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INITIAL IMPLEMENTATION REPORT: SOCIAL FORESTRY, EDUCATION AND PARTICIPATION IN THAILAND

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INITIAL IMPLEMENTATION REPORT

SOCIAL FORESTRY, EDUCATION AND PARTICIPATION IN THAILAND

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INTRODUCTION

The goal of this project is to develop new links between schools and their respective communities by integrating the educational system into the movement for environmental reform. Through local case studies on social forestry issues, schools will assist communities in understanding the causes of local environmental degradation and participate in strategies to provide sustainable alternatives to local problems, such as community woodlots, agroforestry initiatives and community forestry projects. In so doing this initiative does more than just promote curriculum innovation. It seeks to contribute to the efforts underway throughout Thailand to build local community capacity for change. The critical contribution of schools to this effort will be to change the style of student participation in the teaching and learning process at the classroom level. Using local case studies as the focus, the problems of social forestry, participation, and education will be addressed by:

- o changing student involvement in instruction from passive rote learning of environmental facts to more active construction of knowledge by altering the common view of teaching and learning from simply acquiring information to also developing understanding of environmental knowledge and developing the ability to apply such knowledge;

- o assisting teachers to develop and use a more integrated curriculum, one that shows the relationships between scientific concepts and key moral, economic, social, and policy issues embedded in such local case studies.

- o assisting students to assume greater responsibility for creating meaning from school and community experiences as a way of learning how to address real problems in their communities.

- o strengthening the relationship between the school and community to enhance the community's capacity for change.

By helping students to become more active, competent citizens who know the appropriate questions to ask and actions to undertake when dealing with

forestry issues in their local environment, the project seeks to contribute to creating a new generation of more competent citizens. By including local community members in the training programs, the selection of case studies, and their implementation, the project seeks to promote new links between schools and communities to improve the welfare of local people.

PROJECT SCOPE AND DURATION

The project is a pilot designed to test the theory described above in a small set of typical Thai primary and secondary schools to develop lessons that will enable MOE to expand the project to a broader set of schools. As such, the project focuses attention on six primary schools and two secondary schools in two provinces in Northern Thailand, where the effects of deforestation are substantial and continue to grow. It is designed to run for two and a half years from its official start date of May, 1993.

BASELINE DATA REPORT: FINDINGS

Between June and November, 1993 four fieldworkers under the direction of two senior researchers at the Social Research Institute of Chiang Mai University gathered baseline data on communities, teachers (and school leadership), and administrative organizations participating in the project. This report (Wheeler, et al, 1994) found the following:

A. Communities

Project communities (N=10) rely on local forests for a variety of products, including food, fuelwood, building materials, crops, grazing and ceremonies. These activities are carried out, using a land tenure for classification, on one or more of nine forest types (forest reserve, community forest, watershed forest, development forest, public forest land, school forest, crematorium, village forest, and temple forest). There is, however, very little forest management. Some tree planting and watering occurs but it

is not widespread and does not occur in the forests that are most heavily used for products. The most common activity is grass removal, which tends to have a negative impact on the natural regeneration of trees. Villages have indigenous decisionmaking systems regarding access to local forest resources. Patterns of decisionmaking are unique to each community. However, the sectors of the community involved in decisionmaking regarding forest resources is limited. Forestry officials and village committees seem to dominate the process. Women and youth, for example, do not appear to be directly involved. Schools do not have decisionmaking responsibility for school forests in two of the three instances of school forests. Even in that case, it is the principal, not the students, who participates.

Regarding school-community relations, villagers in project communities see schools as an opportunity for their children to gain skills needed to move from the agricultural sector to other kinds of employment. Communities are proud to have a primary or secondary school in their community (or vicinity). Where strained relations exist (N=4), they are seen as temporary and not likely to damage long-term relations. In other words, such schools can continue to count on community financial and in-kind support for projects, typical of school-community relations throughout Thailand. A strong status barrier, however, exists between schools and communities. Villagers view teachers and administrators as having knowledge superior to their own and they show considerable respect to school officials. There is a reluctance to become involved in or attempt to assert influence over classroom or curricular matters. This status barrier not only limits parental involvement to more symbolic participation, but also serves to devalue indigenous knowledge held by villagers.

B. Teachers (and school leadership)

Classroom observations (N=45) of teachers participating in the project (N=21) were classified as falling into one of three levels. Didactic teaching, commonly referred to in Thailand as "chalk and talk" characterized levels 1 and 2. Level 1 is more fact-centered, with little engagement of students. Level 2 is somewhat more engaging for students and more conceptually focused. Level 3 teaching uses a wide array of teaching methods including methods that engage students more actively in learning and the content is concept-centered. In all three levels the teacher is largely in control of the content. Baseline data showed that 80 percent (N=37) of the lessons were at Levels 1 and 2. Only 20 percent (N=9) were at Level 3.

This project, however, calls for teachers to work at Levels 4 and beyond. In Levels 4 and beyond, teachers and students will need to jointly engage in selecting the content to be studied, and the focus of the study will need to be on real problems and their resolution. Thus much of the work will be investigative, involving studies of a specific issue in a local community that is tied directly into the content of the curriculum. It is envisioned that students and teachers in this project will work in their local communities to study real problems such as the reasons for increased flooding during the rainy season and increased drought in the dry season. They will study actions of people in the local community that affect this condition. Since forests influence flooding and drought, they will also study environmental factors, such as the amount of forest land and the quality of forests in the area. They will contact and seek information from technical experts who can help them understand the problem and a range of possible solutions. They will present their findings to the community and encourage a dialogue that can generate possible projects to combat the problem.

Classrooms are nested within the school as an organization. While teachers are autonomous in the sense of having the responsibility for instruction, their teaching can be affected by a number of factors outside the classroom. The role the principal plays in school and classroom life is one such factor. Depending on the size of the school, the principal can directly affect classroom life or use subordinates, such as assistant principals or department heads (in secondary schools). Since not all teachers were observed, it is not possible to generalize about overall teaching patterns in a specific school. However, the data suggest some possible connections between principal leadership and the instruction in classrooms observed for this project.

A. Primary Schools

In four of the six primary schools where two or more teachers participated in this project the following patterns emerged: (1) in schools with active principals there was much less variation in instruction than in schools where the principal does not exercise effective leadership; and (2) the quality of instruction in schools with effective leadership was uniformly higher.

B. Secondary Schools

In one secondary school the principal was transferred soon after the project began. Prior to her departure, she was a strong supporter of this intervention and set a tone for participants that it was to be taken seriously. The new principal has delegated direct responsibility for the project to an assistant principal. In the other secondary school, considerable tension existed between a new principal, assigned shortly after the school agreed to participate in this project, and the staff. With only two years to go before retirement, this principal was given this assignment as

a way finish out his career. His dictatorial style of leadership has created considerable animosity with school staff and tensions with villages involved in this project. While agreeing to continue this project, he demonstrated his skepticism of its value in different ways and it remained to be seen whether he would teachers to be involved in this project in anything more than a symbolic way.

C. Higher Administrative Agencies

The Thai administrative system is highly centralized with major decisions made in Bangkok and an administrative system that is designed to communicate policy to lower echelons. This has fostered a culture among administrators, including educators, to look to higher levels for instructions and to avoid experimentation. In the past decade, however, efforts have been made to encourage more active forms of classroom instruction and to involve the community in more meaningful ways in the life of the school. This project is part of such efforts.

In the Ministry of Education, the Office of the National Primary Education Commission is responsible for primary schools and the Department of General Education for secondary. Each has its own administrative chain of command reaching down to the school level.

For primary schools, the supervisory units in the provincial offices involved in this project are responsible for most of the academic programs. Activities include: supervision, training, distribution of materials and test development and administration. The same functions are carried out by the two district offices involved in the project. The two participating school clusters engage in supervision, materials development, training, and test construction and administration. Through the cluster resource center, teachers have access to materials. Cluster staff organize and carry out

various competitions for awards as well as programs for special days. They also respond to district requests for various kinds of data.

At the secondary level both the provincial and regional supervisory units interact with the secondary schools in the project. There is a school cluster at the provincial level for all secondary schools in the province. In addition to providing materials, it develops tests for all subject areas.

Creating a follow-up system of support for teachers using the resources of the cluster, district office, and other administrative levels represents one of the major innovations this project is attempting to introduce. Under this system supervision is to include a new form of classroom observation where the official observing the classroom learns what to look for as the lesson unfolds and how to debrief the teacher so they talk about changes that might lead to instructional practice more congruent with the goals of the project (levels 4 and beyond). A critical component of this new form of observation is a personal relationship of trust that both parties must learn for a genuine collaborative dialogue about teaching and learning to occur. Besides supervision, the follow-up is designed to promote teacher-teacher collaboration within the school (by having at least two teachers per school participate as well as the principal) and through the cluster office with regular meetings of all teachers participating in the project. Finally, through the cluster office, specific needs for additional information and knowledge can be addressed by bringing outside resource people to these weekly cluster meetings to discuss a particular content area or teaching strategy.

Changing the style of supervision and developing regular cross-school contact through cluster meetings necessitate changes in organizational routines. Creating trust represents a special challege. Until two years ago, both clusters had a process called "internal supervision" where the "academic"

cluster teacher (one of six regular teachers recognized as an effective teacher in a particular discipline) at his or her home school would be responsible, as part of their cluster duties, for observing other teachers during instruction and reporting their findings to the principal. Teachers reported they were unhappy with this process because they received no feedback and were concerned about what was said about their teaching to others, especially the principal. Some teachers also questioned the validity of observations by peers. While this system has been discontinued in favor of conversations with teachers about problems, its legacy continues. Some teachers expressed concern during baseline data interviews about the qualifications of cluster office staff to observe their teaching for various award competitions sponsored by the district and provincial levels, even though a form is used, and if supervision of classroom teaching is done, they prefer feedback.

PROJECT IMPLEMENTATION

A. Training

During the second semester of the Thai academic year (October, 1993-February, 1994), initial implementation occurred. Prior to the opening of school in mid-October a two week training session was held for teachers and administrators. This session was organized by MOE officials with participation by cluster, district, provincial and regional MOE officials who had been previously trained and formed a team to implement the project. The training used a "teacher as learner" model which involved participants directly in the learning process through site visits to carry out mini-case studies, groupwork to analyze data and present findings, and discussions of key sections of a Handbook/Guide developed specifically for this project. In

addition, lectures and discussions on foresty concepts were held. Finally, schools worked in teams to prepare lesson plans for the semester.

B. Goals for Initial Implementation

During this training session the goals and objectives for this initial implementation were discussed and agreed upon. Instead of focusing on a forest or tree-related problem, examining the biophysical, economic, social and policy causes of the problem, and reporting findings back to the community, it was decided to focus on doing a history of the village (or for science at the secondary level to have students carry out experiments in the village or collect specimens for classroom instruction). There were four reasons for this focus. Each reason led to a specific objective.

Only on rare occasions had any participating teachers ventured out to their communities for academic purposes. Taking students out on a regular basis was a new experience for nearly all of them. Besides logistical issues, they had to consider safety. Teachers had to learn how to develop lesson plans as previously they relied almost exclusively on plans developed at the district level. Students had no knowledge of how to formulate questions about the community, how to interview and record information, or how to make sense of results. Community members had to be informed of the project and asked to participate. Cluster, district, provincial, and regional staff were expected to perform new roles. The initial implementation period, therefore, provided an opportunity for all parties to experiment with developing the skills needed to carry out the larger goals of the project: studying a forestry/tree related problem and reporting findings back to the community to stimulate a dialogue on possible strategies to address the problem. **Skill building became an important objective of the First Term Pilot.**

While extensive discussion had occurred among MOE and MSU participants in the project on the curriculum at primary and secondary schools, exactly how the field work would be related to material to be covered had to be worked out by teachers as they implemented the project. Since this was their first effort at such integration, limiting the scope of the project made it possible to address this curricular objective.

Teachers also felt it was important to learn more about their communities before focusing on a specific problem. So understanding the community emerged as an objective.

Finally, time constraints played a role in limiting the focus of the initial implementation. Project designers have always seen doing a case study and reporting back to the community as a year-long activity (Project Proposal). Moreover, implementing an innovation during the second semester of a school year in any country is problematic, since classroom routines have already been established. Finally, during the second semester all schools in northern Thailand had a number of holidays and sport activities which further limited the time available to implement this project. Given the time available, teachers and MOE officials felt it would be possible to carry out a community history.

While this more limited set of objectives was to guide the initial implementation of the project, it was made clear to participants that the focus on doing a village history was only the first step.

C. Implementation

From mid-October,1993 until early March, 1994 project participants carried out the initial implemention. During that time SRI fieldworkers observed classroom lessons, debriefed teachers, followed classrooms out to the villages, and carried out exit interviews with all participants, including a

sample of students. What follows are the findings from the initial try-out. As with the Baseline Data Report (April 1, 1994), names of schools, principals, teachers, students, supervisors, districts, and provinces have been changed to preserve anonymity.

Part One

COMMUNITIES AND SCHOOL COMMUNITY RELATIONS

A major purpose of this project is to link the formal information system with informal learning in communities by joining schools with their communities through local case studies of forestry problems. Ideally, information will flow in both directions through these links. Students will learn about their communities through the case study process and communities will learn more about trees and forests from students and teachers. Together students, teachers, and communities will be able to construct alternative futures for the natural resources they share. Specifically, new school relationships with communities should impact:

a. The number and diversity of tree/forest related activities

b. The number of people aware of and involved in tree/forest related activities

c. The sustainability of tree/forest activities

As described in the Introduction the initial try-out was not designed to affect community management of forest resources. That is a long-term goal. However, there are first steps that must be taken in order to achieve this goal. Communities must understand the project and a communication channel must be opened between the school and community. The purpose of the initial implementation evaluation is to see whether these first steps have occurred.

Specifically, the objectives of the community evaluation are to examine:

1. Community knowledge of the project;
2. Community view of project effects;
3. Community perceptions of barriers to the project; and
4. Teacher views of community effects.

Summary of Findings

In summary form, the findings from the initial implementation showed that with reference to:

- **Knowledge of the project**: Community members understood that this is an environmental project designed to bring the school and community together. Project knowledge could be divided into two specific categories: content and the process of teaching and learning. With respect to content or project focus, people from 9 of the 11 project communities* believed that the project was about village history or forest protection. Regarding the teaching/learning process, people from the same number of communities believed the school was using the community for student studies or for applying a new method of teaching/learning.

- **Project effects**: Community members felt the project helped students get to know their community better and had improved school-community relations. People from 9 of the 11 project communities* believed that they had knowledge to contribute to the school and felt proud to participate in this way.

- **Barriers**: Comments about barriers were not widespread. They included suggestions that students should interview people with power, learning should occur in school, change will not occur unless government authorities become involved, and comments about a problematic principal.

- **Teachers/administrators**: This group felt they were learning about communities and community problems. They felt that students were also learning about their communities and that knowledge can come from communities.

Design and Methods

Originally the project included 10 villages, one each for the six primary schools and two each for the two secondary schools. Typically primary schools serve one to two communities, where secondary schools serve a much larger number. Baseline data were collected on all 10 villages. In Mae Suey secondary school, however, the principal created numerous barriers that discouraged teachers from taking their students to the community. In this school, two of four teachers confined their projects to learning about the school's history by interviewing students and teachers on the school grounds or assigning students tasks on weekends. One teacher took students out to a neighboring village only once, while basically confining her efforts to the

school grounds. Finally one teacher took his students to three villages on different occasions, one that was in the project and two that were not.

Interviews were conducted in eleven villages (nine baseline; two nonbaseline) in March and April, 1994 after the end of the school year. Because contact between Pirunwittaya and communities was curtailed, in this analysis the associated communities (Villages 5, 12, and 11) will be referred to collectively as "communities associated with the inactive secondary school."

Fieldworkers interviewed people who had been interviewed by students during their case studies with the exception of village 6 where four people who had not had contact with the students were interviewed. Table 1 describes the 47 villagers who were interviewed. The sample is not a representative cross section of people within villages. Some diversity is evident across villages.

In addition, exit interviews were conducted with project teachers, principals and supervisors at the end of the school year. As part of these interviews, they were asked about school-community relations.

