School clusters and teacher resource centres

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Fundamentals of educational planning

The booklets in this series are written primarily for two types of clientele: those engaged in educational planning and administration, in developing as well as developed countries; and others, less specialized, such as senior government officials and policy-makers who seek a more general understanding of educational planning and of how it is related to overall national development. They are intended to be of use either for private study or in formal training programmes.

Since this series was launched in 1967, practices and concepts of educational planning have undergone substantial change. Many of the assumptions which underlay earlier attempts to rationalize the process of educational development have been criticized or abandoned. Yet even if rigid mandatory centralized planning has now clearly proven to be inappropriate, this does not mean that all forms of planning have been dispensed with. On the contrary, the need for collecting data, evaluating the efficiency of existing programmes, undertaking a wide range of studies, exploring the future and fostering broad debate on these bases to guide educational policy and decision-making has become even more acute than before. One cannot make sensible policy choices without assessing the present situation, specifying the goals to be reached, marshalling the means to attain them, and monitoring what has been accomplished. Hence planning is also a way to organize learning: by mapping, targeting, acting and correcting. The scope of educational planning has been broadened. In addition to the formal system of education, it is now applied to all other important educational efforts in non-formal settings. Attention to the growth and expansion of education systems is being complemented and sometimes even replaced by a growing concern for the quality of the entire educational process and for the control of its results. Finally, planners and administrators have become more aware of the importance of implementation strategies and the role of regulatory mechanisms, including the choice of financing methods and examination and certification procedures. The concern of planners is twofold: to reach a better understanding of the

validity of education in its own empirically-observed dimensions, and to help in defining appropriate strategies for change.

The purpose of these booklets includes monitoring the evolution and change in educational policies and their effect upon educational planning requirements; highlighting current issues of educational planning and analyzing them in the context of their historical and societal setting; and disseminating methodologies of planning which can be applied in the context of both the developed and the developing countries. For policy-making and planning, vicarious experience is a potent source of learning: the problems others face, the objectives they seek, the routes they try, the outcomes they achieve, and the unintended results they produce all deserve analysis.

In order to help the Institute identify up-to-date issues in educational planning and policy-making in different parts of the world, an Editorial Board has been appointed comprising professionals of high repute in their fields. The series has been carefully designed, but no attempt has been made to avoid differences or even contradictions in the views expressed by the authors. The Institute itself does not wish to impose any official doctrine. Thus, while the views are the responsibility of the authors and may not always be shared by UNESCO or IIEP, they warrant attention in the international forum of ideas. Indeed, one purpose of this series is to reflect a diversity of experience and opinions by giving different authors from a wide range of backgrounds and disciplines the opportunity to express their views on changing theories and practices in educational planning.

Schools in poor and isolated areas face great difficulty in providing education of a decent quality and with the infrastructure necessary due to lack of resources. They may already have a building, but which is dilapidated and unsafe and where no teaching and learning materials are available for teachers and pupils.

In order to remedy this unfortunate but real situation, initiatives were developed in such different countries as Bolivia and Peru, Great Britain and India. The idea behind the first of these initiatives – school clustering – was to group schools together so that they could share resources, while the second – teacher resource centres – was to bring teachers working in isolated areas together to share experiences and practices etc., and thus encourage them to improve

their materials and skills. These initiatives spread to other parts of Asia and Africa as part of national education reforms, and were often implemented in conjunction with one another.

Other than aiming to provide a solution to the isolation in which these schools are located and the lack of infrastructure and resources in schools, these approaches also aim to address equity in education delivery, access and participation, transition to higher levels of schooling, and overcoming disparities in attainment.

Reviewing the literature on this subject, the author of this booklet seeks to evaluate the programmes implemented, examining successes but also disappointments, trying to assess the reasons for their failure. She concludes by highlighting the keys to successful cluster operations and proposes some options for educational planners. IIEP is convinced that this booklet will be of great use to policy-makers and planners all over the world. We are grateful to Elizabeth Giordano for her valuable contribution to the *Fundamentals of Educational Planning* series.

Mark Bray
Director, IIEP

Composition of the Editorial Board

Preface

Most research on education quality emphasizes the key role of teachers and school leadership in bringing about educational change. Change takes place in the classrooms behind thousands of doors and depends on the motivation and the qualifications of teachers, who may or may not adopt the teaching strategy most adapted to the needs and the level of their pupils, and who may or may not implement policy recommendations. Teachers, however, need support to accomplish their tasks, to reflect on their day-to-day experiences and to improve their skills; they also need to exchange with others. The literature on school effectiveness and school improvement stresses the importance of school leadership and school capacity, as well as contact with the community. However, not every school leader is qualified. Some of the schools are very isolated and have very meagre resources. Supervisors rarely visit them and do not provide advice. Hence the idea to regroup schools and to link them to one another in order to share physical resources, skills and experiences emerged in the 1960s in Latin America. Since then, the model has developed everywhere under different names and can be found in rural and urban areas in Latin America, Asia, Africa, and even in industrialized countries.

These clusters have been complemented with teacher resource centres. They have been given different objectives (pedagogic, economic, administrative, and even political) and assigned various tasks in a number of countries. Clusters and teacher resource centres have become an important element of many quality improvement projects in Asia and Africa. However, while their original objective was essentially pedagogical and administrative, the number of tasks that they have been assigned has increased over the years. In a context of decentralization, clusters and resources centres are increasingly expected to accomplish a thousand different things, in addition to acting as a link between the central government, the district education officer, the schools and the communities. As is often the case with many good innovations, they have created much expectation, and nowadays, tend to be overburdened with tasks

for which they are not competent and do not have the necessary resources.

This booklet, written by Elizabeth Giordano, presents the different models that can be found, and reviews various evaluative studies to assess what they can achieve. It presents interested planners and decision-makers with different options to be considered in terms of organization when implementing such a project. It also concludes with a number of recommendations to ensure that the innovation really contributes to improving the quality of education. One of the wise recommendations is that clusters and resource centres should not become simple agents of decentralization, drowned in administrative procedures, but that they should remain essentially concerned with providing pedagogical support.

The booklet corresponds to one of the prime objectives of the series: to help define appropriate strategies for change and provide evidence based information on what works and what does not work in different contexts. The booklet is very practical, answering down to earth questions that policy makers, planners and administrators might have as they work to improve quality at the local level.

Françoise Caillods
General Editor

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Contents

List of abbreviations

AKES	Aga Khan Education Service
AIEMS	Action to Improve English, Mathematics and Science
APEID	Asia Pacific Programme of Educational Innovation for Development
BPEP	Basic and Primary Education Project
CAP	*Centres d'animation pédagogique* [District education office]
CDO	Community Development Officer
CENDES	*Centro de Estudios del Desarollo, Universidad Central de Venezuela*
DANIDA	Danish International Development Assistance
DFES	Department for Education and Skills, UK
DFID	Department for International Development, UK
EAZ	Education Action Zones
EFA	Education for All
EQIP	Education Quality Improvement Project
FAO	Food and Agriculture Organization
HTSG	Head Teacher Support Group
ICT	Information and communications technologies
INSET	In-service training
IO	International organization
IT	Information technology
KCSE	Kenya Certificate of Secondary Education
KENSIP	Kenya School Improvement Project
KESSP	Kenya Education Sector Support Programme
LAAMP	Los Angeles Annenberg Metropolitan Project
LCSC	Local Cluster School Committee (Cambodia)
LEA	Local education authority
LSA	Learning support assistants

MAPP	Monitoring and Assessment Performance Programme, UK
MECE	*Mejoramiento de la Calidad y Equidad de la Educación* (Chile) [Improvement in quality and equity of education]
MiET	The Media in Education Trust (South Africa)
MoEYS	Ministry of Youth, Education and Sports (Cambodia)
NER	*Núcleos educativos rurales* (Nicaragua) [Rural education clusters]
NERA	*Núcleos educativos rurales autónomos* (Nicaragua) [Autonomous rural education clusters]
NGO	Non-governmental organization
NIES	*Nucleada de Instituciones Educativas del sector Sur* (Argentina) [Nuclia of educational institutioins in the South]
OECD	Organization for Economic Cooperation and Development
PEP	Primary Education Project
PE	*Proyecto educativo* [Education project]
PEI	*Proyecto educativo institucional* [Institutional education project]
PME	*Proyectos de mejoramiento educativo* [Education improvement projects]
PRISM	Primary School Management (Kenya)
PO	Project Officer
QUEST	Quality Education through Supporting Teachers
RC	Resource Centre
RCMC	Resource Centre Management Committee
RER	*Red educativo rural; réseaux d'éducation rural* [Rural education networks]
RP	Resource Person

RPI	*Regroupements pédagogiques intercommunaux* (France) [Inter-communal pedagogic clusters]
RRE	*Réseau ruraux d'éducation* (France) [Rural education networks]
SAT	Sida Advisory Team
SEDU	Secondary Education Development Unit, Nepal
SEN	Special Educational Needs
SHAPE	Self-Help Action Plan for Education
Sida	Swedish International Development Assistance
SIMCE	*Sistema de Medición de la Calidad de la Educación* [Educational quality measuring system (national standardized test)]
SIP	School improvement project
SPRED	Strengthening Primary Education
TAC	Teacher Advisory Centre
TDG	Teacher development groups
TRC	Teacher resource centre
TMC	Teacher Advisory Centre Management Committee
UK	United Kingdom
UNESCO	United Nations Educational Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

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Introduction

This booklet presents an overview of school clusters, resource centres and school networks as different strategies for co-operation between schools. It is based on a survey of the literature on past and existing cluster and resource centre programmes in developed and developing countries throughout the world. School clusters and resource centres have been used in different national and regional contexts with the main objective of improving the quality and delivery of education by creating units that group several schools together for mutual support and exchange.

The author has tried to provide an idea of the diversity of resource centre and school cluster programmes by looking at their goals and activities, their organization, and what they can effectively achieve. Some models of best practice in interschool co-operation are presented, highlighting characteristics of successful resource centre and school cluster programmes.

Chapter I describes how school cluster and resource centre strategies came about and looks at the gradual diffusion of these strategies worldwide in the context of improving educational quality. It provides some conceptual definitions and explains what these strategies have in common. Then, it breaks down the main objectives and activities targeted in creating resource centre and school cluster programmes.

Chapter II looks at case studies of resource centre and school cluster programmes. They have been categorized into five different models for clearer understanding. These case studies describe the local context for setting up cluster and resource centre programmes, explain how the programmes are organized and financed, point out the major actors, and analyze the evolution of each programme and its level of institutionalization.

Chapter III examines both the promising and disappointing results of resource centre and school cluster programmes, especially in terms of how they have been effective and what they can achieve. Some reasons why resource centre and cluster programmes fail to

achieve their goals are mentioned, before highlighting the keys to successful programmes through examples of effective networks, school clusters and resource centre programmes.

Chapter IV explores some options and issues for educational planners to consider when implementing a resource centre or school cluster programme, based on the experiences of existing programmes. It outlines a few organizational options and steps to be taken during the process of introducing resource centres and school clusters.

Throughout the booklet, the author has drawn on existing research, project descriptions and evaluations to make a case that resource centre, network and school cluster strategies can be effective ways of improving education quality and delivery. However, careful consideration must be given to their objectives and the manner in which they are organized. This can only be done effectively with the co-operation of local stakeholders.

I. Presentation of school cluster and resource centres: concepts, goals and existing models

Origins of school clusters and resource centres

School clusters and teacher resource centre strategies emerged in an attempt to address the problems faced by teachers and schools in rural areas. In contrast to urban schools, rural schools are confronted with a lack of resources, limited access to materials and equipment, and school buildings in poor condition. Many rural schools can offer only an incomplete educational cycle, while transition between lower and upper grades in compulsory education may be problematic. The distance between schools and from the district administration means that schools, teachers and students in rural areas tend to be isolated. Visits from district level advisors and supervisors are few and far between, and support is limited. In addition, teachers in rural areas are often less experienced, less qualified, and have little opportunity for professional development. Put together, these conditions make it difficult to deliver quality education in rural areas.

School clusters were first established in Great Britain and India as early as the 1940s in order to enable rural schools to pool together resources for education. The classic model for clustering involves bringing several schools together to form a cluster or network. Usually, a larger and better equipped central school acts as the lead school or 'core' school of the cluster. This core school may house a resource centre, equipped with a library and material resources that are available to teachers from the surrounding schools. It can also act as a meeting place for teachers from several schools to come together informally to exchange ideas, or more formally for in-service training.

Clustering of neighbouring schools can also facilitate administration and supervision of schools that are spread out over a large territory. Schools may be organized into clusters, the clusters organized into districts, and so on. Grouping schools by clusters

means bringing supervision and support one step closer to the school level.

Teacher resource centres (TRCs) were created to help rural teachers combat isolation by allowing them to come together to exchange ideas and experiences with other teachers and to work on their own professional development. The original teacher centres in the United Kingdom (UK) were places where teachers from several surrounding schools could meet and discuss with one another, work on curricula, develop materials, but most of all, to develop their personal knowledge and skills (Fairhurst in Knamiller, 1999). The activities and orientations of TRCs in the UK were to be controlled by the teachers with the support of a warden.

How the two strategies have evolved

TRCs and school clusters were set up in various countries up to the late 1970s. The UK TRC model was widely promoted throughout the developing world as a way to help teachers develop as professionals and improve classroom teaching and learning (Knamiller, 1999; Kahn in Ankrah-Dove, 1977). From the late 1960s and early 1970s, a major wave of educational reform in Asia and Latin America brought teacher resource centres and school clustering to the forefront as innovative strategies to improve teaching and learning conditions in neglected rural schools and in post-conflict areas. After this period of reform, clusters and resource centres continued to operate in some countries; however, other initiatives died out due to lack of funding or political changes. Even in Great Britain, the birthplace of the TRC, many centres closed down due to budget cuts in the 1980s.

Following the World Declaration on Education for All (EFA) formulated at the Jomtien Conference in 1990, education ministries and donor organizations made a new commitment to improve the provision and quality of education. Since then, the TRC strategy has grown to be a common feature of educational reforms and improvement programmes throughout the developing world, particularly in Asia and Africa. Considering the teacher as the primary agent for educational change, and access to resources as a major factor in educational quality, TRCs have been set up to administer support to teachers. In order to provide universal basic education, countries

such as Malawi and Uganda needed to train massive numbers of teachers as quickly as possible. Many aid programmes have utilized resource centres to ensure the rapid delivery of in-service training or to train unqualified teachers (MacNeil, 2004; Hoppers, 1998).

At the same time, more importance was given to improving efficiency and governance in education systems. Locally-based delivery of education services, targeted as close to school level as possible, is a major reason donors and education ministries give for setting up clusters. Many countries have engaged in dramatic decentralization reforms, giving more responsibility in education administration and financing to local authorities. School cluster programmes have grown in scope and have been utilized in a number of reforms seeking to decentralize education, encourage school autonomy, and promote community involvement in decision making and the financing of education.

The movement for increased accountability at the school level has shifted the emphasis of TRCs from individual teacher development to whole school improvement. Services provided by TRCs are adapting accordingly. Delivery of in-service training increasingly takes place at the school level or through clusters of schools.

Both school cluster and TRC strategies have transitioned from being innovative methods for improving rural schools to becoming part of national packages for education improvement in both rural and urban areas. The strength of both is that they are local strategies and therefore adaptable to a variety of situations. Both are used to diffuse information and communication technologies (ICT), to equip schools with Internet access, and to train teachers, students and community members in the use of new technologies.

Definitions

A school cluster is a grouping of schools for educational and/or administrative purposes. In a school cluster, several schools come together to share their resources to improve the conditions for the delivery of education. Clusters are a support strategy for schools, bringing together material and human resources so that the schools can benefit mutually.

School clusters are usually formed by grouping surrounding schools located reasonably near one another. Cluster size can vary considerably depending on the geography and accessibility of the schools, but they usually include somewhere between 2-15 schools. Clusters are also called zones, networks, and in Latin America, *redes escolares* (Venezuela, Peru) or *núcleo* (Bolivia).

School clusters are not limited to rural areas. Countries such as Cambodia, Bangladesh, Bolivia and Namibia have undertaken comprehensive, nationwide cluster programmes, with clusters set up in urban areas (Mombassa, Kenya, Los Angeles). Schools might come together to address special needs they may share, such as the integration of minority populations.

School clusters can cover a variety of activities involving co-operation between schools. This can be administrative, material, pedagogical or extracurricular. A resource centre may be housed within a cluster school to provide cluster teachers with professional and pedagogical support.

Teacher resource centres are used for delivery of professional development activities, such as in-service training, and to support teachers in their work in the classroom. TRCs have also been called teacher activity centres, teacher advisory centres, teacher support groups, *microcentros*, teacher circles, etc.

An appropriate question to raise might be: "Is a teacher resource centre a building or a strategy?". To answer, a TRC is characterized by three elements:

(i) The group of teachers that serves as a network of exchange and support.
(ii) The presence of a tutor or facilitator who provides support for classroom practice, professional development and in-service courses.
(iii) The space that is called the 'teacher resource centre', which may house meeting facilities, a lending library, reprographic materials and ICT tools (telephone, fax, Internet).

A TRC does not need to use all three of these elements; many start off as teacher groups and grow gradually – according to their needs and the resources available to them – to incorporate a tutor,

their own building, and even evolving as far as taking on a role in the management of schools (Raj Khaniya, 1997; De Grauwe and Carron, 2001). The TRCs reviewed in this booklet make use of one or more of these elements.

A TRC is commonly housed in a purpose-built structure or shares building space with a school. In some cases, resource centres have no permanent building and meetings are held in a school classroom or other suitable space. A support person – also called resource person, tutor, mentor, warden or supervisor – may organize meetings, activities and in-service training, visits teachers in schools to follow up and lend support, and organizes the materials and resources available in the centre. The resource person sometimes acts as a supervisor, though his/her role is usually more pedagogical than administrative.

Why address school clusters and resource centres together?

School clusters and resource centres are dealt with jointly because the two strategies are complementary to one another. In many programmes that aim to improve educational quality, clusters and resource centres are designed to work together, as is the case in Zambia, Lesotho, Nepal and India, among many others.

More importantly, both are strategies for bringing together people and resources from several surrounding schools for their mutual benefit. Both resource centres and school clusters rely on teacher or head teacher peer groups for support and exchange.

In a decentralization context, both school clusters and resource centres group schools together for close-to-school decision making and supervision; sometimes, they are intended to bring the schools closer to the administration, while in other cases, they provide local solutions to local problems, bring services closer to the school level, and encourage participation of local teachers, parents and the community.

Moreover, both strategies seek to change a pattern of interaction through networking – to turn schools and teachers toward one another rather than toward the central administration. Now more than ever, schools, teachers, pupils and their parents form part of a larger education community, linking individuals and groups based

on their common interests. Resource centres and school clusters are strategies used as the basis of such exchange.

Goals and activities targeted through the creation of clusters and resource centres

Teacher resource centres and school clusters can be used to accomplish a variety of tasks and activities. Because they are local strategies, they target education services at the appropriate level. They can react quickly to find solutions to local problems. They can also be adapted to fit local contexts and needs. As De Grauwe and Carron (2001: 3) have remarked, "what characterizes a resource centre more than [its definition] are its objectives".

Authors traditionally present four areas targeted through TRCs and clusters: improvement of educational quality; improvement of cost-effectiveness; improvement of the management of education; and encouragement of community participation in education. Prasertsri (1996: 8), in his article on school clusters in Cambodia, describes them as "effective, decentralized means of developing primary education with full community participation". The four target areas mentioned above can be expanded upon to include a fifth: the more global objective of improving the conditions of education delivery.

The fundamental goal of school clusters and resource centres is to improve the quality of teaching and learning at the school and classroom levels. Exchanging ideas and information, combating isolation, and fostering co-operation between schools are goals of collaboration among teachers and school directors. School clustering and resource centres also deliver teacher training closer to school level. Resource sharing and development of materials and curricula are often cited as school cluster objectives, but frequently prove more difficult to put into practice. Many of these pedagogical activities are animated by a TRC, where one exists.

For decentralization, resource centres and school clusters increasingly serve a number of administrative purposes through their linking of schools at the sub-district level. Using clusters for education management is a goal more typical of large-scale cluster

programmes established by ministries and donor agencies, and tends to be part of overall decentralizing education reform, although some locally-initiated clusters promote improved education management as well. As an offshoot of decentralization, encouraging community school co-operation and community participation in education through clustering is becoming more important.

Improving the conditions of education delivery

Address equity in education delivery

In many countries, the quality of education and the condition of school infrastructure and equipment can vary strikingly from one region or town to another. Some ministries attempt to redress this balance by setting up school clusters and TRCs in an effort to provide similar material conditions in schools throughout the country.

In Latin America, the importance of providing equal quality education in rural and urban areas is growing. By establishing school clusters in both areas, the Bolivian Ministry of Education hopes to "erase the inequalities" in education by offering "an equivalent education, in the city and in the countryside ..." (Comboni Salinas and Juárez Núñez, 2001: 11). In France, where uniformity and providing equal opportunity in education is highly valued, the Ministry of Education suggests that the development of school networks in rural areas can provide "the same chances for access to knowledge and training" to all school children (Darcos, 2003: 4).

In both cases, it is through the ensemble of sharing material resources, offering a complete primary and secondary cycle, providing specialized classes and an effective and participatory education management that the ministries hope to improve the quality of and access to education through school clustering.

Address access and participation

Basic education projects in several countries have set up clusters and resource centres as part of an effort to expand basic education and increase participation. Especially in rural areas where provision of basic education is limited, school clusters group incomplete rural schools with complete ones to provide the entire cycle of basic education, and link *feeder* schools to *core* schools to expand

access. For example, Kenya's head teacher support groups are required to investigate ways of improving access and participation (Herriot *et al*., 2002). Similarly, a feasibility study carried out in the Eastern Caribbean puts forward TRCs as a strategy for expanding the offer of secondary education (Brown and Halliday, 1995).

Facilitate transition

Observing that the drop-out and repetition rates increase dramatically when children change schools to begin lower secondary education, the Universidad Central de Venezuela in Caracas helped establish *redes escolares* (school networks) to improve the transition between the second and third phases of basic schooling. This is done through increased communication and collaboration of teachers from both levels.

A similar project for facilitating transition was carried out in Barnsley, UK. Teacher development groups from primary and secondary schools collaborated to improve the tracking of pupils and to set goals to be carried over from one stage to the next. France's voluntary *Réseaux d'écoles primaries* (primary school networks) group together pre-schools (*maternelles*) and primary schools in rural areas to ease the transition from one level to the next.

Overcoming disparities in attainment

Certain countries have made a conscious decision to boost educational support in areas where educational attainment is low and the economic and social environment is more difficult. National testing and assessment have enabled education officials to single out areas where student performance is notably lower. In the UK and Chile, clusters aim to improve attainment in economically deprived areas. Great Britain encouraged the formation of Excellence Clusters and Education Action Zones (EAZs) in rural and urban areas where educational attainment is lower than average. In the Santiago metropolitan area as well, school directors from Pudahuel's schools came together to develop a common plan to improve the academic results of the commune's pupils (see section on *Redes in Latin America*, http://.innovemos.unesco.cl).

Respond to education reform

Quality and accountability movements place more responsibility on the school to monitor improvement through testing and evaluation. New norms and standards, national testing, and curriculum changes are just a few examples of the repercussions of government reforms at the school level. School clusters and resource centres bring schools, directors and teachers together to find ways of dealing with institutional change and government reform. The USAID Mali cluster programme, for example, aims to integrate a new transitional bilingual curriculum into basic schools through school clusters (USAID, 2002).

Addressing pedagogical goals and quality improvement

In both developing and developed countries, school clusters and resource centres aim to improve educational quality by assembling staff and pupils from different schools to encourage co-operation, diffuse good teaching practice or share special skills. This often takes place in a resource centre housed in one of the schools where teachers, head teachers, and sometimes even pupils can come together to exchange information, access technology and materials, or get training and pedagogical support.

Teacher discussion groups remain a key feature of teacher resource centres and one that teachers find particularly useful. Peer exchange, through clusters and teacher groups, targets multiple goals for teaching and learning. Collaboration among schools and teachers can help establish clearer goals for learning and encourage education professionals to work towards the same ends. It can also foster co-operation among education professionals and promote more autonomy and professionalism.

Groups are either entirely led by teachers themselves or are assisted and supported by a tutor. Chile's *microcentros*, set up as part of the *Mejoramiento de la Calidad y Equidad de la Educación* (improvement of education quality and equity), or MECE, *Basica Rural* programme, were initially supervised by a tutor and are now run by the teachers themselves (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*). Exchanging ideas through teacher

groups can lead to concrete steps such as developing action plans and needs assessments.

Breaking the isolation of rural teachers and pupils

Being removed from the professional support of peers and colleagues is one of the major difficulties of teaching in rural areas. Combating isolation through regular meetings, among rural teachers in a cluster, might help retain these teachers and help boost their motivation. In Latin America, teacher groups target isolated teachers in rural areas, namely those teaching in multi-grade and one-teacher schools. In its coastal areas, Ecuador's *micro grupos* unite teachers from nearby one-teacher schools, while Chile's *microcentros* strive to help alleviate the isolation of rural multi-grade teachers (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*).

