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ABSTRACT

The Child-to-Child (CtC) project involved school-age African children in monitoring younger children's weight and health (since much of the daily infant care in Africa is performed by preadolescents). CtC emphasizes local autonomy and is based on respect for children as morally responsible community members with a basic right to health and education. A case study examined activities of primary school teachers who applied CtC concepts in the Mpika district of Zambia. Third and sixth graders learned about basic health care and the use of growth charts to monitor health during mathematics class. After discussing diarrheal diseases and oral rehydration therapy, the paper describes an investigation of teaching-learning processes in schools using CtC. The study observed students in seven schools as they learned about and worked with growth charts. Interviews and written records indicated the children had a good understanding of the subject. Using a behavioral assessment instrument, students' ability to act appropriately in emergencies (bleeding or severe diarrhea) were examined. Interviews with parents investigated what they knew about CtC and how they felt about home-school relationships. Results revealed that most were strong supporters of home-school links and considered nurturance a very important theme inherent in CtC. CtC activities helped empower low-income, rural African children to participate meaningfully in the health care of younger children. (Contains 53 references.) (SM)

Participatory appropriation of health science by primary school students in rural Zambia

by

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In search of alternative approaches to education in Africa

The cultivation of children's development is a multi-faceted enterprise that takes various forms in different societies. In many parts of contemporary Africa, indigenous socialisation practices coexist somewhat uneasily with the systematic approaches of formal education. One reason for this is that the institutions of schooling introduced to Africa by Christian and Islamic missionaries were characterised by hegemonic imposition (Serpell & Hatano, in press), resulting in extraneous constraints that hamper the integration of professional services with the cultural system of indigenous communities. Despite three decades of political independence, these exogenous educational institutions have not been subjected to fundamental reappraisal according to indigenous cultural criteria by those in positions of authority (Mazrui, 1986; Nsamenang, 1992). As a result, the effect of schooling on many of the rural youth, rather than preparation for constructive participation in the life of their community, is to orient them towards a set of industrial and bureaucratic norms that have greater relevance in the formal employment sector of urban settings than in the rural communities in which they live.

The educational process that gives rise to this alienation relies on an implicit consensus among teachers, students and their families on an "extractive definition of success" (Serpell, 1993a). Students who obtain a certificate that enables them to obtain a formal sector job in the city are regarded as having succeeded educationally, while those who remain in the communities into which they were born are characterised as "failures", or "drop-outs", whose subsistence agricultural activities are termed "loafing" or "just sitting" (Hoppers, 1967) rather than productive work. Since the economic constraints on opportunities for secondary and tertiary education ensure that the majority of students do not proceed beyond the basic tier of the school system, the result of this ideological orientation is that most students are by definition denied the possibility of considering their years of basic schooling as valuable learning opportunities.

The project described in this paper is motivated by a search for alternative, less alienating approaches to basic education for contemporary African society (Serpell, 1995), with the goal of documenting several exemplary programs (Hawes & Stephens, 1990) of basic education, health promotion, and habilitation that address in innovative ways the challenges of supporting human development in lowincome, African communities. This is a preliminary report of research in progress on one such case-study.

The Child-to-Child approach

Building on the work of David Morley and his colleagues (Morley & Woodland, 1979), the Child-to-Child Trust in London has 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 (Bailey, Hawes & Bonati, 1992; Otaala, 1978; Young & Durston, 1987). The concept has been applied in several African countries (UNESCO/UNICEF, 1989). The present case-study is focused on the activities of a group of primary school teachers in the Mpika District of Zambia's northern province, who have for several years been applying these concepts within the framework of the Child-to-Child programme.

"Child to Child" (often abbreviated as Child-to-Child, or CtC) is a broadly conceived approach to the integration of education and health that seeks to mobilise 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 the influential theoretical perspective of Piaget.

In African schools, a widespread tendency has been observed for instruction to follow an authoritarian pattern, relying heavily on verbatim solicitation routines (cf. Koivukari, 1982), which are more conducive to rote memorization than to the development of deep understanding and appropriation. The CtC approach aims instead to cultivate critical thinking, by encouraging students to become more active, to take responsibility for finding information for themselves, and to engage in practical activities. The principle of democratization of the educational process is linked to a recognition of children's rights, and is construed as extending into the life of the wider community.