Community Knowledge of Project

Villagers were asked what they knew about the project. Responses to this question can be found in Table 2. Fourteen items were listed by villagers. Responses can be generally divided into two groups: knowledge of project content (e.g. village history, forest protection) and knowledge of teaching/learning and/or the curriculum.

The most common response regarding project focus was that the project was about village history. However, while all of the villages associated with secondary schools gave this as a project description only 3/6 primary schools did. At the secondary level, communities associated with the

Table 1. Description of sample.

Communities	Number	Who
Village 1	3	Elder (2) Village Committee (1)
Village 2	2	Elder (1) Temple Committee (1)
Village 3	3	Bank president (1) Elder (1) Forest Committee (1)
Village 4	5	Headman/ Assistant (2) Village Committee (1) Farmers (2)
Village 5	5	Elders (2) Young woman (1) Middle aged couple (2)
Village 6	10	Headman/Assistant (2) Women's Village Association Elder (3) **Housewives/Farmers (3) **Farmers (1)
Village 7	5	Former Village Headman (1) Farmers (4)
Village 8	5	Assistant headman (1) Shopkeeper (1) Teacher (1) Farmers (2)
Village 10	4	Elder (2) Shopkeepers (2)
Village 11	2	Middle aged man (1) Middle aged woman (1)
Village 12	3	Elder (1) Men (2)
TOTAL	47	

** Not interviewed by students

Table 2: Community knowledge of project with villages ordered by level and province (V=village).

	PRIMARY						SECONDARY					TOTAL
	V2	V1	V3	V6	V7	V1		V8	V5	V1	V1	
PROJECT FOCUS												
Village history/description		X	X			X	X	X	X*	X*	X*	8
Forest protection	X	X	X				X	X	X			6
Environment		X				X	X		X			4
Village problems	X							X				2
TEACHING/LEARNING												
Use community in student studies	X	X	X	X	X	X		X				7
New method of teaching/learning	X	X			X	X	X			X		6
Writing reports				X			X	X				3
Hands on/ applied			X			X	X	X				4
Data used for T/L				X	X	X		X				4
Improve school curriculum		X				X						2
Experimental		X			X							2
Community helps educate students			X				X					2
OTHER												
Budget	X				X							2
Project with village					X							1

* Occupations only ** Occupations/population only

inactive school reported a narrow focus on occupations rather than a more complete history. The second most common response was forest protection (6/11). When communities associated with the inactive secondary school are taken out of the totals, 6/8 remaining communities knew that the project was about forest/environment. Only 4/11 communities overall were unaware that the project was about forest/environment.

Second overall and first in the teaching/learning/curriculum category is that the project is about using the community in student studies. All six villages associated with primary schools gave this as a project description. Only one village associated with the secondary schools stated this. Specifically, 6/11 villages described the project as a new method of teaching and learning (4/6 primary schools).

Remaining categories were widely distributed across villages with anywhere from one to four villages out of eleven using them to describe the project. The three communities associated with the inactive secondary school and the village 6 knew the least about the project. Villages 10, 1, 4, and 8 had the most diverse knowledge about the project (7/14 items) followed by village 7 with 6/14 items.

A long term goal of the project is to bring schools and communities together to examine alternative environmental futures. The fact that no villagers mentioned this goal in their description of the project is to be expected given the early stage of the project. However, slightly over half described the project as environmental in nature. In addition, 7/11 including all primary schools indicated that the project was about using the community in student studies indicating that they understood that this project brought schools and communities together. Clearly, community members who had contact with the students from project schools had knowledge of several

fundamental aspects of the project.

Community Perceptions of Project Effects

Villagers were also asked about project effects on the community. They generated seventeen different responses which are summarized in Table 3. Overall, 8/11 of villages stated that the project helped the students know their own community better. However, this number rises to 6/8 when the communities associated with the inactive secondary school are taken out of the analysis. People in 7/11 communities (7/8 when the inactive secondary school communities are removed) including those associated with all 6 primary schools indicated that the project had improved school/community relations. For one primary school this is especially important. Baseline data indicated considerable tension between this school and one of its communities over school opposition to vote buying by politicians in the 1993 national elections. As a result of this project, the principal reported he was now able to visit the community and discuss issues other than vote buying. However, for the inactive secondary school, relations have only further deteriorated according to two community members interviewed for this project. In general, however, the data suggest that a critical first step in opening up an information flow between the villages and schools has been taken. Community residents said they know teachers and students better and felt teachers and students know community better because the school is now coming to the community.

With respect to indigenous knowledge, 7/11 (7/8 communities associated with active schools) felt that the community had knowledge to contribute to the school and 8/11 (7/8 active schools) villages said they were proud to be able to give information to the students. A project goal is to increase the flow of indigenous knowledge from village to school and these responses indicate

Table 3. Community perceptions of project effects ordered by level and province (V=village).

	PRIMARY						SECONDARY					TOTAL
	V2	V10	V3	V6	V7	V1	V4	V8	V5	V12	V11	
Students know own community better	X	X	X	X		X	X	X		X		8
Proud to give info	X	X	X	X	X	X	X			X		8
Community has knowledge to contribute	X	X	X		X	X	X	X				7
Better Sc/C relations	X	X	X	X	X	X	X					7
Villagers know T/S	X	X		X	X	X				X		6
Bring school to community	X	X	X		X		X			X		6
Students practice etiquette and respect	X	X	X	X	X	X						6
T/S know villagers	X			X	X	X				X		5
Students have increased concern for conservation		X	X	X	X							4
Villagers see importance of education/know more about T/L process				X	X	X						3
Teachers more familiar with village/issues				X		X	X					3
Students improved ability to ask questions				X	X	X						3
Villagers motivated to learn about village problems/future						X	X					2
Villagers have increased concern for conservation				X			X					2
Villagers more aware of forest issues							X					1
Elders know youth					X							1
Students learning from personal experience											X	1

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that villagers know this and are pleased by it.

In addition, 8/11 of the communities considered students knowing their community better (6/8 active) as a project impact. All six villages associated with primary schools indicated that students practicing etiquette and respect was a project effect.

The involvement of communities as a source of knowledge for students and as a partner in development of sustainable forestry alternatives draws the school and community together into a partnership. A channel is opened that allows technical information to flow from the school to the community and for indigenous knowledge held by villagers to flow to the school. The first step is to open the channel. For villager interviewed by students, the process seems to have begun.

Diversity among community members interviewed by students was limited. Because fieldworkers focused their evaluation interviews almost exclusively on people interviewed by students, caution in generalizing evaluation results to entire communities is warranted. If the project is to eventually impact village forest and tree management practices, a much broader range of community members will have to participate in the project. In addition, the contrast in villager knowledge of project focus and effects between primary and secondary schools indicated that attention must be paid to problems with secondary school participation, if the project is to succeed at that level.

Teacher/administrator views of school-community relations

In their exit interviews, teachers and administrators generated a list of nine items that reflected their views of project impacts on school-community relations. These are summarized in Table 4. While teachers and administrators in only 4/8 schools mentioned improved school-community relations specifically, other response categories were very similar to

Table 4. Teacher and administrator views of school-community (S/C) relations (n=8). **

	1	2	3	4	5	6	7	8	TOTAL
Teachers learn about community/problems	X		X	X	X	X	X	X	7
Students learn about community		X	X	X	X	X	X	X	7
Knowledge can come from community	X		X	X	X	X	X	X	7
Better S/C relations now				X	X	X	X		4
Students feel closer to community/pride				X			X	X	3
Better S/C relations in future							X	X	2
Community residents know students				X	X				2
Community understands school better					X		X		2
School sees importance of community					X				1

** Stated by at least one teacher/administrator in a school during exit interviews.

Schools:
1 Panasueksa
2 Paiwanwittaya
3 Taradamrong
4 Ruemjaiwittaya
5 Choomchonepatana
6 Samakkeedam rong
7 Phasaiwittaya
8 Pirunwittaya

community responses. The three top items mentioned by 7/8 schools were teachers learning about the village and village problems, students learning about their community and that knowledge can come from the community. The last is very important as it indicates an increased respect by the school for indigenous knowledge in the community. As discussed earlier, villagers in 7/11 communities (7/8 active schools) indicated that the community had knowledge to give to the school and 8/11 (6/8 active schools) said that they were proud to give information to the students. This is additional evidence that information is flowing from the community to the school. A challenge for the project is to develop two-way communication but at least there is now an open channel where none existed before.

Perceived Barriers to the Project

In several villages, people mentioned views of the project that could be considered as unforeseen barriers that teachers and students may need to overcome to achieve project goals. These comments are listed in Table 5. While not widespread, they are factors of which schools should be aware of and which may help teachers in understanding resistances they may encounter.

Community Suggestions for the Project

Villagers also had suggestions about improving the logistics of the project. These are listed in Table 6 and fall into the categories of planning, timing of village visits, structure of village visits and other. These suggestions from the villagers view should help the case studies run more smoothly.

Table 5. Perceived Barriers to Project

Belief that students should interview people with power and/or experience instead of them(n=2)

Perceptions that learning should occur in the school(n=2)

Negative community perceptions of principal(n=1)

Belief that change will not occur unless government authorities involved(n=1)

Table 6. Villagers' suggestions for the project

Planning

Schools/teachers need to come out and make interview contacts in advance(n=6)

School should explain project better in advance(n=2)

Appointment for interviews are needed(n=2)

Timing of village visits

Students should come out during school hours/teacher supervision(n=3)

Few people available to be interviewed during day/people are busy(n=2)

Parents may worry about children out after dark(n=1)

Structure of interviews

Wider range of people should be interviewed(n=4)

Make interviewing groups smaller(n=2)

Increase time in village for interviews(n=2)

Other

Project takes student time away from chores and other studies(n=3)

Bring results back to village(n=1)

More grades should be involved(n=1)

Pay attention to safety/potential accidents(n=1)

Part Two

TEACHING AND LEARNING

Overview

Part Two examines observational data on what teachers did as they implemented the project during the First Term Pilot and interview data on what was learned as a result. It also compares teacher implementation with what was learned about teacher practice during the baseline data collection period. Initial results are promising, but a number of issues need to be addressed if progress is to continue.

I. Background

During the second semester, teachers in project schools engaged in initial implementation of the program. Twenty-three teachers* from six primary schools and two lower secondary schools in two provinces in northern Thailand guided their students in gathering data from adult community members on questions related to the environment in their local communities. Many chose to gather data on the history of changes in their villages as a beginning activity. A few science teachers chose to investigate topics more closely aligned with the curriculum such as soils and ecological relationships. Teachers engaged in cooperative planning for this activity during the Team B training and during meetings held in their local districts. By late November 1993, most teachers had begun activities with their students in gathering data on the history of their communities or another topic that was part of the

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* Twenty-four teachers actually agreed to participate in the initial implementation of the project. One teacher, however, dropped out shortly after the semester began because he philosophically disagreed with the approach of the project. Four teachers were new to the project because of personnel changes. Baseline data does not exist for these teachers.

curriculum. By March 1994, the end of the academic year, all but one of the teachers had engaged in some activities to collect data from community members on one or more topics.

SRI fieldworkers observed teachers as they initiated studies in their local communities (e.g. classroom observations, debriefings, observing classes when they went to the community, and exit interviews at the end of the semester). In addition, the fieldworkers observed meetings of teachers at the school cluster office, and conducted exit interviews with principals, MOE supervisors, community members interviewed by the students, and a sample of students from almost every classroom participating in the project. As a result, a large amount of ethnographic data was assembled during the period from November 1993-March 1994.

These data were analyzed in three stages. First, fieldworkers in collaboration with senior SRI staff engaged in ongoing analysis of the data from the time of its collection until the arrival of the MOE/MSU team in mid-July 1994. Second, reports of observations, debriefings, and interviews were written in Thai by the fieldworkers. Third, summaries of these detailed reports were prepared in English by bilingual members of the SRI staff. These were sent to MOE/MSU between March and June 1994 for review and preliminary analysis.

During mid-July, the MOE/MSU team worked intensively for ten days with the SRI team to form a more detailed record of the results of the fieldworkers' reports in English than had been included in the translated summaries. This provided the MOE/MSU team with a more complete understanding of the initial implementation in project schools.

II. Teacher and Student Perceptions of Lessons Learned

Exit interviews showed that teachers saw a difference between the ways they had taught before and what was called for to implement this project. Regardless of how well they implemented this first phase of the project, teachers saw:

- **The importance of developing good lesson plans** and how difficult this can be. Previously, teachers were almost entirely dependent on MOE-prepared lesson plans, usually developed by the district office. Considerable time and effort went into developing lessons plans during training prior to the beginning of the term, group meetings at the school cluster office prior to and during the term, and collaboratively with colleagues at specific schools. This represented an important skill-building component of the first term pilot.

- **Ways to involve students more in the learning process** by delegating authority. Instead of teachers being the only ones to present content, teachers saw that students could develop questions, make appointments with villagers, collect and analyze data, and report findings.

- **Student learning improve** in the following areas: knowledge of their local community, writing, speaking, self-confidence (e.g., daring to express themselves), self-reliance (e.g., going out to interview villagers), and the ability to work more effectively in groups. Teachers also commented on how polite students were in the field.

- **Observation as an important additional assessment strategy** to evaluate student performance. This included: observation of behavior in the field, participation in groups, and expression during oral reports. Besides observation, teachers also evaluated student written work. As a result of using different assessment strategies, teachers saw a wider range of student competencies than they had using more traditional evaluation strategies.

- **Information provided by community members as useful.** Many commented they learned things about the community they had not known before. They felt the community was helpful in providing time and information for the students. They also commented that school-community relations had improved as a result of the project.

They also saw problems, including:

- **The amount of time** required to carry out the project. Developing lesson plans, visiting the community, and making sense of the data took more time than they had anticipated. As a result, teachers had to devote time in the evenings, afternoons and weekends to the project.

- **The difficulty of relating field activity to content in the curriculum.** While teachers felt students learned more about local village history, they expressed concern about whether they had drawn out the central

concepts in social studies that needed to be taught from such case studies.

o **Anxiety** over whether they were implementing the project correctly. Teachers looked to MOE officials for indications on whether what they were trying was "right" or not. While they understood from the training sessions that there was more than one "right" way to do it, they nevertheless continued to look for specific guidance on what they were doing. Given the hierarchical nature of the Thai educational system, this response was predictable, but nevertheless an important reality.

o **Minimal** participation by a small number of students. While the quality of groupwork improved during the project, some students developed ways of not participating in discussions or avoiding asking questions during field work.

o **Logistical arrangements, including safety concerns**. Teachers expressed frustration that some villagers cancelled appointments because of other commitments or because of the burden of seeing too many classes (secondary level). They were also concerned about how to ensure the safety of students during the field visits or on weekends, when students in some classes collected data.

Exit interviews with a sample of students in each class showed they:

o **Liked this new method of teaching** where they could go out and interview people in the community instead of only studying in the classroom where the teacher taught everything. Before they received work cards which gave them specific assignments (e.g., told them what information to get from books or other materials in the library). They then wrote reports and handed them in to the teacher. This new method allowed them to work in groups to define questions, analyze information, and then develop written and oral reports.

o **Felt they improved** their writing skills since they had to take notes in the field, revise them in class, and develop reports; their ability to speak (by interviewing villagers, participating in group discussions, and making oral reports); and confidence to express themselves (in interview situations, group discussions and reporting out findings).

o **Felt they learned more** because they were the ones to go out and collect information from villagers and because, for the most part, the information was about their own village.

Students also discussed problems:

o Some villagers were not at home, even though they had made appointments.

o Villagers sometimes could not answer questions or gave different information than what other villagers gave.

o Some students did not work in the groups or ask questions they were supposed to ask in the field.

o Students had to work harder, since they had to prepare questions, interview villagers, and make reports (oral and written). Also they had other subjects to study which meant make-up work.

o The sun was often hot; it was often dusty, and some students were bothered by dogs.

These findings are encouraging. However, a closer examination of the data shows that even though all teachers engaged in community-based studies with their students, and teachers and students alike generally expressed strong satisfaction with their experiences, there were important variations in what teachers did and in student experiences during initial implementation of the project.

III. Observational Data on Initial Implementation

Detailed analysis of observational data collected by field workers from SRI from November 1993 through March 1994 generated findings on the different ways that teachers carried out their work with students during initial implementation.

