Culture, Cognition, and Pedagogy: Evolving A Discourse of Possibility

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Культура, познание и педагогика: раскрывая дискурс возможного

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В статье поднимается вопрос об особенностях когнитивного развития детей из бедных районов Индии. По утверждению автора, в современных науках о человеке по-прежнему господствует мнение, будто дети из семей, принадлежащих к низшим слоям общества (и к притесняемым этническим группам), заведомо отстают в когнитивном развитии от своих сверстников из более благополучных семей. Исследование, представленное в статье, ставило своей целью выяснить, правомерны ли подобные утверждения. Для этого были собраны данные, характеризовавшие образ мышления работающих детей 10—14 лет, не посещающих школу: информация об уличных играх этих детей, о том, как они справляются с заданиями в видеоиграх (это распространенное среди работающих детей развлечение), об их стратегиях в решении повседневных задач, а также о специфике их математических познаний. Опираясь на теорию деятельности, культурно-историческую психологию, теорию практики и постмодернистские концепции знания и образования, автор анализирует полученные данные и приходит к выводу, что, хотя когнитивное развитие работающих индийских детей и обладает своей спецификой, говорить о запаздывании или отставании в развитии было бы в корне неверно.

Ключевые слова: когнитивное развитие, этноцентризм, игра, школьное обучение, теория деятельности, культурно-историческая психология, теория практики, постмодернизм.

The Context

Non-negotiable agenda of any contemporary psychological theorizing should be to promote human dignity and dismantle the theoretical constructs that affirm the existing social order. However, it is well documented that empiricist-positivist methodology was originally designed precisely to make social transformation and equalization difficult. Research projects are conceptualized to substantiate the prefigured ethnocentric deductions that till today continue to hold, 'those people suffer from general cognitive deficits as a consequence of cultural inadequacies'. Evidences can be garnered to substantiate that mainstream psychological theorizing is still elitist and skewed against the non-Caucasian modes of thought and social relations. For instance, Galtonian axioms are *still* sought to justify the prevailing social distribution of cognitive and personality traits across class, gender, and ethnic groups.

Rise and support to the IQ testing movement further edged out the humanity from the agenda of psychological and educational theorizing. Contextualist voices pointing at the erroneousness of the IQ tests in equating cultural *difference* with cultural *deprivation* were muzzled by the political declarations of the positivists that children of the lower classes and the despised ethnic groups share and perpetuate the mental characteristics of their classes and groups, while children of the superior classes and favoured ethnic groups share and reproduce the traits of theirs. (Joravsky, 1989; Cole 1996). Widespread endorsement of Herrnstein and Murray's *The Bell Curve* further consolidates the unabated continuance of the racist ideology in contemporary human science theorizing. Feuerstein and Kozulin (1995) strongly contested the veracity of such socio-politically motivated claims: «to present intelligence in this reified way — as a concrete stable quantity — is a scientific anachronism». Challenging *The Bell Curve's* pessimistic prognosis, they advocate that intelligence is a propensity, a tendency or the power of the organism to change itself to adapt to a new situation. It is multi-dimensional, modifiable and amneable to change, the very qualities that have enabled humans to adapt so effectively to a multitude of environments. Reifying psychological phenomena not only disavow the possibility of social change and transformation, but also serves the rightist agenda of maintaining existing social hegemony.

However, what is more worrying is that in its most frightening form, such spuriously generated myths not only tend to get legitimized at the national policy level but continue to have wide-ranging bearing on political ideology, social reform and praxis, and educational theorizing. It erroneously interprets the education problems of failing children of the poor and working classes in terms of competencies or incompetencies of children, not inadequacies or adequacies of schools and other societal institutions, national educational policies and goals. Projected crises in the successive public budgets can further attest the diminishing economical support to the social welfare policies of the State, including that of the provision of public education for underprivileged or excluded groups, and hence the unequal access to accompanying opportunities of upward mobility from birth to achievement criteria in determining status and life chances.

Locating 'Subject' in Social Theorising: Evolving a Discourse of Possibility

Most of the officially sponsored and available studies tend to reduce the working child1 to a socially disempowered 'non-actor', a deterministic product of statistical combination of hereditary and environment, instead as an active agent and self- conscious organizer of his socio — economical conditions. The present research study was conceptualized to construct a more encompassing social theory that can be developed in a chain of interconnected conceptual propositions like: that in order to gauge how working children behave, think, and act, 'they' should be regarded as legitimate subjects in their own right and not in comparison with their superiors and norms; analysis should be grounded in the subjects' 'life — spaces' — in their homes, schools, streets, and working places; working children are active agents in their own development; mind emerges in the joint activity of people and is an important sense, 'co-constructed'; and any critical theory of education in its explanatory framework should create space for transaction of education processes that legitimizes rather marginalizes the working children's lived — world. Implicit in the social construction of experience is the 'discourse of possibility' that offers hope for emancipatory forms of social research that could eventually lead to a more egalitarian and democratic social order. For then, each human being is a source of cognition, of conscious relation, and of action, all of which constitute the central characteristics of subjectivity.

The more pressing strategic need in the discourse of possibility is to develop theoretical frames and research methodologies to comprehend the complex inter relationships of all aspects of human cognitive engagement with their worlds. If thinking is produced in practices, we need to understand what practices are and how participation in social interactional processes promotes individual knowledge production. To achieve this, two bodies of work were drawn upon: Vygotsky inspired Cultural-Historical Activity Theory (Cole, 1996; Engestrom, 1999; Leont'ev, 1981; Scribner 1984; Wertsch, 1981) and Lave's notion of Practice Theory (Lave, 1988, 1991) as grounded in critical anthropology and informed by Bourdieu (1977, 1984). Combining of these two mutually informing perspectives has provided an enhanced theoretical language for studying cognition as it gets culturally and socially constructed (Fig. 1).

