

3 PARTICIPATORY APPROPRIATION AND THE CULTIVATION OF NURTURANCE: A CASE STUDY OF AFRICAN PRIMARY HEALTH SCIENCE CURRICULUM DEVELOPMENT¹

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ABSTRACT

This chapter advances a cultural perspective on applied developmental psychology that conceptualizes education as facilitating the appropriation of new ideas by learners through participating in socially organized activities. The benefits of literacy, mathematics, and health science to a community cannot be gauged by simple aggregation of individual competencies, since the cultural structure of technology involves socially distributed cognition. The technological characteristics of cultural resources, such as, a system of writing, are both constraining and empowering. The cognitive possibilities that they afford are mediated by co-constructive processes among participants in various socially organized activities. Rather than conceiving instruction as the ‘de-contextualized’ transmission of information, this perspective on education emphasizes the benefits of situating learning opportunities within the socio-cultural context in which the target student activity will be applied in everyday life. Not only does this obviate the problem of ‘transfer’ of learning that has often arisen in assessments of the impact of formal education, it also provides

opportunities for multiple instructional supports within the learner's 'zone of proximal development', and acknowledges the mutually constitutive relationship between culture and cognition. This in turn provides a basis for recruiting the imaginative creativity of young learners in the appropriation of a dynamically evolving cultural system of meanings rather than treating them as passive recipients of fossilized knowledge. This chapter illustrates this perspective with a case study of health science curriculum development in a rural district of northern Zambia.

INVITATION TO PARTICIPATE: A PEDAGOGICAL APPROACH CONDUCIVE TO APPROPRIATION

Ideally, I think, in the field of behavioural development, the relationship between theory and practice should be mutually constitutive. Theoretical formulations should afford practitioners guidance on how to conceptualize their tasks and how to evaluate their actions; and engagement in practice should afford theorists insight into the adequacy of theoretical concepts and models for explaining human behaviour and experience. In this paper, I propose a theoretical conception of how pedagogical intervention can support and channelize personal development, and I argue for its validity by considering an illustrative example of successful educational practice. The central concept in my analysis is *participatory appropriation*.

The concept of participatory appropriation serves as a theoretical resource to explain and illuminate the nature of human development. As such it may serve as a guide to the design of intervention, because it accurately describes what is going on, because it can connect with moral expectations held by parents, teachers, health professionals, and other influential representatives of society, and because it informs the commitment to responsible social action by the research team of which I have been fortunate to be a member². Furthermore, in addition to these general philosophical principles, I wish to claim some African cultural validity for the concept, insofar as indigenous Africans have endorsed it as researchers, teachers, health workers, parents, and indirectly also as children.

The interaction of context with development has been conceptualized in a number of different ways in formal theories of human development (Serpell, 1999a). Rather than regarding context as an

external, detached environment that affords information and/or applies reinforcement contingencies, the socio-cultural perspective adopted in this paper construes context as an incorporating system of social activities (Bronfenbrenner, 1979), informed by a system of cultural meanings (D' Andrade, 1984). Developmental change within such a context involves a process of participatory appropriation: children enter a cultural activity as novices and develop by virtue of appropriating the system of meanings that informs the activity. Initially they participate in the activities peripherally, and/or under the guidance of experts or old-timers, and their developmental appropriation of the system of meanings enables them eventually to participate more centrally and with greater authority as full-fledged members of the community of practice who can now claim the culture as their own (Lave and Wenger, 1991; Rogoff, 1993; Serpell, 1997, 2001).

The cognitive development of children arises, as Piaget (1983) and his colleagues have shown, from active exploration. Much of what children learn about the material world as they explore it involves discovering 'affordances' of the environment (Gibson, 1982). In addition to discovering such properties of the physical world, children discover through verbal discourse and other forms of social interaction the other minds that populate their social world, and how to use the language of their culture to communicate about the physical and social world. The disposition to seek out inter-subjectivity with other minds is every bit as fundamental to human development as the desire to master and control the physical environment (Trevarthen, 1980). Moreover, the cultural system of meanings that children encounter as they begin to use language is dynamic and open-ended. Children do not simply adopt the language as they find it, but re-invent it, negotiating the right to transform their community's culture as they appropriate it (Ochs, 1990).

This theoretical view of child development as embedded in social interaction and cultural systems of meaning acknowledges their 'agency' as persons, over and above their behaviour as organisms. This focus of interpretation has moral and strategic implications for practice whose deeper significance is easily overlooked if a purely rhetorical attitude is adopted toward the proposal that the 'other' humans in psychological research be regarded not as subjects, but as participants (American Psychological Association, 1982). Children as newcomers to a cultural activity can be likened to 'apprentices'

(Lave and Wenger, 1991). As they progressively master the demands of the tasks confronting them, they gradually qualify as members of a community of practice, and by the same token acquire authority as owners of the system of cultural meanings that is shared by the community and informs its practices (Serpell, 1997).

The theoretical proposal, then, is that we construe children, not as a set of organisms to be moulded into a pattern of behaviour specified in advance as educational outcomes, but as newcomers to a community of practice, for whom the desirable outcome of a period of apprenticeship is that they would appropriate the system of meanings that informs the community's practices. By appropriating this system, students are expected to make those meanings their own, transforming them in the process, and co-constructing with the rest of the community a new, emerging set of cultural practices.