Unlike many other nationally coordinated government programmes in Zambia and elsewhere in Africa, the philosophy of CtC emphasizes local autonomy relative to central administration.

Growth - charts as a multi-faceted cognitive resource FOR MONITORING INFANT GROWTH, teaching mathematics, participatory appropriation of health science:

The Zambian Ministry of Health has been committed since the Alma Ata declaration (WHO/UNICEF, 1978) to a policy of primary health care, within which the Child Survival Programme defines as priority objectives the promotion of growth-monitoring, oral rehydration, breast-feeding and immunization ("GOBI", cf. Grant, 1984). As part of this programme, a weightmonitoring growth chart is printed on child health record cards, which are kept at home all over Zambia, as in many other third world countries (cf. Morley & Woodland, 1979), by parents, many of whom have received an incomplete primary school education. The metaphor of "the road to health" encoded diagrammatically on these charts combines a number of powerful attributes: lowcost userfriendliness (a recurrent theme of Appropriate Technology); semiotic translucency (a valuable resource for crosscultural communication cf. Kiernan, 1985); demographic adaptability (guaranteeing transcultural relevance); and statistical calibration (giving it the quantitative sophistication required of a curricular topic in the field of modern science).

A great deal of the daily care of infants in Africa is performed by preadolescent children (cf. Nsamenang, 1992; Harkness & Super, 1992; Serpell, 1992). Moreover, from a distributed cognition perspective, the goal of protecting infant health could be (and indeed sometimes is) achieved through collaboration by professional health personnel with mothers who can grasp the essential principles of the "road to health" diagram, without expecting the latter to master the technicalities of calculating statistical norms or plotting graphs. Thus, various types of understanding may inform the ways in which different members of the community 'read' the chart, and yet those diverse understandings may converge sufficiently for the chart to serve as an effective shared resource for co-constructive problem solving and action planning.

Curriculum development for basic education

Arising from a workshop held in Kenya in 1987, Gibbs and Mutunga (1991) have published a set of instructional modules in basic mathematics that focus on practical aspects of primary health care, including the monitoring of young children's weight. Mumba (1994) describes a class assignment that required his students to plot a growth chart from imaginary raw data, as well as plans to develop an ongoing application that would involve students maintaining weight charts for their younger siblings after the age of 2.5. As he points out, this represents a critical phase for many rural Zambian children's development, because parents tend to stop bringing their children to the clinic for weighing at this age, shifting their attention to the care of the next sibling to be born. Such involvement in the care of a younger child has other potential educational value as an opportunity to cultivate nurturant responsibility a moral quality highly valued in many African societies, but relatively neglected in the curriculum of most contemporary public school systems (Serpell, 1993a).

Diarrheal disease:
a major impediment to infant growth in Africa

Diarrheal diseases rank among the leading causes of death in infancy and childhood (alongside respiratory tract infections, and malaria) in many parts of Africa including Zambia. A child with chronic diarrhea tends to lose weight. Often (but by no means always) associated with malnutrition, diarrhea is also frequently caused by consuming contaminated food or drink. The **maintenance of personal and environmental hygiene** is thus a major preventive strategy emphasized by CtC.

"Most children who die from diarrhea die because they do not have enough water left in their bodies. This lack of water is called **dehydration**. Dehydration results when the body loses more liquid than it takes in. ... People of any age can become dehydrated, but dehydration develops more quickly and is most dangerous in small children" (Werner, Thuman, Maxwell & Pearson, 1993, 160).

Oral rehydration therapy:
a scientifically tested, effective, and low-cost method
for saving children's lives

Frequent small doses of ORS provide a very effective treatment for dehydration. "In some countries packets of Oral Rehydration Salts (ORS) are available for mixing with water. These contain a simple sugar, salt, soda and potassium. However, homemade drinks - especially cereal drinks - when correctly prepared are often cheaper, safer, and more effective than ORS packets" (Werner, Thuman, Maxwell & Pearson, 1993, 161).

The CtC program teaches children to make a 'home mix' rehydration drink by dissolving one teaspoon of salt with eight teaspoons of sugar in a litre of water. This drink is called **ORS : Oral Rehydration Solution**.

