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Revolutionizing Ritual Interaction in the Classroom: Constructing the Chinese Renaissance of the 21st Century

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Abstract
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Revolutionizing Ritual Interaction in the Classroom:
Constructing the Chinese Renaissance of the 21st Century

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ABSTRACT

Over the past decade, educational leaders in China have maintained that the pattern of social interactions in Chinese classrooms is not conducive to the cultivation of innovativeness and creativity, and that this lack of creativity is a major barrier to China’s global competitiveness. One key response has been the implementation of the 2001 “New Curriculum Reforms” in basic education. In this study, I draw on qualitative classroom observation and in-depth interview data, and quantitative survey data, from Gansu Province to investigate the extent to which classroom interactions differ substantially in Chinese primary school classrooms that are implementing the “New Curriculum” reforms, compared to those that are not. To the extent that individuals are constructed by the interactions in which they participate, changes in classrooms could have far-reaching implications for contemporary youth socialized differently from those of previous generations, and for the future social, cultural and political order of China.
Currently, and in the near future, the lack of creative talent capable of international leadership has already become the greatest restriction to our nation’s creative ability and competitiveness … The revitalization of our nation’s education is an objective need for the realization of the goals of socialist modernization and the great renaissance of the Chinese nation. (People's Republic of China Ministry of Education, 1998).

INTRODUCTION

Education reform has played a central role in the tumultuous wave of social changes that have occurred in China during the course of the 20th century (Cleverly, 1991; Pepper, 1990; Pepper, 1996). The architects of China’s emergence as a global economic and political power continue to see educational reform as playing a key role in China’s national development and global competitiveness. Over the past decade, educational leaders in China have maintained that the pattern of social interactions in Chinese classrooms is not conducive to the cultivation of innovativeness and creativity. This concern has led to the design and implementation of the New Curriculum Reforms for basic education, the goals of which include an overhaul of the structure and content of basic education (Grades 1-12) and a transformation in the processes of teaching and learning (Shi and Liu, 2004). In a key guiding document for the design and implementation of the New Curriculum reforms, the Ministry of Education stipulates the following:

Change the overemphasis on transmission learning in the implementation of curriculum, and the emphasis on rote memorization, and mechanical drill. Promote instead students’ active participation, their desire to investigate, and eagerness to use their hands. Develop students’ ability to collect and process information and to analyze and solve problems.
Cultivate also the capacities for cooperation and communication. (People's Republic of China Ministry of Education, 2001)

Educational leaders also call for the creation of “an open classroom environment” and “a positive and comfortable atmosphere” that is conducive to development of the “students’ own thinking processes,” their “expressions of new, different and unconventional ideas,” and their “curiosity, desire for learning, and imagination” (People's Republic of China Ministry of Education, 2002).

A shift in classroom social interactions has implications for the socialization of students. According to social interaction theory, individuals are socialized during a series of momentary interactional encounters (Bernstein, 1975; Collins, 2004; Durkheim, 1912/1995; Goffman, 1967). The myriad micro-interactions between individuals occurring at every moment also construct the societal macrostructures. As Collins (1981) writes,

Strictly speaking, there is no such thing as a “state,” an “economy,” a “culture,” a “social class.” There are only collections of individual people acting in particular kinds of microsituations—collections which are characterized thus by a kind of shorthand (Collins, 1981: 988).

Applying social interaction theory to education, some scholars have argued that interactions at the level of the classroom instill values such as obedience and submission to authority that are conducive to integration into the structure of relations in the school and the labor force, and are further implicated in the social reproduction of the class structure (Anyon, 1980, 1981; Apple, 1973, 1979; Bernstein, 1975; Bourdieu and Passeron, 1990; Bowles and Gintis, 1976; Dreeben, 1968; Durkheim, 1956; Giroux, 1981,
(1983; Gracey, 1977; Jackson, 1968). Other scholars have argued, however, that a transformation in pedagogical techniques can lead to individual empowerment and awakening, and subsequent social transformation or revolution (Dewey, 1900/1990, 1916/1997; Freire, 1993; Mao, 1973; Reich, 1991).

In this paper, I investigate whether there is evidence of a relationship between New Curriculum Reform implementation and patterns of classroom social interactions in rural primary schools in Gansu, in Northwest China. I analyze qualitative data from classroom observations and teacher in-depth interviews carried out in fall 2004 in 15 rural primary schools across 6 counties in Gansu. I also analyze data from linked student, household, teacher and school questionnaires from a 2004 survey of schools serving a representative sample of 100 rural villages in Gansu. As I will show below, results suggest that teachers in classrooms that are using the New Curriculum materials lecture less, praise more, and place greater emphasis on the development of students’ self-expression and thinking abilities.

TEACHERS, TEXTS AND EXAMINATIONS IN CHINA

Classroom social interactions vary with the role assigned to teachers, textbooks and examinations. In China, these roles have oscillated dramatically over the past century, coinciding with major social upheavals. For example, the abolition in 1905 of the Confucian imperial civil service examination system was accompanied by a revolution in the content of education. The focus on the study of Chinese classics was replaced with the study of modern subjects such as social studies, science, math, geography, physical education and foreign languages (Xu, 1992). This was accompanied by greater emphasis on the psychology of education, the concept of IQ, standardized
testing and the importance of emotional development (Cleverly, 1991; Xu, 1992). John Dewey’s influential visit to China in 1919 lead to the promotion of the ideals of progressive education: the cultivation of a healthy personality, democratization in access to educational opportunity, and learning by doing rather than only from books (Cleverly, 1991; Xu, 1992). In the Dewey-inspired experimental schools that were established during this period, students learned actively through observation, reading, writing, discussion and through experimentation (Xu, 1992).