The opening move of such an enterprise is an invitation to participate. Productive discourse in search of enhanced understanding depends on an egalitarian set of premises—the conditions that the philosopher, Juergen Habermas characterized as the ideal communication situation (McCarthy, 1978). Each party must be in a position to adopt any one of the full range of dialogue roles, so that the outcome of discussion will be determined by the force of the better argument, and not by extrinsic factors of differential power and prestige. Although this idealization is open to criticism (McCarthy, 1976), it has the merit of highlighting some of the barriers to genuine understanding that tend to characterize a great deal of didactic discourse.

Teachers typically do not listen to their students with the same degree of respectful open-mindedness as they expect their students to bring to the interaction. Rather they seek to impose on their students' thinking a preconceived set of constraints, and provide feedback to their students' speech and writing acts primarily in terms of how well the student is conforming to their expectations. A very common form of this type of instructional interaction is the I-R-E routine, in which the sequence of verbal utterances is as follows: teacher initiates—student responds—teacher evaluates (Mehan, 1979). Such ritualized, factitious verbal exchanges have been described as prototypical of lessons in traditional American and European classrooms, and in many African primary schools (Koivukari, 1982; Pontefract and Hardman, 2005). As an alternative to this domineering type of discourse, which they term 'the recitation script', Tharp and

Gallimore (1988) have advocated the model of ‘the instructional conversation’, in which teachers seek to engage their students in a more authentic exchange of views, and inject their instructional contributions through ‘in-flight responsiveness’.

The strategic power of this flexibly adapted style of intervention can be understood with reference to Vygotsky’s (1978) concept of the ‘zone of proximal development,’ or zoped, the zone between what a person can perform with the assistance of external support and what he or she can perform without such guidance. The zoped of each individual is different, so that when a pre-structured plan of instruction is addressed to a group of students, it is only likely to mesh with the needs of a small proportion of those within the group. For those whose mastery of the topic is relatively advanced, the instructional input will appear redundant and uninspiring, while for those who lack some of the foundational knowledge and/or skills, the same input will appear opaque and intimidating. In-flight responsiveness draws on a judicious use of questioning and observation to elicit evidence of each student’s relevant pre-instructional understanding, and follows the student’s orientation with a view to connecting with and recruiting his or her imagination and creativity. At its best, such instructional interaction not only expands the cognitive repertoire of the student, but also leaves the student’s own mark on the very culture that s/he is learning about, transforming it in the very process of appropriation. As Cole (1985) put it succinctly, the zoped is thus a mutually constitutive nexus, ‘where culture and cognition create each other’.

PARTICIPATORY HEALTH EDUCATION IN AN AFRICAN PRIMARY SCHOOL

Socially distributed cognition

The benefits of literacy, mathematics, and health science to a community cannot be gauged by simple aggregation of individual competencies, since the cultural structure of technology involves socially distributed cognition (Salomon, 1993). For example, in contemporary, cosmopolitan preventive and curative health practices, responsibility for the cognitive and practical work is distributed across many participants in activities that extend across time and space. Consider the task of maintaining healthy growth of an infant during the first five years of life.

Growth-charts

According to the strategy of growth monitoring (Morley and Woodland, 1988), the quality of the match between a young child's nutritional needs and the nutritional inputs that she or he receives can be significantly enhanced by regular weighing of the child and recording of her weight on a chart (see Figure 1). The slope of the line graph that emerges on this chart provides critical information for determining whether the child is growing at a normal rate of development. The slope is compared with that of averaged measurements over time of a large standardization sample. In order to make possible such a comparison, information known to the child's primary caregiver (such as the child's date of birth) has to be coordinated with statistical information that has been compiled and organized by scientists. Records have to be made accurately on the chart by people with relevant training, preserved by the child's family, and brought together with the child on a subsequent occasion, to a location where the child can be accurately weighed. And the whole complex of information must be synthesized and interpreted in accordance with scientific guidelines by a competent person and communicated to the responsible caregiver, along with appropriate advice on actions to be taken to maintain or ameliorate the child's current pattern of care.

Learning exercises for primary school students

Building on the work of Morley and his colleagues, Gibbs and Mutunga (1991) have articulated a set of instructional modules in mathematics that are focused on practical aspects of primary health care, including the monitoring of young children's weight. The Child-to-Child Trust has also for a number of years promoted the idea of involving school-age children in the monitoring of younger children's weight and other indices of health (Hawes, 1988; Otaala, 1982). 'Child to Child' (often abbreviated as CtC) is a broadly conceived approach to the integration of education and health that seeks to mobilize the potential of children as agents of preventive health in their schools, their homes and their community. The educational philosophy expressed in CtC materials centres around respect for the child as a morally responsible member of the community with a basic right to health and education. The child is conceived as an active, exploratory agent who will learn best when she or he makes

discoveries—a principle derived from Piaget's (1983) influential theoretical perspective. Under the auspices of Zambia's CtC program, a group of teachers in the Mpika District of Northern Province has systematically applied these concepts. Paul Mumba, a teacher at Kabale Primary School, has devised a number of relevant exercises that afford students multiple opportunities to appropriate the technology of primary health care. Several examples are presented in Appendix 1.