Group organization of learning opportunities

To find out more about the teaching-learning process in schools that have espoused the Child to Child approach to learning, classroom observations were made at seven schools in the Mpika District of Zambia's Northern Province in November-December 1995. In a follow-up visit to Kabale school where most of the research work is based, further classroom observations were made in May 1996.

Observation of Demonstration Classes.

During the first visit to the main school the research team observed lessons in a Grade 3 class and a Grade 6 class, in which children were taught about the growth chart. In the Grade 3 class, the children read and interpreted growth charts of some fictional children. They also measured one another's actual weight (on a bathroom scale placed in front of the class) and height (on a scale drawn on the wall of the classroom). Informal interviews with a sample of these young pupils after the lesson revealed generally good understanding of the topic. Written records of class assignments in the upper grades showed for several students impressive evidence of integration of the theory of growth monitoring with their lives at home and in the community.

In the few schools where Child to Child was integrated across the curriculum, there was evidence of the teachers attempting to democratize the learning process. Group work was greatly encouraged - it was observed that immediately after they were given a task the children put their heads together and had a discussion after which the group's academic leader put up his/her hand. When asked how they arrived at an answer, the children responded that they had discussions and then decided on an answer which they gave to the academic leader. It was notable that the teachers referred to the children by the name of their groups and not by their individual names and that efforts were being made by the children to encourage their peers who did not seem to get into the discussions readily.

Behavioural assessment
of individual learning outcomes

The purpose of the Behavioural Assessment Instrument was to find out whether the children who are being taught about primary health care and taking responsibility for their own health and that of their younger siblings would be able to act accordingly in an emergency. Two scenarios were selected for eliciting children's behaviour, one involving diarrhoea, the other involving bleeding. The rationale behind selecting these two situations was that diarrhoea is a common occurrence among young children in Zambian homes. Similarly, children usually find themselves in situations where they hurt themselves and bleed.

The procedure followed was as follows: the focal child was brought together with a younger child, preferably a younger sibling in the focal child's home. Parents and or/caregivers were requested to leave the room so that the children would not feel inhibited by their presence. Briefly the focal child was told to imagine that the younger child:

1. has hurt his/her toe/knee and is bleeding,

or 2. has terrible diarrhoea.

In both scenarios the focal child was said to be the oldest person in the house at the time and is asked what he/she would do about the problem. Several prompts are given that would help the older child give an appropriate response.

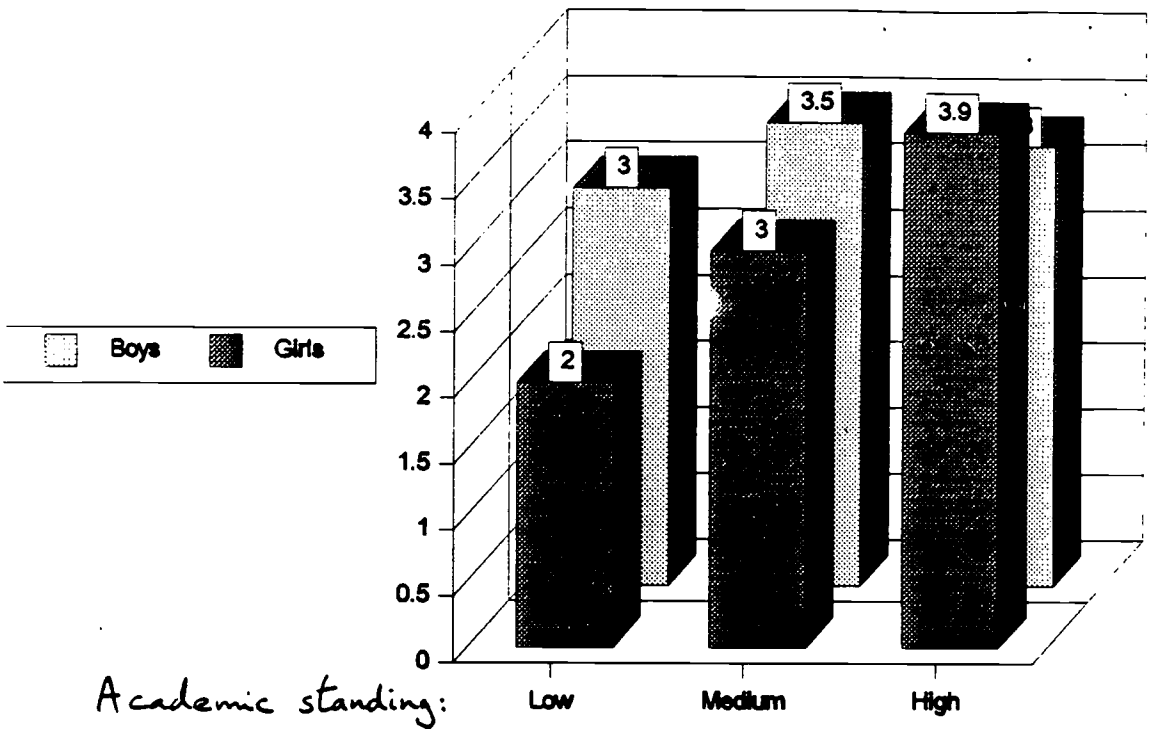
The behaviour of the children was assessed in terms of::