Schools within a cluster might bring together their students for teaching specialized subjects, for extracurricular programmes, sports activities, or to create a larger peer group for students in small schools. A study on co-operation among rural English and Welsh schools found that clustering enables students to take part in activities that singular schools could not undertake (Ribchester and Edwards, 1998).

Provide better access to teaching and learning resources

A major goal of clusters and resource centres is to provide pupils with access to learning materials and resources, especially in rural areas and small schools. In rural France, primary schools co-operate to provide pupils with access to specialized subjects such as arts, music or foreign languages. Subject teachers travel from one school to another to give classes at different sites. These networks (*regroupements pédagogiques intercommunaux*, or inter-communal pedagogic networks) also meet the increasing demand placed on schools to deliver other services such as after-school care and school meals.

Resource centres allow teachers to drop in and borrow or use materials including teacher-made materials, supplemental texts, teacher guides, curriculum guides, science equipment, maps and charts and other audio-visual aids for the classroom. Teacher centres

are often intended to be distribution points for textbooks and teacher guides, as is the case in Nepal and Kenya.

Resource centres are increasingly being used to expand access to ICT. This process began in developed countries and is now being extended to developing countries. The World Links for Development programme, for example, sets up school clusters with computer-equipped resource centres in participating countries. Malaysia's Teacher Activity Centres and New York State's Teacher Centres have used clusters and resource centres to expand the use of information technology and provide technical support services.

Teacher development and training

Teacher development and training constitute a major component of TRCs, which are sometimes set up exclusively for this purpose. Teacher-centred professional development can take the form of upgrading and accreditation courses designed to keep teachers up-to-date on theories, effective techniques and practices.

Teacher-driven professional development has been replaced by sponsor- or ministry-driven teacher training in many developing countries. TRCs are regularly used for the rapid delivery of training through cascaded courses. To meet the demand for trained teachers due to soaring enrolment rates, some programmes in developing countries have turned to the rapid training of previously untrained teachers through TRC- and cluster-based training, though unfortunately, not always with great success. In Uganda, such training was provided through the Teacher Development and Management System, and in Malawi through the Malawi Integrated Teacher Education Programme (Knamiller, 1999; MacNeil, 2004).

Traditional in-service training is usually provided in centrally- or regionally-organized courses, meaning that teachers are often required to leave their classrooms to take part. Female teachers and teachers with other occupations may have difficulty attending training courses under such conditions. Many programmes prefer to train teachers through on-site or cluster-based workshops and courses, with the goal of keeping teachers in their classrooms when possible (MacNeil, 2004). Ecuador has developed a close-to-home upgrading and certification programme where teachers work in

micro grupos, aided by a co-ordinator (see http://innovemos.unesco.cl, *Micro Grupos: Ecuador*). USAID Mali has chosen to deliver school-based teacher training through clusters of between two and four schools (USAID, 2002).

Training teachers in active teaching methodologies to replace the traditional 'chalk and talk' teaching style is another goal of teacher training through resource centres. Aga Khan Educational Service programmes, such as the school improvement projects (SIPs) in Mombassa in Kenya and Kampala in Uganda, have been targeting active teaching through their TRCs (Welford and Khatete in Knamiller, 1999; Siraj-Blatchford, Odada and Omagor, 1997), as has the UK's DFID-sponsored centres in Nepal and elsewhere.

Pedagogical supervision and support

Instead of using district or regional supervisors for pedagogical supervision and support, clusters or resource centres are occasionally used. The idea is that supervision at the cluster level allows for close-to-school support, where the supervisor can have a more inside view of the issues faced by cluster teachers and head teachers (De Grauwe and Carron, 1997 and 2001).

The term 'supervisor' evokes a figure of authority whose role is to enforce rules and regulations. But pedagogical supervisors are also supposed to provide advice, guidance and information. Their intervention is intended to improve teachers' practice in the classroom. Resource centre strategies often use resource persons or tutors as supervisors with a more supportive role. Chile's *MECE basica rural* stresses the point that *microcentro* supervisors are, in reality, facilitators for the teacher groups.

Some programmes use resource centre tutors to support teacher development by providing classroom observation and feedback as well as follow-up on training. This sort of support was used in the SIPs in Kenya and, with less success, through Nepal's TRCs.

Production of materials, adaptation and development of curriculum

The production of inexpensive, locally-generated instructional materials is a goal commonly addressed by TRCs in developing

countries. Resource centres also furnish teachers with a place to prepare and produce classroom materials, as well as a storeroom for these materials. Teachers can collect local materials free of charge to make displays or to illustrate a lesson; and resource centres can supply duplicating material and a budget for production of 'low-cost, no-cost' materials. This is the case in the teacher centres in Andhra Pradesh in India, in the Aga Khan SIP teacher advisory centres in Kenya, and in the TRCs in Nepal, among others.

Cross-site teacher groups can develop common curricula and begin to work in the same direction. One of the goals targeted by the *microcentros* of Chile's *MECE Basica Rural* was to decentralize curricular development. Once Namibia's cluster system was in place, the teachers themselves created subject groups to offer support to one another, interpret curricular guidelines and elaborate common work schemes and tests.

Teacher resource centres can also supply a place to document, catalogue and diffuse these teacher-generated curricula, materials and innovations. The feasibility study on teacher resource centres in the Eastern Caribbean aimed to place teacher resource centres at the nexus of an information system to collect curriculum development material for the benefit of teachers throughout the region (Brown and Halliday, 1995). Chile's *Equipo Gestor 8* also proposed to create a common data bank in each school to collect didactic materials and methodological resources (see http://innovemos.unesco.cl, *Fortalecimiento docente en escuelas marginales*).

Create and promote innovations and good practice in education

A cluster can provide a network of support and ideas for the generation and diffusion of pedagogical innovations and good practice. In rural areas especially, where traditional teaching and learning methods are not adapted to the different context, clusters and teacher groups are encouraged to find new and effective ways of teaching. As part of the *Escuela Nueva* programme in Colombia, as well as in Chile's MECE rural programme, teacher groups meet monthly to share their innovations and work together on education projects (Schiefelbien, 1992; Richards, 1996).

In France, the UK and Chile, schools collectively elaborate a programme or innovation and present it to the local education authorities or a national committee, which then provides support or funding. The EAZ programme encouraged schools in the UK to find innovative ways of improving education through 'zones' or clusters of schools. If the project was accepted, the zone received funding from the department of education as well as from businesses (DFES, 2002*a*).

Quality improvement programmes sometimes use school clusters and resource centres to identify schools that show exemplary pedagogical or management skills. New York District 2 began a peer exchange programme so that teachers could learn from particularly effective teachers (MacNeil, 2004). Nepal's Basic and Primary Education Project selects a model school within a cluster to promote good practice (Raj Khaniya, 1997).

Testing and assessment

Teachers from different schools can meet to create or administer tests for their pupils, as was done in Thailand (Wheeler, Charatanaphong and Kunarak, 1992). Depending on the local context, teachers can also create tests together for special-needs pupils, minority-language pupils, or for subjects not covered in official exams.

Co-operation for special educational needs

Clusters can also bring together teachers from different schools whose pupils have similar educational needs. School cluster co-operation is used in the Netherlands and Great Britain to support educators who are trying to develop methods for dealing with students with special needs such as behavioural problems, learning disorders and physical disabilities (Pijl and van Den Bos, 2001; Norwich and Evans, 1994). They address issues that affect their students and share solutions to common problems.

Economic objectives: improving cost-effectiveness

Many schools in rural areas and in developing countries lack financial resources, proper physical infrastructure and adequate learning materials. School clusters and resource centres are

generally created to share resources that improve inputs in these areas. Clusters and resource centres may improve cost-effectiveness because, instead of supplying individual schools with funding for activities or staff with limited use, education authorities can give fewer resources or training sessions, but make them available to a greater number of teachers and pupils. The hidden costs, sometimes overlooked though, include the transportation of teachers, pupils and materials between the core school and satellite schools.

Creating greater economies of scale

Clusters can serve to assemble central funds, especially in rural areas where pupil numbers are low and financial resources scarce. Per capita funding, coupled with rural de-population, in the UK has placed small rural schools in danger of closing. In rural England and Wales, pooling resources through clusters provides increased funding capacity for a range of activities that individual schools are unable to fund (Ribchester and Edwards, 1998). France began encouraging rural schools to create 'networks' in the 1970s to keep pupil numbers up and small schools open (Darcos, 2003). Since 1998 a new form of networking has been adopted, and schools often co-operate across communes to offer school transportation, internet services and childcare before and after school (Duhamel *et al*., 2003).

Ordering and distribution of school books and materials can be more efficient and cost-effective when executed by the cluster centre rather than by individual schools, as is the case in Namibia (Dittmar, Mendelsohn and Ward, 2002).

Some programmes bring schools together to finance common activities. Schools can share costs in order to economize on current activities or develop new innovations. Schools involved in the Los Angeles Annenberg Metropolitan Project (LAAMP), for example, formed networks that jointly invested in literacy programmes or teacher training (Smith and Wohlstetter, 2001).

Sharing equipment, materials, moveable assets

School clusters and resource centres promote sharing material and human resources in resource-poor areas. Resource centres often serve as storage places for shared materials. Immobile assets, such

as sports facilities or Internet connections, can be available at the core school, resource centre, or at any of the properly equipped satellite school sites.

Moveable assets such as books and teaching tools can be circulated among schools within a cluster. In Mozambique, the French donor programme *Action Nord Sud* set up book-box libraries that rotated among 70 schools to supply extra reading materials to pupils (do Amaral in Rosenberg, 1998). The World Bank Rural Education Project for Romania plans to use mobile resource centres to supply video projectors, laptops, a mobile lending library and teaching aids through school clusters, coupled with fixed-site resource centres at consolidated schools (World Bank, 2003*b*). Circulating materials can be an alternative to keeping a fixed-site resource centre in areas where schools are too far apart to easily access a central resource centre.

Material improvement of schools

In some places where school buildings are inadequate or unsafe, community members from a school cluster work together, providing labour and material resources to improve the physical infrastructure of schools. In both Cambodia and Kenya, clusters and community members previously collaborated to work on one particularly needy school within the cluster to improve its condition (Herriot, Crossley, Juma, Waudo, Mwirotsi and Kamau, 2002; Prasertsri, 1996). Secondary schools in Jujuy, Argentina, elaborated a joint plan for adapting and equipping their existing school buildings to meet new educational guidelines (see http://innovemos.unesco.cl, *Red NIES*).

Staff allocations and sharing of specialized teachers

In small schools, fluctuations in pupil numbers can make a difference in staff allocations from one year to the next. In order to stabilize and rationalize staff allocations, some clusters have proposed cluster-wide staff allocations. Namibia's cluster programme proposes to allocate staff by clusters rather than by individual school, and to apply staffing norms to the total number of learners in a cluster rather than school-by-school (Dittmar *et al*., 2002). An evaluation of France's *Regroupements pédagogiques intercommunaux* (RPI) proposes a similar idea (Duhamel *et al*., 2003).

Low pupil numbers in rural areas may not allow for specialized teachers in every school. Sharing of specialized teachers among several schools allows students of rural schools access to foreign language, music or art. In France's RPI, specialized teachers travel between the different schools in the cluster.

Convenient channel for distributing financial resources for certain activities

Local education authorities (LEAs) may opt to channel funds for certain activities through the clusters rather than through individual schools. In Great Britain, LEAs preferred to allocate resources for special educational needs to clusters than to individual schools because "larger numbers of pupils were involved with fewer fluctuations in demand" (Norwich and Evans, 1994: 288).

Addressing administrative concerns: improving education management

School cluster and resource centres have been widely adopted and promoted for the improvement of education management within the framework of international and bilateral donor projects. In cases such as Cambodia and Namibia, school clusters have become a formal unit in the administrative hierarchy between the districts and schools. Some decentralizing reforms have cluster and resource centre management committees and local education councils in an effort to delegate some responsibility for the management and financing of education to the local level and to encourage the active participation of stakeholders in education.

In developing and transition countries, resource centres and clusters established with the co-operation of the ministry of education and donor agencies, often include a component for education management as well as pedagogical support. In Nepal, existing resource centres have been attributed a role in administration and management.

Decentralization of education management and financing

Many cluster programmes, as they have been brought to scale, intend to promote decentralized planning, management and financing. There are examples of this in Asia as well as in Africa, Latin

America and Europe. The World Bank has been a strong proponent of decentralizing education management by giving local authorities and school cluster committees more responsibility in decision making. According to the Asia Pacific Programme of Educational Innovation for Development (APEID/UNESCO, 1995: 10), ideally clusters do not simply serve as channels for orders from the top of the bureaucracy down to the school level, but must have "the autonomy to develop both self-reliance and their own plans and programmes for quality improvement and local capacity building". This has been the intention of several programmes that have shifted some of the decision making, planning and financing of education to the school cluster level (APEID/UNESCO, 1995).

In Cambodia, the cluster system was established nationwide in 1996 to increase management capacity at lower levels, and therefore facilitate education decentralization. The Ministry now relies on local school cluster committees for technical assistance on school planning and the management of operational funds (Geeves, 2003).

Several Latin American countries have established clusters in rural areas as part of decentralization measures. Nicaragua's school autonomy reform, extended to primary schools in 1995, established *núcleos educativos rurales* (rural school clusters), which are groups of two to four schools formed around a larger centre school that acts as a single autonomous school with a shared council. The Ministry, in turn, expects local communities to provide additional funds to their schools (Fuller and Rivarola, 1998). In the early 1990s, Bolivia, along with the World Bank, also initiated a sector-wide education reform. After devolving some responsibility for allocating funds for materials to the school level, the Ministry created clusters of schools in rural areas, as well as in cities and towns, to share management decisions (Contreras and Talavera Simoni, 2003).

Improve school governance and accountability

The accountability movement has pushed for self-evaluation mechanisms such as annual school development plans. A number of resource centre and cluster programmes have provided training to principals and head teachers in management. School clusters have been used to promote both of these measures to improve school governance.

Kenya's head teacher support groups, which were initiated following the wide-scale training of head teachers in management, encouraged heads to meet with one another to discuss development plans and find solutions to common problems in school management. Another goal included the community in school management in order to improve accountability and transparency (Herriot *et al*., 2002). In Nepal, the resource centre is responsible for developing an annual plan for education and the activities of its participating schools (Raj Khaniya, 1997).

Schools involved in LAAMP created cross-site teams that developed annual learning plans and carried out self-evaluations to measure the achievement of their goals (Smith and Wohlstetter, 2001). Similarly, Bolivia's rural *núcleos* develop an annual education project (*projecto educativo de núcleo*) that reviews the ensemble of the *núcleo*'s "processes, policies and programmes" (Contreras and Talavera Simoni, 2003: 70).

Facilitate monitoring and supervision

Education supervision in many countries is carried out by the district education office of the ministry of education. But because of the vast area that must be covered and the large number of schools, it is often difficult, if not impossible, for a district education officer to monitor and supervise each individual school within a district. A study in Namibia found that the circuit inspector managed to inspect each school about every two-and-a-half years (Dittmar *et al*., 2002). Also, district education officials are often removed from specific issues and needs of the schools, and their judgments and decisions are sometimes poorly informed. For these reasons a number of reforms have tried to bring supervision and monitoring closer to the school level through clusters and resource centres.

There are essentially two ways of bringing supervision and monitoring closer to the school level through resource centres and school clusters: The first is by creating them as an intermediate structure between the school and the district level that is part of the administrative hierarchy. The second is by grouping schools together so that a committee, made up of representatives from all of the schools, collectively monitors the group of schools (Carron and De Grauwe, 1997).

Resource centres and school clusters can serve as an intermediate level of the education administration located closer to the schools, enabling districts to deal with groups of schools rather than individual schools. Resource-centre and cluster-based supervisors – who often carry out monitoring and supervision as well as providing pedagogical support – are based closer to the school level, are in charge of supervising fewer schools, and can make more frequent visits to the schools under their responsibility. Nepal's TRC programme managed to reduce absenteeism of school teachers through more frequent visits from the local resource person (Raj Khaniya, 1997).

Other resource centre and cluster programmes form committees, comprising representatives of participating schools and sometimes a district inspector, to supervise and monitor the management and performance of the schools in the cluster, collectively or individually. Network-based peer monitoring and self-evaluation have been used in Great Britain and Los Angeles.

Facilitate planning on a more logical scale

An early objective of clustering was to group together schools for more effective planning. In Sri Lanka, the cluster head is responsible for planning and deploying staff within the cluster (Samaranayake, 1985). In Bolivia, planning at the *núcleo* level provides a better overall picture of the demand for education, and allows education officials to better distribute students and teachers among educational institutions (Comboni Salinas and Juárez Núñez, 2001).

Namibia's cluster strategy planned to counteract organizational problems of small school size and geographical isolation by grouping all schools in Namibia into clusters of five to seven schools. Before the reform, schools tended to operate as small 'empires'. Now school mapping and planning for education provision takes place at cluster level (Dittmar *et al*., 2002).

Transmitting information

School clusters can also serve in the collection of data from the local level to transmit to the regional and national levels, or to assist in local planning. In Cambodia, cluster-based resource centres were "expected to compile information to assist local education planners,

such as data on enrolment, repetition, drop-out and completion rates" (Prasertsri, 1996: 10). The same is true for all sorts of information that can be useful for school planning. Ideally, this requires the participation of stakeholders at the cluster level in assessing their own needs.

Project implementation and funding

A number of donor and ministry programmes have chosen to organize their education programmes around school clusters and resource centres. In Namibia, the school cluster system can be used to plan donor assistance programmes to target aid to the areas that most need it and "to prevent the duplication of resources and services" (Dittmar *et al*., 2002: 18). For more effective delivery of services to the grass roots level, USAID Mali has also chosen to establish school clusters and resource centres (USAID, 2002). Clusters and resource centres are also used by donors to deliver social programmes such as scholarships, nutrition and health programmes.

In the context of donor-supported projects, clusters can serve to route donor funding more directly to schools. This is perceived as a major advantage of clustering for education ministries and donor agencies alike. The World Bank projects in Cambodia and Romania attribute grants to school clusters instead of focusing funding efforts at the regional or national level (World Bank, 2003*b* and 2004*a*).

Promoting interactions between school and community

There is a growing interest in using school clusters and resource centres in local development with the goal of fostering self-reliance and sustainability of community participation in education. Increased interaction between communities and schools can play a role in improving access to primary school, mobilizing resources, increasing the role parents play in their children's education, and adapting school policies to local needs (Hoppers, 1998).

There are four main facets to the relationship between school clusters and the community: The first concerns community participation in decision making concerning the school cluster; the second is the financial or material support given to a school cluster or resource centre by the community it serves; the third is the role of the school cluster or resource centre *vis-à-vis* the community it serves;

and the fourth concerns parental involvement in their children's education. These four points are discussed in detail below.

Fostering community participation in decision making

By bringing together teachers, parents and pupils from different schools, school clusters and resource centres can promote local stakeholders' involvement in education. Community participation in decision making is generally formalized by a cluster or resource centre committee that acts as an advisory body to cluster activities. Community participation in education was one goal of the UNICEF-piloted school cluster and teacher support programmes implemented in Cambodia and Mozambique, the World Bank rural education programme for Romania, and Bolivia's education reform (Pasertsri, 1996; Hoppers, 1998; World Bank, 2003; Contreras and Talavera Simoni, 2003). By mandating the creation of community-elected *núcleo* committees composed of parents and community officials, the Bolivian education reform law makes community participation in the "planning, management and use of resources" for education obligatory (*La Ley de Reforma Educativa* 1565, cited in Comboni Salinas and Juárez Núñez, 2001: 12).

Hoppers observes that "in southern Africa the notion that responsibility for educational development should be shared with those parties who are most directly concerned with implementation on the ground, i.e. teachers, school heads and parents, has been very strong" (1998: 237). Clusters and resource centre committees can promote democratic participation and ownership of an education programme by the parents, teachers and other community members. Hoppers also notes that, in Zambia and Mozambique, "teachers' participation in decision-making through school clusters and TRCs could be seen as part of a wider drive towards participatory democracy" (1998: 238).

Clusters can also mobilize community members to collect information and provide input for needs assessments and planning. Bolivia's education reform aims to use clusters and resource centres to encourage community participation in assessing its education needs to improve the quality of education (Comboni Salinas and Juárez Núñez, 2001).

Fundraising – local mobilization of financial resources

Dependence on community-raised funds for education is a controversial subject because this places the burden of funding educational activities on communities and households that can sometimes not afford it, and thus places poor communities at a disadvantage. Nevertheless, in some cases, school clusters and resource centres are being used to collect funds from the community. In areas where community financial support for education is strong, school clusters can unite school communities to raise funds in common for education. In Kenya, where parents are largely responsible for financing material costs in schools, head teacher support groups are encouraged to help needy schools in the cluster through fundraising (Herriot *et al*., 2002).

Fundraising can realistically support some cluster activities, but other donor-supported school cluster and resource centre programmes, such as Kenya's Teacher Activity Centres, are counting on local levies and different types of fundraising to sustain their activities. Unfortunately, locally-raised funds for resource centres and cluster activities do not always serve their intended purpose (Welford and Khatete, in Knamiller, 1999).

Role of the resource centre vis-à-vis *the community*

In some cases, a resource centre or school cluster is used as the basis for mobilizing support for community development, diffusion of information to the wider community, and establishing ties between schools and the local business community. A resource centre can be used as a community centre to help diffuse information on public health or other issues of wider interest. Its resources, especially learning resources, books and computers, can be made available to the public.

One goal of the school-community linkage project in Mozambique was to help teachers become "agents of community development" (Hoppers, 1998: 233). Head teacher support groups in Kenya sought to address the question of how schools could contribute to the well-being of the community. The resource centres located at core schools in Cambodia's UNICEF-supported clusters were

established to serve teachers and provide community development activities (Prasertsri, 1996).

Resource centres can serve as community meeting places, provide adult education and informal education, as well as dispense information on health and nutrition. USAID Mali planned to use clusters and resource centres to provide adult literacy classes and leadership training (USAID Mali, 2003). TRCs established by The Media in Education Trust in South Africa (MiET) strived to support teachers as well as foster life-long learning, providing resource centres "that become centres for community development" (Botha, 2002: 4).

At times, school clusters and resource centres are used to address specific subjects such as girls' education and HIV/AIDS. In Lima, Peru, a network of teachers mobilized the educational community to diffuse information about children's rights. USAID Mali hopes to address gender concerns through school cluster training sessions for all teachers and administrators, as well as community members. Community health centres are also expected to work through school clusters for community outreach on health education (USAID Mali, 2002).

Community and parental involvement in education

Clusters are used to educate and inform parents and community members about educational matters and promote parental involvement in their children's schooling (APEID/UNESCO, 1995). USAID Mali observes that enrolment and attendance tend to be higher in schools where parents and communities are involved (USAID, 2002). Aside from private-sector investment in the EAZ's projects, schools in Blackburn and Darwen co-operated to find innovative ways of involving parents in their children's schooling and developed a Parents as Educators course. These schools also co-operated with other social services to improve social inclusion (DFES, 2002*a*).

II. Organization and functioning of school clusters and resource centres: some case study examples

Because school clusters and resource centres can vary dramatically in their organization, scope, the way they function and the activities that they carry out, it is impossible to provide a standard that applies to all programmes. We have grouped them together in five overall models according their organization structure (national, rural), target population (teachers, rural schools) and activities for a clearer understanding of how they can be organized. The five models are: the national cluster model, the resource centre model, the teacher group, the network, and the rural cluster model. The development, major actors, organization, management and financing, and the level of institutionalization will be discussed for each model. The case studies featured here are not exhaustive but are meant to show a range of different programmes.

The national cluster model

Many countries in different parts of the world, but especially in Asia and Africa, have established school clusters as part of a national education reform strategy. This section examines a few school cluster systems that have gone to scale, how they have done so, and how they operate. These national cluster programmes are complex and have required large amounts of funding and technical support to set up and to operate effectively. The school cluster systems in this section have been set up with the participation of the ministry of education in each respective country and with a number of bilateral and international donor organizations.

Clusters organized as an intermediate structure between the district (or region) and the school level serve as channels to better disseminate information up and down the hierarchy, from the national to the school level. As in most decentralization programmes, the hierarchy remains in place. Clusters can thus be more effective points for distribution of materials and information, and for supervision and support of schools.

There has been an effort in some wide-scale cluster programmes to encourage school-community partnerships and to include community members on local cluster steering committees. It is indeed useful to have the support of the local community in collecting data on pupils and schools for fundraising, school improvement and decision making. The interaction and partnerships created between actors at the cluster level – directors from the different schools, teachers, pupils, parents and other community members – need to be co-ordinated or animated by a co-ordinator and steering committee. The activities of the clusters, in turn, need to be supported by the district or regional level, which can step in to render assistance and support at the level above the clusters.

School clusters in Cambodia

School clustering was introduced by the Cambodian Ministry of Education, Youth and Sports (MoEYS) and UNICEF in 1993 as a development strategy to improve the quality of education in primary schools, maximize resource utilization and promote decentralization. The Cambodian case illustrates how a large-scale, heavily sponsored cluster operation can evolve from pilot phase to national scale and points out the complications involved.

