CAN SCHOOL CLUSTERING ENHANCE EDUCATIONAL EFFECTIVENESS?

Promises and Pitfalls

PREPARED BY:
Kurt Bredenberg

KAMPUCHEAN ACTION FOR PRIMARY EDUCATION

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KAPE, c/o Provincial Teacher Training College, Kampong Cham Town
Kampong Cham Province, Cambodia; Mailing Address: PO Box 1621 Phnom Penh (email: kape@kapekh.org/website: www.kapekh.org)

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1. Introduction to School Clustering

Whatever the place where school clustering has been tried, its record of success has been difficult to sort out. It may be a testament to the merit of school clustering as a development strategy that in spite of this checkered history, it continues to be a popular approach to improve educational quality in many countries. Its continuing popularity may also suggest that assessment of its effectiveness has to go beyond simply measuring rates of student enrollment, repetition, and dropout. The purpose of this article is to try make sense of the complex issues relating to the effectiveness of school clustering; why it continues to be a popular development strategy; and how common problems in implementation of cluster school projects in the past can be avoided.

For many developing educational systems, resource scarcity has been a persistent barrier to improving the quality of education. School clustering is a development strategy that stresses the use of resources in common by several schools simultaneously. As a result, it is a strategy that offers the possibility of highly efficient resource utilization. This is what makes school clustering a very attractive development strategy to many countries. At its simplest level, school clustering is the process of organizing geographically contiguous schools into a mutual support network. The schools are usually arranged around a core school whose primary function is to provide leadership to the cluster and coordinate quality improvement activities among schools. Sometimes the membership of the cluster includes both secondary and primary schools. Most frequently, however, school clustering occurs mainly in the primary education sector. Depending on the context, the nature of the association between schools can vary widely. This includes very loose, voluntary arrangements of schools such as in Papua New Guinea to mandatory membership in which the decisions reached in the cluster are binding upon all schools as in Thailand and Sri Lanka. Between these extremes, there exists a wide range of cluster types with varying degrees of fixed association among member schools.

There are mainly two kinds of underlying approach that typify most cluster school initiatives. One approach emphasizes using clusters as a kind of delivery mechanism for quality improvement inputs while the other focuses on using the cluster as a means to facilitate interaction between schools. The first approach treats the cluster as the extended arm of the district education office and usually has a full time staff person or persons for the delivery of training and supervision of schools. The success of this approach usually depends to a large extent on the ability of the staff assigned to run the cluster. In the second approach, the school cluster is used as a forum for interaction between schools. The level of interaction can vary and may include teachers, school directors, and parents as participants. In this typology, the success of the cluster depends largely on the voluntary actions of the immediate stakeholders as well as their interest and commitment to the initiative. The cluster acts as a forum to promote motivation and support of efforts to improve children's learning but has no enforcement

authority. In actual practice, however, most clusters do not fall completely into either category but may possess characteristics of each along a continuum.

The sharing of resources, both material and human, is usually one of the most central functions in a cluster. This function has a strong bearing on a number of other goals variously adopted by school clusters in many different settings. For example, sharing personnel between member schools for purposes of teacher education, test development, and other capacity building activities enables those schools that lack a strong human resource base to access more experienced personnel. When experienced personnel are shared among schools, this can facilitate improved local planning, more opportunities for staff development, improved evaluation, and a host of other quality improvement imperatives. Improved planning capacity at the local level can also promote decentralization which is another frequently cited theme in school clustering. Similarly, sharing material resources such as library facilities and teaching aids through rotation arrangements can promote improvements in the learning environments offered by schools. Resource sharing of this sort also promotes equity between schools that differ in important ways such as size, remoteness, and material endowment. These are but some of the common goals school clusters share.

School clustering has a long history. Examples can be found as far back as the early 1950s in places such as Thailand when the first pilots there were set in motion. During the global recession of the 1970s and 1980s when many countries were facing the prospect of diminishing education budgets in an environment of exploding enrollments, school clustering became especially popular. As a result, it was adopted by many countries as a fundamental development strategy. This was especially true in Latin America where clusters were called 'nucleos.' Since one of the main functions of school clustering is to deal with resource scarcity, the role of clusters has changed as prosperity has returned to the world economy, particularly in East Asia. In several of the countries which first adopted clustering, resource sharing is less and less important than it once was. At the same time, other cluster functions such as capacity building and accountability have increased in importance. It may eventually happen that the resource sharing function of clusters may one day disappear entirely when the education systems in these countries reach a critical mass of economic development.

In the 1990s, school clustering was embraced by several former socialist bloc countries many of whose educational systems have been in a state of collapse for an extended period of time. Some of the countries in this category now implementing cluster school projects include Cambodia, Laos, and even Albania. Because the development environment is qualitatively very different in these countries, we can almost call school clustering there a 'second wave' with a very distinct set of challenges than those faced by the initial wave of school clustering in the 1970s and 1980s. For example, the weakened administrative state of educational systems in these countries made cluster school initiatives sin-

gularly dependent on donor support. This sometimes created greater susceptibility of cluster school programs to being hijacked or compromised by the agendas of different donors. This has caused especially acute problems when the agendas of different donors have been in conflict. For example, it was reported that in one of these countries, one donor had advocated for distance based education programs to train teachers in a cluster context. At the same time, another was supporting school-based in-servicing often in the same clusters. This created tremendous confusion and greatly taxed the already limited capacity of the system to effectively absorb development aid. Similarly, total dependence on donor support in these countries has made sustainability of cluster school activities a major issue of an increasingly intractable nature.