Activity Theory: Cultural-Historical Activity Theory (CHAT)[2] is an interdisciplinary approach to human sciences that has its threefold historical origins in classical German philosophy (from Kant to Hegel), in the writings of Marx and Engels, and in the Soviet Russian cultural-historical psychology of Vygotsky, Leont'ev and Luria. It is fundamental to activity theory that the relation of individuals to every aspect of the world around them is essentially societal. Focus is on the societal nature of the human individual, as distinct from the social. Leont'ev elaborated upon human societality by stating that «in studying development of the child psyche, we must ...start by analyzing the development of the child's activity, as this activity is built up in the concrete conditions of its life (Leont'ev, 1981, p. 395). The societal nature of the individual human being, as engaged in cultural practices constitutes the *concrete conditions of life*. This approach necessitates shift in focus from either the individual or the larger social context to an activity system that allows an examination of the inter relationship between the individual and the cultural setting. With culturally organized *human activities* as the primary unit of analysis, social settings are not viewed as discretely circumscribed phenomena but instead occur as a part of interwoven social phenomena that occur in the moment and across time and space (Gutierrez et al., 1995; Putney et al., 1995). Engestrom (1987, 1999) has defined activity system as a social practice that includes the norms, values, division of labour, and goals of the community.

Another essential tenet of the cultural-historical school is that the process of the historical development of human behaviour and the process of biological evolution do not coincide; one is not a continuation of the other. Rather, each of these processes is governed by its own laws (Cole, 1999, p. 90). For Valsiner (1989), «the *historical* portion of the label cultural — historical refers specifically to the developmental nature of all psychological phenomena«, along with the recognition that historical thinking implies a connection not just with the past, but with the present and future as well (p. 60). In addition, the forms of activity associated with labour, as well as the resultant material conditions of the encapsulating context, serve to situate development. For Portes and Vadeboncoeur (2003), «the *cultural* portion of the term refers to the dialectical nature of instrumental human activity, in particular, the way in which people act upon their social contexts aided by cultural tools« (p. 374). Action is thus dialectical and shapes the environment while it transforms human development across various fields and contexts.

Practice Theory: Lave's (1988) social practice theory symbolizes a struggle against the academic posturing of

the mainstream individualistic psychology that is entrenched in mind-body dualism. Viewing the world of a person's ideas, beliefs, and (intellectual) knowledge as autonomous — essentially disengaged from their bodily (i.e., lived) experience, and hence from their socio-cultural context---- provides broadly for a devaluing of lived experience in favour of 'higher' (abstracted) contemplative activity (Kirshner and Whitson, 1997). Lave offers a cogent critique of conventional cognitive theory by moving out analysis of cognitive activity from laboratory into the domain of everyday-life. The result is a new way of understanding human thought process, a view of cognition as the dialectic between persons-acting and the settings in which their activity is constituted, a subtle interaction that shapes both the human subject and the world within which it acts. Knowledge-in-practice, constituted in the settings of practice shaped by rich experience generated over time, is the site of the most powerful knowledgebility of people in the lived-in world. Practice theory, in short, suggests a different approach to cognition and to schooling than that entailed in individualistic functional — schooling theories, educational ideologies and cognitive theory.

Practice theory has eclectic roots in the work of Marx, Bourdieu, Sahlins, Giddens and other critical social theorists and anthropologists. Theorizing about social practice, praxis, activity, and the development of human knowing through participation in an ongoing social world is inspired by Marxist tradition in social sciences. Lave has further advanced the discourse with the infusion of Bourdieu's central organizing principles of capital (accumulable social-symbolic resources), field (the arenas of social life and struggle), and habitus (embodied social structures).

Thus expanded framework entails a crucial possibility to break from the dualisms that have kept persons reduced to their minds, mental processes to instrumental rationalism, and learning to the acquisition of knowledge. For Lave and Wenger (1991), a theory of social practice emphasizes that «learning, thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world. This world is socially constituted, objective forms and systems of activity, on the one hand, and agents' subjective and inter-subjective understanding of them, on the other, mutually constitute both the world and its experienced forms. Knowledge of the socially constituted world is socially mediated and open ended« (p. 51). Emphasis is on the inherently socially negotiated character of the thought and actions of persons-in-activity. This implies that understanding and experience are in constant interaction- indeed, are mutually constitutive.

Postmodernism, Knowledge and Education: Streaks of the postmodernism constructs can be visualized in the theorizaton of knowledge construction as explicated in the practice theory. However, juxtaposition of the postmodernism ideas into the social practice theory is *provisional* and needs to be treaded with caution. Bauman (1992) while critiquing the universal rationality, knowledge and truth of modernity had agued that «the postmodern perspective reveals the world as composed of an indefinite number of meaning-generating agencies, all relatively self-sustained and autonomous, all subject to their own respective logics and armed with their own facilities of truth-validation. Their relative superiority may be argued solely, if at all, in pragmatic and overtly self-referential mode, with no claim to supra-communal authority« (Bauman as quoted in Usher and Edwards, 1994, p. 198). According equal value to the experiential and learning engaged in as part of everyday life, knowledge validation cannot be judged merely in the valency of what is 'right' or 'wrong' learning; all is contingent on an individual's situatedness in the social formation and the sense an individual brings to and appropriates from it, their con-text, pre-text and sub-text. There is no single, ordered view of the world to be imparted, but multiple 'realities' to be constructed through an already interpreted experience (Usher and Edwards, 1994).

Need is to reconfigure discourses in social science that tend to underplay what Foucault called 'subjugated knowledges' or local, unelaborated knowledge and experience because it was considered as having failed to pass the test of universality and scientificity. Knowledge constructed through participating in practices at work place is an instance of a 'subjugated knowledge'. From disciplinary standpoint, this knowledge is judged as anecdotal, situationally-specific (and hence ungeneralisable), lacks scientificity and thus not worth researching about. In other words, practitioner knowledge is excluded from the agenda of mainstream theorizing.

Education as a social-cultural structure and process, in all its various forms, intimately connected with the production, organization and dissemination of knowledge tends to uncritically accept assumptions grounded in the modernist discourse. Even within this modernist perspective where education is seen as inherently emancipatory and empowering, it is unwittingly becoming the site of social control through its 'uniform view of schooling'. According to the uniform view, as much as possible all students should study the same subject matter, that ought to be conveyed in the same way to all students and progress in school ought to be assessed by formal tests administered under uniform conditions (Gardner, 1999). This homogenized view of the practice of education, its theorization, structures and processes based on only one perspective or mode of rationality needs to be contested.