The pilot phase, which began with four provinces in both urban and rural areas, was carried out between 1992 and 1995. Over the following decade, clusters were extended to the entire country, and at the beginning of 2003, there were 925 clusters, of which 500 had never actually been operational. About 45 per cent of these clusters received direct support from external donors. This has created a two-track system where some clusters receive external support while others are self-supported. Various impact studies have found that clustering has worked in Cambodia when high levels of financial and technical support have been provided by non-governmental organizations (NGOs) and international organizations (Geeves, 2003).

The cluster scheme began with a unitary model, in which five to eight primary schools in the same neighbourhood or district work together as a single unit. One school is chosen as the 'core' school and functions as the administrative heart of the cluster. All the schools in the cluster share their facilities, teaching materials and teaching staff. Local teacher training takes place at the core school. The core

school also houses a resource centre serving teachers, pupils and the community as a whole. The resource centre provides training and community development activities (Prasertsri, 1996). The Ministry now recognizes the need for the cluster structure to adapt to the local context and the guidelines now accommodate four types of clusters: regular clusters; populous (town) clusters; remote clusters; and irregular clusters. In 2001 and 2002, cluster boundaries were re-drawn to create more reasonable entities in terms of distances between schools. In doing so, it increased the number of clusters nationwide from 757 to 925 (Geeves, 2003).

Cluster heads are chosen by election and the position is held concurrently by the director of one of the schools, usually the core school. This has posed a problem of control over resources when cluster heads come from schools other than the core school. In an analysis of how to improve cluster management, Geeves (2003) suggests appointing a separate school cluster director to be based at the core school. He also notes that three key positions are required for effective cluster functioning in the Cambodian context: a district cluster schools co-ordinator at the district education office to provide follow-up, support and advice to cluster directors; a school cluster director support staff to handle administrative and management issues; and a technical co-ordinator to co-ordinate in-service and pedagogical activities.

A number of key players from the education administration and the community have a role in cluster functioning. The Local Cluster School Committee (LCSC) acts as an advisory body on cluster activities and, under the MoEYS and the World Bank Education Quality Improvement Project (EQIP), is responsible for managing the clusters' resources and writing grant proposals. The LCSC is supposed to be composed of school directors, teachers, and a variety of local community members, but Geeves (2003) notes that LCSCs are most often composed entirely of school directors and, in rare cases, include community representatives. While under EQIP the LCSCs take on a wider role in planning and management, the 2003 Sida Advisory Team (SAT) report notes that most often the LCSC is a passive body handling only fundraising and school meals, and that women and younger community members are underrepresented.

The District Office of Education provides support services to school clusters and guidance in planning. The province level screens the clusters' grant proposals and, to a large extent, determines the role of clusters in decentralized management. The Ministry holds weekly teacher training sessions at the cluster level and provides operational funding to the schools. The World Bank EQIP experience shows how important the support of actors at all of these levels is for a successful cluster programme. The cluster system also allows the government to deal with schools collectively to better channel technical support and facilitate development planning.

Donor organizations have taken a strong role in the development of Cambodia's cluster system. The objectives of clustering have changed with the orientations of the different donor projects. Most recently, efforts have focused on using clusters to make decentralized planning and management more effective while targeting whole school and cluster improvement. School clusters are now responsible for management of funds for operational expenses. The EQIP programme provided grants to clusters for quality improvement projects in three provinces, making school clusters responsible for developing their own quality improvement action plans and managing the resources attributed to them (World Bank, 2004*a*).

In addition to managing funds, clusters also have begun to take a role in planning and evaluation. Educational management information is available at the cluster level, and clusters can monitor indicators of enrolment, repetition and drop-out. Clusters are also the base unit for in-service teacher training, and for monitoring its quality and managing resources for in-service activities. EQIP and other donor projects have demonstrated that "school clusters can flourish when they have an opportunity to make genuine decisions over the distribution of resources" (Geeves, 2003: 13).

Although the school cluster has shown that it can be an effective unit of technical support, planning and management, because they have not yet been institutionalized, the future of the school cluster system in Cambodia is uncertain. Funding is one issue: the 2003 SAT report noted that additional resources are needed to provide ongoing support to clusters. Extra funds are needed to cover "teaching and learning aids, operational budgets for local level support services

and also for the technical assistance to be provided by local NGOs and professional organizations" (SAT, 2003: 7).

Clusters will probably be given a more clearly defined status and role in the Education Law being prepared for ratification in 2007. According to the World Bank, provinces that have had a positive experience with clusters are likely to continue using them as a decentralized support network to offer regular in-service training and to foster the exchange of experiences (World Bank, 2004*a*: 11).

School cluster system in Namibia

The cluster system in Namibia was first initiated as a pilot project in the Rundu region in 1996. Under the Basic Education Project, all of the country's schools have been grouped into 260 clusters in a comprehensive cluster scheme. Namibia's education management used to be a centralized structure, with regional and circuit offices of the Ministry responsible for the management and supervision of schools. Because of Namibia's low population density, schools tended to be isolated and were run independently from one another, sometimes duplicating resources within a small area. Clusters appeared to be a practical solution to the management and supervision issues encountered in Namibia due to the small size and isolation of schools (Dittmar *et al*., 2002).

The school cluster system was thus established to provide a decentralized management and support structure by creating another management level between the circuit and the school. Each school belongs to a cluster, which belongs to a circuit, which in turn belongs to a region. At the same time, the school cluster system appeared to be a solution for improving education provision and planning and for allowing schools to share resources and to exchange with one another. The cluster programme in Namibia is not only ambitious, it also marks a profound change from a centralized bureaucratic system to a decentralized system where school clusters have taken a major role in the supervision, management and planning of education.

Clusters were developed based on a school mapping exercise and baseline study, taking into consideration geographical proximity, school size, grades offered, pupil numbers and enrolment trends. Then, the schools were assessed to determine which would work best together and which could serve as cluster centres.

A cluster of schools in Namibia consists of five to seven schools on average. Most schools are basic education schools, but some also contain upper grades. The school with the most resources and complete education cycle serves as the cluster centre. The cluster centre should be central and accessible to its satellite schools and ideally have access to other commercial services. Cluster centres are the focal point of contact and co-ordination between cluster schools. They act as meeting places and sites for in-service training, since they contain materials such as audio-visual aids and duplicating facilities. More extensive resources and training facilities are housed in regional resource centres.

The cluster centre principal serves as the head of the cluster and takes a large part of the responsibility for co-ordinating activities, management and supervision of the school cluster. He also serves as chairperson of the cluster management committee. Because this position requires strong management and leadership skills, the cluster centre principals should be trained in management, administration and planning.

Other key players include: the cluster management committee, composed of the school principals of all of the cluster schools and senior teachers, which serves as a basis for planning and co-operation among the cluster schools; the circuit management committee, formed by the cluster centre principals and headed by the circuit inspector; and the circuit inspector, who represents the Ministry and supervises the clusters. Advisory teachers are also based at the circuit level to provide support through the clusters, but there are still too few advisory teachers compared to the number of schools they must cover (De Grauwe, 2001*a*; Dittmar *et al*., 2002).

In Namibia, clusters have been used as a basis for a number of purposes. Within the clusters, teachers have formed subject groups, headed by subject facilitators, to bring teachers together to exchange experiences and encourage them to work together on testing and curriculum development. Advisory teachers assist subject facilitators in organizing cluster workshops. There are also plans for in-service training to be assessed and organized at the cluster level. Every region has a resource centre, where teachers, inspectors and subject advisors can hold meetings, workshops and in-service training. The

presentation of the Namibian school cluster system by Dittmar *et al*. (2002) suggests developing resource centres at the circuit level to bring support closer to the clusters.

Staffing needs can be assessed by cluster, and teachers can be appointed and transferred within the cluster. Likewise, the cluster management committees will take on a role in planning education provision, offering additional grades and dealing with problems of access. Materials and textbooks are ordered and distributed to the clusters through the circuit offices, helping to reduce delays and transportation costs in delivery to individual schools. Statistics are collected through the cluster, and communications between school and circuit or region are channelled through the cluster. Cluster centre principals have taken on a role of guidance and supervision of satellite schools. Cluster management committees and visits from the cluster centre principal to the core schools help to encourage improved management practices and accountability (Dittmar *et al*., 2002).

The cluster system in Namibia had not become institutionalized by law in 2004. Clusters operate somewhat informally, with the participation of teachers, principals and inspectors. At the time of writing, a review of the Namibian cluster system was being conducted nationwide to be published in November 2006 (personal communication, Vivian Ward).

Box 1. USAID cluster-based teacher development

In the last decade, USAID has funded a number of programmes for teacher development and in-service training that use school clusters with teacher resource centres. USAID-sponsored cluster-based programmes bring support to a few regions or provinces, but not nationwide. USAID has worked with a variety of partners to carry out cluster-based training programmes in Namibia and Cambodia, but also in Malawi, Guinea, Mali, Haiti, Indonesia and Pakistan.

In Guinea, the clusters were formed in 1999 and now reach 25,000 teachers in 1,432 clusters or 'grappes'. Teacher development is based on teacher groups, assembling teachers bi-monthly to explore new teaching practices using round table discussions and peer

observation. Schools take turns hosting the meetings, and a respected principal or teacher is selected to facilitate the meetings.

In Pakistan, USAID collaborated with the Aga Khan Foundation to improve the learning environment in the early years (including lower primary) in two provinces through school clusters. The programme, called Releasing Confidence and Creativity, trains teachers and administrators, and addresses local leaders and communities in support of early education. Key teacher resources are distributed through school clusters to encourage creation of a teacher learning community. Cluster schools organize teacher education and facilitate resource mobilization for early childhood education.

USAID has helped fund several education projects using school clusters in Malawi. Quality Education through Supporting Teachers (QUEST) set up school cluster networks and a teacher mentoring programme to improve teacher support. The mentors, called primary education advisors, provide on-site support and training through the clusters. The Malawi programme trained cluster mentor teachers so that they could carry out cluster-based development sessions for teachers.

A multi-functional school cluster programme has been set up in seven provinces in Mali to improve delivery of education services at the grass roots level. Groups of teachers from two to four nearby schools come together to exchange best practices, for peer coaching and mentoring, and to help their understanding of the new bilingual curriculum. Support and training take place through the corresponding *Centres d'animation pedagogique*, or CAP (district education office). There are also plans to develop ten pilot community learning and information centres, to make available a CD-ROM library and radio access to assist teachers with curriculum and pedagogy. Other components include use of an education management information system at the regional level, encouraging increased community participation in education, and the development of radio education programmes targeted toward teacher learning.

These few examples illustrate the wide variety of teacher development activities addressed by clustering. Clustering for teacher development has become a part of USAID's *de facto* education strategy in opposition to cascade-based training. USAID has used school clusters in response to rapidly expanding enrolment and lack of resources for teacher support, and for promoting active teaching methods and upgrading inexperienced teachers. USAID supports

cluster-based teacher development for its perceived cost-effectiveness and impact on teacher development and practice.

Sources: Anzar, Harping, Cohen and Leu, 2004; USAID, 2004; USAID, 2002; USAID, no date: www.equip123.net.

The resource centre model

A number of donor programmes have been using teacher resource centres as a base unit for in-service and teacher support. Teacher resource centres are meant to increase inputs for teachers and the resources available to them while bringing support services closer to school level. They have even been used to improve the management of schools. Nepal's resource centre programme uses teacher resource centres as a final delivery point of educational services to schools.

Resource centres generally serve one or more school clusters. All the cases studied here make use of physical resource centre facilities, some purpose-built and some incorporated into existing school buildings. They also use tutors, resource people or advisory teachers for support. Most use the teacher resource centre as a delivery point for teacher development workshops and in-service training. Many strategies also use teacher groups for peer exchange and problem solving. Several countries have teacher resource centres available throughout the country at the regional, district or sub-district levels.

New York State teacher centres

Inspired by the TRCs that flourished in the UK in the 1970s, the teacher centre was promoted by teachers' unions in the United States. The Federal Government began funding the development of teacher centres in the US, but in 1980 federal funding was eliminated and many teacher centres closed or operated on a restricted basis. In 1984, the State Government of New York passed a law that established funding for teacher resource and computer training centres. There are now 126 teacher centres serving all New York State school districts, with the annual state grant for 2002/2003 amounting to US$31 million (New York State United Teachers, 2003).

The New York State teacher centres are an initiative of the teachers' unions, whose purpose is to provide teachers with a structure for their own professional development; the centres also act as a forum for action for the teachers' unions. Their stated objectives are to assist teachers in their work with students, provide a site for training educators in information technology (IT), promote educational research for developing materials and curricula, and provide an atmosphere for exchange among teachers.

There are three different teacher centre models in New York State: the district teacher centre, serving a single school district; the consortium teacher centre, serving several districts; and one citywide teacher centre in New York City with a single director and policy board located in 325 buildings and serving teachers in all five boroughs in New York City.

Each teacher centre establishes its own goals and activities through its policy boards. The policy board is the governing body whose majority is appointed by the teachers' union. Other members include a representative of the Board of Education, a representative from a college or university, a parent, and an individual from the business community involved with IT. The board also manages the financing of the centre and its activities and employs teacher centre staff. Teacher centres are funded mainly by the state grant, but the school district may provide additional funding. The teacher centre may also generate revenue by charging fees for the use of the centre and for special events.

Because each teacher centre is operated independently, the staffing and activities they carry out vary. All teacher centres have a director, who may serve either full- or part-time. Some directors are full-time teachers and therefore fulfil their duties as director outside of school hours. Some centres provide additional staff; most have some administrative support. Each policy board decides who can use the teacher centre facilities, including teachers in non-public schools, administrators, university students, retirees, etc.

Teacher centres are generally housed in schools or school board buildings. There is no single format for teacher centres, but they generally contain a lending library and an IT lab. A number of activities are provided by the teacher centres, including training

and support, mentoring, peer coaching, credit courses, IT training, mini-grants, action research and opportunities for peer exchange and professional reflection. They also collaborate with a number of organizations in state and national education programmes, such as bilingual education, head start preschool programmes for disadvantaged children, and educational services for people with disabilities.

New York teacher centres have an evaluation strategy committee that encourages each policy board to evaluate the impact of its programmes on improved learning in the classroom. A website is available to assist the teacher centres in carrying out their self-evaluation (www.programevaluation.org). Teacher centres are written into New York State education law, continue to receive a significant amount of funding from the state budget, and are strongly supported by the teacher unions. Their institutionalization and sustainability appear strengthened by the new federal and state regulations requiring districts to provide professional development for teachers (New York State United Teachers, 2003).

Nepal's teacher resource centres

As in other countries, Nepal's education system has needed to expand rapidly to provide universal access to education. School mapping helped to evaluate the country's needs in terms of building and staffing schools. Over half of Nepal's teachers are untrained. The five-year plan for 1992-1997 proposed to recruit 8,000 new teachers and to train approximately 35,000 primary teachers. Teachers lacked instructional materials for the classroom, and those who did have access to them did not use them adequately.

Teacher resource centres were set up in Nepal with two main objectives in mind: to improve the quality of education through teacher training, support and supervision; and to begin to decentralize the country's education management. Because resource centres are used as a structure for supervision and management between schools and the district, they function very much like school clusters in other contexts.

Resource centres were first piloted in the Seti region in the early 1980s, linking existing school clusters with resource centres. The

Seti project was to use resource centres to provide close-to-school monitoring and supervision, training, and to distribute supplies. The centre school in the cluster acted as the resource centre, but no resource person or separate building was provided. The Primary Education Project (PEP) was initiated in 1982 and resource centres were also an important component. However, PEP provided a resource centre building with furniture and equipment and a full-time resource person responsible for all centre activities. PEP established 133 centres covering 1,855 schools. The project also created the position of Field Co-ordinator, responsible for overseeing three to six resource centres and liaising with the district, and provided for a Resource Centre Management Committee to mobilize community support for its activities (Raj Khaniya, 1997).

Finally, the Basic and Primary Education Project (BPEP) began in 1992 with assistance from the World Bank and DANIDA. Under the BPEP, resource centres began to carry out more functions in the management and planning of primary schools. In 1997, 669 resource centres had been established in 40 districts in Nepal, covering 11,703 schools. Resource centres were given legal status, becoming the basic units for primary education development, and the position of resource person became a permanent, full-time post. The BPEP encouraged increased community participation in the centres by allowing them to undertake income-generating activities. BPEP II, launched in 1999 and completed in 2004, expanded support for the programme (World Bank, 2004*b*).

Resource centres hold in-service training and meetings for teachers, head teachers, resource centre management and committee members to discuss and solve problems. They should be equipped with a building that contains a training hall, a storage area, an office, adequate furniture for training and meetings, a yearly budget for activities, materials for teacher training, and duplicating material. A resource centre and its resource person should serve 10-15 schools no more than three or four hours' walk away. In reality, a resource person is usually responsible for more than one centre, representing on average 32 schools, with some schools much further away than a three-hour walk (Raj Khaniya, 1997). In 2004, a cluster and its resource centre were said to serve an average of about 20 schools, 4,888 students and 108 teachers (Bahadur Bista and Carney, 2004).

The Resource Centre Management Committee (RCMC), composed of representatives of the cluster schools, is headed by the chairman of the school management committee where the centre is based. The committee should support the resource person in running the centre and advise on planning, implementing and monitoring activities, ensure co-ordination of the cluster schools and improve quality and management in the schools but, this is not the reality. Bahadur Bista and Carney recommend strengthening the role of the RCMC in supporting the resource person and increasing the representation of teachers and head teachers within it (Bahadur Bista and Carney, 2004).

The resource person holds the key position within the framework of the centre. Reporting to the district education officer, he/she is responsible for visiting teachers in the schools for follow-up and support, and for ensuring that they have the necessary materials. The resource person also gives demonstration classes and organizes workshops and training, extracurricular activities, and encourages cluster schools to co-operate and share resources. This resource staff member helps schools to elaborate their annual development plans and is responsible for evaluating teacher classroom performance and school functioning.

The school visits of the resource person have helped to reduce teacher absenteeism and have contributed to improving teacher performance in the classroom. A 1993 BPEP evaluation report showed improvements in participating schools, including improved attendance, lower repetition and drop-out rates, and a new professionalism among teachers (Raj Khaniya, 1997). However, there are many critical issues to address in the functioning of Nepalese resource centres. For instance, the resource people appointed are either teachers or supervisors. Those who were Ministry of Education supervisors tend to be regarded with more respect by the schools and the district education officer, who, according to complaints from the resource people, rarely read or follow-up on their reports. The resource people are given more responsibility than they can deliver. Reports on Nepalese resource centres found that when the resource person leaves the centre to visit schools, the centre remains closed (Knamiller, 1999; Raj Khaniya, 1997). The resource people surveyed by Badahur Bista and Carney saw their role as education authorities

as more important than their role in supporting teachers and schools (Bahadur Bista and Carney, 2004). Raj Khaniya (1997) notes that, in 1997, there was no mechanism for supervising resource people and it appears that as late as 2004, monitoring of resource people continued to be ineffective (Badahur Bista and Carney, 2004). Resource people tend to become lone players in this environment, and the high turn-over rate and uncertain job security exacerbate the situation.

There are many issues related to the effectiveness of resource centres in their task of improving the quality of education under the current system. For instance, the centres lack adequate funding to carry out their activities; schools that house centres have no control over them; resource centres are underutilized and in-service courses take place during school time and take teachers away from their classrooms. There is also the question of whether skills learned in teacher training are adaptable to classroom practice. The environment of the school does not lend itself to sharing knowledge learned in the courses with colleagues. To sum up, the analysis published in 2004 by Badahur Bista and Carney states: "the Resource Centre system, while founded on good intentions, has not yet shown itself to be an appropriate vehicle for teacher and school development" (Bahadur Bista and Carney, 2004: 23).

Kenya: Teacher activity centres in Mombassa

Kenya has a long tradition of supporting teachers through teacher centres. Teacher resource centres were created in 1975 to support secondary teachers, and by 1999, there were 25 such centres throughout the country, most of which are situated in a secondary school. Teacher advisory centres (TACs) were developed by the Ministry of Education to support teachers at the primary level in 1978. In 1999, there were over 1,370 TACs serving zones or districts of 10-15 satellite schools. Officially, these centres "provide information for teachers, conduct demonstration lessons, using teachers and develop teaching aids from local materials. They also conduct studies on local educational needs and disseminate information on curriculum innovations" (Republic of Kenya, 1988, cited in Wanzare and Ward, 2000: 268).

The TACs for primary teachers in Kenya have been funded and managed under different programmes. The majority of the country's TACs have been jointly funded by the Government of the Republic of Kenya and DFID as part of a programme called Strengthening Primary Education (SPRED) (Welford and Khatete in Knamiller, 1999). The Aga Khan Education Service also managed and funded TACs through SIP, which began in Kisumu in 1990 before moving to Mombassa in 1994. This case study focuses on the organization and implementation of the Aga Khan-funded Mombassa SIP until its evaluation published in 2002 (Anderson and Nderitu, in Anderson, 2002).

The Mombassa SIP, begun in 1994, set out to promote child-centred methods and to improve the quality of teaching and learning in the city's schools. Mombassa has a history of poor performance on national tests, ranking 60th out of 63 primary districts at the beginning of the project. When the five-year programme was fully launched, approximately 120 primary schools in five Mombassa districts, serving over 40,000 pupils, were included (Anderson and Nderitu, in Anderson, 2002).

The factor distinguishing the Mombassa SIP from other resource centre teacher development programmes is the intensive follow-up support provided to teachers in project schools following TAC-based training workshops. At the beginning of SIP, the TACs of Mombassa were mostly inactive, but under the programme, one TAC was re-activated in each of the ten Mombassa school zones, each serving around 12 schools within 3-5 kilometres. Three schools per zone were selected as project schools to receive additional on site support. A TAC tutor, employed by the municipality, and a SIP project officer were assigned to each centre. Each project officer worked intensively in the three project schools over three terms before moving on to a new group of schools for another three terms.

While project officers' work was confined to teacher development, organizing workshops and offering in-school assistance, TAC tutors had a much wider range of responsibilities. These included workshops and school visits, but also working with subject panels, assisting with preparation and analysis of exams; managing the TAC libraries; co-ordinating extracurricular activities; hosting TAC-based meetings for head teachers, teachers and TAC committees. A few

also provided support to district school officers. TAC tutors were given both formal and on-the-job training through SIP. Investment in the TAC tutors helped improve their professionalism and capacity to use materials and to better play their support role to teachers (Anderson and Nderitu, in Anderson, 2002).

The SIP provided the TACs with basic equipment and materials and some funds for refurbishing. In return, each TAC was required to have a TAC tutor deployed by the municipality, a functioning management committee, and secure and adequate office, classroom and storage facilities. A Community Development Officer (CDO) was hired locally by the SIP to develop community and parental support for the project. The CDO helped form TAC management committees, representing all primary schools in the zone, and mobilized funds and parental support for the TACs at selected project schools. The TAC activities and renovations were to be financed through annual contributions by school committees of the schools served by the TAC. However, once the TAC had been opened, school contributions to the centre plummeted. Eventually, to ensure sustainable funding, a membership system was established with different user fees for members and non-members (Anderson and Nderitu, in Anderson, 2002).

TAC management committees (TMCs) consisted of parent representatives from each school committee, the TAC tutor, all head teachers, the zonal inspector, the divisional school advisor, and the neighbourhood chief. TMC meetings generally focused on funding and acquiring resources to support the TAC and its activities. The TMCs showed support and awareness of the SIP teacher development activities.

The SIP tried to inform and mobilize the head teachers, as well as the community, *vis-à-vis* the goals of the project and the teacher development it was to undertake. Support and awareness of head teachers and parents was important to the success of the SIP. Head teacher training through the SIP was designed to help heads to carry out their school development role and to support teacher development through the SIP and TAC workshops (Anderson and Nderitu, in Anderson, 2002).

Once the TACs were reactivated, teacher in-service workshops were offered through the TAC to all schools in the zone. Mombassa SIP workshops were jointly planned and offered across all zones each term, alternating between mathematics, English and science. Workshop topics were based on teacher surveys, project officer observations and student needs. Workshops used a combination of theory, demonstration and practice that was then reinforced by in class follow-up coaching for the teachers from the project schools. Project officers spent three days a week visiting the teacher trainees in their classrooms to help them apply active, child-centred methods in class. It was this sustained, intensive follow-up of the teachers in their classrooms that helped teachers apply the new techniques learned in the workshops with their pupils (Welford and Khatete, in Knamiller, 1999).

Although it is difficult to measure the impact the TAC workshops and in-school follow-up of teachers had on student learning, following the implementation of the Mombassa SIP, Mombassa's school district ranking improved from 60th to 37th place by 1997 (Anderson and Nderitu in Anderson, 2002). However, the project does have some weak points. Sustainability is heavily dependent upon the community's ability to raise funds and maintain motivation for the TAC. The project officers, whose role is crucial within the programme, were education officers on secondment expected to return to their regular posts. Another problem was the use of TAC tutors as administrators and supervisory assistants to the education officers and zone inspectors. The study by Anderson and Nderitu (in Anderson, 2002) recommends appointing three teacher development consultants to each zone to sustain school-based assistance to teachers.