2. Important Issues Bearing on the Effectiveness of School Clusters

Perhaps the most fundamental issue relating to the effectiveness of school clusters concerns the difficulties in assessing its success. Measuring the effectiveness of clusters requires clear definitions of outputs, which are sometimes difficult to quantify. Since cluster school development is really a process of institution building, assessments must focus on the degree to which these institutions have become functional. Institution building can involve many things including developing cluster based library systems, resource centers, governance committees, and other mechanisms to share resources, facilitate communication between schools, and build capacity (Box 1). Thus, in one sense, assessing the effectiveness of clusters requires evaluation of the process of *institution building*. This is no easy task, least of all because implementers do not always think of cluster school development as a process of institution building at all. Frequently, those responsible for animating clusters get a very superficial definition of what it entails, usually focusing on the incomplete idea that it is simply an association of schools that are supposed to work together. But even when concept formation relating to the cluster school development process has been adequate, creating modalities through which to evaluate the effectiveness of cluster-based institutions can be very difficult. Such modalities require the ability to

BOX 1: ***Common Cluster-based Institutions***

1. Cluster School Committee:
The main decision-making body within the cluster which makes all decisions regarding the allocation of resources, general planning, and implementation of all cluster-wide activities.
2. Resource Center
The institution responsible for the *organization and maintenance* of teaching aids, for researching and planning the *production* of new teaching aids, and for ensuring *dissemination and usage* of materials in surrounding schools.
3. Cluster School Library
The central library system within the cluster which coordinates all library related activities in different schools
4. Teacher Supervision System
A local network usually animated by master teachers who provide technical support to teachers throughout the cluster.
5. Testing Committee
A cluster-based committee with broad representation from all schools charged with bringing about greater accountability for student learning through the development and administration of standardized tests.
6. Parent Associations
Cluster-based associations of parents who assist the cluster in implementing specific activities to promote parental involvement in education.

develop operational definitions of expected outputs relating to planning, dissemination and usage of materials, accountability, technical support, and other major functions which clusters are expected to perform.

BOX 2*: Necessary Preconditions for Clustering to Succeed*

1. An official policy framework or at the pilot stage, permission for schools to experiment in developing local institutions in a cluster framework.
2. A policy commitment to decentralized control of schools.
3. Reasonable transportation and communication network in the target area.
4. Distances between schools that are reasonable.
5. Reasonable level of population density (not too high, not too low).
6. Previously existing culture of cooperation and/or mutual support.
7. Enough available personnel in schools to staff positions such as master teachers, librarians, or resource center manager.
8. Consensus among stakeholders about the purpose and need for clusters.
9. Appointment structure is based on merit and not affiliation.
10. School staff have adequate organizational skills.
11. Availability of locally generated resources or state support to assure sustainability of cluster-based institutions.

The role of extraneous variables can also greatly complicate assessments of cluster school effectiveness. These extraneous variables are separate from the inherent substance of cluster school design. Though the problem of extraneous variables is not limited to school clusters alone, it is a factor to which they are particularly susceptible. Often times, these extraneous variables take the form of missing preconditions that are necessary for developing clusters in any given context (Box 2). For example, poor leadership and inadequate organizational skills among school directors usually doom any chance of effective institution building within a school cluster. Neglecting to consider necessary preconditions for clustering tends to build failure into a program. The negative influence of absent preconditions can be especially debilitating to efforts to develop clusters when governments promulgate policies that place all schools into a cluster regardless of existing conditions. This is what occurred in places such as Thailand and later in Cambodia. Because many schools exist in situations that may not be suitable for clustering, such policies can greatly compromise the effectiveness of a cluster school initiative. This may lead to more failures than might otherwise have occurred if implementation had been more selective. Blunt policy decisions such as these tend not only compromise a program's success but also to lead to doubts about the effectiveness of school clustering as a development strategy.

Extraneous variables can also take the form of faulty project design decisions. These too can hobble efforts to make clusters work through no fault of their own. Frequently, design flaws result from a failure to achieve an appropriate balance between intended outcomes such as *equity* and *quality improvement.* The cluster school experience in Cambodia offers a good case in point in this respect. Erroneous design decisions greatly affected the effectiveness of school clusters there, much to the pain of donors and government who had invested millions in the effort. The Cambodian educational environment suffers from an acute lack of both material and human resources. Thus, school clustering was and continues to be an attractive development strategy there. But many of the decisions affecting pro-

ject design led to a serious mismatch between available field-based technical assistance and the geographical area of project coverage. In the interests of equity, too few staff were spread over too wide a geographical area. As a result, subsequent project assessments found that few school clusters in target areas were in any way operational (Bredenberg, 1998). Too often, mistakes in design such as this lead to premature conclusions about the viability of school clustering as an effective development strategy.

Perhaps the most common omission in cluster school initiatives, which really compromises their effectiveness is the failure to develop definitional models which better aid in implementation and assessment. Defining the parameters of one's assessment can be very helpful in informing the implementation process. Indeed, the best way to think about defining an implementation process is to start with the expected outcomes to be assessed and the functions clusters must fulfill to realize these outcomes. Surprisingly, this common rule of thumb is frequently ignored in cluster school project design. The failure to develop models that try to define outcomes and cluster functions in clear operational terms is an important reason for this state of affairs. As stated earlier, those responsible for animating a cluster school are frequently left with highly simplistic notions of what clustering is all about beyond the very superficial definitions describing its external form as an association of schools. In such cases, the external technical inputs provided to the cluster have not been clearly linked to specific functions that the cluster is supposed to serve. The failure to rationalize technical support in this way can lead to a confused patchwork of activities within clusters with no clear overriding purpose or link to quality improvement in schools. When such rationalization is lacking, clusters tend to perform various activities in a mechanical way without clearly understanding the function that the activity is supposed to serve. For example, one might find a cluster operating a mobile library system in which books are moved from school to school according to a specific rotation schedule. But when asking cluster school personnel what the purpose of the activity is, one might get very unclear answers. There may be no clear understanding that rotating materials in this way serves the purpose of sharing resources among schools. The activity is being carried out simply because it has been mandated by project staff or by officials higher up in the educational hierarchy. When cluster school personnel do not understand the linkages between activities and a generalized set of cluster functions that should be clearly outlined in a definitional framework, the result is likely to be mechanical clusters with limited capacity for innovation.