During our visits to Kabale Primary School, Gertrude Mwape and I observed a number of classroom lessons about growth monitoring, conducted by various teachers engaged in CtC (Serpell and Mwape, 1998/99). The educational paradigm that we observed can be characterized as follows. A teacher enrolls students in several, highly structured activities, including weighing, recording, constructing and interpreting charts. Students also engage in various, complementary, more open-ended activities such as narrating lived experience, discussing scientific and social issues, and brainstorming practical strategies for addressing real-life issues confronting individuals, families, and local and larger communities. In the weighing activity, the teacher invites students to weigh themselves, their classmates, and (as a homework assignment) one or more of their younger siblings or young children in their residential neighbourhood. In the charting activity, the teacher invites students to record weights on a growth chart. Sometimes the weights are laid out on the chalk-board, or on a typed handout for the students to enter them on a printed chart. Sometimes they are required to construct their own data table, and/or chart.

The functional significance of these charts becomes the focus of activities, some of which are pre-structured, while others are more open-ended. Students may, for instance, be assigned the task of interpreting a growth-chart in the narrow sense of detecting episodes of arrested growth or weight loss. But they are also sometimes invited to speculate as to possible causes of such deviations from the healthy norm of steady growth. Moreover, they are invited to share with their classmates accounts of actual episodes of growth-related illness in their families.

Students are also invited to brainstorm possible action strategies to ameliorate the situation, both in the short-term with individualized intervention processes such as oral rehydration, and in the longer term with preventive, public health measures such as hand-washing,

waste disposal, water purification, and even population planning. These possibilities for active, ameliorative intervention are not merely discussed in theory. The students take on responsibility for applying them in practice, through group projects. These include clearing the school grounds of refuse, and digging rubbish pits; rosters of shared responsibility such as bringing containers of clean water to class each day for students to wash their hands when returning from the latrine, and individualized service projects. Some of the students adopted a younger child and monitored his or her growth and other health indicators by escorting the child for regular check-ups at the local under-five clinic, and, when the occasion arose, assisting with the youngster's health care and supplementary nutrition.

Practical, social and moral goals of education

The CtC approach at Kabale School stands in marked contrast to the standard paradigm of Institutionalized Public Basic Schooling (IPBS) that has been widely established across the world (Serpell and Hatano, 1997). This paradigm, with its emphasis on text-based classroom lecturing was originally designed for very different social, cultural and economic circumstances, exported to Africa under politically oppressive and exploitative conditions, and only minimally adapted by an indigenous bureaucracy, that now attempts to maintain it with dwindling resources and a set of product-oriented efficiency criteria that tend to constrain the socio-cultural sensitivity of their personnel. Those efficiency criteria derive their legitimacy partly from historical tradition, and partly from the advocacy of certain economically-oriented technical specialists and agencies (Hawes and Stephens, 1990). Several dysfunctional consequences flow from adhering to them. For instance, primary schools and the local communities they are supposed to serve tend to conspire in adopting an extractive definition of educational success as leaving one's community of origin to enter an outside, more privileged world (Serpell, 1993). This definition is fundamentally self-defeating, since it legitimates a stereotyped equation between intellectual progress and alienation from the indigenous culture. Moreover, preoccupation with input-output statistics serves to divert attention from questions of educational quality (Hawes and Stephens, 1990). For instance, the 'narrowing staircase model' of schooling, tends to overlook, and sometimes even to undermine, the cultivation of social responsibility (Serpell, 1993).

If the paradigm is to be reformed, one of the most important steps is for educators to legitimize parallel tracks to various valued outcomes of education, especially at the local level. The school needs to expand its public criteria of what constitutes a successful outcome of several years of enrolment: instead of defining the only index of success as passing an exam to proceed to the next level of the curriculum, schools and the communities they serve need to acknowledge as alternative indices of educational success more directly observable behaviours with ostensible relevance to local needs, such as food production, nutrition and health (Serpell, 1999b)

In order to work toward such locally valuable outcomes, teachers and parents need to agree on dimensions of personal development that deserve promotion and recognition, other than those conventionally emphasized in the regular curriculum of IPBS. Some of our exploratory quantitative studies using questionnaires and rating scales with primary, basic and high school teachers suggest that teachers with exposure to CtC got to know their students better than non-CtC teachers on the following dimensions: practical problem solving, self-confidence, healthy lifestyle, taking responsibility, co-operating with others, and nurturance (Adamson-Holley, 1999).

Cooperative learning

In addition to the emphasis on health across the curriculum, and the explicit promotion of development toward practical, social and moral goals, another striking feature of the pedagogical practice in several of the classes at Kabale Primary School is the organization of learning opportunities around group work. In Mumba's class of about 60 students, students were grouped for extensive periods of time in teams composed of six children of mixed gender and academic standing, to discuss questions posed by the teacher prior to plenary class debates, to complete written work assignments, and to design and execute projects in the community.

The significance of this instructional practice can be construed in a number of different ways. It has often been advocated as a pragmatic strategy for classroom management in large classes, freeing the teacher to attend more intensively to the needs of individual students in rotation. The importance of adjusting the form and pace of instruction to characteristics of the individual learner is a very widely agreed principle shared among the Behaviourist, Piagetian, and Vygotskian perspectives on learning and development.