Since 2002, the Aga Khan Foundation has supported another phase of SIP in Kwale and Mombassa called the Kenya School Improvement Project (KENSIP), while the Ministry of Education has launched a school cluster programme. The Kenya Education Sector Support Programme (KESSP), begun in 2005, plans to streamline primary teacher development through learning resource centres serving a cluster of four to seven schools, based at the cluster centre primary school. In its presentation on the school cluster and learning resource centre projects, the Kenyan Ministry of Education

has promised to integrate the positive experiences of the SIPs into its project design (Kenya Ministry of Education, Science and Technology, 2005).

The teacher group

Teacher groups are generally a core activity in school clusters and resource centres. They have become a fixture in Latin America; the three examples examined here are Latin American teacher groups. Colombia's and Chile's *microcentros*, as well as Ecuador's *micro grupos*, bring together teachers from rural one-teacher and multi-grade schools. The examples in this section illustrate that collaboration among teachers need not be accompanied by a larger cluster or resource centre scheme in order to benefit its participants.

Most teacher groups are small groups formed by six to ten teachers from surrounding areas. Teachers often cover their own travel expenses, although sometimes project grants are available from the education authorities. Teacher groups are places for informal exchange as well as project-based work. While there is no formal hierarchy, teacher groups might be assisted by a supervisor or advisory teacher. These groups are valued by participants for helping break the isolation of teachers in small schools and for giving more professional recognition to teachers.

***Chile's* Microcentros**

In 1992, the Chilean Ministry of Education and the World Bank launched a programme for the improvement of the quality of basic education in rural areas in Chile called *MECE Basica Rural* and oriented toward teachers in one-, two- and three-teacher schools. The *MECE Basica Rural* programme created *microcentros de programación pedagógica* (microcenters, or teacher groups, for pedagogical planning) to break the isolation of rural teachers and to encourage them to collectively produce 'education improvement projects' (*proyectos de mejoramiento educativo* or PME) especially tailored to the educational needs of each *microcentro's* environment. *Microcentros* were created progressively, first in three provinces, and by 2004 there were 656 throughout the country uniting 8,069 teachers from complete and incomplete schools (Ramirez Arce de Sanchez Moreno, in FAO, 2004). The MECE programme was institutionalized

within the ministry structure in 1997. Each *microcentro,* composed of eight to ten teachers from neighbouring multigrade schools, meets once a month. Teachers from both publicly and privately financed schools participate in the *microcentros*. Participation is voluntary.

Even though teachers appreciate the social interaction with their peers that *microcentros* provide, the rotation of meeting site among schools from month to month can mean that teachers have to travel far, and frequently, at their own expense. These conditions, along with the lack of support from the municipalities, cause some discontentment among teachers.

One important precept of the *microcentros* was that educational change and innovation should come from the teachers themselves and that the role of the Ministry is to provide technical assistance and funding for the teachers to execute their own projects. The teachers meet monthly to share experiences and find solutions to common problems; they formulate their education improvement projects and plan and adapt curricula to the learning needs of their pupils. Because ownership is an important aspect, each *microcentro* chooses a name to develop an 'identity' for its organization. The Ministry provides funding in the form of grants for the education improvement projects designed by the *microcentro* teachers. A few projects that have received funding include writing and communication projects, environmental projects, and bilingual and intercultural education projects. Teachers in certain schools have gone as far as establishing their *microcentro* as a legal entity in order to conduct pedagogical activities promoting the teaching of their native language, culture and beliefs. Other government agencies, universities and NGOs have also provided support for *microcentro* activities (Ramirez Arce de Sanchez Moreno, in FAO, 2004).

A supervisor from the province department of the Ministry of Education and specialized in rural education provides technical assistance to the teachers in formulating their projects, on-the-job certification, and orients them in the direction of the reform. Supervisors should not take on a hierarchical role, but facilitate the meetings and give technical assistance to the teachers in developing their innovations. In reality, certification courses do not take place as systematically as they should, in part because teachers are not able

to attend due to problems of distance and accessibility. Supervisors are also charged with regular supervision of the schools within the *microcentros*, but their support is often limited to the *microcentro* meetings (Williamson, in FAO, 2004; see http://innovemos.unesco.cl, *Microcentros rurales en Chile*).

Benefits of the *microcentros* include the active participation of teachers in developing pedagogical innovations, professional recognition for teachers, and fostering relationships among teachers and supervisors. However, evaluations have shown that there is little transfer to the classroom of the pedagogical skills learned in *microcentro* workshops, which supervisors attribute to the teachers' previous training. There is also a need to create more links between the community and the *microcentros*, and to keep in mind that *microcentros* cannot solve all of the education issues faced in rural areas (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*).

Microcentros *in Colombia*

Microcentros were also created in rural Colombia as a part of the rural multi-grade *Escuela Nueva* programme. The *Escuela Nueva* programme began in Columbia in the 1960s, creating new curricula and pedagogical methods especially adapted to learning conditions in rural one-teacher and multi-grade schools. The programme was expanded in the late 1980s and early 1990s. Beginning in the early 1980s, *Escuela Nueva* teachers in each municipality met in non-formal workshops called *microcentros* that evolved into regular supervision agencies for the *Escuela Nueva* programme. They also took on a major role in coping with logistical problems of taking the *Escuela Nueva* programme to scale (Schiefelbein, 1992).

Similar to Chile, *microcentros* are places where *Escuela Nueva* teachers exchange solutions to problems, share innovations and come up with joint projects for community and school improvement. The meetings take place in demonstration schools with a rotating co-ordinator and do not have a formal hierarchy. They help reinforce the initial training of the *Escuela Nueva* teachers and apply the *Escuela Nueva* methods in the classroom. They have also been a contact point for forming alliances with other institutions. Supervisors visit the *microcentros* periodically to help maintain

motivation and identify experiences that can be shared with other *microcentros* (Schiefelbein, 1992; Perfetti, in FAO, 2004).

Micro grupos *in Ecuador*

Inspired by positive teacher group experiences elsewhere, in 2000, Ecuador's Ministry of Education, along with UNICEF and the littoral region education authorities, began to establish *micro grupos* for teachers in one-teacher schools in the coastal region. The programme was initiated within the government's social emergency plan. The programme's goals were to provide self-certification courses to upgrade teachers in one-teacher schools and to provide a space for these teachers to share experiences and knowledge with one another. Unlike traditional in-service training and certification, distance learning certification through *micro grupos* aims to keep teachers in their classrooms. In 2002, 90 per cent of littoral one-teacher school teachers were integrated into a *micro grupo* and the project was taken to scale in 2003 (see http://innovemos.cl, *Micro Grupos*).

The *micro grupos* are composed of at least five or six teachers from one-teacher schools situated relatively near to each other. The groups are formalized like small associations; the group signs a charter, elects a co-ordinator and gives its group a name. They also must develop an operational plan. The *micro grupos* should receive technical support from the co-ordinator in charge of the Territorial Education Unit (a district-level education co-ordinator), but there are not enough co-ordinators available to assist all of the *micro grupos*.

Teachers receive distance learning materials to work through collectively. The groups also carry out needs assessments as a basis for their operational plans. The final phase of the project is to develop and apply new educational strategies in the classroom and to share these experiences with colleagues (see http://innovemos.unesco.cl, *Micro Grupos*).

All of the teacher groups mentioned above were initiated on behalf of the Education Ministry and donor organizations. The assumption is that the teacher should be the motor of educational innovation and take responsibility for the improvement of quality. The teacher group is a locally-based strategy requiring active participation and ownership on behalf of the teachers that form it. The

teacher groups featured all focus on project work and the importance of sharing results with colleagues and other teacher groups.

Teacher group meetings are not required to take place during class time; meetings are held close to home to prevent travelling long distances. However, making teachers cover expenses from their own pockets can be a strain on motivation and prevent teachers from attending. Funding should also be provided to carry out projects. The assistance of a technical advisor or supervisor is important in keeping teachers focused, motivated, and feeling as if their actions are being taken into account by district level education authorities.

The network

A new form of co-operation between schools has been emerging in several countries, based on voluntary participation, peer exchange and absence of hierarchical relationships. In educational networks, otherwise autonomous entities meet to share knowledge and experiences in pursuit of a common goal. Proponents of networking consider it to be an alternative to hierarchical or market-based reform. According to the literature on networks as an organizational structure, a network features three main components:

1. the people, teams, or institutions involved, called 'nodes';
2. a shared purpose or set of goals – often based on improving performance;
3. the 'links' or exchange among members – interaction, communication, co-ordination.

Instead of being initiated from the top down like most school cluster and resource centres, networks can be initiated by a small group of innovators, a research institute or university figure, NGOs or governmental organizations. While in some cases the impetus for creating the networks comes from the schools themselves, the motor behind creating networks in Los Angeles and Great Britain was the additional funding available for a group of schools to encourage co-operation between schools to design projects for improved pupil performance. Many such networks begin somewhat informally and develop into more stable entities (Slwika, in OECD, 2003).

In contrast to school clusters, networks can involve schools that are geographically disperse. The networks of interest here,

however, are those that include basic schools that enter into network relationships with a number of other players, but remain geographically local. They also demonstrate the qualities associated with networks, such as fluidity, common purpose, cohesion, self-management and mutual benefits (van Alast, Chapman and Slwika, in OECD, 2003).

LAAMP 'school families'

In 1993, the Annenberg Foundation sponsored a programme to encourage networking among schools for mutual learning and support, strengthened accountability and improved student achievement in urban school districts in the United States. The project, which was launched in Los Angeles in 1994, received US$53 million for a five-year project funding 27 networks of schools, termed 'school families', and involving a total of 250 schools. Voluntary groups of schools, consisting of a high school (secondary) and one or more of its feeder middle and elementary schools, were eligible for funding. The school families were larger than anticipated, averaging about nine schools per network.

School families collaborated by sharing information on curricula, instruction and students in order to spread improvement initiatives. School families sought external partners to provide technical support for developing innovations. Universities were the most common partners; they assisted mainly in professional development services and analysis of student test score data.

In spite of operating separately, the LAAMP school families developed very similar structures and processes. Cross-site teams, made up of representatives from each school – parents, teachers and principals – were created within the school families to involve member schools in school family-wide decision making. These teams worked collaboratively to plan and implement improvement strategies in all of the schools involved.

In addition to the cross-site teams, within each school family a network leader was responsible for co-ordinating the activities of the participating schools. This key position usually evolved into a sort of network facilitator, whose job was even formalized as a full- or part-time position in several school families. At the end of

the project, some facilitators became concerned about 'life after LAAMP' and worked toward institutionalizing the improvement strategies developed by their networks.

At the outset, each school family developed a learning plan focusing on curricular objectives, to guide its activities and set goals. The learning plan served as a flexible working document, shaped by the teachers closest to the students. Each year, the learning plan was evaluated and revised to reflect the successes and failures of the previous year. The network's progress was evaluated in terms of achievement of the goals set out in the learning plan. Accountability also focused on the improvement of students' results.

Cross-site teams established a set of skills to be mastered at each grade level across the schools, which helped to ease transition between grades and schools. The school families also shared the costs of developing new innovations, such as professional development targeting a certain grade level or subject area. Sharing knowledge and information also made it easier to diffuse innovations among schools (Smith and Wohlstetter, 2001).

UK: Education Action Zones

Education Action Zones (EAZs) began in the UK in 1998 and were designed to raise attainment in places where there had been "persistent underachievement" based on national evaluations, baseline data and inspections (DFES, 2002*b*). The EAZs were given funding with a maximum lifespan of five years, at which time they were transformed into Excellence Clusters or Excellence in Cities Action Zones. The EAZs brought together a number of local players in education to commit to whole school and zone-wide improvement. These local participants included schools, local businesses, the LEA, parents, teachers, and local community representatives. The UK Government promised £750,000 per annum for each zone project, and the zones were expected to raise £250,000 in funds locally, with the help of private sector sponsors, to meet a one million pound (sterling) total annual budget (DFES, 2002*b*).

Zones tend to be considerably larger than traditional clusters with around 22-25 schools, including primary and secondary, one or more preschools and a special school, representing several thousand

(5,000-7,500) pupils. Zones were set up within an LEA, and many covered both rural and urban areas.

The programmes elaborated in the various EAZs were very diverse, having as their purpose one of the following goals: raising the quality of learning; raising the quality of teaching; providing support for families; providing support for pupils; tackling social exclusion; and working with partners. First, the zone drew up a project bid; after receiving the necessary approval and funding, it came up with a detailed project plan. The zone plan was elaborated after consultation with local education professionals. It contains the zone's objectives, a summary of its targets and of the progress made toward achieving them, the programmes for the coming year, and outlines plans for the remainder of the lifetime of the zone. In some cases, the project expanded on work that was already underway, while extra funding allowed the programme to be extended to other schools.

A zone forum, composed of representatives from each school, an LEA representative, a county council representative, school governors and contributing local businesses ran each zone. The individual zone is managed by a director, supported by a number of core staff, including a project administrator, an ICT advisor and administrative support staff. Zones also set up other committees or teams with a pedagogical focus, made up of teachers, inspectors, advisory teachers and learning support assistants, among others. The zone forum provides funding and support, while the zone teams develop and carry out the project. Not all schools in a zone participated equally; some served as 'lead schools' to guide the other schools in project elaboration and implementation (DFES, 2002*a*).

Case studies show the variation in focus and activities of the zone programmes. In Blackburn with Darwen, the zone project gathered an Early Years Working Group composed of head teachers, health and social services representatives, as well as members of volunteer associations. The zone sponsored parents for Parents as Educators courses to train parents, some of whom became certified classroom assistants as a result. The programme successfully changed the way parents, pupils and teachers interact with one another, promoting parental involvement in education. Blackburn College, a local

university, helped with quality assurance in the certification process (DFES, 2002*a*).

Barnsley's EAZ created teacher development groups (TDGs) to target raising attainment in core subjects. The TDGs were composed of teachers from primary and secondary schools throughout the zone who assembled to find ways of dealing with skills assessment and transition between grades. The groups represented mathematics, English and science, as well as ICT, key skills, and early-years learning.

The Key Skills TDG worked to establish key skills to be mastered at each stage of learning and devised an IT-based monitoring system to track pupils' progress, known as the Monitoring and Assessment Performance Programme (MAPP). MAPP provided a tool for systematizing stages in student learning that could be compared across the schools. In addition, the pupil tracking system provides a plan for each key stage. It allows pupils, teachers and parents to know exactly where each individual pupil is in his or her mastery of the different skills, and to know what to expect at the next stage and which areas to improve (DFES, 2002*a*).

Core subject teacher groups identified problems in teaching and learning and possible solutions. They also worked to find more consistent interpretations of the skills to be mastered so that all subject teachers across the schools used the same vocabulary and concepts in their teaching. The programme has improved whole-school management, co-operation among teachers at different grade levels and across schools, and pupil performance as evaluated by the key stage exams.

Schools in Herefordshire's EAZ brought learning support assistants (LSAs) to work more closely with teachers, restructuring the manner in which they work together to assist pupils. Traditionally, LSAs work with individual pupils with difficulties in literacy, speech and language, and rarely liaise with regular teachers. LSAs began supporting teachers in classrooms, providing needs assessment and monitoring pupils in order to help improve achievement. They also worked with groups of pupils to improve participation in class activities. Teachers and pupils appreciated the LSAs' intervention. Participating schools reported a constant improvement in the

quality of lessons and teaching practice during the programme. As a result, pupil achievement also improved steadily over four years (DFES, 2002*a*).

The EAZs were given a maximum lifespan of five years, with a possibility of an extension from the Ministry. There was a substantial effort to continue project work once zone funding came to an end. Acquiring the support of the LEA, naming permanent posts, institutionalizing innovations, and diffusing good practice to schools within and outside the zones were some steps taken toward sustainability. In 2002, the process of transforming the EAZs into Excellence Clusters or Excellence in Cities programmes began. Because the EAZs were legal entities and employers, a number of legal, financial and personnel issues had to be considered in the transfer of EAZs to Excellence Clusters and Excellence in Cities programmes. Funding for excellence clusters is currently provided by the Ministry based on a per-pupil formula and adjusted for socioeconomic and performance factors. The Department for Education and Skills (DFES) continues to give advisory support to both programmes (DFES, 2002*a* and 2002*b*; Turner, 2003; see www.standards.dfes.gov.uk).

Redes *in Latin America*

In Latin America, similar types of voluntary networks, called *redes*, have also appeared in several countries in the last decade, namely in Chile, Argentina and Venezuela. The following two examples illustrate two small-scale, urban initiatives diffused and adopted as stable entities.

Outside of Santiago, in the commune of Pudahuel, school directors from the commune's P900 schools discussed raising academic performance within the commune's schools. P900 schools are those with school-wide results at the bottom 10 per cent for the national *Sistema de Medición de la Calidad de la Educación*, or SIMCE, exams (educational quality measuring system, or national standardized test). These schools are usually in socially deprived areas. The *Equipo Gestor 8* network officially began in 2000, involving eight basic and pre-basic schools in the first phase and 14 schools, both public and private, in the second phase. The *Equipo Gestor 8* management committee is composed of the

directors of the participating schools (see http://innovemos.unesco.cl, *Equipo Gestor 8*).

The network aimed to bring teachers together to develop common schemes for improving learning and educational achievement. They did this by creating teacher working groups by subject area for developing, sharing and applying innovative pedagogical methods in the participating schools. The teachers themselves formed and operated the teacher groups, which have become places of creativity, motivation and exchange. They have been able to establish clearer goals for learning, and subject teachers have begun to harmonize teaching criteria, curriculum content and methodology across schools. Most schools participating in the network have developed a school education project (*Proyecto Educativo Institutional* – PEI). The network's projects also include creating a database for didactic materials, guidelines and methodological resources and evaluation tools by subject area.

SIMCE test scores have improved among participating schools. The project is ongoing, and its positive results have encouraged a similar network to be set up in another Santiago commune under the responsibility of the Municipal Department of Education (see http://innovemos.unesco.cl, *Equipo Gestor 8*).

Following a study on education data and management carried out by the Universidad Central de Venezuela in Caracas, it became clear that transition between the second and third stages of basic schooling was a trouble spot for the city's schools. Seventy per cent of pupils must change schools between grades six and seven, with the transition between the two grades marking the highest drop-out and repetition rates for all of basic schooling. Throughout Venezuela, the educational offer for the third phase of basic education is severely limited and does not allow all students to finish their basic schooling.

The Centro de Estudios del Desarollo (CENDES) at the Universidad Central de Venezuela, in co-operation with the city's school administration, developed a proposal providing technical assistance and co-ordination for the creation of a network among the schools in Las Minas parish in order to facilitate transition between the different phases of basic education. The CENDES has been the

motor behind the network and proposes to carry out the majority of the planning, co-ordination and evaluation of the network's activities.

The programme, launched in 2001, plans to give increasing control over the network's activities to the network stakeholders. In the first phases, the co-ordinator organizes monthly activities to train teachers, directors, administrators and community members in how to draw up and carry out school pedagogical projects. In later phases, cross-school teacher teams establish the skills that should be mastered at each grade level and communicate them to the teachers in the grades below. Teachers in their teacher groups identify pupils in need of remedial attention and those at risk of dropping out. The CENDES continues to monitor the progress of the pupils within the network and provide technical assistance to the network members. In the first two years of the network's existence, there has been an increase in the retention levels of sixth and seventh grade pupils, greater pupil achievement and lower repetition rates in the seventh grade in participating schools (http://innovemos.unesco.cl, *Redes Escolares*).

Summary

In spite of the fact that these networks were created entirely independently of one another, they actually share a striking number of similarities in the goals they pursue and in the way they operate. The networks here were given the possibility to innovate. The networks also seek to bring in additional players such as universities, consultants, community members and parents. They make use of cross-site teams or teacher groups that work on improving pupil attainment and performance and on easing transition between grades. The inter-school teams saw the need to create common standards of achievement and specific skills to be mastered at each level across schools, and to harmonize their teaching methods and pedagogical objectives in order to achieve these goals. In all cases, special funding or special support from external sources, the commitment of a core management team and cross-site pedagogical teams were necessary for the networks to execute their activities.

The rural cluster model

Rural school clusters have existed since the middle of the twentieth century to address better the issues of access to and quality of education in rural areas. Instead of creating a nationwide cluster scheme, clusters can be established in rural areas where educational coverage and quality tend to be poorer and where the population has specific development needs. Most recently, the rural cluster model has been encouraged by national governments as part of efforts to decentralize responsibility for educational management to local authorities and community education councils. Schools in rural clusters share resources for education, such as classroom facilities and teacher development activities. They seek to provide a complete education cycle, as well as extra subjects and services in areas where there are incomplete schools. Clusters also group schools together in an effort to raise pupil-teacher ratios, and cut back on the costs of rural multi-grade and one-teacher schools. They have also been used to promote rural-urban equity, providing similar conditions for education throughout the country.

Rural school clusters have existed in Latin America for several decades. In countries with a large rural population, education in rural areas tends to be very much outside central control. Rural populations in Latin America have specific education needs due to the fact that many rural children work to contribute to the family income and speak indigenous languages at home rather than the national language. For these reasons, drop-out and repetition rates tend to be higher, and participation rates lower, than in urban areas. In the case of Bolivia, Peru and Nicaragua, rural school clusters have been encouraged by the central government in order to ensure educational coverage in places where the state's governance of schools has not been effective. In Latin America, there has been strong emphasis on parent and community participation in education in rural communities through school clusters called *núcleos*.

***Bolivia's* núcleos escolares**

In Bolivia, where 40 per cent of the population lives in rural areas and 60 per cent speaks an indigenous language other than Spanish, its centralized education system was deemed largely ineffective. According to the World Bank (cited in Contreras and

Talavera Simoni, 2003: 11), Bolivia's education system in the 1980s was divided into two subsystems: one for rural education and another for urban education. High drop-out rates were a result of an irrelevant curriculum and Spanish language instruction in areas where most pupils do not speak Spanish at home. Other problems plaguing education in Bolivia up to and in the 1990s included poor coverage and quality of education, an overly centralized and weak administration, the alienation of the primary beneficiaries from the decision making process, an inefficient allocation of resources, inadequate material conditions, and untrained teachers. All of these areas were targeted when Bolivia sought to reform its education system with the assistance of the World Bank (Contreras and Talavera Simoni, 2003).

The Law of Popular Participation and the Law of Education Reform were passed in 1994, and the Law on Decentralization of Administration in 1995, giving recognition to the indigenous languages and cultures of Bolivia and establishing the decentralized financing and administration of education. The education reform reflects the national movement toward increasing popular participation in decision making. The decentralization measures provide financing for municipal budgets according to the number of inhabitants and their development needs, and establishes participative education councils at the department, municipal, cluster and school levels. It also makes municipalities responsible for education infrastructure, maintenance and supply costs. Parents and community members are now obliged to participate in educational planning and management, and in making decisions regarding the use of resources for education (Comboni Salinas and Juárez Núñez, 2001).

Bolivia has had a long history of rural clusters (*núcleos*) in education, originating with the *Escuela Ayllu* (Allyu Schools, tailored to the rural population in Bolivia) for the education of rural people founded by Elizardo Pérez in the 1930s. With the 1994 education reform, *núcleos* became an official level of administration. Using the rural model as a base, the entire national system was reorganized to create *núcleos* in rural and urban areas to eliminate rural-urban inequalities in education. Clusters encourage mutual co-operation between school and community, and better planning and distribution of education. Each *núcleo* is composed of a central school offering

the entire cycle from preschool to *bachillerato* (high school or upper secondary school), along with several multi-grade satellite schools offering the first three primary grades. Cluster schools share resources such as classrooms and school facilities, libraries, workshops and laboratories in co-ordination with one another. They can re-direct pupils and teachers to different schools within the cluster to provide a more even and complete coverage (Comboni Salinas and Juárez Núñez, 2001).

Cluster schools collectively design an education project (PE) and receive funding for its implementation. According to the review of the Bolivian education reform by Contreras and Talavera Simoni (2003: 50), the PE "is a management and planning instrument for education actors. It seeks to help them find solutions to pedagogical problems and infrastructure and teaching material limitations. It promotes teamwork and seeks to co-ordinate activities to distribute them equally ... PEs address issues such as curriculum development, the usefulness and pedagogical utilization of reform resources ...".

The education project is elaborated by a committee of local actors, including teachers, principals, district education board representatives, and headed by a pedagogical advisor (*asesor pedagógico*). The education project is adapted to the local situation and reviews all of the processes, policies, organization and programmes of the cluster in light of its goals. "Everything that works is kept and reinforced; everything that does not meet the test is discarded" (Contreras and Talavera Simoni, 2003: 70) To give an idea of the weight of rural clusters in Bolivia, between 1999 and 2003, around 1,000 *núcleo* education projects were approved and over US$80 million disbursed to them (Contreras and Talavera Simoni, 2003: 50).

The reforms sought to offer a bilingual and intercultural curriculum to Bolivia's schools and to switch to an active, pupil-centred pedagogy. Schools now offer instruction in the three major indigenous languages in Bolivia: Aymara, Quechua and Guarani. The changes in curriculum and pedagogical methods required retraining teachers. Pedagogical advisors, who ultimately reported to the Ministry, were recruited and trained to help the teachers incorporate the curricular and pedagogical aspects of the

reform. By 2002, there were 1,578 trained pedagogical advisors. Each pedagogical advisor was required to serve a cluster of six schools and report to the *núcleo* directors who had not yet been appointed.