However, John Dewey’s ideas and the growing influence of Western approaches to education were soon attacked as elitist and divorced from Chinese realities. Among the critics of both Confucian education and Western approaches to modern education was Mao Zedong (Pepper, 1996). Mao considered education to be one of the crucial means (along with political and military means) for social transformation (Xu, 1992). He believed that relevant approaches to education could function to raise the political awareness of the peasantry so that they would be able to determine what they needed for themselves (Cleverly, 1991). In Mao’s restructuring of approaches to rural education, the role of the teacher was to be transformed. Independent study was to be primary and formal instruction secondary, and a democratic spirit was to characterize teacher student interactions (Pepper, 1996). Xu (1992) argues that the teaching methods advocated by Dewey and Mao were very similar in their opposition to the heavy use of memorization and cramming and the favoring of inductive methods, group discussions, and activities (Xu, 1992). Similar to the experiential education and “learning by doing” of John Dewey, Mao believed participation in economic production was inseparable from learning. In his view, knowledge could only be obtained through practice:
“If you want to know the taste of the pear you must eat it yourself. If you want to know the composition and properties of atoms you must make experiments in physics and chemistry to change the state of the atoms. If you want to know the theory and methods of revolution, you must participate in the revolution” (Mao quoted in Xu, 1992: 74).

With the founding of New China in 1949, influence from the Soviets and pressure to achieve industrial and economic advancement lead to value being placed on a regularized education system. This included the establishment of examinations as an important force for the systematization of education and reinforcement of the importance of respect for teachers (Pepper, 1996). The period of regularization was short lived. After a falling out with the Soviets and a series of political twists and turns, Mao’s educational ideas again took center stage during the tumultuous years of the Cultural Revolution when all former regularity was overturned. Educational restructuring became the means of overthrowing the patterns of social reproduction and disrupting the bases of power among the wealthy and intellectual classes in Chinese society (Pepper, 1996). Examinations were decried as the instruments of the privileged intellectual and bourgeois classes (Pepper, 1996). Book learning was also devalued. Mao returned to his notion of education connected to labor (Pepper, 1996). Teachers as intellectuals became identified among the worst elements in Chinese society, “the filthy number nine,” worse even than landlords, rich peasants, reactionaries, bad elements, rightists, spies, suspects and criminals (Xu, 1992: 84). Rather than teaching, teachers were instead to be “reeducated” by the proletariat. This brought about a tremendous power shift for students, and especially for those from proletarian families. They were no longer simply the ones to be educated but were to be considered equal, or even superior, to the faculty (Xu, 1992: 91).
The end of the Cultural Revolution and the advent of the Deng Xiaoping era of “opening and reform” brought about another sea change in classroom social interaction in China and, at the heart of the change, was once again the regularization of the education system. Under the clarion call of “science and education to rejuvenate the nation” (ke jiao xing guo), education was to directly serve the cause of economic development so that China could feed and clothe the poorest among its population and raise the GDP to the level of middle income developed countries by the year 2049 (Lewin, Little, Xu, and Zheng, 1994). Respect for teachers and order and discipline were returned to the schools. A strict hierarchical structure, supported by systems of reward and punishment, and teacher directed lecture were returned (Pepper, 1990: 71).

Lynn Paine (1990; 1992) has argued that during the period of opening and reform, teaching practices were once again shaped by the assumptions that knowledge resides in texts; and that a meritocratic society must be based on selection in an examination system. According to Paine (1992), during this period, the “power of the examination to define knowledge, knowledge acquisition and teaching” was significant (Paine, 1992: 200). She also describes the central role and position of the teacher and the text in determining the structure of relations in the classroom:

The textbook, as the source of knowledge, and the teacher, as the presenter of that knowledge, stand at center stage for the activity of Chinese schools… Teachers spend their time teaching at the podium, lecturing, reading out loud, or asking questions… The text ties together all the activity of the period. Normally it is very much in evidence on each student’s desk top and at the teacher’s podium… Interaction between individual students and the teacher generally takes the form of explication of text, with the teacher asking a student to paraphrase, summarize, or explain a portion of text… The
teacher uses questions to review material, inspect for student comprehension, and train students in speaking ability (Paine, 1990: 51).

At the turn of the 21st century, China has emerged as a global economic and political power and the newest round of education reforms once again aims to transform Chinese citizenry and Chinese society. The pendulum is swinging back from a heavy emphasis on teachers, texts and examinations to the call for more progressive pedagogies that focus on the development of the whole person and teaching practices that emphasize learning by doing. Pressure to compete in examinations is criticized as a cause of spiritual and psychological ill-health in students. Jiang Zemin (2000), former President of the People’s Republic of China, in a talk that has been widely disseminated, “Conversations on Educational Issues,” warns of single-minded attention to book-learning and examination scores. He tells the story of a high school student in Zhejiang Province who had beaten his mother to death with a hammer because he was unable to bear his class ranking in the examination and the subsequent pressure exerted on him by his parents. Jiang Zemin (2000) uses this story to emphasize the importance of other goals of education that are clouded by the focus on books and examination results:

The correct guidance and healthy development of young people in an all round way, morally, intellectually, physically and with an appreciation of the arts, (de zhi ti mei) is a major issue in our national educational development… We must not only continue to emphasize students’ literacy levels and cultural knowledge acquisition but must also pay the utmost attention to strengthening students’ ideological and political education, moral education, self-discipline, and education in the law. Teachers, as the “engineers of humanity’s soul” must not only teach books but must also teach people (Jiang, 2000).
The teaching methods that teaching to the test engenders have not only been attacked as being harmful to student’s psychological health but have also been criticized as damaging to the overall national project of raising China’s global position. No longer should education seek to train test-takers, good at rote memorization and fit to become the compliant, manageable workers who were seen as needed in the industrial age. What is seen to be needed now are Richard Reich’s (1991) “symbolic analysts”—generators of knowledge who can solve, identify, and broker new problems in the world economy. Such individuals include scientists, researchers, management consultants, design and civil engineers, public relations officers, musicians, and film producers. This changing definition of what constitutes the most valuable type of human capital has implications for how students are taught in the classrooms.

HYPOTHESES

In my investigation of whether there is evidence of a shift in patterns of classroom social interaction during the new era of China’s development, I conceptualize differences in teaching methods along a continuum from traditional to progressive. I consider the extent to which teachers that have begun implementation of the New Curriculum reforms are more likely to be using more progressive approaches to teaching. The traditional-progressive dichotomy is a classic concept in educational thought. Traditional education has been characterized as fostering docility, receptivity, and obedience in students; depending heavily on texts and teachers; and making use of drill; while progressive education has been characterized as focusing on the expression and cultivation of individuality, learning through experience, purposeful activity, acquaintance with a changing world, and the development of thinking. I operationalize the tendency towards
more progressive approaches in New Curriculum classrooms along three dimensions: 1) the role of teachers, texts and examinations, 2) the nature of student participation, and 3) the classroom atmosphere, including the teachers’ use of praise and punishment.