3. How School Clustering Efforts Can Go Wrong

What follows below is a description of some of the common pitfalls that have occurred in cluster school development as a result of various design flaws, particularly those relating to the failure to develop an adequate definitional model of outcomes to guide the clustering process. These pitfalls are based on real experiences in several countries that use clustering as a central development strategy.

3.1. Hijacked Agendas and the Trojan Horse Syndrome

As implied earlier, the overriding agenda of most cluster school initiatives is to improve the quality of education. Improved resource utilization, capacity building, better accountability, and decentralized management practices are some of the ways in which clusters achieve this agenda. When this agenda is not clearly articulated in the form of a definitional model, competing agendas of either the government or the donors can hijack a cluster school project thereby resulting in a neglect of important development activities. School construction is a painfully common example of a competing agenda that has been known to displace technical activities in school cluster projects. Infrastructure improvement in schools is often an activity of great attraction to both government and donors, particularly donors in the business of providing loans to client countries. Because school cluster projects sometimes require a certain modicum of infrastructure, some part of the project budget is always devoted to building construction. In many places, however, this often gets out of hand so that project staff spend all of their time doing nothing but following up on building construction. This is what occurred in Cambodia's cluster school initiative to devastating effect (Geeves, 1999).

Because competing agendas often seem to displace cluster school development ones, they are sometimes referred to as a Trojan Horse. Take the following scenario, for example. It may happen that Government X wants to renew school infrastructure but knows that Donor Y will only provide funding for technical support. Government X may, therefore, go along with a cluster school project that the donor wishes to promote as long as it includes some provision for construction. But what happens is that the project eventually becomes dominated by school construction to the exclusion of all else because this is really the primary interest of a major stakeholder. The Government has no real commitment to school clustering but really wants support for school infrastructure. The construction provision within the project becomes a Trojan Horse that leads to the disruption of more genuine cluster school development activities.

Trojan Horse Syndrome does not only come from the government side. In Nepal, for example, resource center construction was the brainchild of a major donor. This provision totally changed the complexion of an earlier cluster school pilot that had received considerable kudos from evaluators. When clustering was adopted as a project with national scope, however, a construction agenda promoted by a large loan had the effect of de-linking the resource center from the mainstream of cluster school activity. This change in design greatly impeded coordination within the cluster (see below). In the same way, Trojan Horse Syndrome need not necessarily take the form of school construction although this is one of its more common forms. Cluster school projects have also come to be dominated by singularly non-cluster agendas such as simple provision of school supplies and a host of one-issue donor agendas.

The failure of cluster school initiatives in the manner described above argues for considerable caution when governments and donors with obviously different agendas sign on to support a cluster school project. Project managers need to be highly vigilant about the danger posed to the viability of a cluster school program by competing agendas. Continuous reference to a clear definitional model of cluster school development is one way to maintain heightened awareness of cluster school imperatives such as interschool cooperation, resource sharing, and capacity building.

3.2. Lack of Integrated Development Approaches

It has already been stated that one of the central elements of cluster school development is institution building. Among the important cluster-based institutions developed through this process are resource centers, governing committees, libraries, bodies representing parents, and teacher supervision systems, among others. In order to maintain optimum operation of these systems, coordination and linkage are essential. Yet it often happens that project designs do not facilitate the kind of synergy needed among cluster based institutions to maximize functionality.

There are several ways in which institutional development activities in clusters can become de-linked from one another. One way is when formative activities within the cluster occur in parallel. In Cambodia, for example, a large teacher training program was implemented in parallel with activities to develop management bodies within the cluster. As in Nepal, this meant that the teacher training project structure was external to the clusters in which the training activities were occurring. Since sustained systems of teacher supervision and support are often a major component of capacity building activities within clusters, this was a major oversight in project design. When teacher training activities are de-linked from cluster school development in this way, the latter tends to become a hollow shell. In order for a cluster to have truly functional capacity building systems, there must be a process of informing cluster staff of how teacher training is to occur regularly within the cluster. This is usually a slow process of not just telling people what to do in a one-day training session but of building habits of actually undertaking these tasks over a long period of time. In divorcing teacher training from cluster school development, the Cambodian project set up unsustainable training networks, which disappeared when the teacher training was completed. Because these training activities were never linked to cluster school structures, clusters were left with the hollow shell of a capacity building function but no content or institutional memory of how to carry it out. Since one of the key functions of cluster school development is capacity building, teacher training must be an integral element in the design of a cluster school project.

The parallel operation of resource centers and cluster management structures in Nepal offers a similar example of poorly integrated development approaches. In developing school clusters in Nepal in the

post-pilot stage, the government and donors established resource centers and their support staff as institutions that were external to the management bodies within the cluster. The cluster school director, therefore, had no real authority over the technical support within the cluster. This had serious effects on the ability of the cluster to coordinate technical support to teachers or manage the utilization of available resources in a way that was either effective or equitable. It also weakened a sense of common purpose among schools and in some cases was even reported to heighten a sense of resentment between school directors and those associated with the resource center system.

3.3. Absence of Provisions to Modify Cluster School Development Activities according to Evolutionary Changes in Need

Cluster school development is not a static process. Inputs provided in projects at the beginning are likely to be very different from those provided in the middle and at the end. When definitional models with clear statements of outcomes are not available, project implementers are hard pressed to modify technical support in a way that allows the cluster to mature. As a result, one can find cluster school projects that have been going on for years with no clear direction for the future other than an incurable addiction to donor support. In such cases, external support often continues to be highly prescriptive in nature. Leadership in the cluster is still immature and the ability for innovative thinking limited.

Cluster school development must be thought of as an evolutionary process that usually moves from prescriptive kinds of technical support at the beginning to an ever-increasing degree of stakeholder driven development as time progresses. Prescriptive approaches are frequently necessary at the beginning of cluster school development projects simply because the existing human resource base lacks the necessary previous exposure to new ideas about education. In the former socialist countries of Indochina and Eastern Europe especially, restricted flows of information about education in the outside world were relatively common. Prescriptive inputs in such countries have frequently taken the form of director, teacher, and parental training in areas ranging from instructional methodology to participant-centered management techniques. After one or two years of such inputs, technical support can change to allow for greater autonomy and latitude for innovation among stakeholders within the cluster. It is at this point that the nature of the technical support required is determined by service recipients rather than the service providers. Providing cluster-based grants in which funding support continues to be external but the content of activity is totally determined by stakeholders is a common way of achieving this kind of evolutionary change. This, however, assumes a clear definitional framework of cluster school development along with the expected evolutionary changes in operation.