Talavera Simoni and Contreras (2003) note that through Bolivia's national education reform, "gradual modifications have taken place in thousands of classrooms all over the country". The classroom environment is more child-friendly and co-operative, and teachers are more open to dialogue. The reform has improved the internal efficiency of public primary schools and decreased differentials between rural and urban areas.

Peru núcleos *and* redes educativas

The conditions for rural education in Peru are very similar to those of their Bolivian neighbours. In addition to high levels of poverty in rural areas and rural-urban disparities in education, rural education in Peru has long been characterized by poor quality and low student achievement. Rural girls are particularly vulnerable to dropping out of school. The vast majority of rural schools are one-teacher schools and multi-grade schools (Ramirez Arce de Sanchez Moreno in FAO, 2004). Schools are dispersed, with the distances between them causing school and teacher isolation. Not surprisingly, Peru too has a long history of *núcleos* in rural areas.

Peru's first *núcleos* appeared in the 1940s, spearheaded by Dr Bustamente y Rivero (President from 1945-1949) who took a keen interest in the education needs of the rural population. *Núcleos Educativos Campesinos* (rural school clusters), created in 1945, brought together a 'matrix' school offering a complete primary cycle, with incomplete primary schools offering the lower primary grades. The innovation addressed both the agricultural reality and educational needs of the rural population. The central school served as a community centre and focal point. It generally had better infrastructure and access to cropland, which was used as a 'practice farm' by the students in the *núcleo*. Satellite schools offered instruction in indigenous languages, and when students reached the central school, they began Spanish. The central school served as an administrative centre, managing the personnel, the budget and services to the *núcleo*. The early *núcleo* system was particularly

successful in the areas surrounding Puno and Cusco, and at its height, there were 123 functioning rural *núcleos*. Unfortunately, no measures for sustainability had been planned so the *núcleos* died out in the 1950s. Later, during the administration of General Velasco Alvarado (1968-1975), there was an effort to revive the *núcleos*. These clusters served to create intermediate bodies for the management of education at the sub-zone level. In 1972, there were 600 *núcleos educativos communes* (communal education networks), but they functioned mainly as administrative bodies and were never able to carry out any real educational activities for the rural population. An economic crisis in 1975 cut funding for the *núcleos*, and in the 1980s they were replaced by *Unidades de Servicios Educativos* (educational service units, or district-level units of the education administration) (*Unidad de Descentralización de Centros Educativos del Ministerio de Educación*, 2003).

Since the mid-1990s, there has been a resurgence of rural school clusters in Peru, this time under the name *redes educativas rurales*, or rural education networks. Different bodies working with education in rural areas have been using networks and clusters to carry out activities and mobilize community support for education in rural areas. These include *Foro Educativo* and the Catholic association *Fe y Alegría*. The rural networks piloted by these organizations, along with another set of pilot networks begun by the Ministry, were used as models for the Ministry's proposal to integrate all of the country's rural schools into rural education networks by 2010. The Ministry's pilot networks, founded in 1997, use two management instruments: the network institutional development project and the network curricular project, which have been adopted for application in all rural education networks throughout Peru (Ramirez Arce de Sanchez Moreno in FAO, 2004).

In 2001, the national education council encouraged the creation of networks in rural areas for mutual support. In 2003, rural networks were extended to the entire country and more detailed plans established criteria for their functioning. Education networks are bodies for decentralized educational management based on the philosophy and practice of the original *núcleos campesinos* (rural clusters) founded in the 1940s. The education network also has a place in the administrative hierarchy below the province-level

education management unit (*unidad de gestión educativa*). The country's decentralization plan provides for school councils and network councils to encourage community participation in decision making. According to the 2003 Project for Education in Rural Areas by the Decentralization Unit's technical team, *redes educativas* are multi-sectoral and participative, grounded in solidarity and mutual support for rural and educational development. The plan specifies that a network should include an average of 12 schools within a reasonable geographic range that share a common language or other characteristics. The central school should have adequate infrastructure and services and be a complete primary or secondary school whenever possible (Unidad de Descentralización de Centros Educativos del Ministerio de Educación, 2003).

Each network has a network council, an educational development committee, a co-ordinator and a network assembly. The educational development committee is presided by the network co-ordinator and composed of school directors who come together periodically to co-ordinate activities, assess needs and evaluate the network's development. The network council is also presided by the co-ordinator and composed of community members, indigenous leaders and representatives from different educational institutions. The network assembly is composed of school council representatives.

The co-ordinator has a great deal of responsibility, both in terms of pedagogical development and network management. The co-ordinator is an experienced teacher, chosen by the education management unit, and is responsible for overseeing the network's activities, building alliances with parties from other sectors, and serves as a sort of 'team leader' for the team of itinerant advisory teachers. He or she also represents the network and engages in supervising and monitoring the network's schools, and is responsible for handling resources, funds, equipment and materials for the network. The three-member team of advisory teachers is responsible for elaborating the network's curricular project and for teacher development activities (Unidad de Descentralización de Centros Educativos del Ministerio de Educación, 2003).

Rural education teams play a leading role in project implementation. At the regional level, they are responsible for

producing needs assessment and baseline studies at the network level to serve in curriculum design, institutional development, education plans and special projects and innovations. These teams make proposals concerning the geographical range of the network and its central school.

Borrowing from the *Fe y Alegría* rural network programmes, each network also must elaborate a network institutional education project in addition to its curricular project. Each school in the network is responsible for outlining a school improvement plan, which are then aggregated to form a network development plan that is approved by the Education Management Unit. The World Bank rural education project in Peru plans to fund 150 network institutional education projects from 2003-2010 (World Bank, 2003*a*).

The FAO study on education for rural populations noted that rural education networks in Peru, existing under different forms up until 2003, had demonstrated their strength in developing pedagogical proposals, and had promoted the development of local capacity in educational management, planning, development, monitoring and innovation (Ramirez Arce de Sanchez Moreno in FAO, 2004). The output goals for the current World Bank Rural Education project include the proposed creation of 290 functioning rural school networks to cover all rural schools in Peru by the project's end (World Bank, 2003*a*).

Rural education networks in France

France's rural school clusters (*regroupements pédagogiques intercommunaux* or RPI) originated in the 1970s as the Education Ministry's response to the growing fragility of small rural schools in the face of demographic decline. Small schools from different villages were encouraged to come together voluntarily in order to adhere to minimum pupil:class ratios and provide the entire primary cycle. As of 2003, there were some 4,800 RPI, made up, on average, of four classes and serving three villages (Darcos, 2003).

Two types of RPI are recognized: *concentrated*, meaning that the different schools meet at the same site; and *dispersed*, meaning that the schools continue to operate in different locations, each providing different grade levels. Groupings can be temporary and

schools can retain their staff and separate school councils (Darcos, 2003). The combinations vary according to the local context, but often two or more elementary schools, or an elementary school and a preschool and kindergarten come together to form an RPI (Duhamel *et al*., 2003).

In 1998, the concept of rural educational networks (*réseaux ruraux d'éducation* or RRE) was created, distinguished from the RPI by its emphasis on an educational project which links the schools. Frequently, a network is made up of one or several existing RPI. In 2003, there were 246 networks in 46 French departments, bringing together an average of six schools, 15 classes and over 300 students. The goal is to establish 600 RRE by the end of the 2006/2007 school year. The Ministry's stated objective for encouraging the creation of RRE is "to guarantee to all children throughout the territory the same chances to access knowledge and training" (Darcos, 2003: 4).

Both RPI and RRE are voluntary entities, initiated by the school-level actors – teachers, school directors, school councils – and actively encouraged by the local-level school inspectors, all of whom are active in laying out the objectives of the network and co-ordinating activities. The network's activities are sanctioned and monitored by the local community councils and mayor's offices. RRE have network councils, composed of multiple local stakeholders and representatives of the Ministry of Education at the local level. Half of all networks are managed by inter-communal co-operative councils who facilitate the financing and management of network activities. Funding comes from 'credits' from the Ministry for pedagogical activities, 'credits' from the inter-communal co-operative councils or municipality for facilities and equipment for sports and cultural activities, and from the regional *conseil général* (general council) for other activities (Duhamel *et al*., 2003).

A co-ordinator is appointed to the RRE by the *Inspection de l'académie* (sub-regional branch of the Education Ministry). This co-ordinator is responsible for managing the pedagogical activities of the network and represents the network in dealings with other officials. Ideally, according to the Ministry of Education, a school director should take on the role of network co-ordinator. In reality,

the *inspecteur de la circonscription* (representative of the Ministry) is most often the initiator of the network and serves as co-ordinator.

According to the experiences of the schools involved in these networks, advantages include combating the isolation of teachers and pupils, improving educational continuity, and offering a more complete educational service. Schools pool their resources and are able to provide additional services (school lunches, after-school childcare), subjects and activities (foreign languages, sports, art, music), and access to information technologies. The schools share facilities for these extracurricular activities and services (Darcos, 2003).

Disadvantages of the current scheme include lack of institutional and legal status, absence of a management structure and time for co-ordination, and lack of overlap between new inter-communal political entities and school network management responsibilities. Because of the number and interests of the different stakeholders involved, it is sometimes difficult to achieve consensus on goals. Where schools have fused, the sheer logistics of grouping together so many schools has its limits: a single director cannot meet the demands of managing several schools. Beyond a grouping of 15 classes, the strategy becomes problematic. Transportation between schools is troublesome; in some cases pre-schoolers are bussed to a neighbouring middle school for lunch (Duhamel *et al*., 2003).

The central government hopes to make the inter-communal council responsible for the management of networks. One way in which they plan to encourage this is by providing budget allocations to be channelled through the regional general council and on to the inter-communal co-operative councils. In 2006, the Ministry outlined the role of the academic inspectors and the departmental level in the organization of school networks. In June, the first convention was signed to allow elected officials and education officials control over the school map at the departmental level (see www.education.gouv fr).

Summary

The above case studies illustrate a range of possibilities in organizing cluster and resource centres. In spite of the variety of cluster and resource centre programmes, there are several key actors,

institutions and tools that serve in the functioning and organization of these programmes.

Key actors

Cluster director or network co-ordinator

The cluster director can be either elected or appointed and is generally the director of the centre school in a school cluster. A network co-ordinator is often the initiator of the network and is sometimes a district inspector or administrator. Both cluster directors and network co-ordinators usually represent the cluster or network to their hierarchical superiors and to other authorities, oversee the management committee, and help in the overall co-ordination of the network or cluster.

Resource centre director, tutors and resource people

Tutors or resource people are those charged with the organization of a resource centre and its teacher development and support activities. These are often experienced teachers who are chosen by education authorities for this position, which is permanent and usually full-time and is carried out after school hours. They often organize workshops and training, organize the materials at the resource centre, and help teachers to use the available materials. Tutors also act as facilitators of teacher groups. They are present to give advice and support at the resource centres. Many resource people are required to provide classroom follow-up of teachers after training sessions. They often fill a supervisory as well as a supportive role.

Teacher groups or subject groups

Cluster and resource centre programmes address the need for teachers to share experiences or work on common projects within peer groups. These teacher groups are a common feature of many programmes. Some programmes have encouraged teachers of the same subject or same grade to work together on curriculum development and adaptation, testing or other projects. They are often facilitated by the resource centre tutor.

Advisory teachers

Advisory teachers are usually roaming staff who provide in-school support and follow-up for teachers. Sometimes they are based at the resource centre, other times at the district level. They work in tandem with district inspectors, project officers or resource centre tutors. They are usually in short supply and have difficulty covering all the schools under their jurisdiction. Their continued in-class support is considered a key element for the introduction of new teaching practices in the classroom.

Management committee

Nearly all cluster and resource centre programmes provide for a management committee that oversees the management of the network, allocates or raises funds for activities, and on occasion, engages in school planning and the hiring and firing of personnel. The committees are usually composed of the directors of the cluster schools and are headed by the centre school director. They can include teachers, inspectors, representatives of the LEA and of the community, and, less often, parents.

Pedagogical committee

Some programmes arrange for a pedagogical committee to oversee pedagogical activities of the clusters and resource centres, allowing the management committee to focus on administration and budget. These committees are usually made up of teachers, advisory teachers and inspectors.

District co-ordinator

Support and supervision for clusters and resource centres at the district level is often provided by a co-ordinator at the district level. This person attends cluster management committees and may assist cluster heads in meeting their needs, or with management issues concerning the cluster or resource centre. In some cases, the cluster director or resource person is required to report to a district co-ordinator. District co-ordinators also help diffuse positive resource centre and cluster experiences with other school clusters.

Funding and founding bodies

The vast majority of resource centre and school cluster programmes are supported by the education ministry, NGOs, and bilateral and international donor organizations. These stakeholders not only bring financial support, but also supply an organizational framework and logistical and human resources. They provide a structure for project accountability. Their role as initiators and ongoing supporters is the basis for the growth of resource centres and clusters worldwide. Unfortunately, when the project is finished or when support is withdrawn, it becomes difficult to sustain resource centre and cluster programmes.

Administrative staff

Nearly all programmes provide for a minimum administrative staff to assist the cluster director or resource centre tutor in administrative duties. This enables cluster and resource centre directors to spend valuable time helping the schools.

Tools for setting goals and evaluating progress

Education projects, school improvement projects

As whole school improvement and school-level accountability have become more important in the context of improving education quality and management, education projects and school improvement projects have become a feature of clusters, networks and resource centres. Networks, clusters and resource centres usually have a committee that draws up an improvement project or education project detailing the vision, mission and goals for the group of schools. It might detail activities for improving education in the schools. This project is usually annual and the progress of the cluster in meeting its goals is measured in an evaluation at the end of the school year.

Contracts

Contracts between schools served by a resource centre or in a cluster or network may be drawn up to specify the rights and responsibilities of each party and the extent and duration of their participation in the group. In the case of networks, contracts are particularly important, especially when dealing with outside parties

such as universities, research institutes, community organizations and consultants.

Self-evaluations

Some programmes, especially those initiated by the education ministry, rely on indicators of internal efficiency and standardized testing of pupils to determine their impact on pupils' learning, participation and achievement. This is one type of evaluation used by cluster and resource centre programmes. Another type is a self-evaluation of the cluster, resource centre or network, comparing its progress to the goals set out by its education project. Sometimes all of the "processes, policies, programmes and organization" are reviewed (Contreras and Talavera Simoni, 2003: 70). The self-evaluation is usually done by an evaluation committee and its results are presented to the management committee, to the LEA or publicly, to the community.

Cluster and resource centre typology

Clusters tend to be of two major types: those which are part of a heavily aided project initiated by the education ministry and donor organizations, requiring the participation of schools in a cluster as part of larger education reform effort; and those which are initiated at the local level to exchange information and solve problems using limited resources and including schools that have expressed a desire to work together. The latter type does not require the same sort of logistical support or commitment by the schools and the ministry; while the former type, which is being carried out in a number of countries, demands a major shift in the allocation of human and financial resources.

'Bottom-up' (grass roots) vs. 'top-down' (implemented from above)

Grass roots or 'bottom-up' clusters are those created by local initiatives, usually teachers and head teachers of neighbouring schools who unite voluntarily to address an issue. 'Top-down' clusters are mandated or created by higher education authorities and/or donor agencies in the context of an aid programme. Sometimes bottom-up clusters are created by communities to address educational needs that are not being met from above. The top-down approach is implemented by the ministry, usually with support from a donor

agency in the case of developing countries. Sri Lanka, Cambodia and Mali are a few examples.

Voluntary vs. mandatory

Mandatory clustering happens when education officials require schools to belong to a cluster. Voluntary clustering, like networking, means that schools come together on a voluntary basis and are not required to belong to a cluster. In some countries, such as Cambodia, primary schools are required to belong to a cluster. In France, for instance, the Ministry simply encourages school groupings.

Selective coverage vs. widespread, national coverage

Ministries may choose to use clusters as a national strategy, usually when they have made clusters part of the official education administration, as is the case in several Asian countries (Cambodia, Nepal). In other cases, clusters or resource centres are used mainly in rural areas or in certain regions where they can be particularly effective.

Financially autonomous vs. financially supported by an outside source

Autonomous school clusters do not rely on outside or higher level financial support for their activities. This is often the case for grass roots clusters. Their long-term viability may be compromised by their lack of support, but at the same time, the activities undertaken are likely to be within their self-financing capacity, making them less dependent on donor funds. Other clusters pool together the financial resources available to individual schools to accomplish their activities. This is often the case in OECD countries. Supported clusters receive specific financial resources for their activities and functioning from donor organizations and/or from the ministry level.

High-intensity vs. low-intensity

A high-intensity cluster is one that engages schools in several operations simultaneously and requires schools to share resources systematically. Schools in a high-intensity structure might be part of the same administrative structure. A low-intensity cluster is one

that comes together on a voluntary basis to address a particular problem.

A high intensity cluster may resemble those established in the pilot phases of Cambodia's cluster project. According to the Cambodian model, "a cluster is a group of four to eight primary schools in the same neighbourhood or district which work as a single unit. One school is chosen as the core school and functions as the administrative heart of the cluster. All the schools in the cluster share their facilities, teaching materials and teaching staff" (Prasertsri, 1996: 7).

In a low-intensity model, schools may collaborate with one another on specific projects but remain independent for daily pedagogical and administrative purposes. This is the case of clustering for special educational needs in Great Britain, for example.

Pedagogical vs. administrative

Clusters are never entirely administrative as the goal for most cluster strategies is improving educational quality. Clusters can spend more time, though, pursuing pedagogical or administrative goals. Some countries have experienced problems when they have required cluster heads and resource centre staff to take on administrative duties. This occurred in Nepal, where the resource person was increasingly used for administrative tasks and could not devote time to pedagogical support and advice (De Grauwe and Carron, 2001)

Participation: inclusive vs. exclusive

Inclusive clusters are those in which participation is not limited to school directors and education officials, but where the participation of community members, teachers and parents is solicited. Exclusive clusters are those which accept participation of head teachers and education officials only. Some clusters, as in the case of Kenya or Cambodia, are expected to unite teachers, head teachers and community members to deal with education issues, while others are limited only to head teachers and education officials. During the mid-1990s, in Zimbabwe, existing clusters' activities were restricted to the participation and training of head teachers but have since

been extended to include teachers' participation and professional development.

Clusters with resource centres vs. clusters without resource centres

For many formalized cluster structures, resource centres are part of the cluster strategy. However, not all clusters have a separate resource centre site. Instead, their activities are school-based, or they come together on an ad hoc basis. In Zambia, resource centres were temporary locations where teachers could attend in-service training or other self-planned programmes.

Integrated into the education administration vs. separate programme

Some programmes incorporate resource centres and school clusters into the education administration in order to bring supervision and support closer to the school level. Clusters and resource centres become a sub-district level of the education administration, as in Nepal and Namibia, for instance. In many cases, cluster and resource centre programmes are not integrated into the education administration but function separately from it. Many small-scale programmes, like the voluntary network in Pudahuel, Chile, work in this manner.

Tool for external control vs. tool for internal development

Cluster and resource centre programmes initiated by ministries are more likely to function as vectors for control from the central administration, using their proximity to schools for improved supervision and management. However, even some ministry-driven reforms attempt to build resource centres and clusters as units for internal development. Bolivia's cluster programme was conceived as a tool for community participation in education in an overall effort to encourage popular participation.

III. Evaluations of school cluster and resource centre programmes

Evaluations of resource centres and clusters: what they can effectively achieve

Clusters and resource centres have produced some promising results in the improvement of quality and access to education. Because of their diverging goals and organization, programmes do not evaluate their progress and impact in the same way. However, a few indicators show whether or not cluster and resource centre programmes are reaching their goals and functioning effectively. Some studies have examined how results on pupil achievement tests have changed with the introduction of cluster programmes. Others look at indicators of internal efficiency, such as enrolment, participation and repetition rates. Donor studies often rely on qualitative evaluations, checking the performance of the cluster or resource centre against the goals set out by the programme.

This chapter on evaluations of resource centres and clusters is divided into three parts. The first looks at some of the positive outcomes of resource centre and cluster programmes in terms of improving the quality of teaching, sharing resources and involving parents and the community in education. The second part looks at the disappointing outcomes of certain programmes and explores some reasons why they have failed in reaching their goals. The third section highlights the strategies used by some of the more effective resource centre and cluster programmes.

Improvements for teaching and learning

Active participation of educators in networks can lead to positive changes in their teaching. When resource centres and clusters are doing their job well, they provide more effective support through teacher groups, in-class support and needs-based training. This, in turn, can help motivate teachers, enhance their professionalism and have a positive impact on their classroom performance.

Many evaluations of clusters and resource centres agree that clustering has provided them the valuable opportunity to come together with other teachers, thus improving teacher morale and professionalism. Teacher groups in Chile's *Equipo Gestor 8* cluster have been credited with improving the self-confidence of the teaching body, providing a space for open exchange, creativity and motivation. Teachers participating in Ecuador's *micro grupos* meet for professional development activities. Participating teachers report feeling "empowered" by this teacher group strategy (see http://innovemos.unesco.cl, *Equipo Gestor 8* and *Micro Grupos*).

Raj Khaniya reports that, in Nepal, teachers' professionalism has improved due to the support and training they receive from resource people and weekly meetings (Raj Khaniya, 1997). In Barnsley's EAZ, teacher working groups admittedly required a great deal of commitment on behalf of the teachers involved. But participating teachers said that the groups generated a degree of professional dialogue they had not previously encountered; plus, several teachers received promotions as a result of their efforts (Barnsley EAZ in DFES, 2002*a*).

Chile's *microcentros* have shown that teacher groups can become motors for educational development and innovation in rural areas. Within the programme, *microcentros* receive funds to carry out teacher-designed education projects. The teacher groups are encouraged to integrate the environment of their pupils in project design. These education improvement projects have helped valorize the role of teachers in educational reform (Williamson in FAO, 2004).

Adopting new teaching practices; improved awareness of child-centred pedagogy

Improving the quality of teaching and learning in the classroom is the main goal of most resource centre and school cluster approaches. At its best, teacher support and development through clusters and resource centres can have a positive impact on the content, materials, preparation and teaching methods used by teachers in the classroom. With the objective of improving quality, many programmes aim to train and coach teachers to use child-centred approaches in the classroom rather than the traditional 'chalk and talk' method.

While isolated teacher development workshops, involving individual teachers and sporadic follow-up, do not really influence classroom practice, such training can at the least expose teachers to new teaching practices (Knamiller, 1999). In several Asian countries, teacher training and support through clusters and resource centres have been credited with improving teacher preparation and moving toward more active pedagogy, although its impact on learning appears to be minimal.

Under the most optimal conditions, however, cluster and resource centre-based teacher development can change the way teachers teach in the classroom and help them move toward a more activity-based, child-centred pedagogy. The most remarkable results are achieved using a whole-school approach and sustained in-class follow-up support. The Uganda SIP, jointly sponsored by the Aga Khan Foundation and the Commission of European Communities, worked with a group of primary and nursery schools in the capital, Kampala, over a three-year period to improve teaching and learning quality through the promotion and adoption of child-centred methods and resources. SIP projects use a whole-school approach, involving all teachers in a school as well as the head teachers, pupils and parents. SIPs also provide extended follow-up through in-class support and demonstrations. The programme created a resource centre stocked with supplies for making inexpensive classroom materials.

A team evaluation of the Uganda SIP programme observed that, in a relatively short period (one to three years), dramatic changes in the way teachers used materials and organized classroom work occurred. Teachers produced their own materials that they used and displayed in the classroom, and a vast majority employed group work to encourage pupils to engage in peer support and tutoring (Siraj-Blatchford *et al*., 2002). SIPs were also set up in Kisumu and Mombassa in Kenya, which had similar results. Head teachers reported a reduction in teacher dominance, increased student participation, more learning activities, more interaction with teachers, increased use of group work, more teaching aids and more individualized instruction (Siraj-Blatchford *et al.*, 2002; Anderson and Nderitu, in Anderson, 2002).

Establishing clearer goals for learning and improving transition

Cross-site teacher groups working within clusters and networks of schools have moved towards harmonizing teaching criteria and defining skills to be mastered in each subject, at each grade level. When teachers have a better understanding of goals set out by the curriculum, and the progression of learning, they can be more effective in teaching and evaluating these skills. The result is that pupils and their teachers have a clearer idea about which skills need to be mastered, which helps pupils to meet their learning objectives and ultimately improves their achievement. This has notably helped to improve transition between primary and lower secondary education.

Schools in the Caracas network in Venezuela have collaborated to develop common teaching criteria and methods for the same subjects over the different grade levels in order to improve transition and retention between grades six and seven. Since the project was launched in 2001, more pupils have successfully moved on from grade six to grade seven.

Likewise, Barnsley's EAZ in the UK used cross-site teacher development groups to improve pupil transition. Here, teacher development groups came up with a skills plan, broken down into 'steps' to be mastered by each pupil. The EAZ created a pupil tracking system for ongoing pupil evaluation and to help set goals. Pupils, teachers and parents now understand better the learning goals they are working towards, and student achievement and transition between grades have improved (DFES, 2002*a*).