1. The role of teachers, texts and examinations.

This dimension measures the extent to which teacher lecture predominates in the classroom, the degree of emphasis accorded to the use of the textbook, and the extent to which preparation for the examination drives classroom processes and student engagement with learning. To the extent that the current reforms seek to transform traditional practices, I hypothesize that teachers should be lecturing less in New Curriculum classrooms and engaging students more in classroom discussion and activities that are not directly related to mastery of the textbook and preparation for the examinations.

2. The nature of student participation.

Student participation might be elicited in both traditional classrooms and New Curriculum classrooms but the nature of that participation could vary. If mastery of textbook content is the focus, then student participation might take the form of drilling in the textbook content. One way to get at the nature of student participation is to examine the types of questions and answers that characterize classroom interactions. These include

1) closed-ended questions that require one right and perfect answer and which are designed to drill the students in the content to be mastered;
2) open ended questions which allow for multiple possible responses from the students, stimulate thinking, and do not necessarily have a definitive answer;

3) questions from students to the teacher; and finally,

4) question and answer interactions between the students themselves.

I hypothesize that in New Curriculum classrooms there will be a greater frequency of occasions on which the teacher poses open ended questions of students, encourages students to ask questions of the teacher, and arranges opportunities for students to interact with each other.

3. Classroom atmosphere and the teachers’ use of praise and punishment.

In traditional classrooms that place great value on respect for the teacher’s authority it is possible that teachers may make frequent use of punishment to keep students under control. Furthermore, teachers may feel that fear is an effective form of motivation for students to work hard towards the goal of passing their examinations. Indeed, studies in rural Gansu have shown that there is a high incidence of students reporting that they are punished by their teachers, including reports of corporal punishment (Adams and Hannum, 2006). The New Curriculum Reforms, on the other hand, call for teachers to establish a more relaxed classroom environment where students are free to explore their own novel ideas and understandings. Teachers are called upon to praise and encourage their students in order to enhance their levels of engagement and to make learning a happy experience.

I hypothesize that in New Curriculum classrooms teachers make less use of punishment and more use of praise and encouragement. Furthermore, I hypothesize that
students in New Curriculum classrooms are more likely to feel liked and affirmed by their teachers.

**DATA AND METHODS**

I conduct my study in rural primary school classrooms in the remote interior province of Gansu. There are three implications for my choice of study site. First, while evidence from this study cannot be generalized to the large metropolitan cities or the prosperous eastern seaboard, the study can potentially be considered a conservative estimate of the penetration of national policy influence into the remotest hinterlands. Second, in light of the interest in growing regional inequality in China, this study provides insight into the processes of teaching and learning that rural children in the relatively disadvantaged areas of Northwest China have access to during the current period of curriculum reform. Finally, my results provide insight into primary school classrooms. Middle and high school classrooms may be responding differently to the New Curriculum Reforms given the heightened examination pressure that teachers and students experience at this level of the education system.

**Qualitative Data**

Classroom observation data for the qualitative component of this study was collected in 15 schools in six rural counties across Gansu. The six counties that were included in the qualitative portion of the research were purposefully selected to obtain diversity along the dimensions of wealth, geographic location, and whether or not they had already begun implementing the new curriculum reforms. Within the counties, schools were purposefully selected to achieve diversity with regard to school type (central school, village school or teaching point school) and also by remoteness from the...
county seat. Within each school, the research team requested to observe classes in both mathematics and Chinese, and at a range of grade levels. The sample included 20 Chinese and 10 mathematics classroom observations. In-depth interviews with each of the teachers were conducted immediately following the observed lesson. Interviews were recorded with permission and transcribed. Table 1 illustrates characteristics of the classroom observation data that were collected by grade level, subject, curriculum reform implementation status and school type.

The New Curriculum Reforms have been implemented gradually since 2001, starting first with national pilot counties, then provincial pilot counties and, finally, all counties were to begin implementation by 2005. In each county, implementation of the new reforms also began gradually, in some cases with a few schools starting ahead of the other schools. In addition, implementation within each school is also gradual, beginning first with Grade 1 of primary school and Grade 1 of junior middle school.

As fieldwork was carried out in the early years of curriculum reform, implementation could only be observed in the early grades. The research team made a special request to include the early grades if they were already using the new curriculum materials, but we were flexible according to the school’s schedule on the day we arrived and the classes that the principal chose to have us observe. Of the 15 schools that were visited, 9 had begun implementation of the reforms and 6 schools had not yet begun. Of the thirty classes that were observed by the research team, twelve were already officially implementing the new curriculum reforms.
**Quantitative data**

Items from the linked student, household, teacher, and principal questionnaires from wave 2 of the Gansu Survey of Children and Families (GSCF) are used to look at student perceptions of classroom interactions and the teacher-student relationship, and to analyze the extent to which these reports differ between schools where the new reforms are being implemented and schools where they are not. The GSCF is a unique data set providing a rich source of information about children’s health and education outcomes. It uses a four-stage stratified random sample: first counties were selected, then townships, then villages and finally children. Wave 1 of the GSCF was conducted in the year 2000. The main sample consisted of 2,000 children aged 7-12. In wave 2, the oldest sibling (over the age of seven) of the sample child was added to the sample. In this paper, I restrict my analysis to data collected in primary schools which results in a sample size of 961 children in 137 schools.

All of the dependent variables are dichotomous student reports of classroom processes: teacher lecture, the prevalence of discussion in the classroom, and the teachers’ use of praise and punishment. Logistic regression models suited to the analysis of binomially distributed dependent variables are fitted for each of the outcome variables. Furthermore, as the student data in the Gansu Survey of Children and Families is clustered within schools, multilevel logistic regression models are used. Using the Stata command *gllamm*, I fit a model that has both a random intercept term and random coefficients for the two student level variables, gender and grade. See Rabe-Hesketh and Skrondal (2005) for a detailed presentation of the use of this command.
Table 2 shows descriptive statistics for variables used in the quantitative analysis. Student level descriptive statistics were calculated using individual level data. School level descriptive statistics were calculated using school level data from principal reports as well as from teacher reports aggregated to the school level.

[Table 2 about here.]