1. The technical adequacy of the action taken for preventing dehydration.
2. The technical adequacy of the action taken for preventing infection of the cut.
3. The degree of socio-emotional support expressed (as an index of nurturance).

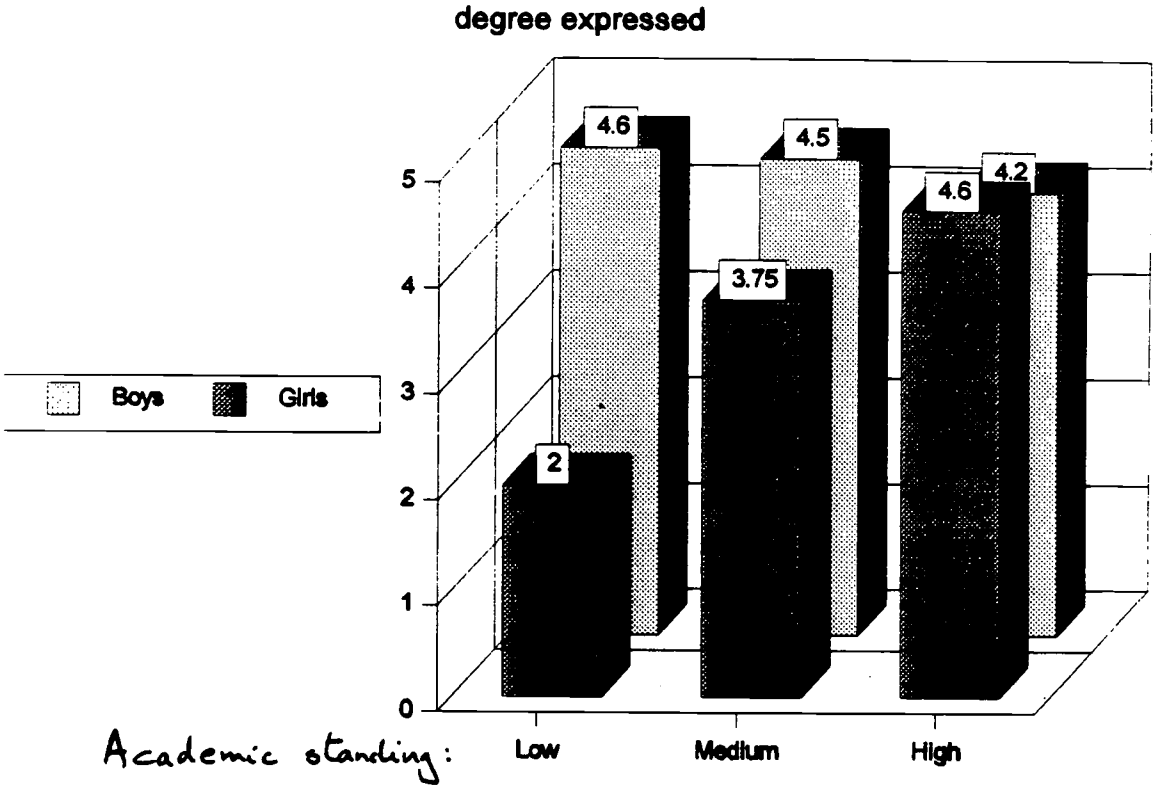
The results presented in the bar-charts are based on a preliminary analysis of the transcripts of half of the sample of 40 children assed to date. Roughly equal proportions of the children selected for assessment were girls and boys,students in either of two Grade 7 classes at Kabale Primary School, and were drawn at random from each of three tiers of general academic performance as rated by their class teacher.