In France, rural school networks grouping together preschools and primary schools have sought to improve transition between grade levels by offering more continuity in the primary cycle. The general impression of teachers and heads participating in RPI is that this has helped to improve continuity between primary cycles. Also, when primary pupils have access to secondary school facilities within the network, they adjust more easily because they are already familiar with their 'new school' (Duhamel *et al*., 2003).

Increased access to materials and resources for teaching and learning

Especially in rural areas, school clusters and resource centres can provide access to materials for teaching and learning, and shared access to specialized teachers, facilities and services. In rural France and Great Britain, clusters have been able to offer a wider curriculum range and additional educational activities. In both countries, clusters are voluntary and can receive extra funds from the local education authorities (or local public authorities) for some of their activities. In Great Britain, sharing costs for excursions means that children can take part in activities that none of the schools could undertake on its own. Both countries have reported that clusters enable rural schools to offer classes in science and technology, languages, art and music (Ribchester and Edwards, 1998; Duhamel *et al*., 2003). For example, in one school network in the Ardennes (France), pupils are transported to a larger nearby school once or twice a week for classes in science, sports and culture. In France, where some regional councils provide extra funding for school clusters (*pôles scolaires*), clusters can receive credits to cover after-school care and school meals (Duhamel *et al*., 2003).

Teacher resource centres are created, in part, to make teaching and learning materials and resources available to teachers. In the review of Teacher Activity Centres in Mombassa, access to materials supporting new teaching methods was found to be essential in changing teachers' practice. For participants in the SIP programme, access to materials is a basic requirement in the implementation of child-centred, activity-based teaching methods. Those findings are echoed in the review of the TRC in Uganda's SIP. In Uganda, the SIP TRC provided book and reference materials for loan as well as a place for teachers to meet, study, or choose materials for their schools. Teachers reportedly found the TRC to be beneficial for preparing teaching aids by providing access to inexpensive materials (Siraj-Blatchford *et al*., 1997).

Discussing Thailand, Wheeler *et al*. (1992: 72) note that "additional resources provided by clusters can have considerable influence in [economically disadvantaged rural] communities". One of the school clusters in the review became very effective at working

in groups to produce their own teaching materials. The same cluster's resource centre staff were actively involved in reproducing and distributing these materials, along with other resources and materials available through the resource centre, directly to the teachers.

In places where schools have limited libraries and other resources, materials available through teacher resource centres can have an impact on learning. In Kenya, the 25 functional teacher resource centres serving secondary schools "provide the only source of class readers for Kenya Certificate of Secondary Education [KCSE] English classes in many government secondary schools" (Welford and Khahete in Knamiller, 1999: 159). The teachers interviewed felt that having a resource centre in their district had a positive effect on KCSE English exam results. However, researchers conclude that the TRCs "have no measurable impact on schools further than a few kilometers away" (Welford and Khahete, in Knamiller, 1999: 181).

But resource centre materials cannot stand alone in supporting teachers. The cluster in Wheeler's study in Thailand was an isolated example of successful materials development, in which the resource centre staff played an effective role. Ideally, resource centre staff can motivate teachers in materials development and assist in distributing the materials. In the Uganda SIP, other major benefits of the TRC are also linked to the workshops and support provided by TRC staff. Uganda SIP teachers felt the TRC helped them in updating skills and knowledge, expanding teaching approaches, and making teaching "more interesting" and easier through workshops and demonstrations. As summed up by Siraj-Blatchford *et al*. (1997: 124), "It is difficult to estimate how important TRCs are to the success of SIP, but it is clear that they have a strong support and development role and that the teachers like them".

Raising achievement test scores; closing the urban-rural gap

National exam results have become an important element in gauging pupils' learning achievement, and are used to identify schools that are performing better or worse than average on a national scale. Sometimes schools with poorer overall performance on national tests are targeted by programmes intended to improve pupil achievement (see section on *Redes* in Latin America and http://innovemos.unesco.cl, *Equipo Gestor 8*).

The UK's EAZs targeted schools in areas where there was persistent underachievement on national exams. In a comparative national evaluation of the programme, it was found that EAZs have contributed to improving achievement. Attainment rose faster than the national average for English, math and science at several grade levels. Improvement was most marked in primary schools whose zones had invested in skills development for teachers and pupils (DFES, 2002*b*).

In the Mombassa SIP, topics for teacher workshops were selected based on analysis of achievement test results. In 1996, the district was recognized as the second most improved in the country based on national exam results (Anderson and Nderitu, in Anderson, 2002).

Improved test scores can indicate that rural clusters have helped redress inequities in achievement between rural and urban areas. In France, schools belonging to rural networks have shown less disparity with urban schools on achievement test scores (Darcos, 2003). Chile's MECE programme, which focused resources on rural schools and created teacher *microgrupos* in rural areas, also saw an improvement in test scores in participating incomplete rural schools as compared to urban, municipal and complete rural schools.

Improved internal efficiency

Indicators for enrolment, participation, completion, repetition and cohort survival are used for evaluating programme impact. Some evaluations compare schools participating in particular cluster programmes with non-participating schools to control for other factors. Many cluster and resource centre programmes have been part of larger education reform projects, making it difficult to isolate them as being responsible for improved internal efficiency. It should also be considered that evaluations of this type are often carried out by the donors themselves, or other parties who have a stake in the programme and are likely to contain a bias in favour of it.

Several programmes have reported an improvement in enrolment rates in schools participating in specific cluster programmes. These improvements include increases in net enrolment, lower repetition and improved retention in Cambodia's EQUIP cluster schools (World Bank, 2004*a*), and lower repetition rates among schools

participating in France's rural networks as well as in the CENDES school network in Caracas.

Improved access and coverage

Increases in enrolment and retention can be indicators that the system's coverage is more complete and that access has improved. Few evaluations describe how, by re-organizing the school map, by grouping complete and incomplete schools, and by deploying teachers throughout the cluster, some school clusters have managed to provide more even access to a full education cycle. In France, rural networks are formed to address problems of educational coverage. RPI provide specialized classes that individual schools cannot, and have enabled more equitable access to educational services in rural areas (Duhamel *et al*., 2003).

In a voluntary school network in Jujuy, Argentina, schools assemble to retrain and re-deploy teachers, and to re-equip several schools to meet the demands of extended basic schooling and secondary school reform. In this case, co-operation enabled the schools to extend and adapt their educational offer to fit the reform (http://.innovemos.unesco.cl, *Red Nucleada de instituciones educativas del sector sur*).

Improved management and accountability at the school and cluster levels

School clusters and resource centres have shown the potential to improve management at the school and cluster levels through improved monitoring of heads and teachers, training head teachers, providing a head teacher forum for sharing solutions to common problems, and through cluster development plans.

In an evaluation of Nepal's resource centres, teachers and resource centre management committee members expressed that the involvement of resource people in school management committees and their assistance in preparing annual development plans helped the committee to manage schools and teachers better (Raj Khaniya, 1997). Regular visits and support from the resource person also had a positive impact on teacher attendance and accountability. During such visits, the resource person records the school's progress, the work done by teachers and the work remaining to be done to complete

the curriculum. The management committee's participation in monitoring teachers has contributed to improved teacher attendance and accountability (Raj Khaniya, 1997).

EQIP, in Cambodia, encouraged local school cluster committees to take a more active role in educational planning. The project also made educational management data available to the cluster level to improve planning and evaluation. Funds for improvement projects were distributed through clusters "with a high degree of accountability" (World Bank, 2004*a*: 5). By the end of the programme, participating clusters were able to define priorities and action schemes through their development plans.

Teacher groups and clusters bring teachers, supervisors and administrators together to focus on common objectives, which can lead to improved working relationships. The shared priority becomes the betterment of children's education, and the different parties work collectively toward this goal. Chile's *microcentros* have reportedly helped to change the tendency of mistrust between teachers, supervisors and decision-makers. This is, in part, due to a role change for the supervisor, who, instead of inspecting and evaluating teachers, offers them support (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*).

Kenya's head teacher support groups were formed to enable them to share the benefits of their training with other heads, but also so that they can consult with one another and find solutions to common school management issues. Teachers report that participating heads are more involved in whole school improvement, communicate better with their staff, and show a higher degree of transparency, accountability and co-operation in their management of schools. They also stated that head teachers involved in the support groups consulted them more often, and that working relationships had improved (Herriot *et al*., 2002).

More active community and parent involvement

Community participation is often cited as a goal for education projects involving clusters. The following examples illustrate positive outcomes from increased community involvement in education through clusters and resource centres.

School clusters in Cambodia and Kenya have been able to pool community resources for building projects. In Cambodia, where classroom provision is inadequate and demand for education has soared since the early 1990s, clusters have allowed for the expansion of school facilities by sharing existing classrooms. Local communities have participated in building projects, offering donations and labour to improve the physical infrastructure of school buildings. In Kenya, the parents "are mainly responsible for financing the facilities and learning resources of the school" (Herriot *et al*., 2002: 514). Some head teacher support groups in Kenya were able to pool their resources to give assistance to needy schools in the cluster for building projects, using locally-raised funds and in-kind resources.

The Mombassa SIP in Kenya required community support for the mobilization of TACs. In order to receive equipment and materials for the TAC, a functioning management committee, composed of parents and education representatives, had to be established. The management committee was required to open a bank account and provide secure storage facilities for the TAC. The project also encouraged parental participation in other aspects of school involvement. In fact, "parental involvement in school and TAC financing and governance" turned out to be essential for the programme's success (Anderson and Nderitu, in Anderson, 2002: 182).

The programme piloted by the Blackburn EAZ (UK) differs from others in that its *main* goal was to improve parent involvement in their children's schooling. In Blackburn, a large number of families receive public assistance, and a sizeable proportion of children do not speak English at home. In addition to the Parents as Educators courses, zone schools also offered extension classes to parents in computer skills, English and numeracy. The zone programme helped to bridge the home-school relationship and had a positive impact on parents' and children's confidence, as well as on pupils' achievement (Blackburn with Darwen EAZ in DFES, 2002*a*).

Locally-generated solutions and innovations

Providing a context for innovations and adapting education services to the local context are also goals for school networks, clusters and resource centres. Placing responsibility for educational

planning and provision into the hands of the local community or local education authorities is a very ambitious goal, but with adequate facilitation, co-operation and support, the school cluster can begin this process by setting its own objectives and developing its own projects for improving education.

Several programmes have given grants to groups of teachers and groups of schools for education improvement projects. Cambodia's EQIP, Chile's *microcentros*, LAAMP (Los Angeles) and the UK's EAZs are a few examples of this type of grant programme. *Microcentros* in Chile also received funding for innovative education projects adapted to the local context. These projects have helped valorize teachers as well as promote local languages and cultures (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*; *Redes Escolares en la Ciudad*).

Some disappointing outcomes: reasons why some clusters and resource centres fail to achieve their goals

In spite of their advantages, school clusters and resource centres have shown somewhat disappointing results in terms of actually improving teaching, and at worst, can be counterproductive in their goals. A number of studies have attempted to explain the shortcomings of clusters and resource centres.

Cluster and resource centre-based teacher development

As discussed above, school clusters and resource centres can serve as a potentially effective base for teacher in-service training and pedagogical support, and thus for improving the quality of education. However, the teacher training function of resource centres has increasingly come under scrutiny when training through resource centres is found to be costly and ineffective in translating training into classroom practice.

Knamiller (1999) and his research teams found in their four-country study that cluster-based in-service training, when not appropriately targeted, does not cause any change in classroom practice. In Nepal, where in-service training is well planned and supported with resource materials, school conditions make it very difficult to apply the teaching skills learned in in-service training (INSET). Teachers need to restructure what they learn to apply it

to the classroom. Some teachers are sent for classes that are not relevant to their teaching (Knamiller, 1999).

Goals set by donor-supported teacher training are sometimes too far removed from local practice. In Zambia, the Action to Improve English, Mathematics and Science (AIEMS) programme planned to use already existing TRCs to deliver INSET and to enable teachers to make better use of the materials available in schools. The programme used a series of workshops cascaded down to the school level, where they would be followed up by teacher group meetings. The authors Gibbs and Kazilimani (in Knamiller, 1999) note that the ideas behind forming teacher groups did not evolve from the Zambian context, but were adapted from other systems. The teacher groups were found to be ineffective because they were irrelevant to teachers' immediate needs, not enough time was available to hold fruitful meetings, and the teachers were provided no accreditation from attending the groups. Ultimately, the workshops did not give clear evidence of changing classroom practice.

Out-of-class INSET, even if it is locally-based, results in higher teacher absenteeism. Researchers visiting schools participating in the AIEMS project in Zambia, for example, noted that no teaching was going on in 20 per cent of the schools they visited, in part due to absences for teacher groups and training workshops. The authors note that each hour of INSET and teacher group workshops leaves 40 students without a teacher (Gibbs and Kazilimani in Knamiller, 1999). Knamiller *et al*. (in Knamiller, 1999) similarly observe that in Nepal, taking teachers out of their schools to attend courses at teacher centres contributes significantly to the problem of teacher absenteeism.

Part of the problem in the Nepalese context is that INSET targets individual teachers rather than the whole school to improve the quality of education. After training, once teachers return to their schools, there is no support for their new learning and skills, no incentive to share or diffuse what they have learned. As a result, "there is extremely little observable evidence of the transfer of pedagogical messages or resources from SEDUs [Secondary Education Development Unit] and RC [resource centres] to the schools, classrooms, lessons ...

either in the way teachers teach or the way students are learning ..." (Knamiller *et al*., in Knamiller, 1999: 198).

The results of training teachers without follow-up are even less effective. When teachers are not followed back into their classrooms, they may have difficulty adapting the techniques learned in workshops into practice. While classroom follow-up of teacher trainees may be integrated into project design, it is often too big a task, requiring the trainers or resource centre staff to visit too many classrooms that are far apart. In the case of Nepal's resource centre programme, the resource person responsible for training and follow-up is usually in charge of overseeing two resource centres and more than 30 schools (and in some cases over 70!). Few participants in INSET courses are ever observed in their classrooms (Raj Khaniya, 1997; Knamiller *et al*., in Knamiller, 1999).

In Bolivia and Chile, education reforms were delivered to teachers via INSET in teacher groups and clusters. In both countries, training took place outside classroom hours, sometimes requiring teachers to cover expenses themselves. In Chile, teachers reported difficulties attending *microcentro* meetings and training sessions because of distance and accessibility (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*; Williamson, in FAO, 2004).

Bolivia's recent education reform required teachers to adopt a new curriculum and more student-centred methodologies. In-service teacher training began in 1996, enlisting pedagogical advisors to work with *núcleos* of six schools to provide training and help the teachers incorporate the reform's pedagogical and curricular aspects into their teaching. Not only were the pedagogical advisors themselves not always welcome in the schools, the teachers had a difficult time accepting the new participatory, constructivist methods. Teachers often lacked motivation to attend training courses outside of class hours. Although many teachers were initially reluctant to adopt the reform modules, evaluations showed a gradual use of them in the classroom among most teachers (Contreras and Talavera Simoni, 2003).

Using teacher resource centres for access to materials

In the review of teacher resource centres that operate within school clusters in India, Kenya, Zambia and Nepal, Knamiller (1999: 242) notes that a major downside of the resource centre strategy for teacher development is that it "is not designed to work inside schools".

Resource centres are vastly underused. This problem has been observed in several countries. In the study on Zambia's TRCs, Gibbs and Kazilimani (in Knamiller, 1999) found that they were used for only 10 per cent of their available time for meetings and workshops. In one district surveyed, only 6 per cent of teachers in the district made visits to their district resource centre in a month. In a provincial resource centre, the researchers noted that visits to the TRC were most numerous when teachers were going to collect their pay.

Few teachers use the resource centres, in large part because they are not conveniently located for all the teachers in a cluster, but also because they are open only during school hours. Teachers must then leave their classrooms in order to use them, contributing to the problem of teacher absenteeism. In cases where resource centres are independent from the schools, resource people are often absent visiting schools so the resource centre remains closed. The study on Zambia's TRCs shows that the majority of the teachers visiting resource centres come from less than 5 kilometres away, while 24 per cent had travelled more than 20 kilometres to use the resource centre. This indicates that the TRC must be less than two hours' walking distance in order to be used on a drop-in basis (Gibbs and Kazilimani in Knamiller, 1999).

Resource centres in many places have inadequate resources to be useful to teachers. Some fall into neglect and may later be 'revitalized' by subsequent programmes. Resource centres also need a refreshed stock of resources and materials. In Kenya, some teachers reported that they no longer used the TRC because they had already gone through all of the materials with their students (Welford and Khatete in Knamiller, 1999). In still other cases, vehicles to transport tutors and materials to schools have been co-opted by other officials. In discussing resource centres in Zambia, Gibbs and Kaziliamani pointedly raise the question, "what role can Resource Centres have

when there is no fuel for the vehicle, no ink for the duplicator and no electricity?" (Gibbs and Kazilimani, in Knamiller, 1999: 235).

Many clusters set up resource centres so that workshops will be used for the development and creation of materials, but this is simply too ambitious. In the case of Zambia, researchers found little evidence that resource centres were being used to create teaching and learning materials. TRCs "made no significant contribution to improved resources in the classroom" (Gibbs and Kazilimani, in Knamiller, 1999: 232). Rather, the centres served more to collect materials than disseminate them to schools. Many teachers used the resource centres for photocopying administrative and personal documents.

The materials development work done at the TRCs is not easily transferred into the classroom. Materials made in teacher development sessions are then left at the centre for display and not used in the classroom. In Nepal, because teachers are not shown how to incorporate the available teaching and learning materials into their classes, expensive science equipment and useful maps and materials go unused (Knamiller *et al*., in Knamiller, 1999). In other cases, teachers are reluctant to use shared materials because they are afraid to be held financially responsible in case of loss or damage (Wheeler *et al*., 1992; do Amaral, in Rosenberg, 1998).

In sum, Knamiller remarks that in the case studies examined, TRCs have not "significantly impacted on the quality of teaching and learning in schools and classrooms" (Knamiller, 1999: 253).

Organizational and practical problems

Clusters and networks vary in size depending on their proposed activities and goals, and the distances between schools. While there is no consensus on the ideal number of schools that should be clustered, experience has shown that co-ordinating cluster activities is difficult when too many schools or schools too far apart have been linked together.

For instance Peru's previous *núcleo* project created school districts where none had existed before. Bray suggests that these *núcleos* were too large and too far apart to function effectively, and that in fact, the project could have benefited from smaller *núcleos*

within the larger units (Bray, 1987). Peru's *núcleos* have since been revived (as *redes*) on a more logical scale. In Sri Lanka, clusters with more than seven schools encountered major co-ordination problems (Bray, 1987).

A survey of co-operation among schools in rural England and Wales points out that six is the optimum number of schools for effective co-operation (Ribchester and Edwards, 1998). In another study on using clusters for special education needs in England, the largest cluster surveyed was comprised of 25 schools. This cluster was no more than an administrative division within the LEA. The schools did not actually meet and there was no direct resource sharing among them (Norwich and Evans, 1994). In rural France, where schools voluntarily form networks, there are no guidelines for the administration of large clusters. Duhamel *et al*. report that in networks comprised of more than 15 classes, especially if they are run by a single director, the grouping strategy becomes problematic (Duhamel *et al*., 2003).

Nepal's resource centres are intended to serve 10-15 schools within a three to four hour walk, but in reality they serve schools much further apart than this. This poses problems for co-operation between schools, and also complicates the task of the resource person who is required to visit schools for supervision and support (Raj Khaniya, 1997). Cambodia's 'remote' clusters in rural areas have schools too far away from one another for regular networking. Geeves (2003) recommends supporting these schools from the district level rather than through regular clustering.

Sharing materials and teachers

Some clusters experienced problems sharing resources due to difficulties in transporting materials or poor co-ordination among cluster members (Bray, 1987). In Mozambique, French donors, *Action Nord Sud*, set up a mobile book project, which loaned a box library to different schools on a rotating basis. The project's main weakness was attributed to the lack of circulation of the box libraries among the schools and a need for a functioning transportation network (do Amaral in Rosenberg, 1998). In Thailand as well, some cluster office staff were not doing an adequate job of circulating materials to teachers and schools. "The end result is that in most

clusters, office staff wait for the teachers to come to the resource centre to get materials or equipment" (Wheeler *et al*., 1992: 78).

Transportation for roaming teachers in clusters can pose problems too. Rural clusters in France and Great Britain report difficulties transporting people and materials between schools. Ribchester and Edwards (1998: 287) note that "the movement of pupils and staff is time-consuming and costly, and may lead to frustrations over the availability of shared resources". In France, participants in rural networks also complain that assembling pupils from different schools together is often complicated: "we cannot fit entire classes into the small school transport vehicles ... we need vehicles and drivers" (Duhamel *et al*., 2003: 35).

Financing issues

Clusters and resource centres require reliable funding to carry out even the most basic activities. As pointed out by De Grauwe and Carron (2001: 12), "resource centres are not a low-cost alternative ... in order to function well, [resource centres] will need sufficient staff and financial resources". Some clusters pool resources between schools for extra activities. Others receive donor funding for their activities. Still others rely on grants or special government allocations. In some cases, resource centres have been expected to be self reliant, funding their activities through user fees or other fundraising activities. However, such self-reliance appears to be unrealistic in most instances.

Geeves (2003: 3) reports that in Cambodia, "clustering has only worked when relatively high levels of financial and technical support have been provided by IO [international organizations] and NGOs". This observation echoes earlier findings that most self-supported clusters in Cambodia have not been able to function satisfactorily (MoEYS Cambodia, 2002). Likewise, a study on Paraguay's *núcleo* scheme found that the material costs of keeping up the network were extremely high and the resources of the central school were not sufficient for carrying out cluster activities (Brunswick and Valérien, 2003).

In England and Wales, where small rural school clusters receive some special support for cluster activities from their LEA, many

schools mentioned that the cluster's effectiveness was linked to this funding, which sustains activities such as school camp, and transportation and communication between cluster schools (Ribchester and Edwards, 1998). When financing comes from several sources, collecting and redistributing funds for school cluster activities can be complicated. In France, network co-ordinators and directors report spending a lot of time juggling public subsidies and private financial contributions in order to distribute them among schools (Duhamel *et al*., 2003).

Some resource centres are expected to finance themselves to a certain degree, through membership and user fees, fundraising activities and community donations. Not only are these funds generally insufficient for sustaining resource centres, but they are also subject to mismanagement. Raj Khaniya reports that in Nepal, where resource centres are asked to raise funds through income-generating activities, the centres "do not have funds for many of the activities they propose to carry out" (Raj Khaniya, 1997: 37).

In Zambia, resource centre co-ordinators spoke of the importance of covering costs by raising funds through membership fees, and charging for photocopies and use of video and computer equipment. However, the expenses largely outweigh the income of most resource centres (Gibbs and Kazilimani, in Knamiller, 1999). Kenya's TRC tutors reported spending out of pocket to keep the resource centre running, despite fees collected from parents to pay for the centre's activities. The Kisumu SIP resource centres also relied on parent levies to maintain funding for TACs, but the research team discovered that these funds were not remitted to the SIP account (Welford and Khatete in Knamiller, 1999).

Administrative issues

Inadequate preparation of cluster heads

The successful operation of a cluster often relies strongly on the co-ordination and leadership role of the cluster head. Newly appointed cluster heads, whether they be head teachers, teachers or other education officials, are not necessarily prepared to take on the responsibilities attributed to them. "It cannot be assumed that those who enter positions in the cluster office will know what their

responsibilities are or how best to carry them out" (Wheeler *et al*., 1992: 76). Inadequate training was cited as problematic in a number of cluster programmes, including in Cambodia (Bredenberg, 2000), Thailand (Wheeler *et al*., 1991), Sri Lanka and Costa Rica's initial *núcleo* scheme (Bray, 1987).

Inadequate conditions for resource centre supervision and support

Most resource centre and cluster programmes rely on resource people and advisory teachers for support and supervision to the schools and teachers in the clusters. Several reports have suggested that an insufficient number of supervisory and support staff has hampered programme effectiveness and progress. The inadequate distribution of supervisors in comparison to the number of *microcentros* is considered one of the main weaknesses of the Chile *microcentro* programme. Ecuador's *micro grupo* programme for teacher development also cites the lack of supervisory personnel as a major weakness (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*; *Micro Grupos*).

When resource people or network co-ordinators are isolated from their peers and receive little support from the district level, their job is even more difficult. In addition, some programmes offer little professional or financial incentives to keep effective resource people or co-ordinators in their positions. Nepalese resource people also commented that they receive little support or feedback from the district education officer. At the time of Raj Khaniya's evaluation of Nepal's resource centres, no system existed for evaluating and monitoring the performance of the resource people. Because resource people are often senior teachers on secondment, they were never appointed on a permanent basis, so many returned to their schools after a few years, generating high turnover. Resource people who were former supervisors received more consideration from the district level, but there were far too few of them to serve all of the country's resource centres (Raj Khaniya, 1997).

Cluster co-ordinators, resource people and tutors overburdened with work

In many cluster strategies, the heavy workload of the cluster head poses problems. In places where the cluster head is the head

teacher of the core school, the head's cluster duties are compounded by his or her regular duties as head teacher. In Cambodia, where school clusters have an important administrative role, Geeves (2003) has suggested that appointing a separate school cluster co-ordinator, based at the core school, could help reduce this problem.