3.4. Failure to Balance Functions within Clusters

Clusters are at times described metaphorically as a pipeline or conduit. This is to say that the institutional framework inherent in school clusters can provide an administrative structure at the local level through which to facilitate the dissemination of either materials or technical content. The dissemination of technical inputs to member schools is an especially valuable facility that clusters are able to provide. Each institution developed in the cluster may have particular value in implementing a technical input. This is why it is helpful to consider school clustering an institution building process. Some of the kinds of technical inputs which clusters have in the past helped to facilitate include teacher training programs, testing activities, and provision of library services. For example, teacher supervision system in the cluster may be utilized to provide a series of training seminars developed at central level for dissemination to all teachers in local schools.

Although the ability of clusters to act as a pipeline is an important way in which it facilitates educational development, it can at times be a double-edged sword. When particular technical inputs tend to receive a very high priority, their input through the system can sometimes alter the balance of functions within the cluster. As we have seen above, there are many functions that clusters can serve. Some of these functions, however, are regarded as core functions such as *resource sharing, capacity building,* and *accountability* (Box 3). When any one of these functions is displaced, it negatively impacts on the overall functioning of the cluster. This can sometimes happen when particular technical inputs mandated by higher authorities are implemented with excessive zeal. A review of cluster school development activities in Thailand, for example, described the very useful support that clusters were able to provide there with respect to a national testing program (Wheeler, 1991). A working group of teachers representing all schools in the cluster developed standardized testing instruments regularly as an important basis for assessing teacher performance. Average class scores were posted in member schools so that each teacher had some idea how they were performing in comparison with their colleagues not only in their own school but in other schools as well. As an accountability measure, these practices were described as highly effective and had tremendous influence on the behavior of teachers. But the reviewer also found that the backwash effect from the tests promoted teacher-centered instructional practices and an overemphasis on rote recall. As a result, they tended to negate many of the capacity building activities in the cluster that were

Box 3: Core Cluster Functions

Resource Sharing:
Refers to the maximum utilization of scarce educational resources, both human and material, by developing institutional mechanisms that help to share these resources throughout the cluster (e.g., mobile libraries, resource center service schedules, joint planning exercises, etc.))

Capacity Building:
Refers to the development of institutionalized mechanisms within the cluster that improve the ability of staff to carry out their work (e.g., provision of technical support to teachers through a cluster-based teacher supervision system).

Accountability:
Refers to the institutionalization of mechanisms that hold staff responsible for their performance (e.g., the development of teacher supervision systems which hold teachers accountable for their teaching).

designed to promote more student friendly classrooms.

Another illustrative example of the negative effects that can occur in cluster operation when they are used as a conduit for a particular input once again relates to construction. In the Cambodian example mentioned earlier, it was noted how the government's preoccupation with school construction led to a cessation of more genuine cluster school activities. One of the rather important functions expected of clusters that did not occur was resource sharing. Considerable hope had been placed on clusters to move resources between schools to promote greater equity. Not only did this fail to occur but the strong emphasis on resource center construction at the core schools actually exacerbated inequities. This was due to the fact that core schools tended to be the largest and best endowed schools in a particular locality. These experiences underline how easily the functional equilibrium of clusters can be disrupted. There is, therefore, an important need for caution when using school clusters as a conduit for technical and material inputs mandated at a higher level.

3.5. Failure to Match Policy to Local Conditions

As with many innovations, cluster school initiatives have been known to lose their way when they move from the pilot stage to nation-wide implementation. After clusters have begun to show some success at the pilot stage, they are frequently seized upon by policy makers as a panacea for a large array of ills in the educational system including poor quality, inequity, and low community involvement in education. In the oversimplified world of public opinion, the complex issues relating to when and how clusters work (and do not work) are lost in the din of the collective outcry for action.

National policies that are intended to promote the clustering of all schools in an educational system usually founder on the issue of absent preconditions necessary for clustering mentioned earlier. The effect of these missing preconditions can be particularly acute in underdeveloped countries where infrastructure is primitive and the educational system less sophisticated. For instance, Thailand offers an example of a country in the relatively advanced stages of development where school clustering was extended nationally. Most of the country, however, is connected by roads and telephones. In addition, there is a highly evolved network of Teacher Training Colleges to staff schools with competent teachers. Communication between schools and the availability of staffing were, therefore, never serious problems in most school clusters. Thus, the potentially disastrous effect of national extension of clustering to all schools was somewhat mitigated. Neighboring Cambodia, on the other hand, did not have any of these advantages owing to the debilitating period of internal strife and international isolation that had occurred during the 1970s and 1980s. Consequently, the decision to extend school clusters throughout the country during the late 1990s did not yield many of the benefits hoped for (Geeves, 1999). In the remote areas of the country in the Northeast and Northwest, schools were sepa-

rated by distances of more than 20 to 30 kilometers without even the most rudimentary presence of a transportation network. This situation flew in the face of national guidelines stipulating that member schools should not be farther than 7 km from the core school. In addition, severe staffing shortages in many rural schools made it impossible to animate most of the internal institutional structures that were mandated in the national cluster school model. Many schools in rural areas were hard pressed to staff classrooms adequately let alone cluster libraries and resource centers. The mismatch between local conditions and the mandate to cluster all schools was made all the worse by a rigid policy framework that espoused a unitary cluster structure for all schools. Thus, even in cases when local authorities tried to adapt school clusters to local conditions, they were often frustrated in their attempts to do so by an overly centralized policy framework that did not allow the flexibility for modification in cluster school design. Needless to say, the cluster school initiative in Cambodia has not prospered under these circumstances.