1. Dependent variables

The dependent variables are based on student responses to the following five items:

Role of the teacher and nature of student participation

a. Teacher lecture: “In class the teachers usually talk and we listen.”
   (disagree=0, agree=1)

b. Class discussion: “We usually have lively discussions in class.”
   (disagree=0, agree=1)

Classroom atmosphere and the teachers’ use of praise and punishment

c. Teachers’ use of praise: “As long as I try hard to learn the teachers will praise me.” (disagree=0, agree=1)

d. Students feel liked by the teachers: “The teachers like me.”
   (disagree=0, agree=1)

e. Teachers’ use of punishment: “Have you been hit by the teacher for breaking school rules?” (no=0, yes=1)
2. Explanatory variable: reform implementation status

The explanatory variable is the degree of reform implementation at the level of the school. This variable is measured using a school-level score that is an aggregate of teachers’ reports of the extent of reform implementation in the school. The teachers responded to the question: “What is the status of implementation of the New Curriculum Reforms in your school?” There were four possible responses to this question (on a scale from 1 to 4):

1. We are not yet aware of the reforms.
2. We are aware of the reforms but have not yet begun implementation.
3. We are already implementing a few of the reforms.
4. We are already implementing all aspects of the reform.

There was some within-school variation in response to this question. The new curriculum reforms were implemented only gradually into the schools in the experimental phase of implementation during the period 2001-2005. Teachers in lower grades began full implementation earlier than other teachers and this may explain the ambiguity that was discovered among responses regarding the extent of reform implementation in the schools. However, aggregation of this teacher-level variable to create a reform implementation score at the school level creates a potentially strong indicator of the level of awareness and engagement with the reform implementation within the school.

3. Control variables: school and student characteristics

Three school level characteristics are included in the analysis as control variables. The first is the percentage of the teachers’ yearly evaluation that is dependent on their
students’ examination scores. Every year teachers are evaluated according to a multidimensional rubric that is designed at the county level. In addition to student examination scores, evaluations have relied on observations by the principal and district or county level administrators of teachers’ classroom teaching and the quality of teacher feedback on student homework. Peer and student evaluations are also included in the yearly evaluation score as are factors such as absences from work, teacher research and publication and the moral rectitude of the teacher. Teachers are given a rating of excellent, good, pass or fail for their yearly evaluation. These yearly evaluations have implications for teachers’ promotion through the levels of teacher ranks (Sargent and Hannum, 2005). It is conceivable that in schools where a greater percentage of the teachers’ evaluation is dependent on the students’ examination scores, teachers may be less inclined to use progressive teaching methods in their classrooms.

Given that teaching practices are likely to be heavily determined by the number of children in the classroom, average class-size in the school is included as a control variable. The financial conditions of the school are also likely to impact upon a wide range of other factors that might affect teachers’ classroom practices. This is measured using the schools’ semester expenditure per student on water, electricity and heating, office expenses, lab equipment, sports equipment, library books, teachers’ bonus and benefits, student scholarships, and school maintenance expenses.

Two student level characteristics were included as controls: gender and grade level.
RESULTS FROM THE QUALITATIVE DATA ANALYSIS

Fieldwork revealed a variation in the extent to which teaching methods reflected the reform policy ideals. Classroom observation and teacher in-depth interview data was analyzed along the three analytical dimensions of: 1) teachers, texts and examinations; 2) the nature of student participation; and 3) classroom atmosphere and the teachers’ use of praise and punishment. As a result of the analysis, I placed the classrooms into three main categories: traditional, surface influence of progressive ideals, and progressive. Table 3 summarizes the characteristics of the three categories in the typology. Figure 1 shows the distribution of the allocation of the classroom observations into different categories of this typology.

[Table 3 and Figure 1 about here.]

Traditional classroom

In traditional classrooms, textual reproduction is central. There is an emphasis on exam preparation including much value placed on the one right answer and the memorization of rules and procedures. There is frequent interaction between teachers and students and it is centered on assisting students to gain mastery of the textbook content. Teachers in the “traditional” group tend to state that they do not know anything about the new reforms. The following interview excerpts are illustrative:

Interviewer: Do you think that the ideas of the new curriculum have influenced your teaching?

Teacher: They haven’t influenced my teaching at all. (ZZZ_Tan_T01, paragraphs 80-81)
Teacher Li, a high school graduate, has been teaching for 30 years. He teaches the fifth grade math class at a village school in a beautiful, green and hilly region of Gansu Province. He has not participated in any New Curriculum specific training and he does not profess to know anything about the new curriculum reforms but has the following response to a question about the greatest challenge currently facing teachers:

Currently the greatest challenge we face is the curriculum reform. Among my generation of teachers we use some rather old teaching methods, isn’t that right? Rather old. If you want to reform your teaching practices you must first know how to use the new practices. This is the greatest challenge for my generation. Of course for those teachers who have just begun teaching this is easier. (WSY_Tan_T01, paragraph 59)

By his own admission he uses some “rather old teaching methods.” The lesson observed is focused heavily on the mastery of the material contained in the textbook which they have open on the desk in front of them. They are turned to page 45 which holds the content for the lesson: three sample problems that have already been solved step by step with the answers provided. Teacher Li copies these three sample problems from the textbook word for word onto the blackboard emphasizing the centrality of the written word in the textbook as the core of the lesson (see Figures 2 and 3).
There is an explicit focus on preparation for the examination. Teacher Li begins the lesson by clearly identifying the type of examination problem that is the subject of the day’s lesson: applied problems with fractions and learning when to divide and when to multiply. He asks the class to recite a rule about when you should turn a division problem with fractions into a multiplication problem. The class recites the rule in rather messy unison and the teacher restates it clearly as he has taught it to them and asks them to repeat it once again. This time the class is able to parrot the rule back with military tidiness.

During the lesson, all questions originate with the teacher and all are closed ended questions with a clear answer. Some of Teacher Li’s questions elicit choral responses; others require individual responses, in which case the students raise their hands in accordance with a fixed and formal classroom ritual, with elbow on the desk and palm neatly extended. No choices or options are available to students in the interchange between teacher and student. The constant refrain of the question “Is that correct?” (Dui bu dui?) reinforces an attitude and respect for the one right answer that is required by the examination. The world is neatly subdivided into the correct and the incorrect. In Teacher Li’s classroom all levels of students are rewarded with the opportunity to respond to questions and there is no explicit use of punishment during the lesson that I observed. However, the atmosphere in the classroom is one of stern discipline and praise is used sparingly.