PREVENTING DEHYDRATION

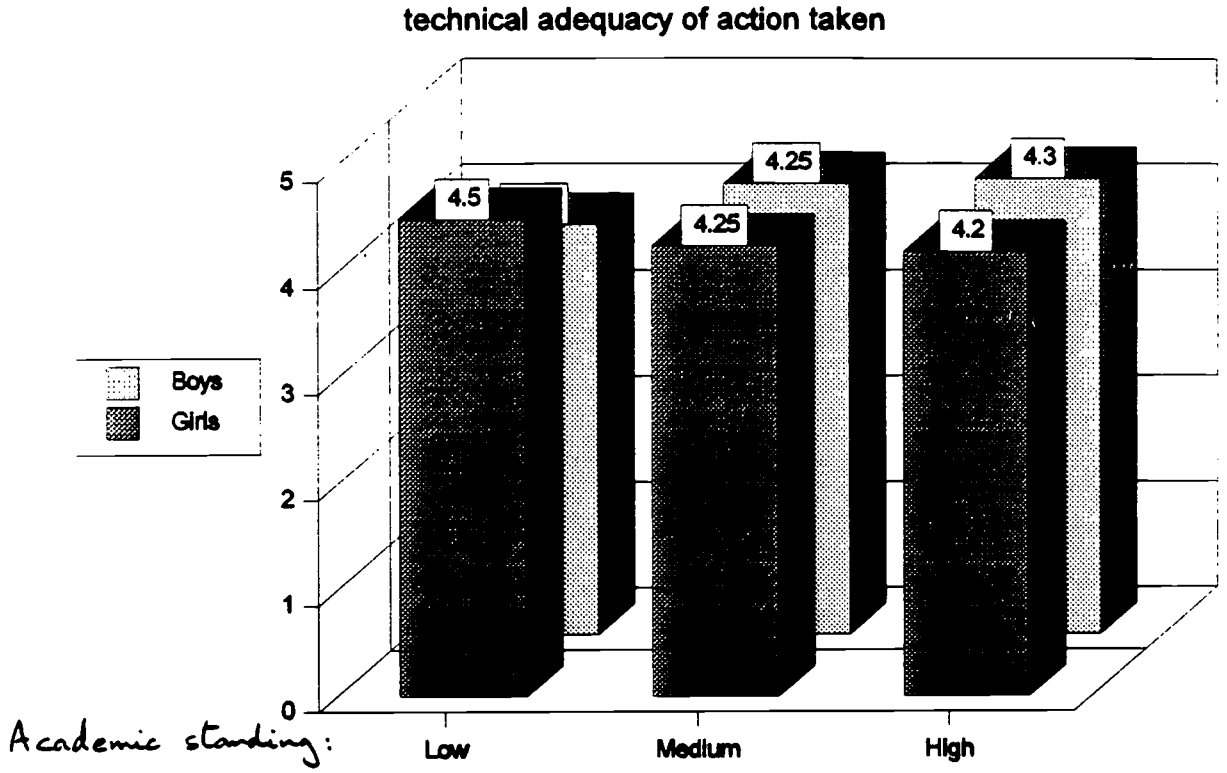
technical adequacy of action taken



EMOTIONAL SUPPORTIVENESS



PREVENTING INFECTION OF CUT



Home-school coordination of
child socialization and education
Community response to educational innovation

Parent Interview Schedule

It has often been argued that since both the school and the family (the home) have an interest in the development of the child, it is important that good links be established between the home and the school. This link between the school and the home is of even greater importance as far as the Child-to-Child concept is concerned. This is because it is hoped that through CtC important health messages can be disseminated by the child to both his/her peers and other members of the community. It is also believed that the school and health workers can obtain important information about health practices and beliefs operating in the community through the child. The child is, therefore, a channel of information between the home and the school. But without the support of the home it would perhaps be over ambitious to imagine that much could be achieved. It was, therefore, considered important to find out what parents know about Child-to-Child, what they think of the approach and of some aspects of the curriculum which are not in the regular curriculum, e.g. teaching about the under-five clinic card and nurturance etc. The parent interview schedule was written in Bemba as our preliminary enquiry in November 1995 had indicated that the majority of the local population was predominantly Bemba speaking. The writers felt that for the participants to express their feelings with as much clarity as possible, they should use their mother tongue. Provision was, however, made for those who felt otherwise to use English.