Giving cluster heads and resource people sole responsibility for pedagogical and administrative tasks is a major concern. They are quickly overburdened by management duties and cannot properly attend to the pedagogical functions of the cluster. This is a criticism of Nepal's resource centre programme. The Ministry of Education in Nepal relied upon resource people for a number of administrative functions in addition to their extensive pedagogical duties (De Grauwe and Carron, 2001). As Carron and De Grauwe note, "when a choice needs to be made between administrative and pedagogic duties, the latter will suffer" (1997: 31).

Political issues

Lack of authority, cluster heads and supervisors

Cluster heads are often chosen on a rotating basis or elected from one of the member schools. This can pose a problem in the functioning of the cluster when the status of the person chosen as cluster head is inferior to that of the directors of the member schools. For example, a primary school principal chosen as cluster head may have inferior status to that of a secondary school principal in the same cluster, leading the other cluster members to disregard the authority of the cluster head. In Sri Lanka, conflict of authority arose because the head of the core school was junior to the heads of other member schools (Samaranayake, 1985). Geeves suggests that within the Cambodian cluster programme, the position of a cluster school director "should be equal in status and salary to that of school director" (2003: 5) in order for the cluster school director to be considered a 'peer' by the other members of the local cluster school committee.

Considering the importance of the cluster head's status in the management of human and financial resources, Geeves (2003) reports that in Cambodia, when the elected cluster director comes from a satellite school, conflict over resources may ensue. Because

the core school receives the bulk of the cluster's resources, the core school director may exercise *de facto* control over them, creating rivalry and tension.

Resistance of head teachers to cluster initiatives

The cases below indicate that the intervention of cluster co-ordinators and advisors can have unexpected effects on the local stakeholders. More precisely, the cluster school principals may feel threatened by the new authority represented by the cluster co-ordinators, perceiving a loss of autonomy or an unwelcome surveillance of their activities.

In a study on Thailand's school clusters, the research team of Wheeler *et al*. (1992) noted that clusters have little ability to positively influence educational quality in the absence of a head teacher who is receptive and willing to contribute to cluster initiatives. Some principals in their study did not take advantage of cluster resources and contributed to the inertia of the cluster. They reported that in one cluster, principals strictly limited the funds made available for developing materials. One academic cluster teacher (cluster advisory teacher) reported having to "beg every principal to get permission for the academic teachers to come and do any job in the cluster" (Wheeler *et al*., 1992: 73). Wheeler *et al*. (1992) conclude that head teacher receptiveness and participation in cluster activities was of capital importance to the cluster's success in improving education quality.

A similar problem occurred in implementing Bolivia's education reform. Bolivia established *núcleos* in rural and urban areas as part of its 1992-2002 education reform. The programme trained over 1,500 pedagogical advisors to help teachers incorporate the reform's curricular and pedagogical content into their classroom practices. However, school principals sometimes refused to allow the pedagogical advisors into the schools. This was due, in part, to the chain of command of the pedagogical advisors. They were supposed to report to cluster directors, but these had not yet been appointed. The advisors ended up reporting directly to the Ministry. In a sense, the pedagogical advisors were sent as 'missionaries' to convey the government's new policies. This intervention on behalf

of the Ministry threatened the principals' authority (Contreras and Talavera Simoni, 2003).

Lack of overlap in cluster boundaries and administrative boundaries

Because clusters and networks aim to group together schools within geographic proximity, cluster boundaries do not always correspond with local administrative or political boundaries. This can cause confusion or conflict in attributing funds and determining responsibility and authority over clusters. Such was the case in Namibia where, in order to group together schools that are geographically close, cluster boundaries are not aligned with boundaries of constituencies. Dittmar *et al*. (2002) suggest that using cluster boundaries as the basis for constituencies would be useful, as it would allow for a group of clusters to be represented by a regional councillor.

France's RPI are school groupings that cross administrative boundaries. France's education system has historically been highly centralized, but there are increasing efforts on the part of the state to hand control of some of the management and financing of schools over to local authorities. In order to give more clarity to the financing and management of the inter-communal school networks, the Ministry has encouraged the creation of inter-communal councils to take responsibility for overseeing the local school network. Additional financial incentives in the form of credits are made available to communes that have given control over education matters to the inter-communal council. This has met some resistance from local mayors who believe that communal services are more reactive than inter-communal services (Duhamel *et al*., 2003; Darcos, 2003).

Non-participation of stakeholders

Clusters and resource centres are often designed to encourage community participation in education. Many programmes explicitly encourage or require community participation in resource centre and cluster activities, usually through formal management committees. However, several programmes criticize the lack of community participation as a weak point; it may also threaten cluster sustainability in the long term.

Communities may not be sufficiently aware of opportunities to participate in their local education committee. In Kenya's head teacher support groups, which count on community participation and support, community members were not aware that the support groups were not exclusively for heads (Herriot *et al*., 2002).

Even in cases where there are structures for community participation, like management committees, the voice and responsibility of the community in decision making is often limited. The SAT review of Cambodia's school clusters observed that "Local Cluster School Committees often remain passive bodies whose participation does not go beyond some fundraising and handling school meals" (SAT, 2003: 9).

There is a growing awareness that in order to create effective participatory bodies in managing resource centres and clusters, responsibilities need to be outlined and some training of committee members might be considered. Again, in the case of the Cambodian cluster programme, the SAT team observes: "the question is, to what extent [commune councils] will be able to play the role efficiently, given the small number of council members, particularly in rural areas, their limited experience and technical know-how, and the fact that they are solicited by all development sectors at the same time" (SAT, 2004: 9).

Inadequate support from the education administration

The government-initiated *núcleo* scheme attempted in Costa Rica in the 1980s failed because the *núcleos* were not under the control of the communities, and therefore when the project was abandoned by the central government, they disintegrated (Bray, 1987). Likewise, the first cluster initiative in Peru dissipated with the change in political power because no measures for sustainability had been taken. The attempt to revive *núcleos* in the late 1960s and early 1970s failed too because they lacked a broad political base of support and Ministry officials were reluctant to hand over power to the clusters (Unidad de Descentralización de Centros Educativos del Ministerio de Educación, 2003; Bray, 1987).

One of the obstacles to sustained cluster operations cited by the head teacher support groups in Kenya was the lack of support from

education officials in the area: "Education officials, regardless of a strong sensitization programme, tended not to recognize support group meetings within the mainstream of educational strategies" (Herriot *et al*., 2002: 521).

Cluster and resource centre programmes are often intermediate support structures between the district and the school level. Their initiatives rely largely on the role of the district to support and animate clusters and resource centres, help diffuse initiatives and otherwise keep up the momentum of cluster activities. The World Bank report on the Cambodia EQIP programme affirms that "the effectiveness of clusters, however, will ultimately depend on the availability of district level facilitators to motivate and facilitate professional dialogue and pedagogical reflection" (World Bank, 2004*a*: 11).

Sustainability and survival of cluster and resource centre initiatives

The sustainability of cluster and resource centre programmes is often insufficiently planned. When it is planned, it often ends up being unrealistic. When donors pull out from a successful project, a few individuals are left to shoulder the responsibility of keeping initiatives alive. This is partly why so many cluster and resource centre projects stress the importance of community participation and ownership of projects. As noted by Herriot *et al*. (2002: 519-520) regarding the sustainability of Kenya's head teacher support groups, "the more knowledge the community had on the aspirations and activities of the group, the better it would be for continued support".

What happens when donor support ends and resource centre initiatives are left to their own means? As observed by Herriot *et al*., "initiatives that are funded externally tend to flounder soon after the funding comes to an end" (2002: 523). In the case studies on Nepal, Kenya, Zambia and India, in Knamiller's review "none of the TRCs ... were surviving on their own local resources" (1999: 251). When financial support falters, materials cannot be renewed, resource centres fall into neglect and disrepair, extra personnel required for functioning cannot be paid, and teachers and tutors are forced to cover expenses out of pocket. All of these factors lead to lack of motivation and eventually cessation of activities.

Even when measures for sustainability have been written into project plans, when donor support ends, it is very difficult for resource centre and cluster projects to continue functioning with the same level of effectiveness. Momentum for clusters and resource centres, created in the context of a donor project, tend to fade away once donor support in the form of funds and expertise for a specific project ceases. Most often, programme monitoring and evaluation also cease. In its project completion document for Cambodia EQIP, the World Bank team stated that "one of the challenges of the sustainability of the EQIP model is to maintain the necessary continuous injection of new ideas that came with the technical assistance provided by Volunteer Service Overseas and the province-level Lead Technical Advisors" (World Bank, 2004*a*: 11). In the case where capacity building of key personnel and ownership of local actors has not been emphasized enough, clusters and resource centres are likely to fail when the programme support is withdrawn. This, unfortunately, makes many cluster initiatives dependent on donor support for long-term survival (Knamiller, 1999; Hoppers, 1998).

Once a project has ended and its sponsor has pulled out, new projects and sponsors tend to come in and take over the existing resource centre or cluster structures, using them for new ends. Paradoxically, new programmes that adopt existing structures may actually lend a hand in sustaining the cluster and resource centre structures, while the projects themselves are replaced. The World Bank EQIP programme in Cambodia does point out that one of the factors of its success was the utilization of existing structures (clusters, in this case) for programme implementation (World Bank, 2003*a*).

Lack of formal structure

Grass roots cluster initiatives are also fragile and at risk of disappearing without the active participation of a few members (Bray, 1987). Informants in the case study of Kenya's head teacher support groups agreed that "support groups do depend on people and resources and a great deal of enthusiasm and commitment", and expressed the worry that "disinterest and lack of support from officialdom may act as a deterrent in the long-run" (Herriot, 2002: 523).

Surprisingly, school clusters and resource centres are not always written into education law, even where they are used nationwide. In 2004, the school cluster system in Cambodia had not yet been institutionalized. The World Bank completion report for the EQIP project in Cambodia stated that "the future of the school cluster system in Cambodia is uncertain. Whether on a formal or informal basis, provinces which have had positive experience with clusters are likely to continue to rely on them as a decentralized support network ..." (World Bank, 2004*a*: 11). Institutionalization alone, however, is not a sufficient condition to maintain an effectively functioning cluster or resource centre system.

Summary: some strategies used by successful cluster and resource centre programmes

Experience shows that programmes that target whole school development, train heads and involve community members are the most effective in producing positive changes in teaching and learning. The most effective programmes make use of development plans and self-evaluations to set goals and gauge their progress. Funding, provided through grants for education improvement projects, has had some measure of success in creating innovative solutions adapted to local problems while involving local actors in education.

Effective cluster and resource centre-based support and training

While several authors offer differing suggestions on how to improve resource centre-based training, there is consensus on one issue regarding the effectiveness of teacher development through clusters and resource centres: visiting resource centre teachers, who provide in-class support and feedback, have more of an impact on teacher practice than stand-alone resource centres and isolated workshops (World Bank, 2000*b*; Knamiller, 1999). The Mombassa SIP provides an excellent example of the effectiveness of this sort of teacher development strategy. Mombassa's TAC tutors and project officers offer support in schools in conjunction with the teacher development workshops offered at the TAC (see section on Kenya: Teachers' Activity Centres in Mombassa).

Effective cluster and resource centres also use cross-level subject groups as a basis for curriculum planning and to harmonize teaching and learning criteria across the cluster. This was done in the Barnsley EAZ (UK) through its teacher development groups (see section on UK: Education Action Zones), as well as in the urban school network in Caracas (see section on *Redes* in Latin America) and in the LAAMP school families (see section on LAAMP school families).

Several of the studies on resource centre- and cluster-based in-service training agree that paying teachers and trainers, providing accreditation, and the possibility for professional advancement contribute to teachers' motivation for professional development. Geeves remarks that in Cambodia "trainers and trainees have usually participated enthusiastically in the training components of the projects when there has been a high level of technical support and some supplementation of income through per diems and travelling allowances ... when the technical and financial support ceases, teaching quickly reverts to established practice" (2003: 9). Under the Cambodia EQIP programme, teachers' in-service training represented about 50 per cent of total quality improvement funds. Teachers' attendance increased when teachers were remunerated through EQIP. The level of participation and interest increased when materials were provided and trainers were paid to plan and facilitate the sessions (Geeves, 2003). The Mombassa SIP provided training, but also post graduate degree courses for co-ordinators and TAC tutors, which contributed to their professionalism and enthusiasm (Knamiller, 1999).

Another point to consider is the pertinence of training workshops and materials to the local context. Clusters and resource centres are often used for 'cascade' workshops, whose effectiveness is contested on several grounds, one of which is that the cascade model is initiated from above and does not give enough consideration to local needs. Because training often does not take into account local needs and teaching conditions, INSET based at resource centres is said to be too far removed from local teacher practice. Knamiller (in Knamiller, 1999) suggests trying to take advantage of what local teachers do best, like storytelling, teaching from the textbook and using the blackboard, and modifying these techniques toward

more student-centred teaching. He also suggests using cluster-based workshops and training to show teachers how to incorporate the materials available at the resource centre into their lessons. Courses orienting teachers in how to use new pupil textbooks and teacher guides that are distributed through the TRC could be more relevant to teachers' needs.

Several authors recommend taking into account local circumstances and consulting local stakeholders in setting up and running resource centre-based training (MacNeil, 2004; Hoppers, 1998; Geeves, 2003). The Mombassa SIP chose workshop themes based on local needs analysis and observations made by the project officers and TAC tutors. Welford and Khatete (in Knamiller, 1999: 164) report that "the director of the SIP programme and the programme officers sit down once a week to develop the workshop programme through a detailed needs analysis". This helped make the workshops more practical for teachers.

Box 2. Aga Khan SIP in Uganda

The cases of the SIPs funded by the Aga Khan Education Service in Kampala, Uganda and in Mombassa, Kenya, show how remarkable results can be achieved using a whole-school approach and sustained, in-class, follow-up support. "Traditional teacher development can take many years to show results. The SIP experience suggests that the whole-school approach brings visible results quickly and retains the interest of parents, pupils and staff. The model incorporates an emphasis on a child-centred philosophy as well as a regard to the managerial structures that are essential to maintain change" (Siraj-Batchford *et al*., in Anderson, 2002: 122).

The Uganda SIP worked with a group of primary and nursery schools in the capital Kampala, over a three-year period, to improve the quality of teaching and learning through the promotion and adoption of child-centred methods and resources. SIPs use a whole-school approach, involving all of the teachers in a school, as well as the head teachers, pupils and parents. SIPs also use extended follow-up through in-class support and demonstrations. In addition, the programme created a teacher resource centre stocked with resources for making inexpensive classroom materials.

Observations by a team evaluating the Uganda SIP indicated dramatic changes, in a relatively short period (of one to three years), in the way teachers used materials and organized classroom work. Teachers produced their own materials used and displayed in the classroom, and used group work to encourage pupils to engage in peer support and tutoring (Siraj-Blatchford *et al*., in Anderson, 2002). The SIPs set up in Kisumu and Mombassa, in Kenya, exhibited similar results (Siraj-Blatchford *et al*., in Anderson, 2002; Anderson and Nderitu, in Anderson, 2002).

The TRC in Kampala also illustrates good practice in the use of resource centres as a support for teacher development. For participants in the SIP programme, access to materials is a basic requirement in the implementation of child-centred, activity-based teaching methods. The Makere Road TRC provided book and reference materials for loan and a place for teachers to meet, study, or choose materials for their schools. Teachers reportedly found the TRC to be beneficial for preparing teaching aids by providing access to inexpensive materials (Siraj-Blatchford *et al*., in Anderson, 2002). Access to materials supporting new teaching methods available through the TACs in Mombassa was found to be essential in changing teachers' practice.

Sources: Siraj-Blatchford *et al*. 1997; Siraj-Blatchford *et al*. in Anderson, 2002.

Whole-school approach

A whole-school approach to teacher development appears to have more of an impact on improving education quality than training individual teachers in workshop sessions. The Aga Khan Education Service SIP model, in Kenya, used mobile resource centre staff to provide on-the-job training and intensive follow-up in three or four schools in a cluster each year. The following year they rotate to a new group of schools. SIP was able to provide dramatic and visible results in applying child-centred methods in the classroom, throughout the participating schools, within a three-year period (Knamiller, 1999; Siraj-Blatchford *et al*., in Anderson, 2002).

Involving all staff in development helps give support and momentum to education improvement projects, especially when trying to implement a new curriculum or new pedagogical methods. Experiences in Bolivia (Contreras and Talavera Simoni, 2003),

Thailand (Wheeler *et al*., 1992) and Kenya (Herriot *et al*., 2002; Anderson and Nderitu in Anderson, 2002) show that the support of head teachers in cluster activities and staff development is essential to promoting and implementing improvement projects. Head teachers who are more informed and involved in cluster-wide initiatives, reforms and improvement projects from the beginning can be catalysts for change.

Active support of local stakeholders

Programmes with a high level of parent and community involvement and local ownership are more likely to have an impact on education quality. Receiving feedback from local stakeholders and participants can help ensure that project initiatives are in line with local expectations. Mombassa SIP built up parent awareness and trained TAC management committee members (Anderson and Nderitu in Anderson, 2002). EQIP used local cluster school committees to assess needs, develop its own improvement projects, apply for grants and carry out its action plans (World Bank, 2004*a*).

Promoting local involvement and ownership of a resource centre or cluster programme can contribute to its sustainability. Kenya's SIPs focused on community support for TACs from the initial stages of the project. The TAC management committee, formed by parents, head teachers and headed by a community business leader, was "intended to ensure sustainability through its close involvement with the local community" (Welford and Khatete in Knamiller, 1999: 166). However, total reliance on the community to ensure project sustainability is probably not realistic.

Occasionally, community participation needs a push, especially when parent and community involvement has been confined to fundraising. One solution to encouraging community participation and ownership of resource centre and cluster project initiatives has been to employ network animators or community development officers, as was done in Cambodia's EQIP and in the Mombassa SIP. EQIP used animators to work with cluster school committees to develop improvement plans and grant proposals. They continued to provide monitoring and evaluation to assist the committees once improvement projects were underway (World Bank, 2004*a*). Mombassa SIP provided community development officers to

encourage parental involvement in the project and activate TAC management committees (Anderson and Nderitu in Anderson, 2002). These capacity-building initiatives can make a major difference in the extent and quality of community participation.

Grants programmes: encouraging local innovations

Some of the most successful network and resource centre cluster programmes allow for development of local innovations that respond to local demand and are based on local needs assessment. Providing grants for education improvement projects has shown to be one of the most effective methods for supporting local initiatives for education improvement through clusters. Having shown some initial positive results, many donor and government programmes are offering competitive grants to groups of schools for education projects designed locally and adapted to the local context. Local project design also means that the project already has the support of the local education community, who has a vested interest in the success of the project from the outset.

Two examples of grants programmes are the LAAMP school families project in Los Angeles and Great Britain's Education Action Zones, both of which provided funding for voluntary school networks to develop and implement their own innovative pedagogical projects. EAZ projects were *de facto* pertinent to local needs because they had been elaborated by the local education community and stakeholders.

Chile's *microcentros* and the EQIP in Cambodia also proffered grants to teacher groups and clusters for projects of their own design. Both programmes provided the technical assistance of animators and supervisors for creating, carrying out and monitoring projects. EQIP demonstrated that clusters have the potential to "develop new resources and provide for interactive learning" when they receive devolved funding, regular support, guidance and supervision (World Bank, 2004*a*: 16).

Box 3. Cambodia EQIP grants for education improvement projects

In Cambodia, the Ministry of Education, with assistance from the World Bank and DFID, set up EQIP in 1999. EQIP provided grants to school clusters for quality improvement projects in three provinces, making school clusters responsible for developing their own quality improvement action plans and managing the resources attributed to them. EQIP also made educational management data available to the cluster level to improve planning and evaluation.

Animators, recruited from the district education office staff, worked with communities and school clusters to identify problems and possible solutions in their schools. The local cluster school committees prepared grant proposals on the basis of improvement projects with the help of the animators. The proposals were reviewed at province level by a grants committee "to ensure that they were in line with national priorities" (World Bank, 2004*a*: 2). Once proposals were approved, funds were distributed to schools and the Local Cluster School Committee was responsible for managing the clusters' resources. Animators assisted in the implementation, monitoring and evaluation of improvement projects. The District Office of Education provided support services to school clusters and guidance in planning. The EQIP experience shows the importance of having the support of actors at all of these levels for clusters to be effective in improving education quality.

The majority of the cluster projects funded by EQIP targeted teacher development. Other grant projects included investments in school infrastructure and equipment, school libraries, teaching materials and student learning materials. Overall, enrolment in EQIP clusters increased constantly in participating schools during the project, with improved drop-out and promotion rates and better retention of pupils in the system. Pupil performance also improved within the project schools throughout the duration of EQIP. Teacher development expenditures correlated with improved pupil performance. Spending on school infrastructure was associated with higher promotion rates. The World Bank report on EQIP acknowledged the necessity of investing in essential inputs of supplies, teacher training and basic management practices in order to promote changes in education quality. Observers also noted that the project schools "show a healthy and active learning" environment (World Bank, 2004*a*).

Geeves (2003: 5) reports that "after three years of implementation, the EQIP planning process was being run completely by MoEYS staff". EQIP showed that funds distributed to clusters could be used for locally-developed school improvements "with a high degree of accountability" (World Bank, 2004*a*: 5). Through the direct transfer of funds, EQIP contributed to the decentralization of decision making to schools and local cluster school committees and encouraged community participation in school management. Building capacity at the district and provincial levels was also important in supporting decentralized planning at the cluster level. The grants programme demonstrated that clusters "are willing to take on new ideas, use and develop new resources and provide for interactive learning when they receive devolved funding and have regular, well-informed guidance and feedback at the local level" (World Bank, 2004*a*: 16).

Sources: Geeves, 2003; World Bank, 2004*a*.

Development plans, self-evaluation

Effective clusters, networks and resource centre programmes use development plans and self-evaluations to gauge progress and perfect their improvement plans. The LAAMP school families were required to develop a learning plan to guide its activities and set goals. The learning plan served as a flexible working document. Each year, it was evaluated and revised to reflect the successes and failures of the previous year. The network's progress was evaluated in terms of achieving the goals set out in the learning plan.

In Cambodia, district animators assisted the local cluster school committees in monitoring and evaluation after the implementation of their improvement projects. EQIP made education management data available to the school cluster level so that they could closely monitor the impact of their improvement projects. In Cambodia, where previously there were no effective mechanisms in place to monitor and evaluate cluster performance, EQIP helped to "create a culture of evaluation in Cambodia" and built capacity at the district level to do so (World Bank, 2004*a*: 12).

IV. Options available to planners

Considerations and orientations

Programmes that facilitate exchange between schools and teachers do not need to be extensive or mandatory in order to have an impact on education quality. A number of objectives can be reached through small-scale cluster and teacher group programmes, provided they have technical support and adequate funding for their activities.

Experience shows the importance of targeting interventions of clusters and resource centres so that they match the needs of the people they are meant to serve. Donor organizations and education ministries are becoming more aware of the need to take into account the experience, needs and practices of local stakeholders in the design of cluster and resource centre programmes. Stakeholder participation is required to optimize their impact and to ensure their survival and pertinence.

Choice of scope in implementing a cluster scheme

Depending on the goals of a programme and the local context, an extensive and mandatory cluster or resource centre programme may not be necessary. Voluntary school networks and small-scale teacher groups can improve conditions for teaching and learning. Co-operative activities that can be carried out by small-scale clusters and teacher groups include exchange among teachers and head teachers, bringing together pupils and teachers for targeted activities, sharing pedagogical and material resources, implementing improvement projects, and encouraging community-school partnerships.

Microcentros in Chile and Colombia, *micro grupos* in Ecuador and head teacher support groups in Kenya rely on voluntary participation of teachers and head teachers and allow participants to exchange solutions to problems, share innovations, and plan and carry out joint projects for school improvement with teachers and heads from other schools. In Chile and Colombia, *microcentro*

meetings are held in different schools, on a rotating basis, so there is no need for a purpose-built structure. These teacher and head teacher groups have positive results in improving pupil participation and achievement as well as working relationships between heads and teachers, teachers and supervisors.

Voluntary school networks have also shown that cluster programmes limited in time and locally-based can have a positive impact on the quality of education in the participating schools. The LAAMP project and the examples of school networks in Chile and Venezuela are small-scale, locally-based programmes that created innovative ways of improving conditions for teaching and learning with positive results for participation and pupil performance. All of these programmes, it might be noted, were undertaken in urban areas, where distance was not an impediment to co-operation and the schools had access to universities and other institutions for assistance in their projects.

Ownership and demand

Programmes with a high level of local ownership and involvement are more likely to have an impact on education quality and to continue to function once donor support ends. This means involving teachers, head teachers and management committees in needs assessment, design of cluster-based improvement projects and action plans. It also means devolving some real decision making and management power to management committees, while not neglecting the need for capacity building for these responsibilities.

Hoppers points out that many teacher resource centres initiated by ministry and donor programmes are "focused more on the quality and effectiveness of service delivery than on participation, self-reliance and ownership by the teachers" (Hoppers, 1998: 235). The result is that teacher resource centres have become delivery points for teacher training rather than places for capacity building at the local level.