Henry Giroux (1988) and other critical education theorists have maintained that schools can become institutions where forms of knowledge, values, and social relations are taught with the objective of educating young people for critical empowerment rather than subjugation. He criticized Marxist scholars like Samuel Bowles and Herbert Gintis for their view that schools are capitalist agencies of social, economic, cultural, and bureaucratic reproduction. From Girouxian perspective, schools could become sites of resistance and democratic possibility through concerted efforts among teachers and students to work within a liberatory pedagogical framework (Kincheloe and Mclaren, 2000).

• Activity theorists (Engestrom, Leont'ev)
• Situated Cognitists (Brown et al, Forman, Minick and Stone, Pea, Salomon)
• Vygotskians (Cole, Davydov, Kozulin, Scribner, Van der Veer, Wertsch)
• Post Modernists (Derrida, Foucault, Lacan, Lyotard)
• Practice Theorists (Bourdieu, Giddens, Lave, Wenger, Walkerdine)

Fig. 1. Zone of theorizing subject: A critical social theorist perspective

An Interpretive Framework: Essential Features

Need is to strategically blend theoretical constructs from the Activity and Practice theories to create a theoretical platform that can further advance the understanding of learning and knowledge as processes that occur in a local, subjective and socially constituted context. Social construction of knowledge has implications for how one views the nature of knowledge, the context of learning and the assessment practice. The resultant syncretic framework, having postmodern moments then, is dependent upon a rich theoretical network that evolves from the goodness of fit between proposed theoretical constructs and the complexity of social phenomena. (Gutierrez and Stone, 2000). This goodness of fit allows us to examine naturally -occurring cognitive activity not as it appears through isolated mental tasks, but as it unfolds in situ, functions in the larger, purposive life activities that are carried out in constant interaction with social and material resources and constrains. This syncretic perspective allows us to move across and within various levels of analysis in the *activity system*. The crux of the synthesis is that it recognizes individuals in all of their complexity, while simultaneously crediting the intrinsically social nature of cognition and learning. Essential tenets of this interpretive framework are:

• Child-In-Activity-In-Context is the unit of study. There is a strategic shift in focus from the child as the unit of analysis towards the view that child-in-context participating in some event is the smallest meaningful unit of study. The social-cultural-historical context defines and shapes any particular child and her experience. At the same time children affect their contexts. The child and the context are mutually co-constitutive or dialectically related. The context is conceptualized as a system of nested structures, ranging from the immediate face-to-face interaction with another person to general all encompassing cultural practices. Cultural practices are meaningful activities that occur routinely in everyday life and are widely shared by members of the group. Culturally organized human activities are enduring, intellectually planned sequences of actions that are directed towards specific objective. They can be analyzed on a molar level---as for instance, artistic activities, work activities, play activities and they can also be analyzed in terms of their lower levels --- the goal-directed actions that constitute them or the specific operations by which actions are carried out (Scribner, 1985/1997).

• The economic practices determine children's working conditions and social interactions, which is turn influence their cognitions. In this formulation, thinking is no longer located exclusively within the human subject. It is distributed across minds, persons, the symbolic and physical environments, the social and economic practices. The whole activity system constituting the subject and the available cognitive tools realizes the thinking process. The economic collectivist principal of shared goods is paralleled by socially shared cognition.

• Rather than a single, universal and invariant mode of rationality, there is a need to see rationality as having many forms, validated in many different human practices. We are all producers of knowledge, but through participation not disengagement. Knowledge generated from a wide number of sources, including everyday life should be accorded equal status. Work is an educational site in which pedagogical and learning practices have always taken place.

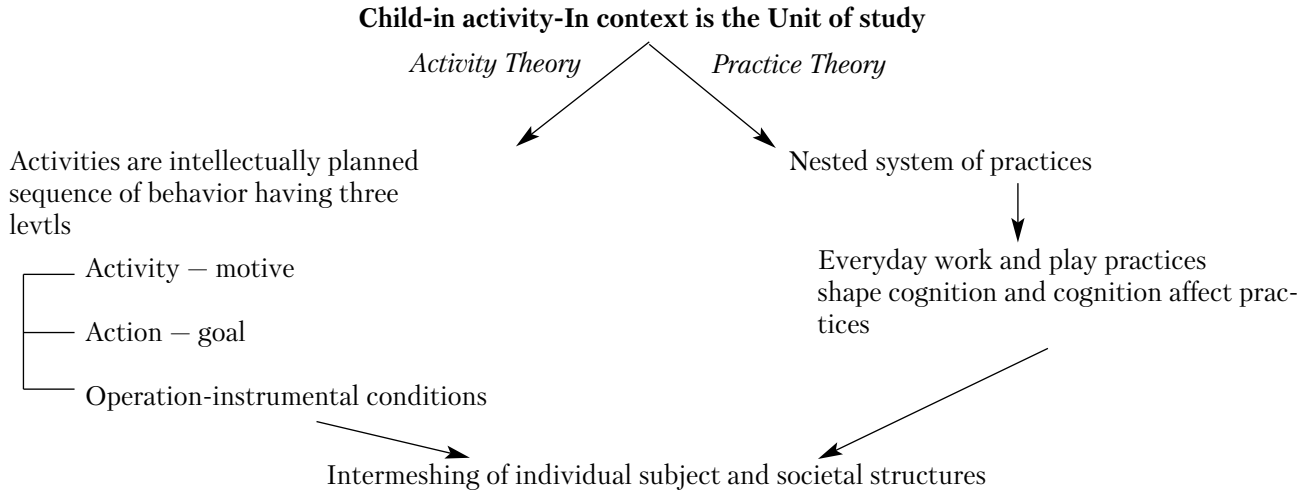

Fig. 2. Syncretic framework emphasizing the dialectic character of work practices and cognition in the socially constituted lived-in activity system

The Project: Site, Participants and Method

The study is localized at Jehangirpuri, one of the biggest cluster of slums at outskirts of the North Delhi. Inspite of a fairly good accessibility to education in terms of availability of state schools, incidences of educational failure, non-enrollment, school exclusion, and children engaged in labour activities of various sorts are alarmingly high in Jehangirpuri. The socio-economic identity of these children is not difficult to discern: they are children of landless agricultural labourers, subsistence peasants, village artisans, urban workers, employed in household industries, informal jobs and building construction activities. Generally, the basic earnings of a family are insufficient to cover even the most basic daily subsistence needs, let alone saving for unexpected emergencies. Thus, many children resort to informal work practices whenever the economy of the household needs them.