The Vygotskian rationale has been well articulated, for instance, by Tharp and Gallimore (1988) in their account of the highly successful Kamehameha Early Education Program (KEEP) in Hawaii. In addition, some advocates of cooperative learning arrangements have argued that peer-mediated learning affords special opportunities for cognitive growth, although the key processes for achieving this remain a matter of controversy (Forman and McPhail, 1993).

Mumba (2000), himself, values these arrangements for their productivity of both social and personal progress. He construes the organization of his students into 'cooperative learning groups' as part of a strategic process of 'setting up of a participation atmosphere' conducive to 'democratization' of the learning community constituted by his class. Another component of this strategy was to introduce the students to an awareness of their rights as children. He describes a pedagogical focus on children taking responsibility for evaluation of their own performance, that of their peers, and that of the teacher; and for active participation in decision-making about activities to be undertaken by the class. He claims a number of positive outcomes for this strategy which has evolved over a period of several years of experimentation. It has, in his own words: 'created a good classroom climate; increased participation in learning built self-esteem in the students; improved interpersonal relationships; improved punctuality and lessened absenteeism; improved the performance and image of the girl child; improved the quality of teaching; helped to avoid "burn-out" by teachers; introduced the community to participate in their children's education; developed leadership qualities in the leaders of learning groups; and improved preventive maintenance of school structures, contents and environment'. (Mumba, 2000)

A crucial condition for the success of this innovative approach to education, according to Mumba, is for teachers 'to build a genuine relationship with their pupils...a teacher should seek opportunities to interact with the pupils at all costs, and to enrich this relationship he must reach a level of joining their conversation without raising suspicions among the pupils' (Mumba 2000: 32). In articulating his philosophical rationale for the form of practice that he has designed over the years, Mumba has increasingly drawn on published social, psychological and educational theory, appropriating ideas from the texts which the research team has introduced to him, and placing his own distinctive mark on them while reflectively interpreting his practical teaching experience.

Although CtC was proclaimed in Zambia as a policy initiative in the mid-1980s to be introduced nationwide in all public schools (Sianjibu-Miyato, 1993), two independent assessments commissioned by the Zambian Government concluded that, in contrast to the vibrant enthusiasm we witnessed at Kabale Primary School, by the late 1990s the great majority of schools across the country had only very superficially appropriated the concept of Child-to-Child, reducing it to little more than an extra-curricular, voluntary club (Chiwela, 1996, Gibbs, 1997). Mumba (2000) argues that the main impediment to widespread effective implementation of CtC in Zambia has been resistance by teachers to the organizational change that it requires, namely democratization of class activities.³ He attributes the resistance to democratization to both an indigenous African cultural tradition that prescribes authoritarian relations between adults and children and to a gap that has been created historically between parents and schools. He notes that inviting Kabale school students and their parents to participate in the design of the syllabus served to enhance the relevance of the curriculum to the felt needs of the community. By emphasizing the rights and responsibilities of children in their educational practices, primary school teachers can 'influence the larger society' and 'help to transform this nation for the better'.

Project activities in the home community

Another striking feature of the activities at Kabale Primary School is the emphasis on assigning students practical activities in their home community. A recurrent theme, derived from the CtC approach is termed 'twinning'. Contrary to what might be expected from the term, these pairings are generally between an older and a younger child, and involve some kind of explicitly asymmetrical, adoptive or mentoring relationship. The child to be adopted may be a younger sibling within the student's own family, a neighbour, or a student attending the same school. The focus is nurturant, with an overt emphasis on service by the older child to the younger child, but, as I will discuss later, the developmental benefits of such a relationship for the older child may also be considerable. In the case of growth monitoring, the assignment involves the older child taking responsibility for negotiating acceptance of his or her good faith by the younger child's parents, a task made easier by the existence of an

indigenous cultural tradition of delegating caregiving responsibilities for young children to older children in the family or community.

At its best, the innovative approach to education spearheaded by the CtC teachers at Kabale Primary School affords opportunities for teachers and students to negotiate a shared understanding and appreciation of the significance of growth-monitoring. They co-construct an application of the technology to the life of the community that reflects their multiple, complementary perspectives. Ideally, through participation in this and other related activities, children will gradually appropriate the cultural practice of primary health care, including both the technology of growth charts, immunization, and so on, and the underlying meaning system of nutritional monitoring and disease prevention, as conceptualized in contemporary social medicine. The child will thus develop into an informed and responsible member of the community of practice of primary health care, and an owner of the system of meanings that informs the clinical practice as it evolves.

DISSEMINATION AND APPROPRIATION OF A SEMINAL IDEA: THE CHILD-TO-CHILD APPROACH

Cultural and historical origins

One feature of the successful educational approach at Kabale Primary School that seems to me to be of particular importance is the special attunement or receptiveness of indigenous African cultural practices and values to the emphasis of CtC on nurturant mentoring relationships between older and younger children.

Several child development researchers in Africa have stressed that the responsibility for nurturance is more widely shared in African family traditions than might be expected from the Western, middle-class paradigm of the nuclear family. Indeed, rather than delegation of a burden, the practice of involving children in the care of younger siblings is better construed in African cultural terms as a reflection of two principles: the sharing of responsibility for the young amongst all members of the family, and the socialization of the elder child through a priming process for learning adult roles (Nsamenang, 1992). Whereas UNICEF has at times tended to include the domestic participation of African girls in child care as an example of

exploitative child labour, it is important to realize that in many African communities with a subsistence economy, child labour can be legitimately interpreted 'an indigenous educational strategy that keeps children in contact with existential realities and the activities of daily life—[that] represents the participatory component of social integration' (Nsamenang, 1992: 157).