Reconciling the antagonism between historical traditions of centralized management and the decentralized ways of working implied in school clustering is another common source of difficulty for cluster school initiatives. National ministries sometimes sign onto the idea of school clustering without fully understanding the policy implications for local control and decentralization. This can lead to the strange paradox of centralized implementation of a development strategy designed to promote decentralization. The use of unitary models of clustering has already been described as one example of how this might happen. There are others as well. These can include such implementation procedures as the identification of resource center supplies in a centralized manner, requirements for central approval for even the most mundane local decisions, and centralized control of local budgets. In Cambodia, for example, the cluster school initiative was totally controlled by a National Cluster School Committee with no real provision for local working groups at provincial and district until very late in the program. Without an avowed commitment to decentralization and all that this implies, however, school clusters cannot be expected to thrive.

3.6. Vulnerability to the Quality of School Leadership

As may by now be apparent, managing clusters is an enormously complex task with high demands for organizational skill. The effectiveness of school clusters hinges heavily on the ability of school directors to rise to the task. This speaks not only to their level of ability but also to their commitment to the goals of a cluster school initiative. The lengthy discussion above demonstrates the important role played by many necessary preconditions for clusters to succeed. The quality of school leadership, however, seems time and again to be one of the most salient determinants of a cluster's effectiveness. The head of the cluster is usually a director selected from one of the member schools. Very often, this person is the director of the core school. Among all the school directors, this individual plays the

most key role because he or she sets the standard for accountability in the cluster. In many places, the cluster director is responsible for calling regular meetings of cluster school management committees and animating a host of key activities such as scheduling rotations of materials, sorting out problems that arise in administering the cluster, and financial management of external and internal funds. Even when the cluster is a more informal association of schools, the cluster school director can exert tremendous influence on other directors and teachers by the example that they set. When this individual is not competent or committed to making the cluster work, the result is usually an ineffective cluster.

The quality of leadership of satellite school directors is also important, but not to the degree of the cluster school director. The former's role is primarily to follow up on decisions taken by the cluster management committees of which they are usually a member. This might entail going to the core school to pick up resource center or library materials for rotation, meeting with teachers regularly to organize implementation of cluster-based annual improvement plans, or discussing performance indicators with teachers as a measure to hold school staff accountable for their performance. It sometimes does happen that a disinterested school director will cause his or her school to miss out on the opportunities afforded by the cluster with respect to resource sharing and staff development. Obviously the effectiveness of the cluster will depend on how many member schools are managed by such individuals. If, however, at least half or more of the directors in a cluster are responsive to opportunities for quality improvement, this can make an important difference in cluster effectiveness.

A cluster's vulnerability to the quality of local school leadership also depends to a large extent on an education system's level of sophistication. When directors are primarily recruited from the ranks of senior teachers, such individuals are more likely to lack the requisite skills needed to manage a school or participate in a cluster school management body. In many former socialist bloc countries, director recruitment may also be heavily influenced by political factors such as party affiliation much more than technical competence. This further raises cluster sensitivities to the nature of school leadership. Even in relatively advanced educational systems, a cluster's success or failure may ultimately depend on the leadership provided by school directors. In Thailand, for example, rigorous measures consisting of a cluster-based testing program were able to achieve some success in making director's comply with expected performance standards. This was only possible, however, because there existed a culture of accountability within the education system. But even in Thailand, Wheeler (1991) found school directors to vary widely in the degree to which they utilized resources available within the cluster. In many educational systems such as in Cambodia, there does not exist a strong tradition of accountability leading to a proliferation of egregious examples of incompetence. In such circumstances, it is very difficult to implement measures to ensure accountability. This leaves school clusters in such countries in a very exposed state indeed.

There are a number of measures that cluster school initiatives have employed to minimize their exposure to the dangers posed by poor school leadership, particularly cluster-based leadership. Director training and certification have been employed with some success in Thailand, for example. Testing programs to assure accountability are another measure successfully employed in Thailand, but as noted above, the impact of such measures is best only when an education system has some tradition of accountability. The cluster school program in Albania has relied on a system of central Ministry appointments to the post of cluster director to ensure scrutiny of selected personnel. This system, however, may become less feasible as the program there expands. In addition, it introduces a measure of central control in the initiative that is undesirable in the context of school clustering. Cambodian school clusters have a preponderance of complicated issues with which to deal in this respect. This includes the absence of a formal certification process for school directors, a highly politicized appointment system, and no historical tradition of accountability. Under these circumstances, the national Ministry has turned to a process of local selection of cluster school directors through elections within the cluster itself. The director and vice director of member schools are each allowed to cast a vote for an individual among their own numbers to fill the post of cluster school director. It must be noted, however, that the quality of the individual selected depends entirely on the collective wisdom of the other directors. This can vary considerably from cluster to cluster. Incentives for travel and task work are also used in Cambodian clusters to considerable effect. In such cases, locally generated income can be used to stimulate interest from directors to complete important tasks necessary to maintain momentum in the operation of cluster-based institutions. Payments are made to directors for specific tasks authorized by the cluster management committee. Because these funds are provided by the cluster itself, they can be accessed quickly and without bureaucratic encumbrance. Each of these measures has merit to minimize the susceptibility of clusters to the effects of inadequate school leadership. They can not, however, be expected to assure a "director proof" cluster or to take the place of commitment and dedication.

3.7. Sustainability Revisited

An important issue in school clustering during the 1990s has been sustainability of cluster school operation after the cessation of donor support. Particularly in former socialist bloc countries, concerns about the ability of educational systems to maintain an operating structure in clusters without external support have been very great. With the collapse of socialism, many of these countries' traditional mechanisms for education financing were severely disrupted. In many cases, recurrent budgets consist mostly of staff salaries with little left over for discretionary spending by local authorities. Schools in Cambodia, for example, receive no budget from the central government other than those for salaries; in Albania, local education authorities also have no discretionary spending authority over the minimal funds received from the central government. In both countries, the cluster school activities in

progress there are utterly dependent on external aid provided by donors. While there has been much discussion about government responsibility for picking up recurrent costs presently covered by donors, little has happened to give any assurance that this will indeed happen. In Cambodia, where some donors have in fact terminated their support, cluster school activities have quickly dissipated. The only exit strategy considered by these donors was government support. This, however, turned out to be a fantasy.