Over the years, the Jehangirpuri has become the dumping-site for refuse generated by the nearby commercial and industrial set-ups. Hence, the most preferred work practice for children is selling the scrap collected by scouring through the streets and dumping-sites. Scrap-selling entails many advantages over the other work-practices: an instant generation of much needed cash, its unskilled nature, convenient timings, investment and stake free practice, an abundant availability of raw material i.e. refuse, and an allowance for an occasional, free-willed, or limited engagement. Because of these features, this work activity can be undertaken with the schooling. However, a sizable number of children never survive the schooling beyond grade-two.

There are two polarized thoughts of school on why child works and forgo schooling. The *poverty* school views child work as primarily a family's response to poverty and hence no space for schooling processes. The *education* school views a dysfunctional education system as the main hazard in the way of schooling.

The study attempted to empirically contest the most widely held a-priori notions like: working children lag cognitively and hence are incapacitated to benefit from formal schooling; institutional arrangements (such as schools) are the only sites to inculcate legitimate knowledge, and practical knowledge produced and acquired at work place is different, inferior by the normative standard of the social science theorizing. By combining ethnographic studies with simulated experiments across settings, framework of this prototypic research was designed to create data sets that describe life trajectories of working children in terms of their relationship among cognitive development, indigenous literacy, schooling, and work practices.

The study generated the data to explain thinking patterns of out-of school, working children (10 to 14 years old) in the context of nature of street games played by them; their ability to solve algorithms in the video-game mode; problem solving strategies used in everyday reasoning; and to map the characteristics of working children's mathematics. Data was obtained by employing quasi-experimental research methodology that entailed ethnographic analyses of naturally-occurring cognitive activity as manifested by working children in their engagement with socio-economic practices, combined with experimental cognitive tasks designed according to analyses of socio-economic practices. Children were tested on practice-related mathematical problems that are meaningful and relevant to them, something significant for their daily survival. A preliminary analysis of data is being attempted to unfold the cognitive, educational, economical and socio-spatial dynamics of working children in the complex nested systems of social processes, and the social order as a whole.

Data Analysis and Result

Mathematics as a social construction

The study is guided by a basic assumption: Working children's participation in economic practices creates a context for children to construct their own understand-

School Mathematics ***Unitary Method***	**Working Mathematics** ***Units and Method devised by children***
Example 1: If 1 kg of Iron Scrap costs Rs. 15 Find the cost of 4 kg **Solution:** Cost of 1 kg Iron = Rs. 15 Cost of 4 kg Iron = 15 × 4 = Rs. 60	**Solution Example 1:** Rs. 50 is equal to 3 kg of Iron +Rs. 5 Rs. 20 is equal to 1 kg of Iron +Rs. 5 => 4 kg of Iron = Rs. 50 + 20 - 5 - 5 = Rs. 60
Or alternatively	**Example 2:** How much money will be obtained By selling 8 kg of Paper scrap @ Rs. 5.25 per kg
Question: Cost of 7 kg of Iron Scrap is Rs. 105 Find the cost of 4 kg of Iron **Solution:** Cost of 7 kg = Rs. 105 Cost of 1 kg = Rs. 105 + 7 = Rs. 15 Cost of 4 kg = Rs. 14 × 4 = Rs. 60	**Step 1**: Rs. 20 appro[imates 4 kg of Paper Rs. 20 appro[imates 4 kg of Paper **Step 2**: 25 + 25 + 25 + 25 = Rs. 1 25 + 25 + 25 + 25 = Rs. 1 **Step 3**: Rs. 20 + 20 + 1 + 1 = Rs. 42

Table 1: School mathematics versus Working mathematics
Legend: Kg — Kilogram; Rs. — Rupee: the basic monetary unit of the Indian currency.

ing of what counts as mathematics. To examine mathematics as a social construction, children's actions spread over all artifacts constructed on that day (for particular students) were documented. This was enabled by an intensive period of participant observation that was undertaken that day, followed up by focused periods of data collection across distinct phases of activity. Through data analysis, an attempt was made to identify what meanings, processes and forms count to working children, how they construct form, process, and meaning; and how meanings are related to, and constituted by, the forms of interaction constructed (Putney et al., 2000).

'Scrap-gathering' practice has three distinct activity phases: sourcing, sorting and selling. During the *sourcing* phase, the children scour through the trash in garbage-dumping sites and collect an assorted mass of scrap items that are saleable. During the *sorting* phase, the undifferentiated collected refuse is organized into groups as per the market specification entailed in their sale-ability. For instance, the plastic refuse is further organized into: plastic bottle (cosmetic/drink/medicines), plastic tubes and pipes, plastic parts obtained from white goods, polythene packaging. During the *selling* phase, the specifically organized items are sold to a scrap dealer at the prevailing market rate.

The study further supports the researches on everyday math initiated by Acioly and Schliemann (1985), Carraher, Carraher, and Schliemann (1982-1983), de la Rocha (1986), Lave (1988), Saxe (1989,1994) and Scribner (1984). However, what is intriguing in the present study is the ability of working children to devise their own units for calculation. These devised units are grounded in the organization practices of their work rather than in the domain of mathematical specificity.