Table 7 presents data on teachers ranked in the order of judgements by fieldworkers and project staff about teacher commitment and creativity in carrying out four important steps in implementing a field study. These steps included:

1. Preparing students for field study
2. Preparing to enter the community
3. Supervision of students as they conducted field studies in the community, and
4. Students and teachers making sense of data that were collected.

Table 7 also provides the ratings given to each teacher during the baseline study conducted from June to September 1993. This is category 6 at

Table 7 Teachers' Initial Implementation of Field Study Activities

Teachers	Bosaba	Suwan	Kunton	Bampen	Bomroong	Pachern	Rawee	Tachpong	Pornchai	Ackapon	Adhan	Somsak	Ratana	Mechai	Arada	Kanok	Rojana	Rojarate	Banhan	Sakarin	Sattra	Amnuey	Rakyoot
1. Preparing Ss for Field Study																							
a. Clarify Purposes of Field Study	+	+	NI	+	+	NI	+	+	NI	+	+	NI		NI	+	NI	+	NI	+		+	+	NI
b. Types of Qs(Methodology)	+	+	+			NI	+	+	NI	+	+	NI	+	+		NI	+	NI				+	NI
c. Developing Specific Questions																NI	NI	NI					NI
Ss alone -			+			+								+					+	+	O		
Ss with help from T	+	+	+	+	+		+	+	+			+	•	+									
T gives categories for Ss to organize Qs			+											•					•				
T gives categories, Ss devel Qs	•	•		•		•	•	+		+	+												
T gives Ss Qs											+				+							+	
d. Reflection and feedback on Qs	+	+	+	+	+	+	NI	+	+	+		NI											
e. Rehearsal of Questioning			+		+		NI			+		NI	•				+						
2. Preparing to Enter the Community																							
a. Organizing People, Places and Groups for Study - T decides -			+			+	•		•	+	+		+		+	+	•		+		+	+	+
Ss decide -	+					•			+			+	•	•			+	+	•	+	•		
T & Ss decide -	•	+		+	+			+															
b. Making Advance Arrangements																							
T arranges -			+		+	+		+	•	+	+	+	+		+	+						+	
Ss arrange -	+	+		+		•		+	+	+	+	•			+					+	+	+	
None made -							+						•	+			+						
3. Supervising Ss in the Community																							
a. T Supervises by Observing							+	NI				+		+	+						O	+	
b. T Supervises by helping occasionally	+		+		+	+			+	+	+		+										
c. T asks Qs for Ss																			+				
d. Ss not Supervisied							•						•			+	+	+		+			+
e. Community study as Homework							NI			+	+		+		+		+					+	
4. Sense-making after Data Collection																							
a. Individual, As Homework					+				+	+	+	+			+			NI	•	+		+	
b. Class Activity	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+		+		+		
c. Feedback on Process	+	+	+	+	+	+	+	+	+	+	NI		+	+	NI						O		
d. Feedback on Content	+	+	+	+	+	+	+	+	+		NI		+		NI								
5. Judgements (Total)	10	10	9	8	8	8	8	7	7	7	5	5	5	4	4	4	4	4	3	3	3	3	2
On Commitment	5	5	5	5	4	4	4	4	4	4	3	3	3	2	2	2	2	2	2	2	2	1	1
On Creativity	5	5	4	3	4	4	4	3	3	3	2	2	2	2	2	2	2	2	1	1	1	2	1
[1 = Low, 5 = High]																							
6. Baseline Level	3	3	2	2	2	3	NI	NI	3	1	1	2	2	1	1	2	1	2	1	2	1	1	NI

+ = Observed
• = Observed in a later lesson
3 = Teacher wrote notes
O = Very little time spent
NI = No information
S = Secondary Teacher
✓ = Teacher wrote notes

the bottom of the table. The basis for this rating can be found in the Baseline Data Report (April, 1994).

Categories 1-4 show whether a teacher did or did not carry out each of the particular actions included in the component categories listed under each of the main categories. Information contained in these first four categories came from reading data summaries and discussions among SRI fieldworkers and project staff (senior SRI staff, MOE officials, and MSU faculty) over several days.

The summative judgements about teacher commitment and creativity require some clarification. While the structure of the project required teachers to implement some activity under each of the main categories, variance existed in both the number of activities carried out and the way in which they were implemented. This last point seemed especially important to the evaluation team. There seemed to be a significant difference among teachers in terms of carrying out the form of the project compared with the spirit in which implementation took place. Thus after determining whether each teacher carried out steps 1-4, SRI fieldworkers and participants from MSU and MOE independently assigned ratings for each teacher according to: (a) the commitment they demonstrated in implementing the project in a manner consistent with the training they received in early October 1993 and (b) the creativity that teachers employed in planning and carrying out activities that related to the project. A scale of 1 (low) to 5 (high) for (a) commitment and (b) creativity was used. These independent ratings were then discussed for each teacher and a collective judgement of the appropriate combined total rating was made. These ratings appear as Category 5 in Table 7. These two ratings were then totaled for each teacher and teachers were rank ordered as shown in Table 7 from 10 (the highest sum) to 2 (the lowest). Table 7, thus, presents data on teachers

ranked in the order of judgements in this last category -- fieldworkers and project staff members' judgements about teachers' commitment and creativity in initial implementation of the project.

Table 8 uses the collective judgements on commitment and creativity in Table 7 to group teachers into three general categories: "High" (seven or above on commitment and creativity); "Medium" (five and six); or "Low" (four or below). The "High" category has 10 teachers, the "Medium" 3 teachers, and the "Low" 10 teachers. Where information was not available, this is indicated in parenthesis. To understand the comparisons, readers must attend to the subcomponents within each of the five broad categories included in Table 8. These are described below along with the findings. Most comparisons will be made between the "High" and "Low" categories.

1. Preparing students for field study included the following component teacher actions:

a. Clarifying the purpose of the field study with the students. Little difference is seen across the three categories. Nearly all teachers gave attention to helping their students understand the purposes of field study.

b. Helping students understand the different types of questions that can be asked and how different kinds of questions tend to elicit different kinds of information. Differences are noted between the "High" and "Low" groups of teachers. Of those teachers on whom there is information, six highly ranked teachers helped their students understand processes of asking questions of villagers as a means of acquiring information for a particular purpose, while only three of ten of the lower ranked teachers provided this preparation for their students.

c. Actions taken with their students to develop specific questions to be asked of villagers. Fieldworker data showed teachers engaged in five different patterns of activity. Teachers with higher rankings tended to help their students formulate specific questions and provided students with categories to guide their development of questions to ask villagers. Teachers who received lower rankings tended to have students work without help from the teacher, or they simply gave the students the questions to be asked, thus eliminating their involvement in question development.

d. Teachers reflecting with students and giving them feedback on questions that they proposed to ask of villagers. Here again, marked differences were noted between two groups of teachers. Nine of ten highly ranked teachers engaged students in reflection about the questions and gave

Table 8 Teacher Rankings on First Term Implementation by Degrees of Commitment and Creativity

Field Study Steps	Teacher with High Ratings N=10 (NI)*	Teacher with Medium Ratings N=3 (NI)	Teachers with Low Ratings N=10 (NI)
Preparing Students for Field Study			
a. Clarifying Purpose	7 (3)	1 (1)	5 (4)
b. Methodology	6 (2)	2 (1)	3 (3)
c. Developing Specific Questions			
Students work without teacher's help	2	0	4
Teacher helps students develop questions	8	2	1
Teacher provides categories, students develop questions	7	1	0
Teacher provides categories for students to organize questions	1	0	2
Teacher gives students questions	0	1	2
d. Reflection and feedback on questions	9 (1)	0 (1)	0
e. Rehearsal of questions before going to village	3 (1)	1 (1)	1
Preparing to Enter the Community			
a. Organizing people, places, and groups for study -- Teacher decides	5	2	7
Students decide	3	2	6
Decide jointly	5	0	0
b. Making advance arrangements			
Teacher arranges	6	3	3
Students arrange	7	2	4
None made	1	1	2
Supervising Students in the Community			
a. Teacher only observes	1	1	4
b. Teachers observes and helps occasionally	8	2	0
c. Teacher asks questions for students	0	0	1
d. Students not supervised	1	1	5
e. Community study as homework	1 (1)	2	3
Sense-making after Data Collection			
a. Individual as homework	3	2	4 (1)
b. Class activity	10	3	5
c. Feedback on process	10	1 (1)	2 (2)
d. Clarifying Purpose	9	1 (1)	0 (2)

*NI= No information

students feedback on the questions that had been formulated; whereas, none of the teachers in the low ranked group provided this kind of guidance to their students.

e. A fifth component of preparation for field study involved rehearsing questions in class before going to the village to ask questions of adult community members. Three of the highly ranked teachers provided opportunities for students to rehearse questions prior to interviewing villagers while only one of ten low ranked teachers offered this assistance.

2. **Preparing to enter the community** included two component actions. The first dealt with organizing student groups and determining which community members would be interviewed during visits to the community. Five high ranking teachers tended to work with their students in deciding these organizational issues, whereas none of the low ranked teachers worked with the students to make these decisions. Instead these teachers either made the decisions for the students or left the decisions entirely up to the students.

Regarding the second component of preparing for entering the community, making arrangements with community members for interviews, some teachers in both groups (high and low ratings) made arrangements for students, while others let the students make arrangements. Thus, no clear differences emerged in this component.

3. **Supervision of students in the community** showed some important differences between the two groups of teachers. Eight of the ten highly rated teachers supervised their students, and gave them assistance as they worked with adults in the community (e.g., they might prompt students if the flow of the conversation slowed down). No information was available on one teacher regarding supervision. All nine teachers spent time with their students as they interviewed adults. Two of these teachers wrote notes for feedback given to students later. Teachers who received low ratings either provided no supervision (5 teachers), or only observed the students while they interviewed

community members but gave no assistance to the students (4 teachers). One teacher asked questions for students because the students were too shy to enter into dialogue with community members. In addition, three low rated teachers assigned community study as homework which eliminated the possibility of supervision, whereas, only one of the teachers receiving a high rating did this but he also provided assistance when students were meeting with community members in a group setting and the conversation got stuck on a particular question.

4. Students and teachers making sense of data after collection also was different for high and low rated teachers. All highly rated teachers (N=10) incorporated sense-making and data interpretation into class activities. This included group discussion of the data, writing reports based on data in small groups, oral presentation and critique of reports in class, and display of written reports in classrooms. In addition, all ten teachers who received high ratings gave students feedback on the processes used to ask questions, record data, and other data collection strategies, and nine of these teachers gave students feedback on the content of the data they had collected to help them better understand their work.

Teachers receiving low ratings demonstrated different tactics after data collection. Four assigned the summary and review of the data as homework or left students to make sense of the data on their own. Only four of seven, including one that also used the individual technique, had students work together on sense-making and interpretation in a class activity. Only five of these teachers gave students feedback on process, and none gave feedback on content. Thus, the students in these teachers' classes had a very limited experience in making sense of data from the field study.

In summary, teachers receiving high ratings on commitment to the project and creativity in implementing it provided much more guidance and support to their students than those who received low ratings in:
(a) preparing for the field study, (b) preparing to enter the community, (c) supervising while in the community collecting data, and (d) following student efforts to interpret and make sense of the data they had collected. Specifically, the higher rated group worked more closely with students in preparing questions and in reflecting on their quality and appropriateness before going to the villages to interview adults. The teachers who received lower ratings left much more of this responsibility to the students. While students were in the community, highly rated teachers supervised and guided students more than lower rated teachers. Also, after returning from the villages, teachers who received high ratings gave more attention to data analysis and interpretation than their peers who received low ratings. Students in the higher rated group of teachers received more feedback on the processes of data collection and on the content of their data than students of teachers with lower ratings. The examples of Mr. Suwan and Mr. Sattra below illustrate the different approaches to implementing this project.

> Mr. Suwan and Mr. Sattra both teach the grade 5 Life Experience program at Choomchonepatana Primary School in northern Thailand. Both are part of the MOE/MSU pilot program in environmental education, both have been part of the program since its inception. Both decided to focus on developing a local history of the community.
>
> During implementation, the differences between the two teachers were pronounced. Mr. Suwan supported his students at every stage of their work in field study. He worked to be sure that his students understood the purposes of field study and the methods to be used. He guided his students and gave them feedback as they worked through two rounds of activities to formulate questions for community members. He worked with students to decide whom should be interviewed using these questions. To help his students record and retain the data form the village study, he purchased notebooks for them. In addition, he went to the local village with the students, and occasionally offered help to

them as they interviewed adults. During his observations of students interviewing adults, Mr. Suwan took notes so that he could give them feedback to aid them in improving their approaches. Back in the school, he worked with students as they attempted to understand the information they obtained and improve their data collection techniques.

Mr. Sattra, on the other hand, introduced his students to the purposes of the field study with a short lecture. Then he gave them less than ten minutes to formulate questions to ask of villagers before going out to interview them. During this time he offered them very little guidance in framing the questions.

On their first visit to the community, Mr. Sattra decided who was to be interviewed and he assigned students to groups. In later visits, students made these decisions and arranged for interviews without his help. While students were interviewing adults in the village, Mr. Sattra rode his motorcycle to each of the houses where students were working to check on them, but he stayed only a few minutes at each location before driving to the next one. Back at school, he did organize a class activity for interpreting the information from the interviews. These discussions, however, produced little useful information.

Based on this experience, Mr. Sattra then changed the direction of students' work related to the project. He directed the students to read a history of the village and study a map of the village that had been prepared a few years ago by some people from Ministry of Interior.

IV. Implications of Findings

A. Observational Data

Observational results from the first term pilot show an even split between ten teachers who carried out most of the key components with creativity and commitment and ten teachers who carried out fewer components with less enthusiasm. Three teachers were in the middle category. Exit interview results were uniformly positive. What does this mean in terms of teacher engagement?

After only one term, important progress has been made in engaging teachers in the project, when several factors are considered. One is the scope of changes required by teachers in this project. For example, a number of low ranking teachers explained their "hands off" approach to helping students develop questions and to supervision in the field by explaining that since one goal of the project was to promote student independence, they thought they were

supposed to avoid giving any assistance at all. Further staff development using teachers more successful in implementing the project may help improve their performance.

A second factor inhibiting the efforts of a number of teachers came from the environment in which they worked. For example, at the secondary level, one principal created numerous barriers that discouraged teachers from taking their students to the community. In this school, two of four teachers confined their projects to learning about the school's history by interviewing students and teachers on the school grounds or assigning students tasks on weekends. One teacher took students out to a neighboring village only once. Another teacher took students out to several villages. At the other secondary school, personnel changes led to the replacement early in the term of a principal highly supportive of the project with one that provided less support. Five of the ten teachers ranked in the "Low" category came from these two schools. At the primary level, tensions between two teachers and their respective principals affected their overall performance, including work in this project. On the other hand, two teachers in the "high" category in another school made substantial progress in part because of strong principal support. Further attention to the role principals can play in this project may increase teacher engagement in subsequent terms.

A third factor stems from the follow up system of support. MOE follow-up support from school cluster, district, and provincial supervisors was more consistent in one province than the other and some supervisors were more adept at providing help than others. Observations and exit interviews indicated that this variation affected teacher engagement.

Finally individual views on what "good" teaching is and how students learn may have affected engagement for some. The theory underlying this project is that a more traditional form of teaching will have to give way to a form in which teachers and students increasingly come to construct knowledge jointly, building understanding, knowledge integration and application of central concepts across disciplines. Instead of learning taking place solely in the classroom, learning in school will need to be connected to learning out of school. Instead of materials such as textbooks and worksheets, learning resources will have to include people, places, and other sources of information in the community as well as student-developed materials for a project. Instead of evaluation focusing on individual student outcomes, evaluation will have to focus both on outcomes and the process of learning.

Data collected during the baseline period prior to the initial training session in late September-early October, 1993 showed that no teachers taught this way. In fact, 80 percent of lessons observed (n=37) were highly didactic, or "chalk and talk," as the Thais refer to such lessons. It is instructive that all teachers who used "chalk and talk" instruction during instruction before the project began were rated in the "Low" category during the first term pilot. In contrast half the teachers in the "High" category engaged students more actively in the learning process using conceptually oriented content before project implementation. This suggests that teachers already using multiple teaching methods and involving students more in their instruction may have found it easier to adapt to the components of this new form of teaching. This reflects underlying beliefs about what good teaching ought to be and how this project fits or not within such a framework. To illustrate this point, we provide two contrasting examples of Mr. Suwan and Mr. Sattra.