Recurrent costs for cluster school activities in these countries focus primarily on funds for travel between schools, materials for libraries and resource centers, and incentives for cluster school personnel. Since resource sharing is still a critical function of major importance in these educational systems, there is a need to ensure that resources are indeed rotated between schools. This might involve travel money for a school director to come to the core school to pick up a mobile library box or for master teachers to visit schools in need of staff development and other kinds of technical support. When funds for these purposes are not available, rotation of resources usually does not occur. Thus, the viability of cluster schools under these circumstances is very much in question.

Some countries have been able to resolve the sustainability issue through loans from international lending institutions. Still, this strategy only postpones the inevitable question of what happens after that. In Cambodia, sustainability has been addressed in some clusters through local income generation activities in which clusters produce their own income. For example, a donor might provide a certain amount of loan capital to start up a credit scheme in which teachers are allowed to borrow from a central fund administered by the cluster. Using salaries as collateral, the cluster is ensured of a relatively risk free source of income from the interest charged for loan funds. These funds are usually enough to assure the continuation of cluster activities albeit at a lower level of intensity than was true during the period of donor support. This strategy works in places like Cambodia because there is a pervasive culture of borrowing and lending at the local level. In Albania, however, there is little cultural accommodation of the idea of using credit schemes to subsidize the operation of the school system. This leaves the cluster school initiative there in a much more precarious situation with respect to sustained operation after the cessation of donor aid. In educational systems where fiscal support of clusters by the state is limited or nonexistent, there should be clear exit strategies for sustained innovation but at lower levels of intensity than was true during periods of donor support. Ultimately, however, it must be recognized that there is no substitute for the sustained support that a properly financed education system can provide.

4. The Search for a Definitional Framework to Aid in Design and Implementation

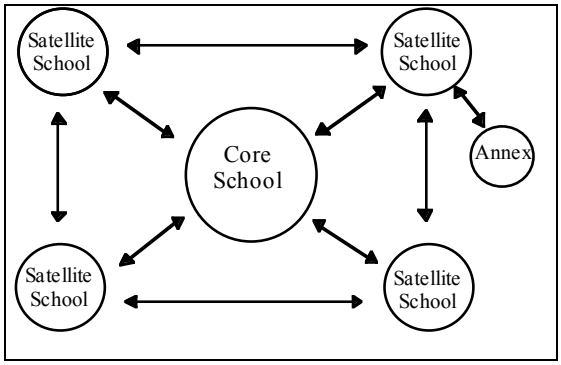
An important theme underlying much of the above discussion relates to the problems that can arise when a strong grasp of the essential quality of school clustering is lacking. In this respect we have seen that agendas can be compromised, equilibrium of functions may be disrupted, or the evolutionary development of clusters may be arrested. One possible way of preventing problems in the implementation of cluster school projects refers to the development of definitional models to aid in implementation and assessment. To be effective, these models should provide a clear classification of the intended functions that clusters are supposed to perform. The precise nature of these functions may vary depending on local needs and conditions. In any case, however, they must be identified early on in the implementation of a cluster school development program. Because organizing school clusters is really the process of institution building as noted earlier, the statement of functions in the model developed should in some way be linked to the institutions situated in the cluster. Classifying functions in this way can greatly facilitate the identification of activities that must occur in order for designated institutions to fulfill the functions intended. What follows below is a discussion of some of the existing models commonly used to describe school clustering and how these models might provide a framework to guide the cluster school development process. This is not the first attempt to design such a framework nor is it likely to be the last. What may be different from previous attempts, however, is the intent to identify a model that provides a practical framework not only for classification and description purposes but for implementation and assessment of school clustering initiatives.

4.1. Moving beyond Surface Structure Definitions of Clustering

The most common definitional models describing school clusters tend to focus on the geographical arrangement of schools and the administrative linkages implied by this arrangement. Typically, this arrangement consists of a number of smaller satellite or member schools organized around a core school which is central in location relative to the others (Figure 1). Annex schools which are associated with satellites are also included in the cluster and are eligible to participate in its management structure through the mother school. The core school tends to be the school best positioned to facilitate communication and coordinate activities within the cluster. The core school is also the site of key facilities such as the resource center and library. The implied level of formality in the association between schools is flexible and can range from highly voluntary arrangements to more rigid, mandatory ones. In the latter, the cluster may be staffed with special personnel designated by central education authorities. The cluster director may also have considerable control over member schools to the degree that staff can be re-assigned between schools without reference to district or provincial authorities.

Descriptive frameworks that focus primarily on the spatial arrangement of clusters and the implied management relationships between schools provide but a surface model of how clusters work. In general, such models are adequate for a cursory explanation of school clustering. They describe geographical coverage and linkages between schools but also leave a great deal else to the project implementer to infer. Explanations of technical function are lacking at this level of definition other than some implied management relationships. Beyond these broad outlines, the technical content of what school clustering entails is missing. In addition, there is no elaboration of institutions within the cluster or how they might perform specific functions. There is mention of "facilities" such as the resource center, but again a description of these and other facilities in terms of the systemic functions that they perform is not an integral component of most surface models. In actual fact, many projects never get beyond the very superficial description of clustering outlined in surface models. Schools get assigned to clusters, a core school is designated, and a resource center is built and furnished. After this point, however, there is often an implementation vacuum. Clusters that do not get beyond this level of development are often referred to as "paper clusters" because they have little to recommend in terms of substance. Because the existence of paper clusters is a more ubiquitous phenomenon than many cluster projects would care to admit, there is a very real need for more practical conceptual frameworks that can help those responsible for cluster school development to delineate both the functions that clusters must perform and the activities implied by such functions. The above critique of surface models is not to suggest that such models are useless. They are attractive because they are simple and can facilitate explanations at some basic level to non-educators and the general public. But as a tool to give real technical substance to the form of clusters, they are severely limited.