Moreover, a child nurse 'is expected' not only to protect and feed, but also 'to sing to, play with, and entertain her or his young charge', an expectation which seems to acknowledge and capitalize upon 'a natural playfulness' (Harkness and Super, 1992) The channelization of that social playfulness towards infants and toddlers is probably less directly governed by disciplinary management than it is a product of pro-social attitudes cultivated in the earliest phase of socialization. Rabain (1979), for instance, has described for the Wolof tradition in Senegal how adults encourage even infants and toddlers to interpret their emotions in terms of sharing and nurturance.

So deeply entrenched are the cultural expectations of older children's participation in the nurture and care of their younger siblings, that as Weisner (1989: 89) suggests of the Aba-Luyia of Kenya, 'mothers use evidence that a child has the ability to give and receive social support, and assist others, as markers of a child's more general developmental level, much as an American parent might use literacy skills such as knowing the alphabet, or verbal facility, to show how grown-up or precocious his or her child is'. Traditionally, across many societies, 'children are socialized within this system both through apprenticeship learning of their family roles and responsibilities and through self-ascribed cultural standards and beliefs about their appropriate role behaviour according to age and gender'. (Weisner, 1997: 14).

Udell (2001) conducted a qualitative analysis of texts (many of them unpublished) to explore the various philosophical and cultural influences that have converged over time on different key actors in the promotion of the CtC approach. Both of the major originators of the CtC curriculum, Morley and Hawes, spent formative years of their lives in Africa and were profoundly influenced by what they observed there and elsewhere in the Third World. For Morley the key motivation was to promote early childhood health and nutrition as a public health intervention, while for Hawes a crucial value of the approach was its incorporation of Piaget's conception of child development as driven by active investigation of the world. For

the Catholic missionaries advocating the introduction of CtC in Zambia, an equally important motive may have been promotion of the Christian value of service. All of these complementary philosophical themes latched onto a set of indigenous cultural practices that informed the assessment by the indigenous Zambian teachers that CtC constituted a 'culturally compatible' form of curriculum (Jordan, 1992). This helped to inspire them to appropriate the concept and articulate its implementation in their schools.

Local parental views on the promotion of nurturance

One strand of our research in Mpika has been directed at documenting the current attitudes and beliefs of local parents in this regard, and their perceptions of how the CtC program at the school relates to their sense of cultural tradition. A stratified sample of forty-one parents were interviewed in 1996 in the catchment population of the Kabale School.

Most parents said they regard the practice of children of primary school age caring for younger children as part of an old Zambian tradition and reported that they were expected to do this in their own childhood at home. But only about half of them recalled this being a theme at their own school. Most parents (of both boys and girls) said they require their children to do this at home. On the question of what benefits the older child derives from such activity, parents cited growth of a nurturant attitude, a sense of responsibility and preparation for parenthood, but also intrinsic pleasure and a sense of personal worth. While the pattern of these responses did not vary significantly according to the gender of the child, the more subjective benefits were especially apparent to parents of academically low-achieving students. Many, but not all, of the parents interviewed were aware of other aspects of the CtC approach and were generally quite supportive, although a few were skeptical of its relevance to their child's prospects of academic success.

Life-journeys of students after leaving primary school

One of the most widely known indices of academic achievement in Zambian society is the national Secondary School Selection Examination (SSSE), a centrally set, computer-marked exam composed of six multiple-choice papers, covering the subjects areas of English,

mathematics, social studies, science, and special papers I and II, which are respectively verbal and non-verbal tests of reasoning designed to assess intellectual aptitude. Separate cut-off criteria are set each year for admission of boys and girls in each province based on the distribution of scores and the availability of places in secondary schools.

Using this measure of achievement, one of the two grade seven CtC classes at Kabale (taught by Paul Mumba) achieved an exceptionally high level of academic performance in November 1996, with twenty-one of the fifty-seven enrolled students (forty-eight of whom sat for the exam) qualifying for admission to secondary school, and a further twenty-one qualifying for admission to basic school⁴. When both types of grade eight class are combined, this yields an overall progression rate of 74 per cent, as compared with 43 per cent for the other CtC class, and 33 per cent and 29 per cent respectively for the two non-CtC grade seven classes at the same school. Two-thirds of Mr. Mumba's successful candidates were girls. Although there is a policy of affirmative action in favour of girls' progression to secondary and basic school, implemented by setting a lower cut-off criterion for girls in each region than for boys, it is noteworthy that in this class, the average absolute score obtained by girls (692) was almost equal to that obtained by boys (691).