Surface influence of progressive ideals
Twelve classrooms were assigned to the category “surface influence of progressive ideals.” In 6 of these classrooms the teachers are still using the old curriculum materials but in-depth interviews with these teachers reveal the extent to which they have been influenced by the New Curriculum Reform ideals. For example, one teacher who has not begun official implementation shares his enthusiasm for the new materials:

Even though I haven’t taught a new curriculum class yet, I have already seen the books that have been distributed and I think that it is really strange…there is very little content in the books and yet the students can learn very, very much because, first the content makes the students think (dong naojing), second, because mostly the focus is on action, from engaging in real activity we can acquire the knowledge that we want to teach and we want to learn. (WSY_Liu_T01, paragraphs 32-33 and 73)

In 6 of these classrooms the teacher is using the new curriculum materials but the focus of the class is still on mastery of textbook content. In all of these classrooms there is the incorporation of a variety of other activities including classroom discussion, games, competitions, and songs and activities. Frequently the activities become just another means to achieving the goal of textbook mastery. On other occasions the games and songs are not integrated into the content of the lesson but seem to be employed for the sole purpose of enlivening the classroom atmosphere. Most importantly, however, observations of classrooms that show some degree of influence of the New Curriculum reforms bear evidence of an important shift in the nature of classroom discussion. Whereas teacher-student interaction in a traditional classroom is focused largely on mastery of the official and static knowledge contained in the textbook, New Curriculum
classroom discussion draws more on student ideas and opinions and places value on students’ novel and original ideas.

Teacher Zhang is a middle aged female teacher in the central school in the township. This school was one of the earliest schools in the province to begin implementation of the New Curriculum Reform implementation as a provincially designated experimental school. There are over sixty students in Teacher Zhang’s class. Teacher Zhang begins the class by asking students about the research that they did for homework on the topic of war. One student stands up to say that he learned that the United States was at war with Iraq. Another student reports that he learned about the Nanjing Massacre. A third student says that there is war between Israel and Palestine. After each student speaks the teacher repeats what the student has said. There is no evaluation of the comment on the part of the teacher but the tone of voice used by the teacher affirms the comment as a valuable and meaningful contribution to the class discussion.

Student: Afghanistan and Iraq are at war

Teacher: Oh, Afghanistan is at war and Iraq is also at war.

While the thread of discussion reemerges throughout this lesson and student contributions are all valued, the main activity of the lesson consists of different permutations of the students reading and rereading the text out loud. In total, I count that the students reread the text 13 times during the lesson. First, the classroom is full of the messy noise of children reading the textbook out loud to themselves, each at their own pace. Then the reading of the text takes the form of desk-mates taking turns listening to each other read out loud. Students are called upon individually to read the passage to the
whole class. The text is read out loud by the whole class in unison, in groups of four in unison, and by individual groups of four called upon to stand up and read to the whole class. With less than five minutes of class time remaining, the teacher asks the students for their ideas on what they can do to make the world a more peaceful place. About six students volunteer their ideas, which include not saying mean things to people, helping each other, and taking care of their families.

The amount of time spent drilling students in the textbook content in this classroom is striking and seems to indicate a continued reliance and emphasis on textbook mastery. A key difference between this classroom and the more traditional classrooms is the increased openness to hear students’ own understandings and interpretations of the content being learned. The teacher’s attitude validates students’ unique experiences and opinions. The interview that was conducted with Teacher Zhang after class she indicates the extent to which she has been exposed to the ideals of the New Curriculum Reforms:

There are many strong points about the New Curriculum Reforms…in the past students had to always follow the knowledge that was transmitted by the teacher but as we move towards the New Curriculum reforms, students all have their own opinions…and we must think about how to create a relaxed and happy atmosphere. (WLM_Tan_T01, paragraph 126).

**Progressive classroom**

In progressive classrooms teachers not only encourage students to express their own ideas and opinions, but students appear to be viewed as co-constructors of
knowledge. Teachers in this category state that they see a difference in students since the implementation of the New Curriculum Reforms:

The greatest challenge [in teaching] now is that since the new curriculum reforms started I feel that my own knowledge is far too narrow. The new curriculum has already been implemented for three years [in this school], and if I compare these students with the previous cohorts, the thinking abilities of these students…whatever kind of new information they learn they become so cunning and discerning that sometimes some of the students’ questions leave me hanging at the podium with no way to respond…

(WLM_Liu_T01, paragraphs 37-38)

Teacher Du, is a young teacher who has been teaching for 5 years. He teaches grade 2 mathematics at a teaching point school in central Gansu. Teacher Du participates regularly in professional development activities about the new curriculum teaching methods. The activities include frequent visits to events at the central school that is located just a few miles away and is easily accessible by bus. He also watches in-service training programs once a week that are transmitted by satellite to the school computer. In my interview with him, he exhibits a high level of buy-in to the New Curriculum ideologies and speaks with an earnest enthusiasm that suggests a sense of mission about the transformation of his teaching practice and the importance of achieving integration between methods of eliciting student participation with the actual quality of the learning.

All aspects of the New Curriculum reforms from the design, the ideas, all of it is extremely good because they put people at the center, make the all-round development of the individual become the main focus, and also emphasize the cultivation of students’ capacities. But in the actual implementation, some teachers have perhaps misunderstood. They think that the fancier you do things the better, the whole class you just feel that the
students are engaged in so many activities, all kinds of activities and plans but otherwise not very meaningful or completely divorced from any knowledge…perhaps in the process it is easier for teachers to organize activities. (G_Tan_T01, paragraphs 32-38 and 51-52)

Teacher Du does not use a textbook in the lesson that is observed. At the start of the class, students construct shapes of their choice using small pieces of straw that each student has brought with them from home. Some children choose to make a series of triangles, some make squares and some make “pine trees.” (See Figure 4.) They are given one to two minutes to work and they all work efficiently to complete the task. The teacher asks the children to tell him what they have made. All the children in the class raise their hands, eager to be called on and the teacher calls on four to five students.

Student 1: I made some “pine trees.”

Student 2: I made some triangles.

Teacher: You made triangles? Good children! (hao haizimen) You are really great!”