Both teach in the same primary school, one at the 5th grade level and the other at the 6th. Both participated in the training session for this project and, judging from exit interview

responses, understood the goals of the project. While the principal of the school officially supports the project, he did little to assist or to hinder teacher implementation, since he is busy with other matters. Both teachers received follow-up support from the same MOE person. The amount and quality of this kind of support were identical. There is an important difference, however, in their beliefs in where learning comes from and their willingness to take risks in trying new techniques.

Mr. Suwan is the kind of teacher who is eager to explore new and different ways of teaching that help him teach more effectively and advance his students' learning. He is analytical about his students' learning and the ways his teaching affects them. During the process of the field study, he supported student learning at each step. Moreover, he believed that the skills and confidence that came from formulating questions, interviewing adults, and making sense of the information acquired were very important for students. He worked very hard to help students benefit from each of the components of the case study.

Mr. Suwan's classes have changed in many ways since the baseline data were collected about a year ago. He says that he talks less to the whole class, and works with individual students and small groups more. As in the baseline data, the content of his lessons include many activities that focus on students' investigations, data collection, and interpretation. However, much more of his work is outside of the classroom, and, while doing this project, his classes were even more student-centered than before.

In contrast, Mr. Sattra has serious reservations about whether students can benefit from the kind of experiential learning that characterizes this project. When discussing the field experience with students, he said that while the lesson was fun, and that students learned more about the community, he felt that what they learned was superficial, which is why he assigned specific readings. (The superficial nature of the information the students gathered reinforced this belief, in spite of the fact that observations showed he spent little time preparing the students for the field visit or in supervising them when they were in the community. When asked about this, he explained that he felt his actions were consistent with the project because of its goal to help students become more independent. Moreover, the fact that the students found the experience a source of new skills and confidence was of little concern to him). In his interview, moreover, he went on to say that these assignments also reflected his belief that real learning comes from studying books and listening to the teacher present content. He believed that students would benefit more from this familiar form of instruction than from the field study. He sincerely believes the way he teaches is the correct way, and, therefore, sees no reason to change. Mr. Sattra's teaching was highly didactic during the baseline data collection period, and he made virtually no change

during the past semester of involvement with the project, largely because he believes his actions do not need to change.

Experience with the kinds of changes expected by this project, however, may have played a role with Mr. Sattra. As noted above, he explained that his "hands off" approach to guiding students was consistent with the project goal of helping students to become independent. It may be that further staff development on how to carry out the various steps of the project may help him (and possibly others with his view of teaching) change his practice. Such changes may also prove not to be possible .

B. Exit Interview Data

Exit interviews with teachers present a far more positive assessment of the project's effects to date. While there was some variation, the uniformity of responses across teachers was the important message. Teachers reported they learned the importance of developing good lesson plans, involved students more in the learning process than was typically the case in their classes, felt student learning improved in a range of areas, came to see observation as an important additional assessment strategy to evaluate student performance, and felt that information provided by community members was useful. Many commented they learned things about the community they had not known before. They also felt the community was helpful in providing time and information for the students. Some also commented that school-community relations had improved as a result of the project.

Since even the ten teachers who ranked "Low" in implementation voiced these perceptions, what sense can we make of these positive comments? To some degree such information likely represents an inflated sense of what they learned. Interviews, while they provide critical information on the participant's perspective, also suffer from the respondent's desire to "look good," to tell the interviewer what the respondent thinks they want to hear, and to avoid criticism of the project. This latter point is especially important in the Thai context, given the cultural emphasis by subordinates on

avoiding criticism of actions by superiors. Finally, the U.S. literature on teacher change shows consistently that teachers overestimate the significance of changes compared with observational data. That is, teachers feel they have made significant change where only small changes are observed. This is because any change represents a considerable risk. These points must be kept in mind when considering teacher response.

Does this mean such responses should be discarded in favor of a "glass half full/half empty" assessment of the First Term Pilot? We do not think so. Lessons learned represent the cumulative assessment of the term's experience. They do not necessarily represent what people actually did. If understanding is the result of an iterative process, these lessons may stimulate increased engagement during the second term pilot. No matter how clearly a training session lays out goals and expectations, it is only during the actual implementation stage, i.e., teaching a lesson involving field work and subsequent sense-making, that a deeper understanding of goals occurs. Just because a teacher comes to see the importance of developing lesson plans, does not necessarily mean that this teacher put in the same care and thought as another into developing lesson plans during the first term pilot. Just because a teacher experiences increased student learning, does not necessarily mean that teacher put forth the maximum effort during the first term pilot to improve student learning. It may be that increased learning during the first term pilot can become a motivating factor for a teacher to increase his or her effort during subsequent terms. In other words, there may be link between deeper teacher understanding of project goals and subsequent motivation.

Moreover, it is important to remember that a teacher's willingness to do more than just go through the motions of implementing a new program depends on a wide range of factors. These factors affect teachers as they

weigh the personal and professional costs or risks involved in changing their practice compared to possible benefits, which means that change is highly individual in nature and can occur at different times.

As indicated earlier, factors affecting teachers' "cost-benefit" calculation of how much to invest in this innovation included: understanding what they were supposed to do and how to help students accomplish these new tasks; their knowledge of content; certain personality characteristics; their workload; their view of what "good" or appropriate teaching ought to be (directing students to learn knowledge from a prescribed curriculum versus engaging them in the material and indirectly leading them to understanding); their sense of "duty" to carry out a new program; and incentives (intrinsic and extrinsic). Examples were provided that showed that some of these factors affected teacher implementation, albeit in different ways, reflecting an interaction between individual characteristics, specific conditions in each school, and the effects of the follow-up system (additional examples will be provided in Part Four, specifically regarding the follow-up system) . Depending on what actually happened in each school and the individual's perception of such events, it is entirely possible that since all teachers (save one) actually took students out to the community (or, in the case of Pirunwittaya, to other parts of the school), they would all see the range of areas affected by the intervention, glimpse some its possible benefits, and talk in similar terms about such benefits and what they learned without necessarily implementing the project to the same level. It may be that increased learning during the First Term Pilot, in spite of minimal effort, could be a motivating factor to increase effort during subsequent terms.

If this idea has merit, then we would expect to see some of the 10 teachers in the "Low" category make changes during the second term pilot.

Preliminary evidence suggests that this is exactly what has happened. But such a discussion must wait for a later point when all data for the second term are gathered and analyzed.

Teachers' positive assessment of what they learned during the First Term Pilot are strongly supported by student responses. Almost without exception students preferred this method of teaching over the more traditional form they had experienced during the first semester; felt they improved their skills in a wide range of areas; and felt they learned more using this method than others, specifically about their respective communities. As with teacher reports, some caution regarding these findings is important to keep in mind. While the original goal was to interview a cross-section of students (high, medium and low achievers), this was not done in most cases, so it is unclear how generally representative these responses are. Students did know the fieldworker well, however, since they appeared regularly to observe instruction and interviews were conducted away from the classroom setting. Moreover, since students could compare instruction with the previous term, they had a context for answering the questions.

Finally, principals also described project contributions in terms similar to teachers and students.

The positive response of each group within the school to the project, however, must be tempered by the problems each enumerated. For example, teachers discussed the workload, difficulties in relating activities to content, anxiety, minimal participation by some students, and logistical arrangements. This suggests the project, while it has made progress, faces a number of challenges which must be overcome it progress is to continue.

C. Change

What about change? Three teachers classified as Level 2 in the baseline study changed their practice significantly during the initial implementation period and received high ratings (8 or 9) for commitment and creativity. One teacher, rated at Level 1 during the baseline study, also engaged in significant change and received high ratings (7). Examples from both the primary and secondary level illustrate the kind of change that occurred for these teachers.

1. Primary School Example of Change: Mr. Kunton

In the baseline study, Mr. Kunton was classified as a level 2 teacher because of his choice of content and the teaching methods he used. In the lessons we observed for the baseline, he connected subject matter from the text with information about the local community in a study of changes in the population. He also integrated conceptual knowledge and process skills in his lesson and engaged students in activities relating to organizing data in tabular form. In addition, he aided students in learning how to extract meaning from a data table. However, he began his lessons by stating objectives instead of finding a more engaging way of beginning. Further, he did not seem to be concerned with students' learning and he did not use time effectively, having devoted a large amount of time to having students recopy a data table that was available in the principal's office, instead of finding a more efficient means of presenting these local data to the students.

In the initial implementation of the project during the second semester, Mr. Kunton showed some important changes in content, teaching style, and concern for students' learning. He appears to be making make significant progress toward achieving Level 4 teaching.

Lesson planning was a collective effort that began in early November with other teachers in the school cluster. At this time, teachers agreed to pursue a study of village history in their local communities.

Limited data are available on how Mr. Kunton introduced the purposes of field study to his students. We know that he reviewed the purposes just prior to the first interview which implies earlier introduction of purposes. Fieldworkers' data show that he began preparation for community study by having students create and ask questions that would help them get to know their fellow students better. Students designed these questions, reported their questions to the teacher, and then practiced with their peers, early in the term.

In the next phase of preparation, students worked in groups, with guidance from Mr. Kunton, to develop questions to be asked of local community members about village history. Students were organized into

two groups of six students to (a) brainstorm ideas about questions, (b) formulate and organize questions, (c) report their questions to the class, and (d) receive feedback from Mr. Kunton. To broaden students' thinking about the questions, Mr. Kunton wrote the following categories on the chalkboard: village history, environment, transportation, economy, and public utilities. (These categories have at least some relation to the "kite model" that has been used as one of the organizing concepts for the project).

Mr. Kunton noted that one group of students organized their questions to elicit data about predominant features of the community in the 1980s, 1950s, and 1930s while the other group's questions were more general. In the debriefing with the field worker from SRI, he stated that this would be an important basis for discussion after collecting data in the community, since students would obtain different data from these different questions.

Prior to going to the community, Mr. Kunton and his students decided whom to interview and the manner in which students would proceed to ask questions. Also, Mr. Kunton arranged with the persons to be interviewed to insure that they would be available when the class came to the village. In the few minutes before leaving the classroom to go to the village for the first interview, he and the students reviewed the plans and rules for the interviews, gave students new notebooks for recording their notes, and announced that they would return to school to summarize their findings. Then he loaded the students into his car and drove to the first interview. On arriving at the site, Mr. Kunton again briefly reviewed purposes of the interview and procedures to be followed.

Students were somewhat in awe of the interviewee, an important older member of the community, when they met him, and they became very quiet. With encouragement from Mr. Kunton, the students began their questioning. During the questioning, Mr. Kunton drew back from the students, intervening only when conversation slowed.

The interview continued for nearly an hour with the old man talking about the history of the village. He used the large posts of his house to demonstrate the size of trees that grew in the village many years ago. He also related the tree size to the fertility of the soil in former times.

When the interview concluded, the students and Mr. Kunton returned to the school, and after a brief recess, the teacher reviewed the process for summarizing the data that had been collected. After about 35 minutes of group work to summarize and record data on sheets provided by Mr. Kunton, oral reports were given by the leader of each group. Mr. Kunton listened along with the Team A supervisor, who entered the room as the reports began. When the two groups concluded their reports, Mr. Kunton had the students place their data in his file for safe-keeping. Then, he and the Team A supervisor gave students feedback on both the content of their reports and the processes they used in presenting them.

Nearly a month later, Mr. Kunton used these data along, with information from other interviews, as the basis for a lesson that focused

on four interrelated themes: (1) the relationships between plants, humans, and other animals, (2) vertebrates and invertebrates, and (4) the water cycle. He began the lesson by reviewing what students already had learned about each of these four themes in grades 4 and 5. Then he gave the students a worksheet that he had developed which asked students about data from the community that related to these four themes. Mr. Kunton advised students not to simply guess at answers, but if they were uncertain, or needed more information, they were to prepare questions to ask of community members during their next interviews in the village. Then Mr. Kunton gave the students their field notebooks, that had been filed for safe-keeping, to use in answering their questions, and to guide the development of new questions.

After the students had worked on the worksheet for about 40 minutes, they went to lunch. After lunch, the groups reported their findings and the teacher gave feedback on both content and process. Then he quizzed individual students on their understanding of the ideas that came from the reports and reviewed each of the four themes, again, with the students in a short question and answer session.

Commentary: This lesson shows that Mr. Kunton is making substantial progress toward level 4 teaching with his fifth grade students. He provided rich opportunities for students to prepare for the field study. He worked with students to support their development of questions, to reflect with them about their questions, and to give them practice in asking questions before going to the community. In addition, he worked with students to decide who should be interviewed, then he arranged for the interviews so that the interviewee was also prepared and present for the interview session. He also provided students with notebooks to record data. He supported students during the interview, yet he moved back from the group to give them a sense of responsibility for the session. Back at school, he had the students work together to interpret and report their findings to the whole class. After students reported their findings, both he and the Team A supervisor gave students feedback on both content and process.

In a subsequent lesson, he connected their findings to curricular concepts that had been learned about important topical areas such as water cycle, forests, the interdependence of humans, other animals, and plants, and the interdependence of students determine what the next round of interview questions should include in order to fill in missing data.

Overall, Mr. Kunton has made significant progress in his approach to teaching, at the same time as he has developed his Level 4 techniques. He helps students learn how to formulate interview questions that focus on acquisition of particular information. He supports them in data collection and interpretation, His interaction with students shows a much greater concern for students' learning. He gives students support and feedback with their development of techniques for data collection and the sense that they make of the data. He demonstrates significant attention and creativity to connecting field studies and regular curricular content. He envisions a different role for himself and his students, and he has changed his teaching strategies to coincide with this new role.

Further, he appears to be more analytical about his own teaching and how it affects students' learning. In a debriefing session, he indicated his concern about students' engagement in classroom and field-centered tasks. He noted that group membership affected engagement of students in activities, and as a result, he decided to reorganize groups in his class as a means of increasing students' engagement in learning tasks (Debriefing, December 21, 1993).

Mr. Kunton also appears to comprehend a clearer picture of the interconnections among the school subjects than previously. Because of the connection of field studies to students' reading, writing, and public speaking in Thai language classes, Mr. Kunton worked with that teacher to gain extra time for field work preparation, analysis, and reporting. This has benefited both teachers and their students.

Students and the community are benefiting from Mr. Kunton's new approach to teaching. During an interview, one student said,

"In the first semester, we just studied in the room and we did not work in groups often. In the second semester, every student had to go out of the school and study the community. In the villages, they did such things as interview the inhabitants and study the data provided by numerous people in order to find out about the history of the village and the forest. This information is not found in books. After going out to the village, they had to come back to the classroom and make sense of the data, then go out in front of the class to report. The work is almost always done in groups where everyone must help each other get the work done. This enables them to practice expressing themselves in front of other people and develop more responsibility for their work" (Student 52, March 9, 1994; Translated from Thai by Michael Grinnell).

The student concluded by saying he had learned a lot more this term than in the previous one because they never had the opportunity to learn first hand about the community. He said that this term he had gained a lot of new knowledge that is not found in books. He also said that in the past, he would not dare to ask questions, but now he learned how to ask questions, and then take the information back to the classroom and write it in a report form.

This student, like others interviewed, was pleased with the new capabilities that were acquired during the field studies in the second semester. Villagers, the principal and supervisors all expressed satisfaction with improved school-community relations and improved student learning that derived from the field studies.

2. Secondary School Example of Change: Mr. Ackapon Adapts His Teaching but Struggles with Problem Identification

Mr. Ackapon is a middle school social studies teacher in Phasaiwittaya with over ten years of teaching experience. In the baseline study, Mr. Ackapon was classified as a level 1 teacher because of his fact-oriented, teacher-centered approach that provided little

engagement for students in this rural middle school. To those who observed his classes, it appeared as though Mr. Ackapon had fallen into many inappropriate practices in his teaching that were ineffective with his students. Moreover, it appeared that his work as a teacher was not providing him with many personal rewards. Like many teachers, his career appeared to have lost its excitement and it had become a routine job.

Mr. Ackapon approached the initial implementation of this project with enthusiasm and creativity. As a result, he now brings new energy and ideas to the work he does with his students. It appears that involvement with the project has given a rebirth to his interest in his professional work.