Relevance of psychosocial dimensions to academic achievement

The significance of several of the dimensions of personal development emphasized by the CtC approach extends well beyond academic achievement, especially beyond those aspects of achievement that the is designed to assess. Qualities such as responsibility, cooperativeness, and nurturance are conventionally regarded by teachers as complementary to, and independent of, the qualities that are conducive to academic achievement, such as verbal and mathematical abilities, or intellectual curiosity. In CtC classes, however, we learned of efforts by the teacher to cultivate these non-traditional qualities both for their own intrinsic value and as resources for the successful mastery of academic topics by study groups. In the case of practical problem-solving, we also saw evidence of CtC teachers investing considerable effort in connecting the substance of the curriculum with real-life, practical problems confronted by the students and their community⁵.

Two years later, a sub-sample of the Kabale grade seven graduates were followed up in grade nine by Adamson-Holley (1999) at two local basic schools and two residential, single-sex High Schools. In the basic schools, teachers rated the girls who graduated from the CtC programme at Kabale significantly higher on average than their current classmates on nurturance, cooperativeness and taking responsibility. But these predictable, enduring consequences of exposure to the CtC approach were not confirmed for boys, nor for either gender among students enrolled in the high schools. CtC students appeared to have less opportunities at the secondary schools to apply the cooperative, pro-social skills and attitudes they had acquired at primary school than those enrolled in basic schools. Adamson-Holley (1999: 2) concluded that 'while the dominant culture of the educational establishment appears too conservative to incorporate CtC philosophy as a whole, elements of CtC could be incorporated, thus achieving some modest amelioration of the status quo'.

Life prospects outside the academy

Of equal interest are the future life journeys of the graduates of CtC curriculum who discontinue their schooling after grade seven. This pattern of behaviour, sometimes designated 'dropping out of school' continues to be the norm for the majority of children completing primary school in Zambia and elsewhere on the continent. I have discussed elsewhere (Serpell, 1993) the tragically demoralizing impact of public stigma on these young people, especially in the first few months and years after they learn of their academic 'failure'. Yet, many of them subsequently achieve satisfactory integration and contribute significantly to the welfare of their natal communities.

One likely implication of the cooperative learning arrangements used in the CtC classes at Kabale was suggested by Paul Mumba. He expected the CtC groups formed in grade seven to continue to function as a source of mutual support over the years to come. Confirmation of this prediction was reported by Adamson-Holley for a number of the adolescents who were continuing their schooling. Some of those she interviewed at the more prestigious local high schools had voluntarily established a practice of meeting regularly with their peers at local basic schools to share experiences and provide informal tutorial assistance with mastery of the grade nine curriculum.

Another impressive longer-term outcome came to my attention, when I had the opportunity to visit, together with a University of Zambia

student, the home of a young woman of eighteen almost three years after she had completed grade seven and left Kabale school. We called on her without advance notice in her home, which was located in a very low-income neighbourhood of Mpika. She was now married and nursing her first child, and when asked what she remembered learning at school, she mentioned growth-monitoring and oral rehydration. So we pressed her for an example of how this had been of value to her community. She then recounted advising one of her friends, who also had a baby, on how to handle an episode of diarrhoea by means of oral rehydration using the home-made solution of sugar, salt and water they had learned about at school.

From a broader perspective, we may ask the question: how fundamental and intractable are the incompatibilities between the authoritarian, extractive staircase model of IPBS on the one hand and the key elements of the successful CtC approach, such as co-operative learning arrangements, outreach activities and nurturant mentoring relationships? The challenge is for education and health personnel to come together with parents in the community they aspire to serve, and convince them that these innovations do not jeopardize any of their crucial expectations of public schooling but that they have the potential to add to the traditional goals of imparting skills and knowledge, important empowering outcomes for boys and girls in the socio-emotional domain, and for the community as a whole by laying the foundations of a healthier future. The case to be made is that CtC is a 'win-win' formula that affords academically talented students an opportunity to learn to take responsibility and on the other hand enables the needy to be included and to receive support from their peers in the confident expectation of mutual benefit. Extrapolating these implications of a successful educational innovation for the wider system of public schooling rests on a conception of the activity of teaching as centered on the cultivation of personal growth, of which one defining dimension is social responsibility.

CONCLUSION

Several major developments have taken place since the Zambian CtC programme was first implemented. Indirect applications of the earlier work have centered on the systematic promotion of children's

rights through the establishment of class and school councils, and on the involvement of preadolescent children in the design of play-based preschool programmes.

The class council programme has built on the principle of recognizing children's agency in their development through inviting their active participation in school activities which was articulated in Mumba's (2000) paper on democratization of primary classrooms. Further impetus arose from the joint participation of Mwape and Mumba in an international training programme in 2003–04 on 'Child rights, classroom and school management,' which brought together at the University of Lund in Sweden multilevel national teams from eleven countries to conceptualize and plan a project in each country based on the UN Convention on the Rights of the Child. The Zambian team engaged in a consultative process at Kabale School that culminated in the establishment of class councils and a school council. Important inspiration for this initiative came from what the participants saw in place in Swedish primary schools. Subsequent elaboration has drawn on the model of school councils in UK. A national toolkit has been compiled drawing on the experience of Kabale and several other Zambian schools (Mwape, Kafula and Tembo-Musonda, 2006), which articulates three principal objectives: giving voice to children's feelings and desires in opposition to those of adults, affirmation of gender equality, and promotion of structured participation in school governance. The toolkit offers a set of explicit rules and procedures for enabling class and school councils to address those objectives.