Teacher Du then goes on to ask his students how many sticks they used altogether and asks them to come up with a formula for how to calculate the number of sticks that they used. The students take out their small notebooks and write things like 3+3+3+3+3 or 4+4+4+4+4+4 based on the pictures they had built. Teacher Du gives them about 1-2 minutes to complete the task and then he calls on the students to tell him their answers. He proceeds to write these formulae on the blackboard and this student-generated information then becomes the basis for the lesson.

[Figure 4 about here.]
Teacher Du writes on the blackboard a long list of fours as prompted by a student reporting on the seven squares he had built with his sticks in the allotted time. Teacher Du asks the students to think of a more succinct way to represent the $4+4+4+4+4+4+4$ that was written on the board. Students are allowed to discuss with each other in pairs. They then have several different approaches to suggest and they are invited to the blackboard to share their ideas with the class. One student writes $8+8+8+4$ and another writes “seven fours added together” (qi ge si xiangjia). Each attempt gets a round of applause from the class. After several students have presented their ideas about how to solve the problem, Teacher Du asks the students if they would like to know the way that mathematicians have chosen to represent the seven fours added together. He writes on the blackboard a large $7\times4$. He then asks the students if they have any questions to ask him about what he has just written. Students raise their hands and ask questions such as “Where did the 7 come from?” and “What is the name of the symbol you have written between the 7 and the 4?” In this lesson, interactions are multidirectional and varied. There are opportunities for students to discuss ideas with their classmates and to express ideas and ask questions of the teacher. The structure of the lesson symbolizes a collective process of investigation and knowledge construction.

Summary

Based on an analysis of the classroom observation and teacher in-depth interview data, I conclude that there is variation in teachers’ exposure and awareness of the New Curriculum Reforms and that this variation is strongly related to the nature of the classroom interactions. In schools that have not begun implementation of the reforms, teachers state that they do not know much about them. In schools where reform
implementation has begun, evidence from the interview data suggests that the requirements of the reforms figure heavily into teachers’ lesson planning and pedagogy. The most striking differences between traditional and New Curriculum classrooms are a greater emphasis on student self-expression, a greater valuing of student contributions to the learning environment, and the opportunity that is given to students to attempt to provide diverse solutions to problems. These are accompanied by a noticeable difference in classroom atmosphere. In New Curriculum classrooms the environment is more relaxed with a greater emphasis on the use of praise and encouragement on the part of the teacher.

RESULTS FROM THE QUANTITATIVE DATA ANALYSIS

While the qualitative data gives us a picture of what is happening at the classroom level in a few select classrooms, analysis of the quantitative data attempts to investigate the extent to which we can generalize the conclusions drawn from the qualitative data analysis to the population of rural primary schools in Gansu Province. Table 4 shows results from a set of multilevel logistic regression models. Results indicate a strongly significant negative relationship between the student reports of teacher lecture and extent of implementation of the new curriculum reforms. We can calculate percentage change in odds from the coefficients for reform implementation status shown in the model. In model 1, the odds ratio of a student reporting that the teacher generally talks and the students listen is 52 percent lower for every one point increase in the score of the implementation status variable. Student responses to this question also vary significantly by grade level and class size with students in higher grades being less likely to report that their teachers generally talk while the students listen. Surprisingly, students in larger
classes are also significantly less likely to report that teachers generally talk and students
listen. Perhaps in larger classes more time is spent hearing more of the students talking.

Model 2 does not provide any evidence for significant differences in the
“liveliness” of classroom discussion by reform implementation status. However, the
findings from the analysis of the qualitative data suggest that the nature of the classroom
discussion may be being influenced by the new reform ideals. Discussion in “traditional”
classrooms was found to be centered on getting the right answer, while discussion in
classrooms that have been influenced by the new curriculum reforms tends towards more
open-ended explorations of student ideas and contributions.

Neither does Model 3 provide any evidence for a greater level of teacher praise of
hard working students in schools where the reforms are being more fully implemented.
Classroom observation data does, however, show a striking increase in the teachers’ use
of praise and encouragement in the classroom for all students and not just the hardest
working students. Furthermore, Model 4 provides evidence that students are significantly
more likely to feel liked by their teachers (odds ratio 1.66) with greater level of
implementation reform. This result may suggest a tendency toward a more relaxed
classroom atmosphere and a democratizing of the relationships between teachers and
students. Students are also significantly more likely to feel liked by their teachers in
classrooms with fewer students.

Descriptive statistics show that corporal punishment is still prevalent in the
schools in my sample. Over 12 percent of all students report being hit by the teacher and
over 57 percent of students who report that they violated school discipline also report that
they were hit by the teacher. In spite of the call to make schools and classrooms
friendlier places as a part of the New Curriculum reforms, there is no significant
relationship between my measure of the implementation of the New Curriculum reforms
and student reports of corporal punishment. Female students are significantly less likely
to be hit by the teacher, as might be expected.

[Table 4 about here.]

The results from the quantitative analysis also provide evidence to suggest that
classroom practices in schools that are more fully implementing the new curriculum
reforms may be different from schools that are not. Based on student reports, teachers
who are teaching in schools where the new curriculum reforms are being implemented
appear to lecture less and interact with students in ways that are more likely to make the
students feel that they are liked by the teacher.

DISCUSSION AND CONCLUSIONS

Is the implementation of the New Curriculum Reforms in contemporary China
having an influence on the classroom interactions in primary schools in rural Gansu?
Evidence from this study suggests that it is. Classroom observations of teachers in rural
Gansu suggest that teachers in traditional classrooms are focused on transmitting textual
content to the students through use of lecture and drill, while teachers who have been
influenced by the new norms of teaching and learning promoted by the New Curriculum
reforms are more likely to integrate student experiences and opinions into the classroom
discussions. The use of closed-ended questions posed by the teacher with the aim of
eliciting the one best answer is giving way to more frequent use of open-ended
questioning techniques which encourage a variety of possible responses and the
development of student ideas and opinions. Quantitative analysis of student, teacher and
school-level survey data corroborate these findings and allow for the results to be
generalized a little more widely. Findings suggest that teachers, who are teaching in
schools where the new curriculum reforms are being implemented to a greater extent,
lecture less and are more likely to create a classroom environment where students feel
liked.