Locally-generated innovations tend to be more reactive and pertinent than many projects initiated by the ministry or outside agencies. Knamiller observes that 'cascade' training "encouraged dependency on centralized initiatives and marginalized initiatives

at the teachers' centre level" (Knamiller, 1999: 40). When projects are initiated by actors outside the local education community, they need to be flexible enough to adapt to the local needs and conditions. Soliciting regular feedback from stakeholders can ensure that project initiatives are in line with local expectations.

Setting achievable goals

Participating schools are likely to be more motivated and active in the cluster if they see how they can benefit from it. There should be common agreement among the participants about the objectives of the resource centre, network or cluster programme. Establishing clear goals gives participants an idea of the immediate benefits that can be achieved.

Not only are goals set out by stakeholders pertinent to local needs, they are generally more achievable. In his analysis of teacher resource centres in southern Africa, Hoppers (1998) observes that in early TRCs, initiatives were taken by the local actors themselves, that their organization ensured the full involvement of heads and teachers in needs assessment, planning and implementation of activities, and that these were in line with local interests. Also, because they were initially self-reliant, they "could be sustained by what was locally available" (Hoppers, 1998: 237).

Often these goals are laid out in a development plan, an improvement plan or an action plan. Development plans for clusters, networks and resource centres are also used as a basis for disbursement of funds in a number of developing and developed countries (OECD, 2003; World Bank, 2004*a*). Programmes can check their progress annually based on accomplishment of the goals set out in the learning plan.

Matching cluster organization with objectives

In the case of Cambodia's cluster programme, Bredenberg and Ratcliffe (2002) explain that matching expected outcomes (goals) with functional processes (organization and activities) is essential in achieving the desired outcomes. The pitfall of many cluster and resource centre programmes is that they aim to do too much and they lack the resources and staff to carry out all the activities they propose. Most programmes cannot, at the same time, staff

the resource centre, provide training and follow-up in schools, and carry out supervisory functions. As Knamiller (1999: 216) remarks: "resources never match project expectations for adequate support in schools". As a result, their impact ends up being minimal.

The more ambitious the goals of the cluster, the more important careful planning, reliable financial and technical support, and co-ordination between the cluster or resource centre and its founding bodies become. Adequate funding and support of cluster projects is vital in helping them achieve their goals. This said, some projects might actually benefit from being scaled down so that their goals match the financial and human resources available.

Capacity building

Some programmes concentrate on building capacity locally in hopes of sustaining the project and its impact. This involves training key personnel such as network and district animators, head teachers and management committee members, as well as providing professional development for teachers. It is necessary to assign a role to local education actors in the development of cluster and resource centre activities. The goal is for innovations to become self-sustaining at the school, cluster and district levels.

One of the strengths of Peru's rural networks is their development of local capacity for management, planning, and development of activities and innovations (Ramirez Arce de Sanchez Moreno in FAO, 2004). Likewise, Barnsley's EAZ acknowledged that investment in professional development is "key to the sustainability and embedding of improvements" (DFES, 2002*a*: 27). Other programmes, such as Kenya's SIPs and Cambodia's EQIP, also focused on building capacity locally through providing training for tutors, head teachers and facilitators, which had positive results in terms of project impact. However, evaluation teams for both programmes were reserved about project sustainability, in spite of capacity-building activities.

Combining administrative and pedagogical goals for clusters and resource centres

Decentralizing education reforms often try to address both administrative and pedagogical goals through resource centre and cluster programmes. Country-wide cluster and resource

centre programmes tend to accompany reforms decentralizing the management and financing of education. This has been the case in Nepal and Cambodia, and more recently in Namibia and Bolivia. These reforms have set out to improve school governance and decentralize the management and financing of education while providing a point of delivery for pedagogical support, teacher development and learning resources. While this might seem logical and even desirable, given the proximity of the resource centres or school clusters to the schools, giving the resource centre or cluster responsibility for both pedagogical and administrative tasks can be problematic.

A major concern is giving cluster heads and resource people sole responsibility for pedagogical and administrative tasks. They are quickly overburdened by management duties and cannot properly attend to the pedagogical functions of the cluster. Nepal is one example of a programme attributing administrative and pedagogical tasks to resource centres. Resource people in Nepal are expected to provide pedagogical support to teachers through the resource centre, through visits to teachers in their schools, and by organizing workshops and giving demonstration lessons. Because of the access resource people have to the satellite schools, different divisions of the Ministry of Education rely upon resource people for a number of administrative functions in addition to their extensive pedagogical duties. As a result, resource people "are given more responsibility than they can deliver", and the administrative duties they are expected to perform take away from their primary role as providers of instructional support and supervision (Raj Khaniya, 1997: 51).

When a cluster or resource centre aims to improve management and provide pedagogical support, it is vital to separate pedagogical and administrative functions and attribute them to different people.

Implications for planners and policy-makers, and suggestions for administrators and local education authorities

There are a number of considerations to keep in mind when establishing clusters and resource centres. The organization of clusters and resource centre programmes depends mainly on their

goals and the local context. Currently, many cluster programmes in developing countries are initiated by donor agencies and ministries in order to implement decentralizing reforms or carry out specific projects more effectively. In the previous sections, it was argued that there should be more extensive consultation with the local actors in the field when setting up network, cluster and resource centre projects. This section presents some different organizational options. The implementation phases, however, can be applied to any cluster or resource centre programme to be established.

Organizational options

Which schools should be included in a cluster, network or resource centre programme?

The types of schools to be included in a cluster depend on local needs and capacities, as well as the goals of the clustering. In some cases, complete and incomplete schools are clustered together in order to give incomplete schools access to a school offering the complete primary cycle. Likewise, clustering several feeder primary schools with a secondary school in order to improve transition and provide access to the resources available at the secondary school may prove beneficial to the primary schools, learners and teachers. Great Britain's EAZs often included pre-primary, primary and secondary schools in a given locality.

Clusters that bring together primary schools of similar sizes and capacities can also benefit from sharing experiences among teachers and head teachers. This also helps to equalize the relationship that can occur when one school has more resources and becomes the 'provider' school while the others are 'receivers'. Resource centres also need to consider which schools should be served by the resource centre – primary, secondary, or both. Again, some programmes prefer to make available separate resource centre facilities to primary and secondary schools, assuming that their needs are different. Others cater to primary and secondary schools and teachers, and provide a wider range of activities and resources.

Another question is whether schools in a certain sector should be required to take part in a cluster or whether participation should be optional. Should all schools in a given area be included in the cluster or should participation be limited to certain types of schools? The

goals of clustering and geographical constraints should be taken into account when making these decisions. Many networks or clusters include schools on a voluntary basis. The schools themselves choose whether to join the cluster or network, and their membership is approved by the other member schools. In some cases, both public and private institutions can choose to join the same network for the benefits of inter-school collaboration; common interests and locality provide the pretext for joining the network. Resource centres too might be open only to fee-paying members, or charge different user fees for members and non-members.

Some cluster programmes only apply to schools in rural areas (Peru's and France's rural school networks), some only to multi-grade schools (Chile's *microcentros*), and others only to schools in urban areas (Caracas urban school network) because of their shared characteristics. School clusters in Cambodia, however, are present in both rural and urban areas, and the government now recognizes different types of organization for rural and urban clusters. Bolivia's education reform made school clusters mandatory throughout the country in order to provide similar conditions for education delivery in rural and urban areas.

Cluster size, geographical distribution and choice of core school

Establishing the appropriate cluster size depends upon the goals of the cluster, the size of the schools involved and the geographical distribution of the schools in the cluster. A school mapping exercise is probably necessary to determine these features. Namibia's school cluster programme conducted a school mapping exercise, first looking at geographical relationships, then data regarding the sizes of the schools, the grades offered and enrolment trends. Individual schools were visited to assess development needs, the relation of schools to one another, and each school's potential as a cluster centre. The Ministry's cluster development team also consulted with regional management staff, inspectors and councillors to determine which schools should be clustered together and which could serve as cluster centres (Dittmar *et al.*, 2002).

Typically, the core school is the one with the most resources at its disposal. Where a cluster brings together primary and secondary schools, the core school is usually the secondary school. When

incomplete and complete schools are clustered together, the core school tends to be the complete school. In some cases there is no core school and the member schools take turns hosting meetings and activities, which can encourage corporate ownership. However, this arrangement usually works for teacher groups or school networks that do not pool together material resources that need to be stored and made accessible to all members. Where resources need to be 'stocked', for organizational and administrative purposes, it is probably easiest to maintain a core school on the same site.

The number of schools included in a cluster is also based on the proximity of the schools and the communication and transportation networks available to them. Maximum distance between schools depends on the terrain, road networks, and transportation reliability. In any case, they should be close enough to allow regular trips of members or facilitators without causing a burden to them. The Aga Khan SIP programme in Mombassa chose to operate in a dense area to alleviate transport problems. In Cambodia, some cluster boundaries were redrawn to make for more reasonable entities in terms of distances between member schools (Geeves, 2003). In cases where schools are very remote, it might be more effective to support them from the district level and to supply an on-site resource centre rather than to include them in a cluster. Alternately, a mobile resource centre may be an option for schools too far away for regular contact with other schools or for drop-in visits to a resource centre.

The number of schools clustered together can also have an effect on their co-operation. When clusters are composed of primary schools that collaborate on a regular basis for resource and teacher sharing, discussion groups and training, or bringing pupils together, the optimum size appears to be between five and eight schools. Above eight schools, practical problems in co-ordination can occur and schools may spend more time maintaining a network than in cluster activities. Other programmes limit the size of their clusters to just a few schools that can easily collaborate on a regular basis. USAID Mali proposes cluster schools in groups of two to four for co-operation. This makes sense given the geographical realities of the country. In Nicaragua, the *Fe y Alegría* NER in Asunción groups its schools in blocks of two or three within its network of ten schools.

In contrast, studies on large voluntary school networks show that another type of co-operation between schools emerges in these entities. LAAMP school families and EAZs were considerably larger than most school clusters. The reviews of the EAZ projects in Great Britain show that, even though an average of 20 schools participated in the EAZ, not all zone schools had an active role in elaborating common tools. However, the ensemble of the schools in each zone benefited from the collective innovation (DFES, 2002*a*).

Location of the resource centre

The location of resource centres should also be based on accessibility to the member schools. Resource centres often serve more than 15 schools. This might be effective if the schools are close together in an urban area. Gibbs and Kazilimani's study also indicates that it is beneficial to place a resource centre in an urban centre where teachers have to go for other reasons. In one provincial resource centre, the researchers noted that visits to the TRC were most numerous when teachers were going to collect their pay. But in Nepal, for instance, resource centres were established based on a school mapping exercise and are meant to serve 10 to 15 schools. In reality, some resource centres cover more than 25 schools and they are more than three or four hours' walk from the satellite schools. Such distances can pose problems of accessibility and under-utilization.

Knamiller *et al*. (in Knamiller, 1999) point out that when resource centres are not based in a school, they tend to be underutilized and their impact is marginal. Gibbs and Kazilimani (in Knamiller, 1999) found that in Zambia, the range of the resource centre as a drop-in centre is 5 km, which is the distance that most teachers are prepared to walk. Welford and Khatete (in Knamiller, 1999) echo this finding in their study of resource centres in Kenya. The 'radius of influence' of a resource centre was found to be only a few kilometres. Distances over 10 km, even when transportation was reliable, were too far.

Co-ordination at cluster level

Adequate staffing

Effective cluster and resource centre-based programmes must have adequate staff to carry out pedagogical development and training, supervision and support, and administrative duties. Many

programmes use teachers or district personnel on secondment as advisory teachers, animators or resource people. This is advantageous because these key actors have a good knowledge of the local conditions for teaching and good experience in the field (World Bank, 2004*a*). But in some cases, they may need permanent positions or other incentives to avoid losing these people to better positions and to prevent high turnover (Welford and Khatete in Knamiller, 1999; Raj Khaniya, 1997). Having sufficient staff also means that the ministry, district or LEA may need to commit resources and personnel to adequately staff the resource centre and cluster core school.

Choice of cluster head

Cluster head is primarily a political and administrative position as opposed to a tutor or an advisory teacher, whose role is pedagogical. The choices of the core school and the cluster head have numerous implications. Some cluster heads are appointed from above, while others are elected by other members of the cluster committee from among the head teachers of the member schools. The local political and administrative context needs to be taken into consideration when choosing a cluster head. It should be a person whose leadership is respected by the other cluster members and whose status is sufficient to relate as an equal to head teachers and to administrative authorities at the district level. The legitimacy and status of the cluster head are important to ensure the co-ordination of the cluster schools.

The cluster head often compounds his or her regular workload as principal with that of cluster head. When the resources are available to do so, it might be beneficial to appoint a separate cluster head to fulfil this role. In Cambodia, Geeves (2003) suggests maintaining one school as the core school with its own director, and appointing a separate cluster schools co-ordinator.

In any case, the person chosen as head should be aware of and prepared to execute the responsibilities of cluster head or co-ordinator. This might require additional training in management and network building. Some cluster programmes have understood the need for training and capacity-building activities for cluster heads and cluster staff, while others have made the decision to replace ineffective cluster heads.

Co-ordinator, facilitator and supervisor

Networks and teacher groups often use facilitators or co-ordinators to animate activities and provide technical support. Co-ordinators are sometimes appointed by the ministry, yet they are not supposed to act as hierarchical superiors to the head teachers and teachers of participating schools, but rather as advisors and facilitators. France's rural networks have a network co-ordinator appointed by the *inspection de l'Académie* (sub-regional branch of the Education Ministry). The co-ordinator manages the pedagogical activities of the network and represents the network in dealings with other officials. A representative of the Ministry is most often the initiator of the network and serves as co-ordinator (Darcos, 2003; Duhamel, 2003). Chile's *microcentro* programme also uses ministry-appointed supervisors as facilitators, stressing their role as pedagogical and technical advisors to support teachers' initiatives and activities (see http://innovemos.unesco.cl, *Microcentros rurales en Chile*).

Pedagogical support staff

In some cluster and resource centre programmes, pedagogical and administrative functions are served by the same person. This can undermine the goal of improving educational quality. A number of studies point out the importance of appointing a separate and well-qualified advisory teacher or tutor to carry out pedagogical responsibilities. This is probably the best manner to ensure that resource centre activities are appropriately targeted and that the person chosen can play a real pedagogical support role. In addition, the resource centre staff person must be paid as much as if he or she were teaching to avoid the departure of staff to the classroom for better pay.

Should community members serve on management committees?

In places where community participation in education is one of the goals of clustering, it seems appropriate to provide parents, community partners, teachers and head teachers with the opportunity to serve together on management committees. This can also be valuable in ensuring that local needs are being addressed, in improving accountability and ownership of the cluster project, as well as in mobilizing local financial, material and human resources.

In Bolivia, education reform created school clusters (*núcleos*) nationwide; at the same time, it required the establishment of participative school cluster committees, giving these committees control over financial resources and decision making regarding education (Combini Salinas and Juárez Núñez, 2001). Most programmes, however, solicit community and parental involvement on resource centre and cluster management committees without requiring it. Others limit membership on management committees to education officials, teachers and heads. Parents and community members served alongside education officials on Great Britain's zone forums, while teachers and education professionals participated in the pedagogical action teams.

Providing for district level support

Co-ordination and support for resource centre and cluster activities at the district level is vital, especially in national cluster and resource centre programmes. This support can come in the form of pedagogical and administrative support and supervision, financial support for cluster activities, assistance in organizing training workshops, feedback and guidance on planning issues that affect the cluster.

Studies on Cambodia (World Bank, 2004*a*), Namibia (Dittmar *et al*., 2001) and Nepal (Raj Khaniya, 1997) all point to the need for adequate support at the district level. EQIP used district office personnel as animators, assisting school clusters in needs assessment, writing grant proposals and providing monitoring following the implementation of improvement projects (World Bank, 2004*a*). The EQIP evaluation team affirmed: "Effectiveness of clusters will ultimately depend on the availability of district-level facilitators to motivate and facilitate professional dialogue" (World Bank, 2004*a*: 11).

Financial backing

Clusters and resource centres require sufficient budgets to carry out their activities. In Cambodia, clusters receiving additional resources from donor-supported projects performed better than those not receiving any outside support (Bredenberg, 2000). The DFID study on resource centres found that none of the programmes were surviving on their own means (Knamiller, 1999).

Funding must be provided in order to set up, equip and staff resource centres, support in-service training and ensure communications and transportation between schools. This usually requires several sources of funding. For example, in Kenya's SIPs the outlay of funds for equipping teacher activity centres was shared by the project and the community. The municipality funded the TAC tutor's salary, while SIP paid the salary of the project officer.

Institutionalization

In some cases, networks, clusters and resource centre programmes have been institutionalized to ensure sustainability. Institutionalization requires three important steps: first, provide a legal framework for resource centres, clusters or networks; second, ensure their reliable financing; third, designate permanent posts for animators or facilitators.

In order to facilitate functioning and provide for more stability, some countries have established a legal framework to outline the responsibilities of the different parties involved in clusters or networks. After several decades of ad hoc management of its rural and inter-communal school networks, France recently developed a legal framework for the constitution and functioning of school networks (Darcos, 2003). Encouraged in legal text since 2001, Peru detailed the organization and functioning of rural networks nationwide in 2003 (Unidad de Descentralización de Centros Educativos del Ministerio de Educación, Peru, 2003). Bolivia's education reform law established clusters as part of the education administration, making them mandatory in rural and urban areas (Comboni Salinas and Juárez Núñez, 2001).

The role of reliable financing in maintaining resource centres and clusters as functioning entities has already been emphasized. Financing arrangements and responsibilities can be laid out in legal text in order to provide for the funding of these programmes. This was done in the UK when funding for EAZs came to an end and they were transformed into Excellence Clusters or Excellence in Cities programmes. Excellence Clusters now receive funding through a per-pupil budgeting formula, adjusted for social, economic and performance factors (Turner, 2003).

Some resource centre programmes, clusters and networks have offered permanent posts to ensure sustainability. Posts for co-ordinators, facilitators or tutors may be included in legal texts and integrated into the education administration. In some cases, the employer may be the ministry, in others, the local education administration or the cluster itself. The legal text on France's RPIs establishes a network co-ordinator for each network. This person is usually a ministry-employed inspector, but the Ministry is trying to encourage the local authorities to name a co-ordinator from within the local administration (Darcos, 2003; Duhamel, 2003).

However, the difficulties faced by Nepal's resource centre programme show that legislating resource centres and clusters alone cannot ensure their successful operation. According to van Alast, one of the characteristics of more flexible and innovative networks is their lack of permanence (van Alast in OECD, 2003). There is often an agreement or a contract regarding network duration or the duration of the participation of its members. This can be an advantage in the sense that it ensures that networks do not outlive their utility.

The process of introducing clusters and resource centres

Assess the needs at the cluster level

One of the pitfalls of introducing cluster and resource centre programmes is overlooking the demands, attitudes and needs of local stakeholders in formulating the goals to be accomplished by the cluster and resource centre. This can lead to misdirected energy and resources. A resource centre or cluster project may encounter resistance from teachers and head teachers if it is part of a reform or decentralization programme. Including stakeholders early in the planning of a resource centre cluster scheme can help define and refine the objectives and implementation plan and give communities ownership of the project. Building awareness and soliciting local opinions can help attract schools to participate in the cluster, especially when their interests and needs are taken into account.

Begin with reasons and concrete goals for establishing clusters

A cluster programme should be clear in what it sets out to achieve and how it intends to go about it. Organizational concerns can only be addressed once goals have been established (Bredenberg and Ratcliffe, 2002). Cluster and resource centre projects should set

out their goals in a development project or improvement project. Planners might consider allowing individual management committees to elaborate a development plan and submit it for approval before attributing funding to the cluster or resource centre.

School mapping: establish where to place core schools or resource centres

The number and type of schools included depends largely on the goals of the cluster or resource centre programme. Geographical (distance, terrain, accessibility ...) and political (conflict zones, ethnic group boundaries ...) realities must be taken into account and attention must be paid to existing administrative boundaries in order to establish a workable cluster and/or resource centre programme.

A school mapping exercise, ideally with the participation of the local education community, can be very useful in identifying the best location for core schools and resource centres. Looking at enrolment trends, grade composition of surrounding schools, numbers of classrooms and staff can help determine which schools to include in a cluster and which school might act as a core school.

Assessment of financial and staffing needs

At any early stage, it is necessary to determine what resources are available and which staff are needed to execute the activities proposed by the cluster or resource centre project. Projects such as Mombassa's SIP and Great Britain's EAZs have benefited from mixed financing and involving the community in raising some funds for the project. In Great Britain, for example, public funds were combined with donations from private sponsors to finance its EAZs.

Pilot projects to clarify goals and strategy

In the case of a cluster or resource centre programme put into place by an education administration, setting up and running a pilot project is a necessary step before a cluster programme can be taken to regional or national scale. Pilots help clarify goals and strategies, identify possible obstacles and provide publicity for a future national scheme. Programmes going to scale should be aware of best practice in local donor-supported and locally-initiated projects, and possibly

use these projects as models. Pilot projects can also create a positive buzz for a cluster or resource centre initiative. Other schools will be more willing to get involved in the programme after seeing the results in the pilot schools.

Identifying and training cluster heads, resource centre personnel and pedagogical support staff

Cluster heads may be appointed or elected. In either case, they may be subject to approval of the local cluster committee and/or LEA. The most important consideration is to match the personnel with the demands of the job and provide training, when necessary. If clusters are administrative units, an experienced and respected head teacher may be appropriate, or alternatively a district supervisor or other education administration official.

Resource centre personnel and advisory teachers must be qualified teachers and sound pedagogues. Pedagogical personnel might also be subject to LEA or management committee approval. All cluster and resource centre staff must receive adequate training.

Establishing a legal framework for authority and responsibilities

To avoid confusion and overlapping of authority, it will be necessary to clarify the legal obligations and responsibilities of clusters, participating schools, school and cluster directors and management committees in relation to local education authorities. It is also necessary to lay out the terms of financing and the financial obligations of the participating and founding bodies. This often takes the form of a legally binding contract.

Where clusters, networks or resource centres are part of the national education administration, these legal obligations might also need to be added to the legislation on education in the locality or country in question. Some programmes prefer to set up contracts for participation in networks and for engagements with providers of outside services such as universities, teacher colleges or other private sector providers.

Conclusions

Resource centres and school clusters have been used as strategies to foster co-operation between schools; share resources and make them available to a wider number of teachers and pupils; improve access to a wider range of pedagogical activities; improve the management of education; and hand over some responsibility for education improvement to local actors, in a variety of contexts, in both developed and developing countries. If the conditions of rural schools provided the impetus for many early cluster and resource centre programmes, their applications have been readily adapted to urban areas and even used country-wide in some instances.

While some resource centre and cluster programmes have not convincingly demonstrated the capacity for effectively improving the quality of education, they have, at the least, begun a process of reflection on how to improve the conditions and quality of education through inter-school exchange and co-operation.

The operating conditions currently imposed on many teacher resource programmes do not allow them to play their part in improving the quality of education. In order to be effective, resource centres cannot be mere storehouses of materials, of which some are out-of-date and located in buildings accessible only through long travel and open only during school hours. Such infrastructure can only be of service if resource centres are well-equipped and staffed with competent and committed tutors playing a real support role for teachers and serving as motivators and mentors for teacher development and improved classroom practice. The most effective resource centre programmes are easily accessible, and available to teachers outside of school hours, allowing teachers to spend their valuable time in classrooms. There must be adequate staff to ensure consistent, and ideally long-term, follow-up of teachers in their classrooms. Workshops should address the real needs of the teachers they are meant to serve.

Ideally, resource centres should provide a basis for interaction among teachers, encouraging exchange and collective projects, fostering a culture of improvement from within the teaching body,

assisted by facilitators or resource centre staff. Cross-site teacher groups have shown that their collaborative work can lead to improvements for teachers and pupils throughout participating schools.

Likewise, school cluster and resource centre programmes cannot serve purely as agents of decentralization, simply existing as another level of the education administration between the schools and the district. Using school clusters mainly as administrative units does not allow them to achieve their main objective of improving education quality. Resource centres and clusters operate most effectively when local stakeholders, including educators, administrators and parents, as well as local public authorities are mobilized and committed to co-operating toward the improvement of education. Successful cluster and resource centre programmes require a number of committed actors at different levels. Consultation with head teachers, especially at the beginning of cluster and resource centre initiatives, and their inclusion on management committees can contribute greatly to promoting cluster and resource centre operations. Network or cluster facilitators are required to keep motivation up for co-operative activities.

Real changes can be accomplished through grants programmes that allow cluster and resource centre management committees to define their own action plans for education improvement. In the best cases, local capacity in education management can be strengthened and improved by engaging local actors in cluster-based improvement projects. The main condition is that they receive adequate guidance and support from education authorities at the district and national levels, or from donor organizations. The technical and financial support provided by education administrators at the district or national level as well as by a number of NGOs are of utmost importance to successful cluster-based improvement programmes.

The diversity of the programmes presented in this booklet illustrates ultimately that resource centres and school clusters do have the potential to contribute to improvements in education. Their primary benefit consists in allowing educators to exchange with their peers to create a culture for improvement of education conditions, practices and management where local stakeholders have a vital role.

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