The emphasis of CtC on the cultivation of nurturance is not reflected in the school councils programme, but has continued to find a place at Kabale school in the participatory design by upper primary school children of play activities for stimulating the development of thinking in children of preschool and lower primary school age. Students are assigned to research such activities in consultation with their parents and report back in class on what they have learned. Reflecting on whether the cooperative learning theme of CtC has been sustained over the past decade, Mumba observed that 'students continue to visit each other and share common problems' (Mumba, personal communication, 2006). However, the focus of their cooperative activities has shifted somewhat. Due to the country's economic problems, most families are focused on ways of generating income, and include the children in this. So when the school teachers

look for the best ways of helping their students, they focus more on income-generating activities in school that the children can take home, such as, making toys and simple artistic designs for sale, and shoe repair.

Together these developments represent a significant shift away from the integrative theme of participatory promotion of child health that informed the CtC approach that we observed in the 1990s. On the other hand, what has been retained is an emphasis of children's agency in the design of intervention programmes to foster and channelize their psychological development (Eckensberger, 2003), and on the need to connect the school curriculum with local cultural practices that acknowledge the legitimacy of children's participation in the domestic economy (Nsamenang, 2003).

APPENDIX 1

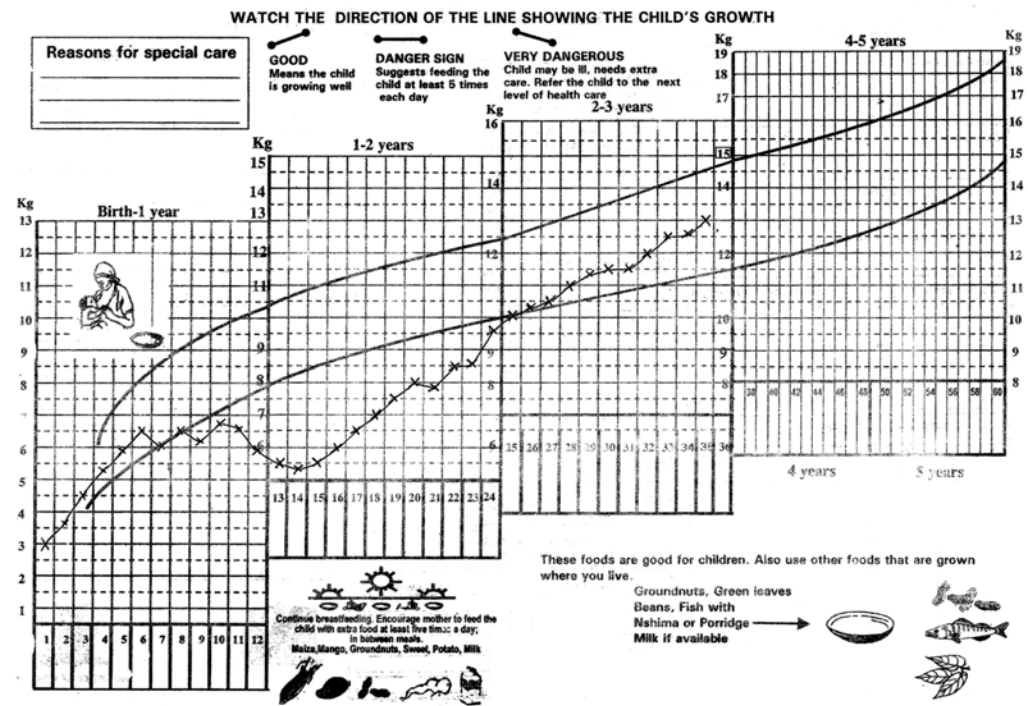
Instructional resources designed by Paul Mumba, Kabale Primary School, Mpika, Zambia

The road to health charts are important. They help mothers know when their children need more nutritious food and special attention. They also help health workers better understand the needs of the child and its family. They also let the mother know when she is doing a good job. For example, for the health of both mothers and children, parents should wait until their youngest child is at least two years old before having another baby.

QUESTIONS:

1. Study the chart and write answers for the questions below.
In the first year of the child's life, the mother stopped breast feeding her child:
 - (a) Which month was this?
 - (b) What do you think happened?
2. At ten months, the child developed diarrhea.
 - (a) What happened to his weight? b How would you have stopped the diarrhea if you were the mother?
3. What caused the difference in weight between the tenth month and the twelfth month?

Figure 3.1: CHILD-to-CHILD, Twinning Project: MATHEMATICS: Upper: TIMING BIRTHS and GROWTH CHARTS: PART 3



Source: Paul Mumba, Kabale Primary School, Mpika, Zambia.

4. However, the mother learnt how important it is to give the nourishing food.
 - (a) In which month did this happen?
 - (b) What reason can you give for the answer above?
5. (a) How many times should a very small child feed in a day?
(b) Give a reason for the answer above?
6. Find the child's weight at:
 - (a) $2\frac{1}{2}$ years
 - (b) $1\frac{1}{3}$ years
 - (c) $1\frac{1}{4}$ years
7. Write in three ways a mother can be helped from the growth chart.
Prepared by: Paul Mumba.

Reference and help from: *Children for Health*; Willam Gibbs/Mutunga Peter, *Health into Mathematics*; David Werner, *Where There is No Doctor*

Appendix 2

Kabale primary school child-to-child twinning project: mathematics children's clinic (graphs)

The information below shows the number of children being brought to the under-five clinic on 14 November 1995. This information was provided by grade 6D of Kabale Primary School.