To elaborate, working children tend to peg the value of scarp to be sold to the scrap dealer in terms of the currency bills of denominations of Rupees (Rs.) 10,20,50 and 100 rather than cost calculated on the basis of rate per unit. For instance, iron scrap gets sold @ Rs. 15 per kg. For children, rate per unit is not the calculating unit, rather the currency bills of denomination of 10,20,50 and 100 are the benchmarking units against which the scrap is to be sold.

These examples illustrate that ballpark strategies devised by working children entail calibrating their measuring unit in terms of the money value of currency bills against which the value of scrap is to be assessed. This ability of 'mathematizing' the problem and a ballpark sense of its solution lie in the socio-economic compulsions and context of the children. When availability and management of economic resources is the constant pressing problem, money value then tends to become the more tenable unit to trade goods. How much wheat flour, rice sugar or tea can be procured in Rs. 20 makes more sense then calculating cost in terms of rate per kg. of essential commodities. This is in sync with Lave's (1990) view that «when people own problems about quantities and their relations, they act to relate them in ways that make sense within ongoing activity. They do not 'pop out' to represent them in mathematical formulas, which furnish only an impoverished representation when the world is available as a 'model' of itself» (p. 27). In this formulation, knowing and doing mathematics is an inherently social and cultural activity entailing both a process of active individual construction and a process of enculturation. Mathematical learning occurs as students develop effective ways to solve problems and cope with situations.

From this perspective, there is a basic structural difference between formal, academic thinking and practical thinking at work. Textbook notion of school mathematics is essentially that of a domain — specific algorithmic competency concerned with abstract conceptualization of number, quantity and space. However this research suggests that quantitative relations are constructed inventively and effectively in everyday situations. Working children's ability to free themselves from rules, and to invent flexible strategies stands in sharp contract to the kind of 'schooled' thinking exemplified in the use of a single algorithm to solve all problems of a given type.

Play and its cognitive consequences

For Vygotsky, play is not the predominant feature of childhood but it is a leading factor in development. Through play, a significant shift is engineered in child's thought process that consequentially gets changed from predominance of the imaginary situation to predominance of rules in the development of play itself. This tantamounts to internal transformation in the child's cognition development that essentially moves the child forward. The defining character of play is that at the end of development, rules emerge, and the more rigid they are, the greater are the demands on the child's application and regulation of activity. It is incorrect to conceptualize play as an activity without any meaning as simply running around without purpose or rules does not appeal to children. For Vygotsky (1978, p.103), «a complex of originally undeveloped features come to the fore at the end of play development ---features that had been secondary or incidental in the beginning occupy a central position at the end, and vice versa». Thus, play contains all potential tendencies in a condensed form and is itself a major source of cognitive development.

Play is a social activity in which human relations are essential and are expressed together with peers. It paves the way for the child's transition to a new level of development (Leont'ev, 1981, p. 369). All three mediating factors, that is, tools, signs, and other people are active in the child's play activity. Children are engaged in an interaction with peers and adults; they use tools and artifacts, and represent the culture through signs and symbols. From this perspective, in play children raise the demand on themselves and with that bring themselves into the zone of proximal development (zpd). Play's context raises children's action to a more advanced level, which in turn initiates a new process of development. For Vygotsky (1978, p.96), «the development from games with an overt imaginary situation and covert rules to games with overt rules and a covert imaginary situation outlines the evolution of children's play».

In play activity, children often overshoots the current contextual frame. Children not only appropriate the social surrounding world, but they also make unexpected creative changes (Brostrom, 1999). Observations of play indicate that children not only adopt to and internalize the local institutional culture but expand beyond it as well. Through this activity new knowledge, skills, and actions often emerge. According to Engestrom (1987), this kind of activity is dramatic and radical for the future life of the individual; it is a turning point, a revelation. Engestrom calls this kind of learning activity *learning by expanding*. It takes shape as if it is a «voyage through the zone of proximal development» (Engestrom, 1987, p. 175).

Bagh — Bakri (Tiger — Goat): the street-game

With this conceptual background, an attempt is made to analyze the defining features of the rule-bound game activity — Bagh-Bakri scripted by the working children. The game is played on a ground and its contours are sketched by a chalk (see figure 3). The game contour is punctuated by 36 holes, where the marbles rest. Two players can play the game with each player's home at star base, each having 18 same-coloured marbles.

Rules: The goal is to move all marbles of your colour from your starting point to the positions on the opposite side. A marble can move by rolling to a hole next to it or by jumping over one marble, to a free hole, along the lines connecting the hole. The player can make several jumps in a row, but only one roll. The player cannot both roll the marble and jump with it at the same turn. When the player has moved one of his marbles, the turn passes on to the next player. Since it is allowed to make several jumps in a row, it is *strategically* important to make it happen. By building structures for the marbles to jump on, it is possible to quickly move a marble to the opponent's side. The ability to recognize the opportunity to make a long jump is critical for playing a good game.

In this turn-based game, when one player had made his move the other player has some time to think before making his move. The value of each possible move is calculated and the move that gives the best result is selected. For instance, it is equally important not to leave any marbles behind when the others have been rolled ahead. The marbles left behind will need more turns to cross as their opportunities to make long jumps will be fewer.

Scripting and playing this rule-based game is a no mean cognitive act for out-of-school children. It signifies an intricate organization of thought processes in which abilities to think algorithmically, strategies for planning and making a successful move, and construction of complex rules have come into an active play. It is in the context of play that a dialectic engagement with others, artifacts and symbols has led to the emergence of a higher level of cognition.

Cognition in video-game setting

For recreation, the working children frequently visit the video-game parlours. Working children's engagement with video-games further supports the claim about sophisticated facets of their mental processes. The ability to manipulate and transform symbols into a rule-bound cognitive form propels children further in context of video-game and cognition entailed in it, i.e., levels-of-difficulty in video-game tends to engineer corresponding levels-of higher mental organization. From this perspective, video-game creates a zone of proximal development for the child. Children try out various rules or strategies in their attempts to attend to, comprehend and undertake task analysis entailed in that particular setting of the video-game. They learn how to select the most efficient routes to solving a problem. Rejection of useless methods and retention of efficient ones signifies emergence of evolved cognition. The ease and speed with which children dealt with multiple, simultaneously acting stimuli in video-game mode tends to dismantle the widely held misconception that the ability of such children to engage in complex multicausal reasoning is limited. Analysis of rule bound 'street games' that children themselves have scripted further confirms that some settings (street games vs. schooling context) result in more effective forms of cognition than others because they elicit different strategies or activate different knowledge structures that allow for more efficient processing.