Preparing Students for the Community Study

Early in the second semester, Mr. Ackapon was observed in a lesson where he and his students were preparing to interview selected adults in two villages near the school that were the residences of the students in the class. Their purpose for the interviews was to gather information about the village population, infrastructure (utilities, stores, health care agencies, etc.), and history. The lesson consisted of a rapid array of detailed preparations for the visit as follows:

1. Mr. Ackapon informed the students about the arrangements that he had made with individuals in two villages for interviews that would occur on the following Saturday.

2. He explained that students would work in their own village to reduce the need to travel and to allow students and villagers who knew each other to work together.

3. Next, he reviewed rules of conduct for the work in the villages with the students. They were instructed to wear their school uniforms when they interviewed in the village and not to ride motorcycles. They were to walk, ride their bicycles, or be driven by an adult as they went to the sites of the interviews.

4. On concluding these organizational details, Mr. Ackapon reviewed Rapid Rural Appraisal, a technique that is used quite commonly by community development personnel to learn about community members' perceptions of local issues. He had taught them about Rapid Rural Appraisal a few days earlier in preparation for their work in the communities.

5. This was followed by a review of the Open Method of Interview, another strategy for eliciting information from community members which he also had taught in an earlier lesson.

6. He then worked with the students to organize the groups that would work together in each village and to differentiate among the questions that each group would use to guide their data collection as a way of reducing redundancy in the data collected.

7. He had the students report on preliminary data about the two villages that were acquired by a small number of class representatives who had interviewed the Headmen and health workers in each village.

8. Last, he had the students practice explaining the purpose of the field visit to each other, as an initial part of the interview.

All of these activities were directed by Mr. Ackapon in an ambiance that was cheerful but businesslike. Students seemed eager to participate, as the activities appeared to give them added confidence in their capability to go to their village and ask questions of adults there about important matters.

Data Collection, Analysis, and Reporting

On the appointed Saturday, each of the students conducted their assigned interviews. In the afternoon, after their interviews were completed, the students met in the village temple to organize and review the data that they had acquired.

Late in the week following data collection, class began with Mr. Ackapon setting the stage for student reporting of the data collected on the weekend. It was apparent that the plan for reporting had been developed during intervening class periods, as students were well-prepared for the task. The teacher reminded students that they would be expected to use overhead transparencies and maps in their oral presentations. The speaker should also do a self-introduction, and each presenter should tell their friends in the class how and where the information was gathered, how long it took to gather the information, and what they had hoped to accomplish with this investigation.

Mr. Ackapon then went to the back of the room to hear the reports. Oral reports took between five and ten minutes each. Five groups reported. The reports each covered several topics, such as economy, transportation, customs, village leadership, history of the village, education, agriculture, occupations, and resources. As a result of this breadth, the reports had a superficial quality. Between each report, Mr. Ackapon offered helpful feedback mainly about processes. For example, he suggested to one reporter that he should be careful to distinguish between what the villagers actually reported and his own opinions on the particular subject.

After the oral presentations were concluded, Mr. Ackapon advised students how to complete a more refined report to hand in and to keep for future reference. He advised group members to work together to finalize the report and make further analysis. He also said that students could go back to the community for more information if they felt it was necessary to make a better report.

Final Steps in Initial Implementation

A few months later, near the end of the semester, Mr. Ackapon and his students had taken the activity further. They had organized into five groups; each had taken a local village, and they have decided to "fix" a

specific problem in that village. In one village, the problem to "fix" was preservation of trees. In the other four villages, the problems related to trash collection and disposal.

Commentary: Mr. Ackapon has made considerable advancement in his work on this project, but he needs to make several additional important changes as well in order to reach all the components of Level 4 implementation. Regarding advancement, he has, first of all, become a much more enthusiastic teacher in the first semester of implementation. That increase in enthusiasm has produced personal rewards for him.

Second, he provides his students with important skills, techniques, and support to aid them in obtaining information from adults in the community. Students' increased interest, confidence, and value placed on learning that have derived from this project during the five months of initial implementation show the great promise of this approach to teaching and learning.

However, even though he has undergone a radical change in his work as a teacher by engaging students in field-based activity as an important part of his teaching, he still is highly didactic in his approach. He directs students in a didactic manner rather than engaging them collaboratively in making decisions about their actions related to the project. To develop his knowledge and skills in teaching approaches that are consonant with the project goals, it will be important for Mr. Ackapon to shift from a highly directive approach to one that offers more collaborative support for his students. For him to make these changes, he will need additional assistance from MOE's follow-up support team.

In some areas, he is showing promise in his support of students' learning. He reviews methods and procedures, and provides opportunities for students to practice techniques, to assure that they understand the actions that they are to engage in during field study. He gives feedback to students about their data, and offers opportunities for them to "fill in" missing data through subsequent data collection. Overall, Mr. Ackapon has made great steps forward, but he can use supervisory guidance in consolidating and improving the quality of his advancements.

Secondly, student reports and the "problems" which they focused on for action may serve as beginning steps in this project, but they are not examples of what the project hopes to attain. The reports, and the field studies they were based on, tried to cover too much in too little time. As a result, they did not yield information that could help with formulating significant problems for further study.

Mr. Ackapon's difficulty with problem formulation appears to be shared by several teachers in the project. Problem formulation may be helped somewhat by directing attention of students to fewer issues and to greater detail on each. Further, he and his students should explore villagers' perceptions of problems using a technique such as Rapid Rural Assessment. The data derived from this technique would give a basis for collaboration with villagers to identify a problem relating to forests and forest management, that has long-term importance to the students' communities. Without finding such a focus for his activity, Mr.

Ackapon's efforts will not reach the potential benefits for significant learning for his students, and significant outcomes for the communities, that are possible.

In summary, Mr. Ackapon made a number of important changes in his approach to teaching during the first implementation period. During this period, Mr. Ackapon demonstrated a high level of commitment and creativity in his work. Additional supervisory support will benefit him and his students as he (a) refines his approach to teaching to make it even more consistent with the project intentions and (b) becomes more adept at problem formulation as a means of providing a framework for teaching and learning activities for himself and his students.

D. Comparing Level 2 Teachers

Another observation is that three of the teachers classified as level 2 in the baseline study received high ratings (8 or 9) in the implementation study while another three of the level 2 teachers in the baseline received low ratings (3 or 4) on judgements of commitment and creativity in the implementation study. Examination of data in Table 7 about these six teachers provides an interesting contrast. All three of the teachers who received high ratings provided help to their students in formulating questions, in reflecting and giving feedback on the questions, and in supervising and giving occasional help to students while they were interviewing community members. None of their three peers who received low ratings did any of these. In fact, all three of the teachers who received low ratings failed to provide any supervision for their students while they worked in the field.

The two sets of three teachers also differed greatly in the manner in which they assisted students make sense of data from the villagers. All three of the teachers that received high ratings worked with students in a class activity to make sense of data, and all three gave feedback on both processes of data collection and content the content of the data. Only one of the three teachers that received low ratings held a class activity for data analysis and interpretation; the other two left sense-making to the students as a homework

activity. None of these teachers gave feedback to their students in either process or content.

VI. Changes in Teachers' Thinking and Actions: What Progress Towards Level 4?

If the project is to achieve its goals, teachers must develop their ability to teach at Level 4. As noted earlier, the kinds of tasks required to implement this project create the conditions for Level 4 teaching (e.g., generating questions, interviewing community members, making sense of findings, reporting findings, etc.). Even carrying out these tasks with little commitment or creativity still means that teachers are altering at least the form of their practice and making, therefore, some progress towards Level 4 teaching. What can be said about overall progress among teachers towards Level 4 teaching? To answer this question, each of the components of Level 4 teaching, described above, will be used to analyze the data from the initial implementation of the project. Table 8, some items in Table 7, interview data, and discussions with fieldworkers help answer this question.

A. Lesson content:

1. **Concepts and investigative skills that relate to the study of real problems.**

All of the teachers made some progress in teaching investigative skills. Ten of the 23 teachers in Table 8 could be judged as making substantial progress, three in the middle range made some progress, ten others made rather limited progress. A general concern of all teachers was how to link the field work to concepts in the curriculum. In many cases, moreover, teachers expressed concern about covering the curriculum. Both issues need attention at all levels of the project management and implementation.

2. **Development of skills for collecting, analyzing, and reporting data and proposing solutions to real problems.**

All teachers took actions to help their students develop skills for collecting and analyzing data. The quantitative report, Table 8, shows 10, 3, and 10 teachers making substantial, some, and limited progress applies here also.

Little progress appears to have been made by any teachers in the study on "reporting data" and "proposing solutions." Again, this needs attention in the near future if the project is to realize its potential.

B. Teachers actions and assessment

1. Seeking information about students' ideas and reasoning.

Little progress appears to have been made in seeking information about students' ideas and reasoning. While teachers commented on reports and made suggestions for improvement, there was little, if any, probing of why students reached certain conclusions, what their understanding of key concepts in the curriculum was, and whether there were alternative explanations for what they found. This is an area needing attention during the next phases of the study.

2. Teaching students basic concepts relating to environmental concepts.

As stated above, little progress was made in this area. More attention is needed here from supervisors and project staff.

3. Teaching that aids students in developing skills for acquiring, analyzing, and reporting data on real problems in their local communities including techniques for field study and interviewing adult community members and technical experts.

Considerable progress was made in this domain for ten teachers, some progress for three, and limited progress for the remaining ten teachers. Reporting data to local communities needs greater attention.

4. Assessing students' learning of these skills and techniques.

Those teachers who reflected with students and gave feedback to them about questions (item 1d in Table 7) and gave feedback on process and content during sense-making (items 4c and 4d) are making considerable progress in this domain. Again, it is the ten teachers rated 7 or better in line 5 of Table 7 who fit this category. The other teachers need to improve in this area.

C. Students

1. Study, practice and apply these concepts and investigative skills.

All teachers made some efforts in nurturing development of these investigative skills. Using concepts to guide development of plans and questions is less clear. As stated previously, more attention should be given to this.

2. Learn techniques for proposing alternative solutions to local problems and report their findings to local audiences.

As discussed in the Introduction, these activities were not part of the initial implementation. In order to prepare teachers for this

eventuality, attention to these components needs to be given in up-coming training workshops.

D. **Materials, resources and environment for teaching and learning**

1. **The local community, people, and the natural environment as "laboratory" and data sources.**

All teachers used the local community, its people and the natural environment as "laboratory" and data sources which shows an essential step toward level 4 teaching.

2. **Materials developed by teachers, students, and community members. Varied information sources including the local community, technical and local experts, books and reports from governmental and private organizations.**

A number of teachers posted reports students had written on the local history in their classrooms. Some science teachers kept and displayed materials students brought to class as part of their assignments. For these teachers, such actions indicated some progress in this area. It will be important to determine during the next evaluation whether these materials were used again.

There was, however, little evidence that teachers used technical experts and technical information from books and reports from governmental and private agencies during the initial implementation. During subsequent training and planning sessions, attention must be given to this area so that teachers know how to access these resources and to create materials from their own field studies.

3. **The classroom as a site for planning investigations, analyzing results, studying varied resource materials, making sense of findings and considering alternative solutions to problems.**

Teachers proved adaptable and creative in this area which is another essential step in approaching level 4 teaching. Many excellent examples have already been provided of teachers ranked "high" in Table 8 using classrooms for the tasks enumerated above. Even those in the middle and low categories carried out these tasks. The one area omitted during the initial implementation phase was a discussion of alternative solutions to problems, although several classes nevertheless carried on such discussions.

4. **Learning activities often are outside of the classroom.**

Again teachers have been very adaptable in taking their students outside the classroom and into the community for field studies. Most teachers and all students found these experiences beneficial.

Supervision of students needs to be thorough and continuous to assure students' safety and to keep them on task. In addition, supervision with occasional help is important in learning. Most teachers in the top and middle groups did well here. Teachers who received low ratings need to be more diligent in supervision.

In summary, all teachers have made some steps toward level 4 teaching. The ten teachers who received ratings of 7 or higher are providing students with many, but not all of the needed qualities of level 4 teaching. More attention needs to be give by these teachers to integrating conceptual development with their teaching of investigative skills. All teachers need to learn how to better integrate conceptual development with local case studies. All teachers might benefit from using written material on how to do a case study, already available for the project (e.g., the Handbook/Guide).

PART THREE: PROVIDING SUPPORT FOR TEACHER CHANGE

The process leading teachers to change their practice is complex because of the number of variables that interact with one another in an ongoing way over time. Findings from the previous chapter described individual teacher characteristics and their contributions to change, specifically teacher commitment and teacher creativity. In probing the causes of such behavior, we suggested that teacher understanding of what is expected and how required tasks can be carried out comprise one set of factors influencing behavior. Teacher knowledge of content, teacher personality characteristics such as flexibility or resistance to change, self-confidence or insecurity, and teacher workload comprise another set. Teacher views on teaching, specifically what constitutes appropriate or "good" teaching and where knowledge comes from (e.g., texts, the teacher or jointly constructed with students) constitute another set. Finally teacher perceptions of their "duty" or responsibility as teachers and incentives (intrinsic, such as seeing students become more engaged in content, and extrinsic, such as promotion possibilities) comprise a final set. These factors all interact with one another over time and in response to certain stimuli.

This project is designed to affect these different variables in such a way as to promote both creativity and commitment. Training sessions using a "teacher as learner" model involve substantial teacher participation to promote engagement and learning, modeling the kind of teaching strategies central to the success of this project. A "handbook/guide," developed specifically for this project, departs from the regular Thai practice of issuing a manual designed by MOE experts in Bangkok and disseminated to schools in the field. Developed initially by the MOE-MSU project design team,

the "handbook/guide" is seen as a draft document, to be used and modified by teachers throughout the pilot in an effort to make it "user friendly" before being disseminated to teachers in non-project schools. The "handbook/guide" elaborates project goals, key concepts, strategies for doing a case study, and a model case. Teacher collaboration in this project is seen as a key factor that can encourage teacher change. Thus at the goal is to have at least two teachers per building involved, principals are encouraged to support teacher efforts to implement the project, and project participants at the primary school level meet regularly at one of the pilot schools on a rotating basis to share experiences and problems with MOE administrative staff from the cluster, district and provincial offices. At the secondary level, meetings are held with participating teachers at each school during the term. MOE staff at different levels of the bureaucracy are trained in how to do a supportive form of classroom supervision and are supposed to visit classrooms on a regular basis. Finally, teachers are encouraged to develop links to information sources outside the traditional educational system, such as officials in the Royal Forestry Department and community members with valuable indigenous knowledge.

This system represents a radical departure from the traditional Thai form of staff development and support. Typically, teachers attend short (2-4 day) workshops where new ideas are introduced in a lecture format. Some groupwork is used to give practice in carrying out prescribed changes. Following the training, teachers are left to their own devices to carry out the innovation. No-one comes to observe and give feedback, with the result that even the small number of teachers who are able on their own to implement to the innovation with some fidelity to the objectives come to question how important it is and whether they really have to do it (Interview, MOE

official, October 5, 1994). For teachers who leave the training workshop unclear about its objectives and how to implement the innovation, the lack of follow-up leads to minimal implementation.

Project Follow-Up Goals and Objectives

Ultimately it is the individual teacher who decides whether to change. The system of follow-up support is designed to create the conditions under which teachers are willing to take the risk to try new teaching strategies and to venture out into the community to develop new relationships. Under this system, it is envisioned that principals will provide a positive environment for the project within the school and will give direct support to the teachers involved in the project. For example, principals can make sure all teachers in the building understand the goals of the project, so the benefits to students as they progress through grades five and six are seen as a part of an effort to improve educational outcomes for all students in the school. They can explain these goals to the community and help them understand the ultimate role the school hopes to play in the community's effort to address important local problems in the area of tree and forest management. They can create opportunities for project teachers to meet to discuss problems and encourage other teachers to help with ideas on the development of materials. They can solve small problems, like arranging meeting rooms or finding funds for field visits from building sources until funds arrive from MOE in Bangkok. They can attend meetings of participating teachers from across buildings to listen to teachers as they discuss their curriculum efforts and problems. Principals, in their role as the academic leader of the building, can also get more directly involved in the project by supervising teachers using the model from this project (observation and debriefing where teachers are asked about their decisions rather than told what was "good" or "bad" about the lesson). They

can help teachers with lesson plans and ideas for activities inside the classroom and outside in the community that might promote the kind of active learning envisioned by this project. They can help with developing materials. They can help in locating resources in the community and from outside agencies such as the Royal Forestry Department or the Community Development Department.