The shift towards a more open classroom environment where students’ own ideas
and opinions are welcomed may have implications for students’ attitudes towards
authority and knowledge. Through practice in critical and analytical thinking, an attitude
of passive submission to authority and deference to “official knowledge” may be
transformed into an awareness of one’s own power to be a co-constructor of reality. The
shift towards a more relaxed and encouraging classroom environment may also affect
student motivation and engagement, which has been found to be significantly related to
educational achievement and attainment in rural China (Hannum and Park, 2006).
Classroom environments where students play a more active role and feel cared for by the
teacher have also been found to be positively correlated with academic achievement and
engagement of children in rural areas in northwest China (An, Hannum, and Sargent,
2007).

However, this newest swing of the pendulum towards greater openness and
progressivism will likely also bring with it unexpected trade-offs and controversies.
Traditional teaching practices may be more conducive to the fostering of strong
classroom solidarity through rhythmic chanting, choral response patterns, a strict set of
classroom regulations and the mutual focus of attention on texts, teachers and
examinations. The simplicity of concentrated emphasis on textbook mastery for all levels
of students in classrooms across the nation may have ensured a higher level of equity in educational opportunity. Successful learning in the age of the New Curriculum may be more dependent on the quality of the teacher and access to rich educational resources. The new emphasis on the cultivation of the “high quality” (gao suzhi) all-round individual may also introduce more subjectivity into student evaluations, leading to a greater importance for student cultural capital (Bourdieu, 1977, 1986) and family background characteristics. Furthermore, even as the policy rhetoric calls for a toning down of the examination pressures, competitiveness in the college entrance examination seems to only increase in its ferocity (Yang, 2006). If parents find that students are not getting what they need to pass the examinations in school, they may find alternative after-school options to ensure their children’s success (Chen, 2007).

In summary, the findings presented in this paper support a hypothesis that classroom social interactions are changing in primary school classrooms in rural northwest China as a result of the implementation of the New Curriculum reforms. To the extent that individuals are constructed by the interactions in which they participate, a transformation in classroom social interactions could affect students’ view of how knowledge is obtained and created, their habits of mind, their willingness to consider different approaches to a problem, and the extent to which they dare to think critically and creatively. If this is the case, changes in China’s classrooms could have far-reaching implications for the political, social, economic and cultural order of China.
NOTES


2. There is sharp regional inequality of access to educational opportunity between the eastern coastal provinces and the provinces of the western interior in terms of the quality of educational infrastructure and the processes of teaching and learning (Hannum, 2003; Hannum and Park, 2002; Hannum and Wang, 2006; Postiglione, 2006)

3. There are three general types of primary schools at the township and village level: central schools, village schools and teaching point schools. In general, each township has one central school that has access to greater financial and human resources and some responsibilities for supporting the other schools in the township. Village primary schools are usually complete schools with grades from 1-6 and teaching point schools generally provide the first two to four years of schooling in the village so that young children do not have to travel long distances to the village or central schools.

4. The greater number of Chinese lessons selected reflects the greater number of lessons devoted to language than to mathematics in primary schools in China. According to Wang Xiufang (2003), primary school students in Gansu take an average of 9 lessons per week in Chinese language and only 5 in mathematics.

5. Multilevel models allow for a simultaneous investigation of both school level and student level variation in the outcome variable, and also the school level predictors which, in this study are class-size, curriculum reform, and school financial resources. The different degrees of student level variation are due to omitted school characteristics that can cause correlation between student responses. Omitted school characteristics can lead
to 1) randomness in the model’s intercept and also 2) randomness in the coefficients of the independent variables. The formula below shows a two level model with both a random intercept effect $\zeta_{1s}$ and a random coefficient effect $\zeta_{2s}$. The random intercept represents the combined effect of all omitted school-specific variables that cause the correlation of children’s responses within each school. The random coefficient effect represents the possibility that students’ responses can also be correlated with each other as a result of interactions between these omitted variables and the student characteristics included in the model.

\[
logit \left[ \Pr(y_{cs} = 1|x_{2s}, x_{3cs}, \zeta_{1s}, \zeta_{2s}) \right] = (\beta_1 + \zeta_{1s}) + \beta_2 x_{2s} + (\beta_3 + \zeta_{2s}) x_{3cs}
\]

where $y_{cs}$ is the outcome variable for child $c$ in school $s$. $y_{cs} = 1$ if the child agrees or answers yes to the given statement/question and $y_{cs} = 0$ if the child disagrees or answers no. $x_{2s}$ is a school level variable such as level of reform implementation and $x_{3cs}$ is a variable describing a child $c$ in school $s$ (student gender, for example).

6. For a discussion of surface change vs. change at the level of epistemological belief see James P. Spillane and John S. Zeuli (1999).

7. All names used are pseudonyms.

8. Table 2 shows coefficients in terms of odds ratios ($e^{\beta}$) which are derived from the exponential of the logit coefficient ($\beta$) of logistic regression. To calculate a percent change in odds we can use the formula $100(e^{\beta} - 1)$. See explanation on interpreting coefficients in logistic regression in Allison (1991), p. 28-29.
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BIOGRAPHICAL INFORMATION

Tanja Sargent is Assistant Professor in sociology and education in the Educational Theory, Policy and Administration department at the Graduate School of Education, Rutgers, The State University of New Jersey. Her research interests are in education reform and development in China.
Table 1. Number of classroom observations by grade level, subject, curriculum implementation and school type

<table>
<thead>
<tr>
<th></th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>5</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td><strong>Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Chinese</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td><strong>Curriculum implementation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old curriculum</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>New curriculum</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td><strong>School type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching point (4)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Village (5)</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Central (2)</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 2. Descriptive statistics for variables used in the analysis