Working children and school practices

School observations and interviews with out-of-school children suggest that socio-economically disadvantaged children in Jehangirpuri are compelled to seek admission into resource-starved, under-staffed, academically ineffective schools. If, for the disadvantaged children, the school remains one of the few mechanisms to offset the negative impact of the other adverse societal pressures by providing a compensating boost then, it is ironical, that selective access to a dysfunctional school will further cumulate their already handicapped situations. How do socio-disadvantaged children in Jehangirpuri experience schooling: in the primordial phase of children's implantation and acclimatisation to the school culture, many teachers and educational personnel instead of chalking out compensatory strategies to facilitate children's social, psychological, and cognitive adaptation, assign them labels on the basis of their socio-ethnic origin. Labelling not only infringes on certain basic rights of children but also massively damage their future prospects in life by tracking them into a virtual situation where they begin to accept the predetermined status that the dominant culture of society has decided that they will fulfil as adults. Schools, instead of liberating and destigmatizing children, have further formalised their ethnicity by stamping them as culturally different, deprived or disadvantaged. Strategically, such institutionalisation of labelling keeps the forces of social homogenisation at bay. That is to say, the non-disadvantaged develop an explicit set of beliefs, images and expectations about the 'disadvantaged', and very often the disadvantaged confirm their labelling by developing a similar set of beliefs about themselves. Thus, the existing social arrangements and stratification continues unhindered.

At the level of educational interactions and practices, many schools invariably tend to compound the handicap by themselves providing experiences that are similar to the disadvantaged homes in terms of impoverished language and near absence of strategies for developing critical thinking skills. The incredible irony is: schools, instead of compensating for the lack of appropriate experiences to anchor and sustain the prerequisite of formal academics, themselves have adopted the interactional patterns so often attributed to disadvantaged homes. The deprived ethnic background of the children which is at variance with the middle-class ethos of school is often evoked as a cover to hush-up the administrative failure to seed and nurture such children. Reiteration of dominant culture's images, messages, representations and modes of knowledge construction are the few other educational retardants.

Working children seem to be very well capable of sensing the real world, handling/coping with uncertain and unpredictable environments, often relying on approximate or qualitative data and reasoning to make decisions and to successfully accomplish their objectives. They seem to gather information in what can be referred to as the 'approximate first' fashion : they look for and/or perceive first some 'general-type' information, of a symbolic, iconic, approximate, or even 'blurry' nature, and then progressively focus their attention on details, or further precision as they judge necessary to supplement the 'general' information. This is quite contrary to the conventional atomistic form in which school knowledge is dispensed and cognition is structured.

Conclusion

The study illustrated the negotiated and constructed nature of working children's consciousness as it gets unfolded in their work, play and education practices. Children do not passively grow into a preexisting world; rather they construct the world in which they live and the opportunities for learning within this world. From the perspective of the syncretic activity-practice framework, the formation of working children — their identities, cognition, and knowledgeable skills had occurred through their participation in some subset of these activity systems- family, school, work and play. Thus, children are critically dependent on these activity systems for appropriating the consciousness, knowledge, and skills that are enacted in participation. However, as the study illustrates the education theory, structure, and practice has yet to adequately respond to the resources that children bring to the school situation.

The study also tends to demonstrate the possibility of re-conceptualizing the notion of human nature as that of human potentials. Generalized ability to perceive, remember, and think are only open-ended statements that yield a limited view of human consciousness. Potentiality of human cognition can only be fully comprehended by studying structure and development of psychological processes as they emerge through culturally mediated practical activity. Shifting to this perspective will enable psychology to redeem itself as a science of subject that will not only deconstruct nonsocial account of human thinking that resists the possibility of psychological and social transformation but will also silence the ethnocentric deductions that 'those people' lag cognitively as a consequence of cultural inadequacies. For then, it is not necessarily the lag between the thinking pattern of us and those, easterns and westerns, blacks and whites, primitives and technologically advanced, literates and non-literates, men and women; the consciousness is held to be different by the horizon of culture and experience within which each subject is situated.

Note

[1] Children who do not survive initial years of schooling often tend to get engaged in labour activities prevalent in the neighbourhood in order to contribute to the household income.

[2] For a historical -theoretical analysis of the evolution of the concept of activity in Soviet psychology, its revisionist version by Leontiev, and its contemporary epeistomological positioning as a generator of consciousness, refer to Alex Kozulin (2005). In context of the present study, Cultural — Historical Activity Theory (CHAT) is used as a generic framework that has scope to extend the work of Vygotsky, Leont'ev and Luria. Emphases on mediated activity, dynamic developmental analyses, as well as the role of activity setting in the co-construction of mind are the focus.

References

1. Apple Michael W. 1995. Education and Power. N.Y.: Routledge, 1993.

2. Bourdieu P. 1973. Cultural reproduction and social reproduction. In R. Brown (ed.), Knowledge, Education, and Cultural Change, p. 71—112. London: Tavistock Publications.

3. Bourdieu P. 1977. Outline of a Theory of Practice. N.Y.: Cambridge University Press.

4. Bronfenbrenner U. 1986. Toward on experimental ecology of human development. American Psychologist, 32—513—531.

5. Brostrom S. 1999. Drama games with 6-year- old children. In Engestrom et al (eds.), Perspectives on Activity Theory. Cambridge: Cambridge Univ. Press.

6. Bruner J.S. 1987. Prologue to the English edition. In L. S. Vygotsky. Collected Works (V. 1, p. 1—16) (R. Rieber & A. Carton, eds.; Minick N., transl.). N.Y.: Plenum.