Table 3.1

<i>Period</i>	<i>No. of children</i>
0–1 year	83
1–2 years	62
2–3 years	9
3–4 years	0
4–5 years	1

Table 3.2

<i>Upward</i>	<i>Downward</i>	<i>Static</i>
60	57	38

Study the above tables and answer the questions below:

1. Show the information in table 1 using bar graphs scale: 1 cm = 1 year across and 1 mm = 1 child up.

2. Why are there more attendants in the first year than the rest?
3. Find the total number of children who attended the clinic.
4. Show the information in table 2 using the scale: 1 cm = 1 box across and 1 mm = 1 child up.
5. Give one reason why some graphs were static.
6. From the information in table 2, find out the total number of children doing badly.
7. Most parents complained that the downward movements of their graphs was due to diarrhoea. List 3 causes of diarrhoea.
8. Suggest solutions to the above causes in your community.

APPENDIX 3

Kabale primary school child-to-child group twinning: upper primary english composition/controlled writing

The following topics on child-to-child methodology have been tried out by children in Grade 6, 1995.

1. You have received a letter from your auntie telling about the sickness of your (baby) cousin from a disease called kwashiorkor. Kwashiorkor comes when a child does not eat enough proteins. Your auntie suspects witchcraft at the neighbourhood. Reply to your auntie telling the causes of kwashiorkor and how it could be prevented. Mention the sources of proteins and what they do to the body.
2. A friend of yours has written to you. He wants you to tell him about tooth decay because his brother is suffering from it. Write in your letter explaining the causes of tooth decay and ways of avoiding it. Your former classmate who stopped school because of being pregnant has given birth to a baby boy. You feel she should know some information on breast feeding. Write a letter to her telling all you could on the importance of breast feeding. Tell the importance of colostrum.
3. Your pen pal has written to you and in his/her letter, he has mentioned that he began smoking cigarettes. Write to him immediately telling the dangers of smoking. Let him be aware of harmful chemicals such as tar, nicotine and carbon monoxide. You can make mention of the disease he could be at risk (danger) of.
4. Your friend in another country has heard about twinning within groups which is being done in your class. He wants to learn from you so that he with other pupils can adopt your ideas. Tell him about the good things about this method and how it has helped you.

5. There is an outbreak of diarrhea in a town of Isoka among children. Write a letter to your sister in that district telling about the causes of diarrhea and how it could be treated locally. (The same could be done for another disease like malaria, and so on).
6. Write a letter to your elder sister who wants to know more about immunization. In your letter tell about the six killer diseases and when immunization should be completed. Include the dangers of not immunizing children.

N.B. These letters could be easily written if pupils are prepared in terms of surveys in community, discussions in twinning within groups, poster making and other practical activities.

Prepared and tried out by Paul Mumba. Ideas adapted from Child-to-Child activity sheets and Children Health.

NOTES

1. An earlier version of this chapter was presented as a keynote address to the 4th African Regional Workshop, International Society for the Study of Behavioural Development, in Windhoek, Namibia: July 1998. The research described in this paper was initiated under a grant from the African Forum for Children's Literacy in Science, and Technology and the Rockefeller Foundation to the University of Zambia, where the author held an appointment as Visiting Professor in the Department of Psychology.
2. The research team was initially constituted in 1995 by the author and Ms Gertrude Mwape, Lecturer in the Psychology Department of the University of Zambia. On our first exploratory visit to Mpika, we were joined by two undergraduate students of the University of Zambia as Research Assistants, Ms Chisha Serpell and Mr Humphrey Washanga (both of whom are since deceased). Arising from our discussions in Mpika, the team was expanded to include Mr Patrick Kangwa, Mr Paul Mumba, and Mr Clement Mumbo, all Teachers at Kabale Basic School. In 1997 further data collection was undertaken in Mpika by another undergraduate student of UNZA, Ms Teza Nakazwe, and a recent graduate of the University, Ms Chimika Mwale. Following my return to Baltimore in 1996, two graduate students of Applied Developmental Psychology at the University of Maryland, Baltimore County joined the team: Ms (now Dr) Care Udell (who conducted documentary research on the origins of the Child-to-Child programme in Mpika for her Masters thesis), and later Ms (now Dr) Dorothy Adamson-Holley (who visited Mpika in 1998 to collect data for her Doctoral Dissertation study).

3. Mumba (2000) describes several complementary entry-points for the promotion of democratization: introduction of students to the notion of children's rights; creation of cooperative learning groups; engaging students in performance evaluation (of their own performance, that of their peers, and that of their teacher); involving students in decision-making (in relation to academic activities and preventive maintenance of school facilities).
4. All Basic Schools offer Grade 8 and Grade 9 classes attached to primary schools. A less stringent set of cut-off marks has been used for admission to 8th Grade classes at Basic Schools.
5. Indeed, using our rating scales, which were anchored with examples of relevant observable behaviour generated by Zambian teachers, we found, using multiple regression analysis, that in the two CtC classes at Kabale School, practical problem-solving ability was significantly predictive of SSSE scores and academic standing within the class only marginally so, whereas in the non-CtC classes only academic standing was predictive.

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