Such support can compliment the follow-up system by cluster, district, and provincial MOE staff involved in the project. Trained in this new method of supervision, these staff can provide an opportunity for teachers to reflect on their classroom decisions and efforts to become involved in the community. Regular meetings with teachers participating in the project can provide the opportunity for developing and improving lesson plans. These meetings can also be an important place for discussing the objectives of the project as it evolves over time. These support staff can also be helpful in locating outside resources to supplement and improve teacher knowledge of certain content areas, such as social forestry. Finally this group can respond to specific teacher needs for time to share experiences and for additional staff development by planning and implementing regular workshops for participants from all the schools involved in the project.

Together the two systems (principal and MOE staff) can create an environment that supports risk-taking by teachers and subsequently by teachers and community members. But the potential for bottlenecks, confusion and conflict is also present. As one MOE official put it, "There can be problems if the principal is not involved and there can be problems if he is too involved." (Interview, MOE official, October 5, 1994). The follow-up system by MOE officials enters an ongoing set of authority and personal relationships within an organization. How these relationships adjust to this intervention becomes a school-by-school affair, and the knowledge, commitment, and skills

of the principal and those MOE officials working with a particular school are key determinants of the specific environment created in each school. This section examines the effects of this intervention school-by-school to draw out lessons and patterns after the First Term Pilot.

Goals and Objectives for the Initial Try-Out

The First Pilot Term provided the opportunity to put in place a support system to encourage teacher change. In discussions prior to the beginning of the term, MOE officials involved in setting up this follow-up system decided the term should be used to inform principals of the role they were to play, to train supervisors in how to do classroom observations and provide supportive feedback, and to implement the system of regular meetings with teachers. (Interview, MOE official, July 20, 1994). From the outset, not unlike the approach used with teachers, creating understanding, building skills, and initially implementing the system to surface problems to be addressed were the goals, rather than implementing a smoothly running system overnight. The objective for supervisors was to help them learn how to work with teachers, specifically, how to support them in their own efforts to solve problems and how to address specific needs through collaboration rather than fiat. Beginning the process of legitimating teacher judgement and encouraging teacher autonomy was central to this objective. For teachers the goal was to have them see that classroom observation, done in a supportive way, did not have to be threatening and could promote teacher confidence. Regular meetings were designed to show teachers that together (with other teachers, MOE support staff, and principals) problems could be discussed and alternative developed. As in the efforts to involve the community, the goal was to open a communication process and to begin creating new relationships. (Interview, MOE official, October 7, 1994).

Findings from the First Term Pilot by School

Table 9 below arrays project teachers by school and shows:

o A noticeable difference in implementation between primary and secondary school teachers. Eight of fourteen primary teachers where data exists on project implementation ranked in the top category on commitment and creativity. This means that of all teachers in that category (N=10), regardless of school level, 80% (N=8) came from the primary level. Only two of nine secondary teachers achieved such high rankings.

In one primary school, two teachers were in the high category, while in all other schools where two or more teachers participated in the project, variation, sometimes substantial, existed.

Could school administration in any way have contributed to such results? What about MOE's follow-up system? Designed to encourage teacher collaboration at the building level and across buildings, did it have any effect on project implementation? Is it possible to separate out the independent effects of each or are they so intertwined that one must speak of interactive or combined effects?

At the secondary level, the answers are clear. Teacher implementation became an individual decision within constraints set by administrative action. While some administrative support within one school (Phasaiwittaya) initially helped teachers, administrative resistance to the project in the other school (Pirunwittaya) directly affected teacher efforts to implement the project which resulted in little overall teacher change. MOE's follow-up system had virtually no effect on teacher change in either school.

Pirunwittaya and Phasaiwittaya are typical rural secondary schools. In terms of administration, in addition to the principal, there are two assistant principals. Moreover, each school has a unit responsible for all academic affairs as well as specific disciplinary departments, with department heads. Given the size of both schools (1,400 at Pirunwittaya and at Phasaiwittaya) it

Primary Schools

Table 9 Initial Implementation of Field Study Activities by School

Schools	Province A										Province B			
	1				2				3		4	5		6
Teachers	Bosaba	Bampen	Bomroong	Banhan	Suwan	Somsak	Sakarin	Sattra	Pachern	Pornchai	Mechai	Kunton	Kanok	Tachpong
1. Preparing Ss for Field Study														
a. Clarify Purposes of Field Study	+	+	+	+	+	NI		+	NI	NI	NI	NI	NI	+
b. Types of Qs(Methodology)	+				+	NI			NI	NI	+	+	NI	+
c. Developing Specific Questions													NI	
Ss alone -				+			+	O	+		+	+		
Ss with help from T	+	+	+		+	+				+	+	+		+
T gives categories for Ss to organize Qs				•							•	+		
T gives categories, Ss devel Qs	•	•			•				•					+
T gives Ss Qs														
d. Reflection and feedback on Qs	+		+		+	NI			+	+		+		+
e. Rehearsal of Questioning			+			NI						+		
2. Preparing to Enter the Community														
a. Organizing People, Places and Groups for Study - T decides -				+				+	+	•		+	+	
Ss decide -	+			•		+	+	•	•	+	•			
T & Ss decide -	•	+	+		+									+
b. Making Advance Arrangements														
T arranges -			+			+			+	•		+	+	+
Ss arrange -	+	+			+	•	+	+	•	+				+
None made -											+			
3. Supervising Ss in the Community														NI
a. T Supervises by Observing						+		O			+			
b. T Supervises by helping occasionally	+	✓	+		✓				+	+		+		
c. T asks Qs for Ss				•										
d. Ss not Supervisied							+						+	
e. Community study as Homework														
4. Sense-making after Data Collection														
a. Individual, As Homework			+	•		+	+			+				
b. Class Activity	+	+	+	+	+	+		+	+	+	+	+	+	+
c. Feedback on Process	+	+	+		+			O	+	+	+	+		+
d. Feedback on Content	+	+	+		+				+	+		+		+
5. Judgements (Total)	10	8	8	3	10	5	3	3	3	7	4	9	4	7
On Commitment	5	5	4	2	5	3	2	2	4	4	2	5	2	4
On Creativity	5	3	4	1	5	2	1	1	4	3	2	4	2	3
6. Baseline Level [1=Low, 5=High]	3	2	2	1	3	2	2	1	3	3	1	2	2	NI

1= Ruemjaiwittaya
2= Choomchonepatana
3= Samakkedam rong
4= Panasueksa
5= Paiwanwittaya
6= Taradamrong

+ = Observed
• = Observed in a later lesson
3 = Teacher wrote notes
O = Very little time spent
NI = No information
S = Secondary Teacher
✓=Teachers wrote notes

56a

Secondary Schools

Table 9 Initial Implementation of Field Study Activities by Schools

Schools	7				8				
Teachers	Ackapon	Adhan	Arada	Amnuey	Rawee	Ratana	Rojana	Rakyoot	Rojarate
1. Preparing Ss for Field Study									
a. Clarify Purposes of Field Study	+	+	+	+	+		+	NI	NI
b. Types of Qs(Methodology)	+	+		+	+	+	+	NI	NI
c. Developing Specific Questions							NI	NI	NI
Ss alone -									
Ss with help from T					+	•			
T gives categories for Ss to organize Qs									
T gives categories, Ss devel Qs	+	+			•				
T gives Ss Qs		+	+	+					
d. Reflection and feedback on Qs	+				NI				
e. Rehearsal of Questioning	+				NI	•	+		
2. Preparing to Enter the Community									
a. Organizing People, Places and Groups for Study - T decides -	+	+	+	+	•	+	•	+	
Ss decide -						•	+		+
T & Ss decide -									
b. Making Advance Arrangements									
T arranges -	+	+	+	+		+			
Ss arrange -	+	+	+	+	+	•	+		
None made -									
3. Supervising Ss in the Community									
a. T Supervises by Observing			+	+	+				
b. T Supervises by helping occasionally	+	+				+			
c. T asks Qs for Ss									
d. Ss not Supervisied					•	•	+	+	+
e. Community study as Homework	+	+	+	+	+	+	+		
4. Sense-making after Data Collection									NI
a. Individual, As Homework	+	+	+	+					
b. Class Activity	+	+			+	+	+		
c. Feedback on Process	+	NI	NI		+	+			
d. Feedback on Content		NI	NI		+	+			
5. Judgements (Total)	7	5	4	3	8	5	4	2	4
On Commitment	4	3	2	1	4	3	2	1	2
On Creativity	3	2	2	2	4	2	2	1	2
[1 = Low, 5 = High]									
6. Baseline Level	NI	1	1	1	NI	2	1	NI	2

7= Phasaiwittaya
8= Pirunwittaya

+ = Observed
• = Observed in a later lesson
3 = Teacher wrote notes

O = Very little time spent
NI = No Information
S = Secondary Teacher

would be nearly impossible for a principal to be directly involved in classroom supervision; of necessity, these tasks are left to others. Thus if teachers in these schools are to receive support, it had to come more from colleagues within the building or from MOE officials outside the school.

An MOE official, during an exit interview, had this to say about secondary school principal leadership:

> Changes in administrators will directly affect how the program is administered in each of the schools because any new personnel will not know as much as the old persons in the same positions and who attended the [training] seminars. In the case of secondary schools, principals are the most important people in the administration of the school. If the principal takes anything seriously, then it does not matter how the vice-principal feels, the project will still be applied. If only the vice-principal is interested in the project, it can still be done, but less effectively. If, on the other hand, neither the vice-principal nor the principal are interested, it will be exceptionally difficult to administer a program in that school. In a situation such as this where there is no administrator giving support and encouragement to the teacher, the program will eventually end prematurely at that school.
>
> The principal and vice-principal must have a deep understanding of the project at the school in order to make it work. They also must have faith and confidence in the project and find personnel who are suitable for the work. The success of the program lies directly with these points. If there is a recognition of the importance of the project, the school will be able to do it (Interview, Regional Cluster official, March 16, 1994).

These comments help us understand the internal dynamics of these two schools and the role principal leadership played in shaping teacher implementation of the project during the First Term Pilot. While overall teacher rankings at between the two schools at the conclusion of the term were remarkably similar, this outcome was not necessarily a given from the outset. To understand this statement requires a look at the evolution of the project in each school over the First Term Pilot.

1. **Phasaiwittaya**

Initially teachers enjoyed strong support from their principal and many opportunities for collaboration. All four teachers were active initially in implementing the project. This lasted approximately half the term, when the principal was transferred to another school and a new principal arrived. During the first principal's tenure a clear tone was set within the building that the project was important, that teachers were to take it seriously, and that they were to implement it as effectively as they could. The principal, a female, had attended Team B training and participated actively. She understood the project well. She followed up informally with teachers on what they were doing. She made an effort to get people on the project working together, including those not directly involved in the project, by explaining the project to all the staff and by arranging for meeting rooms for those in the project. She was particularly helpful with Mr. Amarin, the person in the academic section responsible for the project. Whenever he needed something, she helped. For example, prior to the arrival of MOE funds for this project, she used school resources to print materials for the project. For visits to the community, she arranged to use the school's pickup truck, at no charge to the project. Her enthusiasm for the project even led to support from assistant principals. For example, both assistant principals went out to the village with the students on their initial visit.

The new principal did not show the same support. When he learned that MOE funds had not yet arrived and that school funds were being used to support project activities, he decided not to continue this practice. He also questioned the project's design. While saying it should continue as before, he wanted it first to emphasize solving problems within the school before addressing community problems. Shortly after he arrived at the school, he was

invited to Bangkok to meet with the Director General of the Department of General Education as a member of a small number of schools that were to receive USAID funds for environmental projects, including this project. There he learned that eight secondary schools in one group under the Department were to receive 100,000 Baht each for their projects. His school, plus Pirunwittaya, however, were listed under the Department of Curriculum and Instructional Development's (DCID) projects and would receive only 8,000 Baht. (He was unaware until a March 11 meeting at the school with MOE officials in the project that location of a project was not significant, since all projects were being funded by USAID funds under the MANRES project and that over 1 million Baht from the Ministry of Education were being used to support the two secondary schools listed as DCID projects). He was so dissatisfied with the 8,000 baht amount, he visited the Thai Department administering USAID funds, to complain. According to comments from the fieldworker at this school, he said, upon returning home, that with so little money and the project under DCID rather than DGE, it must not be all that important and began questioning why the school was in the project. Instead of enthusiastic support and active involvement, he took the position that while the school had an obligation to participate in the program according to the goals as stated when they accepted the project, he would delegate responsibility to others for administering the project.

This role fits his general approach to leadership. He delegates responsibilities and involves himself only on occasion in school activities. In terms of this specific project, he asked the assistant principal to monitor it, who in turn asked his assistant to assume a number of responsibilities. Moreover the change directly affected the contributions the academic section could make to the project. Mr. Amarin, who had received strong direction from

the previous principal to actively support the project, was now limited more to preparing documents and visiting communities to explain the project. This means less organizational support was available for individual teachers from this organizational unit. (Discussion with SRI fieldworkers, July 29, 1994).

Moreover, the delegation approach allowed certain tensions between the academic section and teachers in this project to surface, with the result that teachers became less interested in seeking assistance from this organizational unit. Because the academic section is responsible for many activities in the school, including this project, teachers have to go through this office. The head of the section, according to information given to the fieldworker responsible for this school, has power ambitions of her own and attempts to exercise considerable authority whenever possible. Given the former principal's strong support of this project, however, this person did not interfere. Under the current principal's delegation approach and general "hands-off" attitude towards the project, this person's role has grown with the result that, teachers now wanting assistance must approach her, which causes problems, since she acts more as an authority figure than a facilitator. Since teachers in the project, as well as teachers in the school generally, do not want to deal with this, they began avoiding contact with the office. In short, the current principal's delegation approach to administration, instead of fostering teamwork encouraged by the former principal, discouraged teamwork by allowing latent power struggles and personality conflicts to play a greater role in this office with negative effects within the school and for this project. (Discussion with SRI fieldworkers, July 29, 1994).

The cumulative effects of these internal changes in school climate and administrative support for the project directly affected three of the four

teachers. Two of these three initially had reservations about the project but had at least tried actively to implement it. They reduced their efforts. Had the first principal continued at the school, the level of implementation by two teachers at least might have been higher. The third teacher, new to the school and without the benefit of previous training, was struggling just to teach her courses. While she had initially demonstrated a willingness to carry out the project as intended, once the tone from the administration changed, she spent most of her efforts keeping her head above water in all her classes. The fourth teacher, Mr. Akapon, ranked in the "High" category for commitment and creativity. This represented a considerable change in his teaching, as discussed earlier in Part Three. Among the individual characteristics that weighed into his decision to become actively involved in implementing the project was his personal interest in career advancement. He reported to an MOE official that he wanted to use the results of this project to apply for a special promotion under a program initiated by MOE to encourage classroom action research. (Interview, MOE official, July 20, 1994).

B. Pirunwittaya

The Baseline Data Report described the tensions that existed between the new principal, assigned shortly after the school agreed to participate in the project, and staff in the school. His dictatorial style of leadership and personal problems generated considerable reciprocal animosity. Regarding this project, the principal refused to attend team B training prior to the First Term Pilot and raised so many concerns about students leaving the grounds to visit communities, that two teachers confined their efforts to studying the school's history and never visited a community, one participated in the study of the school's history but ventured out once to a nearby village, and only one teacher took students out to several villages to do a local history. He

refused to attend the Bangkok meeting where secondary schools participating in environmental projects met to discuss their responsibilities, sending his assistant principal instead. Even after MOE funds arrived for the project, he refused to authorize their use for visits to the communities.