<table>
<thead>
<tr>
<th>Variables included in the analysis</th>
<th>Proportion/ Mean (SD)</th>
<th>N (no. of children unless otherwise noted)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Role of the teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- In class the teacher generally talks and we listen (proportion agree)</td>
<td>.32 (.73)</td>
<td>961</td>
</tr>
<tr>
<td>- We usually have lively discussions in class (proportion agree)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Praise and punishment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- As long as I study hard, the teachers praise me. (proportion agree)</td>
<td>.77 (.77)</td>
<td>961</td>
</tr>
<tr>
<td>- The teachers like me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- I have been hit by the teacher for disobeying school rules. (proportion agree)</td>
<td>.13 (.13)</td>
<td>961</td>
</tr>
<tr>
<td><strong>Explanatory variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status of reform implementation in the school (Score on a scale of 1-4, where 1 indicates that all the teachers in school report that the school is not aware of the new reforms and 4 indicates that all the teachers report that the school is undertaking full scale implementation of the reforms)</td>
<td>3.12 (.49)</td>
<td>137 schools</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.41 (.41)</td>
<td>961</td>
</tr>
<tr>
<td>Grade level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>.05 (.05)</td>
<td>50</td>
</tr>
<tr>
<td>-2</td>
<td>.08 (.08)</td>
<td>78</td>
</tr>
<tr>
<td>-3</td>
<td>.16 (.16)</td>
<td>149</td>
</tr>
<tr>
<td>-4</td>
<td>.20 (.20)</td>
<td>196</td>
</tr>
<tr>
<td>-5</td>
<td>.30 (.30)</td>
<td>290</td>
</tr>
<tr>
<td>-6</td>
<td>.21 (.21)</td>
<td>198</td>
</tr>
<tr>
<td>Percent of yearly teacher evaluation that is determined by students’ examination scores</td>
<td>.59 (.59)</td>
<td>140 schools</td>
</tr>
<tr>
<td>Class-size</td>
<td>37.3 (13.84)</td>
<td>137 schools</td>
</tr>
<tr>
<td>Semester’s expenditure per student (Yuan)</td>
<td>56.77 (127.06)</td>
<td>134 schools</td>
</tr>
</tbody>
</table>
Table 3. Typology of teaching styles in the early years of the new curriculum reforms

<table>
<thead>
<tr>
<th>Classroom characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional</strong></td>
</tr>
<tr>
<td>• Textual reproduction is central</td>
</tr>
<tr>
<td>• Emphasis on exam preparation and getting the one right answer</td>
</tr>
<tr>
<td>• Emphasis on memorization of rules and procedures</td>
</tr>
<tr>
<td>• Classroom discussion is focused on the one right answer</td>
</tr>
<tr>
<td>• A common method is to invite individual students to solve problems or write sentences at the blackboard while the rest of the class work in their exercise books followed by an analysis of the correctness of the work of the students at the board</td>
</tr>
<tr>
<td><strong>Surface influence of progressive ideals</strong></td>
</tr>
<tr>
<td>• Focus of the class is still on textual reproduction.</td>
</tr>
<tr>
<td>• Continued emphasis on memorization of rules and procedures and the one right answer.</td>
</tr>
<tr>
<td>• Greater openness to student ideas and opinions in the classroom discussion.</td>
</tr>
<tr>
<td>• A greater variety of classroom activities (for example games and songs) that are sometimes poorly integrated with the content of the lesson or are merely additional ways to achieve drilling in the textbook content.</td>
</tr>
<tr>
<td>• Deliberate use of praise and encouragement.</td>
</tr>
<tr>
<td><strong>Progressive</strong></td>
</tr>
<tr>
<td>• A shift in teachers beliefs about the source and nature of knowledge.</td>
</tr>
<tr>
<td>• Instances of genuine open-ended classroom discussion where students are engaged in investigations of real questions and are encouraged to see themselves as co-constructors of knowledge.</td>
</tr>
<tr>
<td>• Students are encouraged to express their own ideas and understandings. Different responses to the same question are valued.</td>
</tr>
<tr>
<td>• Frequent use of small group work where students have the opportunity to interact with each other.</td>
</tr>
<tr>
<td>• Deliberate use of praise and encouragement.</td>
</tr>
</tbody>
</table>
Figure 1. Distribution of types of teaching practice by implementation of new curriculum.

<table>
<thead>
<tr>
<th></th>
<th>Old curriculum</th>
<th>New curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Surface</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Progressive</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
**Figure 2.** The textbook is open on the desk in front of each of the students. The content on the page on the right constitutes the content of the entire forty minute lesson. It consists of three example problems with the questions, the procedure for how to tackle the question and the answer. The teacher leads the students through an analysis of the type of problem that these questions represent and how to go about solving them and answering them with the one right and perfect answer.
Figure 3. Even though each student has the textbook open in front of them on their desk (see Figure 2) the teacher proceeds to copy the text from the textbook exactly onto the blackboard.
Figure 4. Students used small pieces of straw that they have brought from home to construct shapes of their choice.
Table 4: Relationship between teaching practices and reform implementation-- Multilevel logistic regression models with random intercept and random coefficients for student level variables

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher talks students listen</td>
<td>0.476 (0.091)***</td>
<td>1.218 (0.238)</td>
<td>1.440 (0.367)</td>
<td>1.658 (0.319)***</td>
<td>0.886 (0.346)</td>
</tr>
<tr>
<td>Lively classroom discussion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I work hard teacher will praise me</td>
<td>0.998 (0.003)</td>
<td>0.998 (0.004)</td>
<td>0.997 (0.004)</td>
<td>1.003 (0.004)</td>
<td>0.998 (0.007)</td>
</tr>
<tr>
<td>Teacher likes me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporal punishment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reform implementation status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of teacher evaluation based on student exams</td>
<td>1.001 (0.002)</td>
<td>1.004 (0.003)</td>
<td>1.000 (0.001)</td>
<td>1.004 (0.002)</td>
<td>0.998 (0.003)</td>
</tr>
<tr>
<td>Semester’s expenditure per student</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class-size (10s of students)</td>
<td>0.840 (0.056)***</td>
<td>0.867 (0.060)**</td>
<td>0.979 (0.086)</td>
<td>0.843 (0.060)**</td>
<td>1.062 (0.149)</td>
</tr>
<tr>
<td>Female</td>
<td>1.061 (0.178)</td>
<td>0.773 (0.128)</td>
<td>0.791 (0.154)</td>
<td>0.925 (0.160)</td>
<td>0.258 (0.138)**</td>
</tr>
<tr>
<td>Grade level</td>
<td>0.776 (0.058)***</td>
<td>0.986 (0.058)</td>
<td>0.871 (0.062)*</td>
<td>1.059 (0.069)</td>
<td>1.265 (0.190)</td>
</tr>
<tr>
<td>Observations</td>
<td>936</td>
<td>936</td>
<td>936</td>
<td>936</td>
<td>936</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%