7. Chaiklin S. and Lave J. 1996. Understanding Practise: Perspectives on Activity and Context. N.Y.: Cambridge Univ. Press.

8. Cole M. 1996. Cultural Psychology. Cambridge: Harvard Univ. Press.

9. Cole M. 1999. Cultural Psychology: Some general principles and a concrete example.

10. In Y. Engestrom, R. Miettinen, and R. Punama Ki (eds.), Perspectives on Activity Theory (p. 87—106). Cambridge: Cambridge University Press.

11. Cole M. and Engestrom. 1993. A cultural-historical approach to distributed congnition. In G. Salomon (ed), Distributed Cognition, p. 1—46. N.Y.: Cambridge Univ. Press.

12. Cole M., Engestrom Y., and Vasquez O. 1997. Mind, Culture, and Activity. Cambridge, England: Cambridge University Press.

13. D'Andrade R. 1995. The Development of Cognitive Anthropology. N.Y.: Cambridge Univ. Press.

14. Davydov V.V. and Zinchenko V.P. 1993. Vygotsky's contribution to the development of psychology. In H. Daniels (ed.), Charting the Agenda: Educational Activity after Vygotsky. London: Routledge.

15. Engerstrom Y. 1987. Learning by expending: An activity-theorectical approach to developmental research. Helsinki: Orienta — Konsultit.

16. Feuerstein R. and Kozulin A. 1995. The Bell Curve: Getting the Facts Straight. Educational Leadership, p. 71—75.

17. Gardner H. 1993b. Multiple intelligences: The Theory in Practice. N.Y.: Basic Books.

18. Giroux H. (1988). Critical theory and the politics of culture and voice: Rethinking the discourse of educational research. In R. Sherman and R. Webb (Eds.) Qualitative research in education: Focus and methods (p. 190—210). N.Y.: Falmer.

19. Gutierrez K. D. and Stone L.D. 2000. Synchronic and diachronic dimensions of social practice: An emerging methodology for cultural-historical perspectives on literacy learning. In C. D. Lee and P. Smagorinsky (eds.), Vygotskian persectives on literacy research. Cambridge: Cambridge Univ. Press.

20. Hermans H.J.M., Kempen H.J. and Van Loon R.J.P. 1992. The dialogical self: Beyond individualism and rationalism. American Psychologist, 47, 1, 23—33.

21. Herrnstein R. and Charles Murray. 1994. The Bell Curve. N.Y.: The Free Press.

22. Hoselager W.E.G. 1997. Cognitive Science and Folk Psychology. London: Sage Publications.

23. Jensen A.R. and Inouye A.R. 1980. Level I and Level II abilities in Asian, White, and Black Children. Intelligence, 4: 41—49.

24. Joravsky D. 1989. Russian Psychology: A Critical History. Oxford: Basil Blackwell.

25. Kincheloe J.L. and Mclaren P. (2000). Rethinking critical theory and qualitative research. In N.K. Denzin and Y.S. Lincoln (eds.) Handbook of Qualitative Research (p. 279—313). Thousand Oaks: Sage Publications.

26. Kozulin A. (2005). The concept of activity in Soviet Psychology: Vygotsky, his disciples and critics. In Harry Daniels (Ed.). An introduction to Vygotsky (p. 101—124). London: Routledge.

27. Kozulin A., Gindis B., Ageyev V. and Miller S. (eds.) 2003. Vygotsky's educational theory in cultural context. Cambridge: Cambridge Univ. Press.

28. Kozulin A. 1986. The Concept of Activity in Soviet Psychology: His Disciples And Critics. American Psychologist, 41(3), 264—274.

29. Kozulin A. 1990. Vygosky's Psychology. Cambridge, Mass.: Harvard Univ. Press.

30. Krishner D. and Whitson J. A. 1997. Situated Cognition: Social, Semiotic and Psychological Perspective. London: LEA.

31. Laboratory of Comparative Human Cognition. 1983. Culture and Cognitive Development. In W. Kassen (ed.), Handbook of Child Psychology, Volm.1; p. 295—356. N.Y.: Wiley.

32. Lave J. 1988. Cognition in practice, Mind, mathematics and culture in everyday Life. Cambridge: Cambridge University Press.

33. Lave J. 1997. The culture of acquisition and the practice of understanding. In David Kirshner and James A. Whitson (eds.), Situated Cognition: Social, Semiotic and Psychological Perspective (p. 17—36). London: LEA.

34. Lave Jean and Wenger E. 1991. Situated Learning: Legitimate Peripheral Participation. NY: Cambridge Univ. Press.

35. Lee C.D. 2000. Signifying in the zone of the proximal development. In Carol D. Lee and Peter Smagorinsky, Vygotskian Perspectives on Literacy Research: Constructing Meaning through Collaborative Inquiry (p. 191—225). Cambridge, UK: Cambridge University Press.

36. Lee C.D. and Smagorinsky P. 2000. Vygotskian Perspectives on Literacy Research: Constructing Meaning through Collaborative Inquiry. Cambridge, UK: Cambridge University Press.

37. Leont'ev A.V. 1997. On Vygotsky's creative development. In Rieber R.W. and Wollock J. (eds). The Collected Works of L.S. Vygotsky: Problems of the Theory and History of Psychology, Volume III (p. 9—49). N.Y.: Plenum Press.

38. Leont'ev A.N. 1978. Activity, consciousness, and personality. Engelwood Cliffs: Prentice-Hall.

39. Luria A.R. 1976. Cognitive development: Its cultural and social foundations. (M. Lopez Morillas & L. Solotaroff, Trans.). Cambridge, MA: Harvard University Press.

40. Luria A.R. 1994. The problem of the cultural behaviour of the child. In R. Van Der Veer & J. Valisiner (Eds.), The Vygotsky Reader (p. 46—56). Oxford: Blackwell. (Original work published in 1928).

41. Minick N. 1989. Mind and activity in Vygotsky's work: An expanded frame of reference. Cultural Dynamics, 2, 162—187.

42. Moll L.C. 2000. Inspired by Vygotsky: Ethnographic experiments in education. In Carol D. Lee and Peter Smagorinsky, Vygotskian Perspectives on Literacy Research: Constructing Meaning through Collaborative Inquiry (p. 256—268). Cambridge, UK: Cambridge University Press.

