked.

The teacher calls another student and requests her to make a group of ten sticks.

The student does what is asked.

The teacher calls another student and requests her to make a group of ten sticks.

The student does what is asked.

The teacher calls another student and requests him to make a group of ten sticks.

The student does what is asked.

How much is it?

Eight.

How much is the total?

98.

No

[The teacher corrected the mistake by recounting and in one group twelve sticks were placed instead of ten.]

APPENDIX 3

Sequence 3: Interaction illustrating the use of students’ experience during the introduction to a lesson

Example 1

T What games do you play often?

M I used to play Kanna Muchhale (Blindman’s Buff).

T You Narasimha Murthy?

M I used to play chick, chick bulla.

T What time do you all get up in the morning?

G By 6 o’clock

T Before coming to school, what do you need to do?

G We brush our teeth, comb our hair, dress, eat breakfast, then homework.

T Do you like to sing and play?

G Yes Sir.

T Today we are going to learn about the meaning and theme of a poem called ‘Nanna Tayari’ (my preparations)

G Yes Sir.

Example 2

T We needed the knowledge of mathematics for everyday activities, is it not?

G Yes Sir.

T While we go to the market to buy materials, food grain, vegetables etc. we must know the method of addition and subtraction, is it not?

G Yes Sir.

T You learnt in the first standard about numbers from 21–99, is it not?

G Yes sir.

[The teacher instructed the students to come and write numbers as he dictated.]

T: The teacher;
M: Male student
F: Female student
da/tri: Dalit/tribal student
G: Group answer by the class.