The questions in the interview schedule centre around four main themes in the following sequence:

- growth charts
- health and hygiene
- nurturance
- cooperative work in school

A small sample of interviews were tape-recorded in Mpika District between January and July 1996 and have since been transcribed by the students who conducted them in readiness for qualitative analysis.

Evidence that has been accumulated so far reveals that 13 out of 16 (81.25%) parents whose interviews have been transcribed strongly support the notion that the school and the home should work together in socializing children.

Parent 1

"The task of bringing up children is a 'national job'. I could raise my child in my own ways. But suppose that child goes into the outside world? What he has learnt in the home would not be sufficient out there. He will be out of place. Therefore parents and teachers should work together in bringing up children."

Parent 2

"No, they must not try to confuse each other. I think we should work together."

Parent 3

"Through this parents and teachers can tell how and whether a child is developing. This is because he/she may exhibit different behaviours at home and at school."

Three out of sixteen parents (18.75%) had reservations about home-school links. One such parent said:

"In some ways we should work together and in others we shouldn't. There are certain matters that are confined to the home."

The cultivation of nurturance: an indigenous African educational priority ?

Related to responsibility is the concept of nurturance. Nurturance is regarded as being very important for child development by the teachers as results so far obtained from teacher questionnaires suggest. Our pilot study on parent attitudes also suggested that nurturance was regarded as being a very important theme inherent in Child-to-Child.
A great deal of the daily care of infants in Africa is performed by pre-adolescent children (cf. Nsamenang, 1992; Harkness & Super, 1992; Serpell, 1992). Involvement in the care of a younger child has other potential educational value as an opportunity to cultivate nurturant responsibility - a moral quality highly valued in many African societies, but relatively neglected in the curriculum of most contemporary public school systems (Serpell, 1993a).

The complex ways in which families in many African societies share the process of nurturance of young children among adolescent and pre-adolescent children have been discussed extensively in the literature (e.g. Rabain, 1982; Whittemore & Beverly, 1989).

All of the parents interviewed so far have indicated that they see the emphasis by CtC on promoting nurturant behaviour as consistent with a long-standing indigenous cultural tradition:

"Children have always looked after their younger siblings"

e.g. when parents go out to the fields to work. (The Head of one school echoed this sentiment but added on that children run errands for their parents.) Parents also emphasized that there is need for nurturant behaviour (ichikuku in Bemba) to be promoted in both boys and girls as it is a very important attribute.

The team had several opportunities in Mpika District to observe at first-hand children taking care of younger siblings. When we visited the most rural school setting several little girls had younger children on their backs. When questioned why they were with their younger siblings, they seemed incredulous. One responded "***Baiche besu !***" (They are our **kids** !) The children did not see anything unusual about this practice as it is something accepted as part of life.

Participatory appropriation of health science by rural school children

At its best, the activities of the CtC program that we have observed seem to have the potential to empower children of low-income, rural African communities to appropriate a scientific technology that is well adapted to dealing with serious local health problems. By participating from an early age in the care and nurturance of younger siblings, schoolmates, and neighbors, the children develop a sense of social responsibility and competence. By observing, practising and reflecting analytically on effective methods of monitoring the growth of young children, of preventing and treating malnutrition and diarrheal diseases, they become increasingly central and legitimate participants in important societal functions, earning the respect of their peers and their elders as responsible and caring members of the community and as agents of progressive social change. The mathematical and literary contents of their studies are no less technically sophisticated than those of more conventional school curricula, and their rate of learning is probably significantly enhanced by intrinsic motivation arising from the tangible applicability of the knowledge they are encouraged to acquire. Group work affords support to the less highly talented and autonomous members of each cohort. This segment of the child population, which is generally neglected by the standard contemporary model of Institutionalised Public Basic Schooling (IPBS) in Africa, stands to gain from the CtC approach an enhanced opportunity to appropriate some of the socially distributed cognitive resources for health protection and promotion embedded in modern science and technology.

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