Figure 1: Surface Definition of Clustering focusing on Geographical Arrangement of Schools



4.2. Deep Structure Definitions of Clustering

The primary feature of deep structure models that try to describe the process of school clustering is their focus on function. Function in this context is defined as the collective purposes which school clustering is intended to serve. For example, resource sharing is a cluster function referred to numerous times in the discussion above. Thinking of the clustering process in terms of function can provide a practical way of grasping the activities that must be set in motion in clusters and the agencies that can achieve this. In this sense, models focusing on function can be described as "deep" structure frameworks because they can be quite explicit in guiding the process of implementation. By way of

illustration, resource sharing is a function that can take in the sharing of infrastructure, materials, or personnel. If a particular cluster school project were faced with the need of solving scarcities in the availability of didactic materials, this immediately suggests one or more activities to be executed by the resource center. Possible activities to fulfill this function might include rotation schedules of materials, school-based training in materials production in needy schools, or the establishment of resource center branches in schools surrounding the core school. Once these activities have been identified, the parameters of assessment also immediately become apparent. Assessment measures in this respect might include frequency of rotation, quantities of didactic materials produced, or usership of resource center branches. Models describing the operation of school clusters in terms of function, therefore, greatly facilitate the process of moving from function to planned activities. They can further suggest the agencies of implementation and a means of assessment. In view of the above, deep structure definitions of clustering can provide a much more useful basis for building a model that aids in program implementation.

One of the earliest and most comprehensive frameworks describing the functions of clustering was developed by Bray (1987). Four possible functions frequently served by clusters were identified in this scheme based on a broad survey of school cluster initiatives in Latin America, Asia, and parts of Oceania (Box 4). This framework is highly useful for classifying the activities that occur in clusters in a wide range of different settings. For example, Bray was able to determine that teacher development and promoting access to didactic materials were examples of a pedagogic function served by clusters in nearly all the countries surveyed. Conversely, he found that political functions such as raising political awareness of government policies were rare in Asia but pervasive in several South American countries. Consequently, this framework made it possible to easily assess the commonalties and differences in a development strategy that is widely used but which is also characterized by many permutations. Although this framework is highly suited for classification of cluster models by educational researchers, it was not specifically designed to guide the implementation of cluster school programs. The central Ministry in Cambodia, for instance, incorporated many elements of this classification scheme in the official guidelines governing cluster schools there only to find that the intended audience lacked the sophistication to make proper use of them. In addition, this framework was designed to be intentionally

Box 4: ***Bray's Classification Scheme of Cluster Functions (1987)***

Pedagogic
- teacher development
- increasing access to resources
- promoting pupil competition
- facilitating innovation

Administrative
- expediting communication
- forwarding data
- deploying staff efficiently
- improving the planning process

Economic
- sharing facilities
- sharing staff
- bulk ordering

Political
- raising political awareness
- improving community participation
- improving ethnic harmony

broad in order to take in a wide range of cluster school types. In individual countries, however, the range of needed functions tends to be much narrower. Using a broad model, therefore, makes the task of elaborating relevant cluster functions needlessly complicated. This has major implications when the audience of such explanations is not used to working at high levels of abstraction.

A more streamlined classification of cluster functions has been developed by cluster school practitioners in Southeast Asia. Wheeler, for example, found *accountability* and *capacity building* to be key functions observed in clusters in Thailand. Another analysis of cluster school operation in Cambodia added a third formal function, *resource sharing,* to derive a three-component model (Bredenberg, 1998). These 3 functions were earlier referred to as core functions because they take in nearly all the technical input that clusters can provide. Technical input is here taken to exclude administrative and organizational considerations since such problems do not appear to be the main source of the *paper cluster* phenomenon referred to earlier. Thus, the emphasis of the scheme is on inputs more directly related to improving quality of educational services to the largest number of children possible. An added advantage of this delineation of functions is that it is less prone to overlap between functions, which can sometimes occur in much broader classification schemes. In Bray's scheme, for example, this can sometimes happen when referring to activities such as access to didactic resources (pedagogic) and sharing didactic resources (economic) each of which are essentially the same thing.

The tri-functional classification scheme described above can be further magnified to aid implementation needs by providing a mechanism for cross-referencing each function with possible institutional sectors within the cluster. In this respect, it is consistent with a definition of cluster school development as a process of institution building. Several of these institutional sectors have been described earlier though this mix may of course vary in specific settings. They are restated again in the matrix shown in Figure 2. This matrix illustrates how sector and function can intersect. It suggests the need for implementers to conceptualize the operation of institutional sectors in a way that is multi-functional. For instance, Activities A, B, and C in Figure 2 demonstrate examples of how each function identified in the model

Figure 2: Multi-sectoral Classification Scheme for Cluster Functions

Sector / **Function**	**Resource Sharing**	**Capacity Building**	**Accountability**
Resource Center	A	B	C
Cluster School Committee			
Teacher Supervision Systems			
Parent Boards			
Testing Committees			
Other			

Illustrative Activities:

A. Organize rotation schedules for mobile lilbrary
B. Train librarians
C. Track student use of the library

might be manifested in a single institutional sector. Thinking of the functions that might be performed in any given sector in this way can singularly facilitate the development of clusters with technical substance. They not only provide a clear framework for identifying the activities that need to be done but also suggest how the function of each institutional sector should be evaluated. To illustrate, the activities identified in the matrix suggest that library functionality can be assessed by looking at the number of times mobile library boxes have rotated to surrounding schools in a given time period or the regularity with which usership statistics are kept. In addition, this framework can accommodate variations in need easily. In older clusters where resource-sharing functions have decreased in importance, more activities may accumulate under capacity building and accountability. Thus, the mix and distribution of activities identified can change with the evolving nature of cluster school development in a particular setting. Cluster practitioners can, therefore, readily document necessary modifications in cluster functionality in each institutional sector. Similarly, this classification scheme of functions helps to heighten awareness of key development activities and can act as safeguard to the danger of compromised or side-tracked agendas.