43. Ochs E. 1987. Input: A socio-cultural perspective. In M. Hickmann (ed.), Social and Functional Approaches to Language and Thought. Orlando, FL: Academic Press.

44. Portes P.R. and Vedeboncoeur, J.A. 2003. Mediation in cognitive socialization: The influence of socioeconomic status. In Alex Kozulin et al (eds.), Vygotsky's Educational Theory in Cultural Context. Cambridge: Cambridge Univ. Press.

45. Ratner C. 1997. Cultural Psychology and Qualitative Methodology: Theoretical and Empirical Considerations. N.Y.: Plenum Press.

46. Rieber R.W. 1997 (ed.). The Collected Works of L.S. Vygotsky: The History of the Development of Higher Mental Functions, V. IV (Marie J. Hall; Translator). N.Y.: Plenum Press.

47. Rieber R.W. 1999 (ed.). The Collected Works of L.S. Vygotsky: Scientific Legacy, V. VI (Marie J. Hall; Translator). N.Y.: Plenum Press.

48. Rieber R.W. and Carton A.S. (eds.). 1987. The Collected Works of L.S. Vygotsky: Problems of General Psychology, V. I (Norris Minick; translator). N.Y.: Plenum Press.

49. Rogoff B. 1995. Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J.V. Wertsch P. del Rio and A. Alvarez (Eds.). Sociocultural studies of mind (p. 139—164). Cambridge, England: Cambridge University Press.

50. Salomon Gavriel. 1993. Distributed Cognitions. N.Y.: Cambridge Univ. Press.

51. Saxe G.B. 1994. Studying cognitive development in sociocultural context: The development of a practice-based approach. Mind, Culture, and Activity, 1 (3), 135—157.

52. Scribner S. 1997. Mind in action: a functional approach to thinking. In E. Tobach et al. (eds.), Minds and Social Practice: Selected Writings of Sylvia Scribner (p. 296—307). N.Y.: Cambridge University Press.

53. Scribner S., Cole M. 1981. The Psychology of Literacy. Cambridge: Harvard Univ. Press.

54. Stigler J., Shweder R.A. and Herdt, G. 1990. Cultural Psychology. NY: Cambridge Univ. Press.

55. Tobach E. et al (eds.) 1997. Mind and Social Practice: Selected Writings of Sylvia Scribner. N.Y.: Cambridge University Press.

56. Valsiner J. 1996. Cultural Organization of Cognitive Functions. In M.P. Friedman and E.C. Carterette (eds.), Handbook of Perception and Cognition (2nd ed.) Vol. 3 (p. 29—58). San Diego, CA: Academic Press.

57. Van Der Veer R. & Valsiner J. 1994. The Vygotsky Reader. Oxford: Blackwell.

58. Vygotsky L.S. 1978. Mind in society: The development of higher psychological processes (M. Cole, V. John-Steiner, S. Scribner and E. Souberman, eds.). Cambridge: Harvard University Press.

59. Vygotsky L.S. 1962. Thought and Language (E. Hanfmann and G. Vokar, Trans). Cambridge MA: MIT Press. (Original work published in 1930, 1933, 1935).

60. Wells Gordon. 1999. Dialogic Inquiry: Toward a sociocultural Practice and Theory of Education. NY: Cambridge Univ. Press.

61. Wertsch J.V. and Penuel W.R. 1996. The individual society antimony revisited: productive tensions in theories of human development, communication and education. In David R. Olson and Nancy Torrance (eds.). The Handbook of Education and Human Development: New Models of Learning, Teaching and Schooling (p. 415—433). Oxford: Blackwell Publishers.

62. Wertsch J.V. 2000. Vygotsky's two minds on the nature of meaning. In Carol D. Lee and Peter Smagorinsky, Vygotskian Perspectives on Literacy Research: Constructing Meaning through Collaborative Inquiry (p. 19—30). Cambridge, UK: Cambridge University Press.

63. Wertsch James et al (eds.) 1995. Socio-cultural Studies of Mind. N.Y.: Cambridge Univ. Press.

64. Yaroshevsky M.G. and Gurgenidze G.S. 1997. Epilogue. In Rieber, R.W. and Wollock J. (eds). The Collected Works of L. S. Vygotsky: Problems of the Theory and History of Psychology, V. III (p. 345—369). N.Y.: Plenum Press.

65. Zinchenko V.P. 1995. Cultural-historical psychology and the psychological theory of activity: retrospect and prospect. In James V. Wertsch, Pablo Del Rio and Amelia Alvarez (eds.), Sociocultural Studies of Mind (p. 37—55). Cambridge: Cambridge University Press.

Culture, Cognition, and Pedagogy: Evolving A Discourse of Possibility

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The article addresses the problem of cognitive development in working children from poor Indian families. There are still many erroneous notions in contemporary human science concerning this issue; for instance, it is assumed that children of the lower classes and the despised ethnic groups share and perpetuate the mental characteristics of their classes and groups, while children of the superior classes and favoured ethnic groups share and reproduce the traits of theirs. The study attempted to empirically contest the most widely held a-priori notions like: working children lag cognitively and hence are incapacitated to benefit from formal schooling; institutional arrangements (such as schools) are the only sites to inculcate legitimate knowledge, and practical knowledge produced and acquired at work place is different, inferior by the normative standard of the social science theorizing. The study generated data to explain thinking patterns of out-of-school working children (10 to 14 years old) in the context of nature of street games played by them; their ability to solve algorithms in the video-game mode; problem solving strategies used in everyday reasoning; and to map the characteristics of working children's mathematics. Basing on cultural-historical activity theory, practice theory and postmodernist constructs, the author shows the specificity of working children's cognitive development arguing against ethnocentric deductions that these children lag cognitively as a consequence of cultural inadequacies.

Key words: cognitive development, ethnocentrism, play, school education, cultural-historical activity theory, practice theory, postmodernism.