This resistance and the broader climate of administration throughout the building affected teacher efforts to implement the project and contributed to lower commitment and creativity. Teachers had to make adjustments to carry out interviews within the school, focusing on the school's history instead of the community's history. Teachers were not encouraged to collaborate with one another. While the assistant principal was delegated responsibility for the project, he could not really support the teachers without confronting the principal. Finally, this resistance made it easier for teachers with administrative roles down the chain of command to assert their authority. For example, the head of the science section, Mr. Roongrot, announced shortly after Team B training that he was withdrawing from the project for philosophical reasons and was going to teach the prescribed curriculum in his traditional way. This created a special problem for the science teachers in the project because they now had both a hostile principal and a critical department head. Contributing to their problems was the teaching overload each experienced. The normal teaching load at the secondary level is 20 hours per week. The extreme shortage of science teachers at this school, however, meant an average of 30 contact hours per week as well as a number of different preparations. One science teacher, Mr. Rakyoot, for example, not only was in his first year of teaching, but also had one of the heaviest teaching loads in the department, numerous preparations, and weekend trips to Chiang Mai to take classes for his MA. While he attended training sessions, he did little in terms of the project, given his time constraints and his desire to move from

the school as soon as possible. In contrast, Social Studies teachers taught the average of 20 hours a week. One of these, Mr. Rawee was the only one who took his students to surrounding communities (one where baseline data was collected and two other communities) and rated "High" on both commitment and creativity. While fewer teaching hours made it possible for him to consider implementing the project, his approach to teaching, congruent with the goals of this project, as well as his "pet" status with the principal, who relied on him for other tasks in the building, were the major factors leading him to implement the project as he did.

While both Phasaiwittaya and Pirunwittaya's teachers ended the term with similar rankings, the internal dynamics of each school suggest these outcomes might have been different with stronger principal support.

Even if MOE's follow up system had been operating effectively, principal resistance (overt or covert) would likely have restricted its impact. But the system was not implemented effectively. Only pieces of the follow-up system were put in place during the First Pilot Term. Instead of regular visits by regional and provincial supervisors, only the provincial supervisor came to the schools (two to three times per school). Members of Team A visited Phasaiwittaya only three times, once to observe the students' first visit to the community, once to discuss the results of the visit, and once, in March after the term was over, to discuss project goals and problems. Finally several informal contacts were made with the principal at Pirunwittaya in a effort to answer his concerns about the project so students would be allowed to visit communities and teachers would receive more encouragement to carry out the project. The overall result was that teachers were left to negotiate their own levels of involvement according to individual cost-benefit calculations within the parameters set by the administration.

Why was the follow-up system only partially implemented? Certain procedures were not followed by the project team during the design stage which created problems with the Department of General Education at the provincial and ultimately the school level during the First Term Pilot. The provincial office was not involved in the site selection process, which led to public questions and criticism from the Provincial Director during the initial training session for teachers in May, 1993 about the rationale for selecting the schools that were chosen. While the Provincial Director supported the goals of the project, he felt bypassed. Principals at both schools questioned on more than one occasion whether official Department approval had been given, since they had not received any official notice that their schools were to participate in the project. Had DGE been involved from the earliest stages, these two problems might have been avoided and the implementation of the follow-up system might have gone more smoothly. Part of the problem in involving DGE was a matter of personality. The person originally involved had difficulty collaborating with other members of the design team and did not follow through with getting the appropriate letters authorizing school participation through channels and down to the schools. (This finally occurred mid-way through the Second Term Pilot). She also left the Department temporarily for a six month study tour in Great Britain during the First Term Pilot, which created a leadership vacuum for the project in the Department. While the lack of an official request for participation did not affect the support given by the first principal at Phasaiwittaya, her replacement did raise some questions about this issue and the principal at Pirunwittaya made it one of his central concerns. The sum total of these problems increased principal resistance to the follow-up system and made it more difficult to implement.

A second decision by the planning team also created bureaucratic problems at the regional office. The regional supervisor invited to Team A training was not the supervisor responsible for either of the two secondary schools in the project. In order for him to visit these schools, he needed a letter from the schools requesting his participation. In neither case did this occur, for reasons which remain unclear. This problem was addressed only at the end of the Second Term Pilot.

The demands of time and decisions by MOE officials involved in the project as to where to allocate resources also contributed to the weak implementation of the follow-up system at the secondary level. The MOE person involved in setting up the system is from the Office of the National Primary Education Commission (ONPEC). Given the larger number of primary schools involved in the project and the complexity of training cluster, district and provincial supervisors in the new methods of supervision, considerable time had to be devoted to getting that system in place, which reduced the amount of time available for the secondary level. The combination of all these factors contributed to the comparatively weaker implementation of the follow-up system at the secondary level. Coupled with principal resistance, teacher change became more dependent on individual decisions by teachers with the result that change was less at the secondary level than at the primary school level.

What about the primary schools in the project? What role did principal leadership and the follow-up system play in implementing the project in these schools?

B. Primary Schools

Because the follow-up system was implemented much more effectively at the primary level and support provided more systematically, the specific effects of principal leadership are more difficult to disentangle from the

contributions of the follow-up support system. Nevertheless, three conclusions emerge from the data:

o While the major reasons for variation in teacher implementation stem from individual teacher characteristics and the "cost/benefit" decisions teachers make regarding their respective levels of involvement, overall the follow-up system at the primary school level played a greater role in promoting positive change than did principal leadership. The major reason for the contribution of the follow-up system was the creation of trust between teachers and supervisors, which allowed teachers the chance to talk about their concerns, to suggest strategies, and to receive emotional support. Most principals have yet to develop a deep understanding of the project or a commitment to its success. Instead, they see it as a program initiated from Bangkok. As such, it is just one more of a number of activities for which they are responsible.

o Where the follow-up system was most effectively implemented (in three schools in Province A), the conditions existed for maximum effect. In one school strong principal support for the project combined with active follow-up and certain teacher characteristics to create high levels of commitment and creativity. Less principal support and involvement in the project (two schools) meant that individual teacher characteristics interacted with the quality of follow-up assistance to produce change. In both schools wider variation in implementation was the result.

o Where the follow-up system was implemented but not as effectively or as consistently (three schools in Province B), the contributions to teacher change were not as great as in Province A. In terms of positive change, however, they were still greater than what principals contributed. In general, teachers were more on their own in implementing the project than in Province A.

A. Province A

In Muengkao district, ten teachers participated in the project, four each from Ruemjaiwittaya, Choonchonepatana (two fifth and two sixth grade teachers in each school) and two from Samakkeedam rong. The follow-up system for teachers in these schools consisted of the following components:

o One week prior to the start of the term, the ten teachers in the project met for three days with members of the follow-up system to review lesson plans and the activities for the term;

o Six teachers, two per school, were the subject of a special intensive study by an MSU Ph.D. candidate from Thailand who is also an MOE official. This involved visits three days a week for six weeks, detailed debriefings regarding decisions teachers were making with respect to the

project and discussions about possible alternative strategies;

o In addition, the MOE official-MSU graduate student also trained the four supervisors involved in the project in techniques of classroom observation and supportive feedback and facilitated the cross-school meetings. Each was assigned the responsibility for using this new form of supervision with a single teacher;

o Once a week, each Tuesday, the four supervisors (one from the cluster, two from the district, and one from the provincial office) visited their assigned schools to observe teachers and to check up on the project as a whole;

o At regular intervals, the supervisors and MOE official-MSU graduate student would meet and devote a morning to discussing their observations and progress of the project. In the afternoon the ten teachers and three principals would join them to discuss teacher activities and problems.

1. Samakkeedam rong, a small school of only 168 students and ten teachers with classes from pre-school through sixth grade, illustrates how active principal leadership, supportive of this project, and the follow-up system, when implemented as intended,, can maximize the conditions for teachers to change their practice in ways congruent with the goals of this project.

The principal, Mr. Puchong, combines a high energy level with a smile that covers his entire face. While he has only been at the school since 1991, he has already succeeded in setting a tone that academics, the quality of the facilities, and the school's relationship with the community are high priorities. According to baseline interviews with teachers, Mr. Puchong is "an active, excited administrator." His high intensity personality suggests both commitment and the potential to be overbearing in pursuit of goals. He lays out clear expectations for teachers: they are to keep records of what they have taught to show him every Monday. He wants to know what they plan to teach. He walks around the buildings, which lets him see whether teachers are actually in the class teaching or not. He talks to students regularly about what they are learning. He gives advice to teachers, but is careful to do so

only after asking questions about their teaching. Teachers reported that this style of supervision provides both help and increased excitement about teaching.

His active leadership style has, however, ruffled some feathers. Shortly after arriving, two female teachers approached him regarding upcoming decisions for double promotions. They wanted him to be aware that it was their "turn." The principal took offense at what he interpreted as an effort to limit his authority to evaluate who was most deserving and to reward them. To send a signal, he did not award these teachers a double promotion that year, conferring this honor instead on two other teachers who clearly merited such an award. In response, these teachers, both reputed to be good, began criticizing the principal to other teachers and members of the community. Both requested a transfer at the end of the year (which has yet to be honored). While these developments complicated the internal political scene, the principal set about vigorously to develop good community relations. While generally good relations exist according to baseline interviews with community members, the criticism by the two teachers (who also live in the village) has created some disharmony between the school and the community.

It is within this context that the follow-up system must fit. The two male teachers in the project do not belong to the faction critical of the principal. His support of their efforts and the project in general has facilitated teacher change to very high levels of commitment and creativity. He has, for example, attended each training session and participated actively, often volunteering to lead discussions or presentations. He has visited the community regularly to explain the purposes of the project, to answer villager questions, and to encourage village support. He welcomes MOE members of the follow-up system to the school, provides meeting space, and willingly hosts

cross-school meetings. These activities, plus his generally enthusiastic approach to education, has created a highly positive environment for the two teachers and, thereby, maximized the potential contributions of the follow-up system.

In this school both teachers worked intensively with the MSU Ph.D. candidate-MOE official. She visited the school for four weeks, three days a week in her role of collecting data for the evaluation as well as her dissertation. During these visits, she would observe teaching lessons and debrief the teachers on what they were trying to accomplish and why. In her role as supervisor, she would observe the classes as they went to the communities and brainstorm with teachers afterwards on what might have been improved. After the initial four weeks of intensive visits, she observed the teachers on a weekly basis. She also helped to arrange and participated in the weekly meetings of teachers and the MOE follow-up team (Team A), held on a rotating basis at each of the three project schools. The trust that emerged between project participants and this member of the follow-up team led teachers to confide in her their sincere desire to do well in the project as a sense of duty, their concern over how to implement different components of the project, and their insecurities as they developed and attempted solutions of their own. For example, on more than one occasion, Mr. Pornchai talked about how he felt he would let the MOE official down if he did not work hard to implement the project and that not knowing whether he was "doing it right" caused him sleepless nights. This level of trust was not easy to create. At first, both teachers expressed reservations about being observed (as did most teachers initially in the project). They confided to the observer that her presence, in the beginning, caused them to be excited and to forget things they had planned to teach and that they "didn't like to think about when she

was coming." (Interview, MOE official, October 5, 1994). This attitude changed to one where they "looked forward to the visit." (Ibid.).

The combined result of strong principal leadership, supportive of the project, and intensive follow-up enabled both these teachers to make the transition to many of the components of Level 4 teaching as they demonstrated high levels of commitment and creativity to the project.

2. Ruemjaiwittaya is approximately one-third larger than Samakkeedam rong, with 236 students. It is located in village 6, but also serves children from another village. In contrast to the active leadership in Samakkeedam rong, Mr. Boontam, Ruemjaiwittaya's principal, is slow in making decisions, avoids hard choices, does not adequately consult teachers, and has failed to give the school any specific focus. It was not always this way. During the first three years of his administration, he showed excitement for all aspects of his work, but in the past four years, this enthusiasm has waned, for reasons we do not know. In general, teachers are left to their own devices. He rarely observes their work or reviews records of what they have taught. He expressed the opinion that he does not really need to offer suggestions because the teachers are already good at what they do. The fact that this school ranks fifth out of five on school cluster tests, however, suggests that improvement is possible.

One result of this laissez faire approach to administration is a wide variation in the quality of teaching. One teacher, Ms. Bosaba was designated as the "star" teacher at the cluster level in 1992-93. In the baseline data observations, she was one of only four teachers overall to receive a 3 rating in her classes. In contrast two other teachers, Mr. Bampan and Mr. Boomroong, were rated as level 2 teachers, while Mr. Banhan was a Level 1.

Mr. Boontam's "hands off" approach to administration has been reflected in his approach to this project. While he attended various training sessions, he has not actively participated. While he visited the communities to explain the project, his involvement was limited, owing to strained relations between the school and village 6 because of an incident during the last general election in which teachers in the school opposed a former headman's involvement in a "vote buying" effort. Moreover, in his exit interview, he complained about the additional work the project created for teachers but maintained that his role had not been affected by the project at all.

As a result, change has been more the result of individual teacher decisions combined with the effects of the follow-up system. For example, Ms. Bosaba took a leadership role in her school and during cross-school meetings with colleagues in curriculum development. She came prepared with examples of strategies she had been using and problems she was encountering which stimulated lively discussions among the teachers and MOE members of the follow-up system. Her activities modeled the initiative and curiosity required by the project. While the MOE official-MSU graduate student also worked with her in the school, she was, according to this official, a person who needed little guidance or help; rather she just needed a person to discuss ideas with. This role proved very important to Ms. Bosaba. By asking her questions, she became clearer about her thinking and more confident in her decision-making ability. Mr. Bampen, the other sixth grade teacher, benefited more than she did from intensive follow-up assistance, but he also benefited considerably from the collegial relationship he had with Ms. Bosaba. During the First Term Pilot they collaborated more as he turned to her with questions and paid close attention to the activities she developed to prepare her students to enter the field, often using the same ones. At the fifth

grade level, Mr. Boomroong made considerable changes in his teaching, compared with baseline data observations. The contribution of the district supervisor, Mr. Saksit, to this change process was considerable, however, according to all parties. Mr. Saksit used the same strategies as the MOE official-MSU graduate student, although he visited the school less often. During weekly visits, he observed Mr. Boomroong teach and then debriefed with him about his objectives, problems he experienced, and his views of why these problems arose. Mr. Saksit discussed his observations of student learning as they worked in groups, pointing out what seemed to be working well and raising questions about problems and issues. A level of trust developed that enabled Mr. Boomroong to discuss openly his concerns, questions, and ideas for change. In contrast to Mr. Boomroong, Mr. Banhan, previously a Level 1 teacher, remained in the bottom category during initial implementation of the project. Although the provincial supervisor, Ms. Sasitorn, visited the school on a regular basis, she often found Mr. Banhan absent. When he was there, she found it difficult to establish an effective working relationship, even though this supervisor is seen as excellent among her peers (Interview, MOE official, July 20, 1994). As a result, with neither principal support for the project nor opportunities for active follow-up assistance due to his high rate of absenteeism, individual factors affecting Mr. Banhan's commitment to teaching generally played the most important role in shaping the way he implemented the project during the First Term Pilot.

3. Choomchonepatana school serves slightly more students than Ruemjaiwittaya (298 to 236). Its most important characteristic is that it is an "expanded" school, meaning that in addition to pre-primary through sixth grade, it has lower secondary classes (7-9th grade). Choomchonepatana became an expanded school only recently, as part of the Ministry's efforts to expand

enrolment by making lower secondary education more accessible to rural children. This organizational change has consumed the time and thinking of the principal, Mr. Samsern, and shapes his approach to this project.

Mr. Samsern has been at the school for nine years and under his leadership, the school's academic performance has improved. In 1988, for example, the district selected it as the "star" school. Mr. Samsern uses supervision and suggestions as strategies for improving the quality of teaching. The decision to expand this school to include lower secondary, however, has absorbed nearly all his time and energy. While he has attended training sessions and explained the project to the community, he has been unable to provide support to individual teachers, according to exit interviews, and is concerned about the time teachers have to devote to this project. At the end of the First Term Pilot, he expressed reservations about the activities teachers carried out. He felt that learning about village history was "not the least bit related to the environment" (Exit Interview, March 23,1994) and that teachers should have had students study forest preservation and "real" aspects of the environment. Both statements raise questions about his understanding of the goals for the term and his view of what knowledge is best for students to learn. While he did not discourage teachers from participating in the project, he was not actively involved in efforts to implement it. Instead he devoted his efforts to getting the expanded components off to a good start. As a result, teacher change was more related to individual teacher characteristics than principal support in this school. As the subsequent discussion will show, the follow-up system had some effect on one teacher but none on the other.