Another important advantage of the tri-functional model presented above relates to its ability to help rationalize the planning and budgeting process. Earlier, it was stated that when cluster school initiatives lack a coherent framework to guide implementation, the result is frequently a *patchwork* of activities that fail to serve a common purpose. The patchwork phenomenon in cluster programs tends to arise because program decision-makers do not possess a set of function-based guidelines for rationalizing and prioritizing budget allocations. When such criteria are lacking, it is difficult to arrive at acceptable justifications for accepting or rejecting proposed budgets that might be submitted by local project sites. Using the framework described, however, can help program planners determine whether local project plans are linked with institutional cluster sectors and whether the activities proposed develop the functions desired within the sector. In this way, the function-sector matrix provides a compelling basis for rationalized planning and budgeting.

5. School Clustering: Quo Vadis?

In spite of the difficulties encountered in many school clustering initiatives, it has retained its popularity in many places. Indeed, during the last decade, it has been expanded to a whole new wave of countries that are quite different from the sites of the earlier initiatives. In spite of all that can go wrong, clusters can deliver spectacular results when they are implemented properly. In this respect, they not only improve resource utilization but, through a range of capacity building functions, can establish a sound human resource base that greatly expands a group of schools' absorptive capacity to receive development aid. For example, the establishment of a body of cluster-based master teachers has been found to facilitate a wide range of quality improvement inputs such as testing programs, teacher training, and student remediation. In addition, because these human resources are embedded

in a semi-permanent institutional framework, there is some hope that the provision of technical assistance of various kinds will not be a one-time occurrence but a sustained source of technical support to schools. This is especially true in settings where the government can provide regular support for clusters' recurrent costs. For both donors and governments, improvements in an educational system's absorptive capacity has profound implications with respect to the effective allocation of development aid. Although there are risks in using cluster school systems as a conduit for technical and material assistance as described above, this facility can yield important benefits, especially if safeguards are put in place to prevent negative effects on the equilibrium of functions within the cluster.

The other major benefit that clusters can provide to efforts to improve the quality of education in schools relates to its accountability function. Not only are school clusters highly suited for overt accountability measures such as cluster-wide testing programs, but they can also provide increased accountability in more subtle ways as well. When the conceptual framework underpinning a cluster ensures that its core institutions have a multi-functional orientation, measures to ensure accountability for performance can be pervasive. Cluster-based institutions can be developed in a way to ensure that there are highly prescribed activities to complement capacity-building and resource sharing functions. For example, teacher supervision systems can provide regular feedback to teachers on the quality of instruction; library usership records can facilitate intensive scrutiny of student use of the library; and rotation schedules of materials in resource centers can provide clear indications of the degree to which didactic materials are used. Based on the experience of the countries reviewed in this article, the effectiveness of these measures can vary depending on the prominence of historical traditions of accountability within an education system and how political the appointment structure is. Nevertheless, these accountability provisions in clusters can at least raise the question of performance in a systematic way and help point a school system in the right direction if historical traditions are absent.

It is a telling indication of the inherent value of school clustering that its most vociferous critics are sometimes also its most adamant supporters. This says as much about some of the follies that have occurred in the way that cluster school projects are sometimes implemented as about the intrinsic worth of clustering as a development strategy. An important theme in this article has been that much of what can go wrong with school clusters often stems from the highly politicized nature of development and poorly thought out implementation designs. As we have seen above, unfavorable policy environments can subvert cluster school initiatives by compromising the technical agenda of clustering or by rigid implementation guidelines that lead to the dissemination of a unitary cluster model throughout an educational system. They can also lead to anomalous implementation situations when central mechanisms of control are not relaxed to facilitate the decentralized ways of working that clustering is supposed to promote.

Cluster school practitioners have limited options for dealing with the dangers of politicized development contexts other than maintaining a high state of vigilance through well-defined conceptual frameworks. On the other hand, there are several strategies that can be used with great effect for dealing with the risks posed by faulty design. This first includes the need to review the suitability of local conditions to clustering. This means not only looking at physical considerations such as transportation and communication networks or population density but also those relating to political receptivity, historical traditions of accountability, organizational skills of stakeholders, and whether human resource development has reached the critical mass necessary to support the innovative thinking required. The most effective preventive measure to avoid adopting faulty implementation strategies is the development of clear definitional models of clustering that guide institution building and the identification of technical activities linked to function. Having such frameworks when starting a cluster school initiative can facilitate rationalized planning, budgeting, and assessment as well as help maintain a proper balance of functions within the clusters. They can also ensure some degree of integration of activities within the cluster-based institutions and accommodate modifications in the balance of functions as a cluster evolves. Each of these are areas where school cluster initiatives have in the past lost their footing.

Clustering would most certainly seem to have a future as a development strategy if only because there are not many viable alternatives to the problem of resource scarcity in developing educational systems. This may partly explain its enduring attraction. It is, however, a complex strategy requiring some degree of sophistication among implementers, especially with respect to planning and organizational ability. It similarly requires the ability to develop conceptual frameworks that are practically linked to issues of implementation and assessment. This level of complexity in implementation is perhaps partly too why it sometimes does not live up to its promise. Because clusters are not static, their evolutionary path can shift radically as local needs change. They may at some point become a victim of their own success as resource sharing functions become less and less important. This is bound to occur as several of the countries in which they have been used experience increasing economic prosperity. Their disappearance in these places may not be so much a function of their ineffectiveness but of their success. A more likely scenario, however, is a change in the balance of functions as some become less important (like resource sharing) and others increase in importance. Because accountability measures imply some level of technical sophistication among stakeholders, capacity building functions, as they take off, may lead to more and more of a shift to the former. Thus, it might be possible to see an evolutionary shift in the development of clusters functions from resource sharing at the beginning to more pronounced influence of accountability at later stages.

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