The MOE official-MSU graduate student worked closely with two teachers, Mr. Suwan (sixth grade) and Mr. Sattra (fifth grade). Mr. Suwan, already a

Level 3 teacher based on initial observations of his classroom, adapted easily to the kind of teaching required by Level 4. Both the Baseline Data Report and Part Three provide rich examples of his teaching before the project and during the First Term Pilot. Similar to Ms. Bosaba, he used follow-up assistance as support to brainstorm ideas and reflect on problems, rather than sources for inspiration as was the case for Mr. Pornchai and Mr. Pachern in Samakkeedam rong. He referred to the MOE official-MSU graduate student as a "mirror" that allowed him to see himself and thus to reflect on things he needed to change. He came to enjoy the process so much that he talked about its value to other teachers in the project at their joint meetings to ease their concern about the purposes of classroom observation. Mr. Sattra, as described in the Baseline Data Report was a Level 1 teacher, emphasizing "chalk and talk" factual teaching as his basic approach to learning. Part Three described how he adapted the implementation of the community study to this approach, which led to very low ratings on both commitment and creativity. While interactions during follow-up meetings with the MOE official-MSU graduate student were open and cordial, it became clear that his view that knowledge comes more from texts and written material than constructed jointly between students and teacher meant that follow-up support had little impact beyond clarifying differences between his approach to learning and what the project was trying to implement. Similarly the follow-up system had little or no effect on the teaching of either Mr. Somsak (sixth grade) or Mr. Sakarin (fifth grade). While the district supervisor working with Mr. Somsak has many good ideas about teaching, his reticent personality may have contributed to the generally superficial discussions that took place. The school cluster teacher supervising Mr. Sakarin lacked confidence, probably because of his status as a teacher assigned to the

cluster office and newness of the kind of follow-up expected in this project. These factors detracted from the effectiveness of follow-up procedures in this school.

Cross-school meetings. On November 12, 14, and December 9, members of the follow-up team met in the morning to discuss progress of the project and were joined in the afternoon by teachers and administrators (one or two additional meetings may have occurred, but these were the ones attended by a fieldworker). These meetings provided teachers a chance to plan lessons together, discuss problems in going out to their respective communities, and reflect on what students were learning. Discussions were lively and teachers reported that they felt they were of value to them. For three days in April, teachers met with members of the follow-up team to assess what had been accomplished and to lessons plans for the start of the Second Term Pilot.

B. Province B

In contrast to Province A, the follow-up system in Province B was not implemented as effectively, although it was much more operational than what occurred at the secondary level. While supervisors had planned to visit schools weekly, this did not occur because of other demands on the time of district supervisors. Instead visits occurred at more irregular intervals. The team (two district supervisors, one cluster official and one provincial supervisor) were also without the benefit of the sustained involvement of the MOE official-MSU graduate student. While she discussed the new form of supervision with the team in Province B, developed an observation form to use during observations and debriefings, and modeled how the process should work, she was unable to provide the direct supervision given to supervisors in Province A or to attend all of the cross-school meetings. The district

supervisor responsible for the team in Province B, who understood the process well and provided on-going advice and assistance to the other members of the team, had many other district responsibilities, which reduced the amount of time he could give to problem solving with other members of the team. Since the other three supervisors were new to the project (the district supervisor had been a part of the design team), they were still trying to understand their role and how to contribute to the project. For example, the emphasis during Team B training on letting teachers analyze, synthesize and develop results by themselves, led to some confusion later during the First Term Pilot on how much and in what ways supervisors should intervene to provide advice or comment on what teachers were coming up with. Instead of brainstorming solutions with teachers, supervisors would, more often than not, just listen and then ask the district supervisor in charge of their team what they should do (Interview, District supervisor, July 28, 1994). Moreover each supervisor had some deficiencies in their ability to help develop lesson plans, which required assistance from this district supervisor. Until supervisors developed greater competency, their interactions with teachers reflected a lack of self-confidence which affected the kind of relationship they could establish with the teachers. Trust, it seems, comes not only from regular contact but also from the ability to help teachers solve problems. Where this component is missing or in need of improvement, developing the level of trust needed to make this form of supervision effective becomes problematic.

These shortcomings in the follow-up system were compounded by dynamics specific to each school: a strong-willed principal who favored one teacher's approach to the project over another's; the tension in another school between a teacher in the project and the district office and the principal; and the sudden transfer of one teacher in the third school, creating a substantial

additional burden for the remaining participating teacher. The end result was that while the follow-up system provided some support for teacher change, teachers were more on their own than in Province A and were affected more by their own specific contexts than by the follow-up system. In terms of positive change, however, the follow-up system was more important than the role of principals.

1. Paiwanwittaya. Paiwanwittaya primary school is small, with about 120 students and nine staff, including the principal. Two teachers participate in the project, Mr. Kunton, who ranked "High" on commitment and creativity with a score of 9 and Mr. Kanok, who ranked "Low" with a score of 4. A quote from an MOE supervisor captures the essence of the context within which these two teachers work:

> The principal understands the project. He has a good knowledge of teaching methods, but in actual situations, he supervises teachers by just telling them to do x or y. (Interview, District supervisor, July 29, 1994)

Mr. Kriengsak, the principal, is perhaps the most academically oriented of all the principals involved in the project. He understands the teaching/learning process and has a number of good ideas for improving student learning. A young and ambitious man, he is also very confident about his judgement and firmly in control of what goes on in his school. In meetings he typically speaks for his teachers and during the cross-school meetings developed a reputation for not wanting to listen, share or brainstorm, and complained on several occasions that such meetings were "a waste of time."

During the First Term Pilot, the principal talked with both teachers about the project. He approved of the approach Mr. Kunton proposed to use and spent time helping him develop lesson plans. This assistance proved very

important to Mr. Kunton and played a role in the excellent quality of teaching he displayed, as described earlier in Part Two. However, the principal's certitude about "a correct approach" led him into a minor confrontation with Mr. Kanok, who had a different idea of how to approach the project. Rebuffed by a reminder that the project encouraged more than one way to carry out the local history, he simply left Mr. Kanok alone to sink or swim, remarking to an MOE supervisor that "since he didn't want to follow my instructions, I didn't go to watch him in his class." (Interview, MOE official, October 7, 1994). This affected Mr. Kanok's morale, given his naturally quiet nature and sense of insecurity, and likely contributed to his poor implementation of the project.

Within this context the follow-up system focused on providing direct support for the teachers, helping them with lesson plans, ideas for how to link the field studies to the curriculum, suggestions for activities, and advice on how to develop open-ended questions. This created some tension with the principal, who questioned whether the teachers really needed to revise their lesson plans based on MOE suggestions, since it meant so much extra work. Mr. Kanok seemed more receptive to exploring suggestions than Mr. Kunton who often replied that he agreed with the suggestions and would make changes later (Interview, District supervisor, July 29, 1995).

Together, the principal (especially) and the follow-up system helped Mr. Kunton implement the project. For Mr. Kanok, the support system was not enough, given its relatively weak implementation during the First Term Pilot and the relationship that developed with the principal.

2. Taradamrong. Taradamrong is also a small school with just over 100 students and eight staff, including the principal. Staff turnover has been a major problem at this school. Teachers observed during the baseline data

collection period transferred before the start of the First Term Pilot. The replacement, Mr. Tachpong, attended Team B training, but had not intended to teach Life Experience, so was unprepared for the assignment to teach this subject for both the 5th and 6th grade classes until an additional teacher arrived about a month after the start of the term. Mr. Tachpong's own commitment to teaching and the assistance he received from the follow-up system contributed to the changes he made and his ranking in the "High" category. He also played an important mentoring role for the new teacher, helping him understand the goals of the project and encouraging him to observe and assist during visits to the community. Both teachers were also receptive to follow-up assistance. They would brainstorm with the supervisor and were receptive to suggestions. (Interview, District supervisor, July 29, 1994). The principal played no role.

In this school, the principal, Mr. Tongchai, has effectively retired (he officially retires in September, 1995). He shows no interest in the teaching/learning process. As one MOE supervisor put it, "He just sits. He didn't support the project much, but he didn't resist it, either." (Interview, MOE official, October 7, 1994). A district supervisor put it this way:

> I would say this school keeps going because the staff is OK. I mean, the teachers work. The principal is weak, just does nothing, sits down, or does some supporting. Probably it's related to the Thai culture, because the teachers say, 'Well, we have to accept that because now the principal is 59 years old. Let him take a rest before he retires." (Interview, District supervisor, July 29, 1994).

The principal failed to inform the rest of the staff about the project; he failed to help the participating teachers plan for the semester after Team B training; and he made only passing references to the project with members of the community. He did express interest in any pre-packaged materials that

might help his teachers and asked for additional MOE funds to support the project.

3. Panasueksa Like Choomchonepatana in Province A, Panasucksa is an expanded school. This new responsibility, similarly, occupies a considerable amount of the principal's time. While the principal has some understanding of the project, he does not know much about the teaching/learning process and ways to effectively supervise the teachers in his building. He did provide some support for the teacher, Mr. Meechai, who taught both fifth and sixth grade Life Experience, for example, by allowing him to use school funds to duplicate lesson plans. Mr. Meechai also expressed interest in assistance from the follow-up team but failed to use its resources on a consistent basis and was often absent when the supervisor came to the school (He rated in the "Low" category in terns of commitment and creativity. See Table 7). He did carry out a local history project and often taught on weekends to make sure students got the material missed during his absences.

Implementation of the project suffered in this school because of a conflict between Mr. Meechai and the district office/principal. Mr. Meechai was teaching in another school. When Panasueksa was selected to be an expanded school, the district office asked him to move to Panasueksa to teach physical education, his specialty, and various technical classes. Mr. Meechai understood that his position would be permanently reassigned to Panasueksa. Two years later the transfer had still not been made official, in spite of Mr. Meechai's inquiries and pressure. While the delay was the districts' fault. Mr. Meechai's frustration also affected his relationship with the principal, since Meechai felt the principal should have been more active in resolving the issue.

Just as the First Term Pilot got underway, the Provincial Governor announced the formation of a committee to study sport activities, with Mr. Meechai as secretary. This position required sustained absences from the school and provided an opportunity for Mr. Meechai to get a permanent transfer to another school.

Cross-School Meetings. As in Province A, meetings among supervisors and between supervisors and teachers and principals occurred during the term. On at least five occasions (November 8, 11,19, and December 3, 17) discussions took place on problems and progress. While these meetings proved helpful to teachers, of more importance was the weeklong meeting supervisors held with teachers to work on lesson plans shortly after the term began. Even this effort had its limitations, however, since supervisors were without the assistance of the lead supervisor, who had other responsibilities and was away from Province B at the time, and their limitations in understanding how to create lesson plans for this kind of project created some confusion among participants. (Interview, District supervisor, July 29, 1994).

C. Conclusions and Implications

The First Term Pilot was a time for learning a new system: for supervisors in how to provide support through classroom observations and debriefings, in how to convene and run meetings to encourage teachers to share problems and issues and take leadership in developing possible solutions, and in how to encourage principals to assist the project; for teachers in how to benefit from collaborative problem solving, in how to overcome fears of being observed, and in how to take greater initiative and responsibility for learning outcomes; and for principals in how to support the project and in how to interact with more systematic involvement by MOE officials in the life of the school.

While variations occurred across schools, clear patterns emerged regarding the role principals can play in negatively affecting the project, the role principals and the follow-up system can play in creating the conditions for teachers to change their practice in ways congruent with the goals of this project, and the areas which need strengthening and improvement.

Principals' understanding of the goals of the project seems weak at this point. While improving their understanding is important, without attention to their overall styles of administration, substantial change is unlikely to occur.

While the follow-up system is in place for primary schools, attention needs to be devoted to the secondary area, if teachers are to benefit from its potential. Thought also needs to be given to ways to promote school-to-school dialogue, given the absence of any central meeting place for teachers across schools, such as the school cluster office for primary schools.

Where the follow-up system worked most effectively, the role of the MOE official-MSU graduate student seemed most in evidence (e.g., the primary schools in Province A and the six teachers she worked intensively with). The need to continue the staff development process for other supervisors seems particularly necessary, if they are to approach the level of performance required for the project to be successful.

In this regard, the information about "trust" seems especially important. Where high levels of trust emerged between teachers and members of the follow-up system, teaching more congruent with the goals of this project emerged. Two conditions led to high levels of trust: 1) on-going classroom supervision in a supportive way; and 2) the ability of the supervisor to help the teacher solve his or her own problem. In Province B, where these two conditions were not met to the same degree as in Province A (and in Province A

where the conditions were not met as effectively as in some schools), the follow-up system proved not to be as effective and teachers were left more to their own devices and the effects of the school's environment.

In any culture, participants find it difficult to admit that they "don't know" the answer to a problem. In the Thai culture, where saving face and avoiding embarrassment are deeply held cultural values, the challenge of getting participants to discuss their questions, concerns and problems may be especially great. The desire for a "right" answer, especially if given from someone in authority, is strongly felt and, when it occurs, gratefully received, since it abrogates individual responsibility. On more than one occasion, project participants have expressed a variation of this issue so succinctly stated by one principal:

> In this project, I feel like you have thrown me into a river. I'm swimming upstream as hard as I can. On the banks of the river are the fieldworkers, taking notes. I call out to the supervisors for help and all they say is, "Well, there is this alternative. But then again there is that alternative." WON'T SOMEBODY JUST TELL ME WHAT YOU WANT ME TO DO?

This notion of "saving face" means that teachers are more likely to ask their friends (even if they teach at other schools) for advice before they ask their colleagues or supervisors. Principals are likely to avoid situations where they lack expertise, such as in helping teachers with strategies to improve the classroom learning environment. And supervisors are likely to avoid giving advice and becoming actively engaged in situations where their own knowledge and skills are deficient.

These findings suggest not only areas for improvement in the follow-up system and in the role principals can play but also how much was accomplished during the First Term Pilot.

Part Four: Summary and Issues

This is an ambitious project. Developing new links between schools and their respective communities by integrating the educational system into the movement for environmental reform requires change on multiple levels: classroom instruction, curriculum, administrative support, relationships within the school and across participating schools, and community relations. Through local case studies on social forestry issues, schools are to assist communities in understanding the causes of local environmental degradation and participate in strategies to provide sustainable alternatives to local problems, such as community woodlots, agroforestry initiatives and community forestry projects. As described in the Introduction, the critical contribution of schools to this effort will be to change the style of student participation in the teaching and learning process at the classroom level. Specifically the participatory link between social forestry and education is to be addressed by:

- o changing student involvement in instruction from passive rote learning of environmental facts to more active construction of knowledge by altering the common view of teaching and learning from simply acquiring information to also developing understanding of environmental knowledge and developing the ability to apply such knowledge;

- o assisting teachers to develop and use a more integrated curriculum, one that shows the relationships between scientific concepts and key moral, economic, social, and policy issues embedded in such local case studies.

- o assisting students to assume greater responsibility for creating meaning from school and community experiences as a way of learning how to address real problems in their communities.

- o strengthening the relationship between the school and community to enhance the community's capacity for change.

Assessing progress after one term of implementation raises the question of the appropriate standard to be applied to efforts undertaken so far. The

intent, as described earlier, was not to see a completed case study with results reported back to the community and discussions begun on alternative futures. To expect such results, we argued, was premature for a variety of reasons, discussed in the Introduction. Instead First Term Pilot objectives were more modest, focusing on skill building for all participants (teachers, students, administrators, community members, and support persons), curriculum development, community understanding, and the completion of a discrete activity. Instead of a forest or tree-related problem, teachers focused on the history of the village (or for science at the secondary level experiments in the village or specimen collection that could be used for classroom experiments). What can be said about progress towards meeting these limited, but important, objectives?

1. Skill Building

Except for one teacher who withdrew from the project, all teachers took students to a neighboring community to study its history (or to collect specimens for classroom science experiments). Even in the secondary school where the principal banned teachers from taking students to the community, one teacher did so, while the others had them study the history of the school. Thus all participating teachers and students had the opportunity to develop skills needed for this project.

In Part Two, we showed that 10 teachers implemented the project with a high degree of fidelity consonant with the training they had received and with high levels of creativity. The 10 teachers in the "Low" category, however, put forward limited effort. Results, in terms of building the skills needed to carry out a local case study (preparing students, preparing to enter the community, supervising students while in the community, and sense-making after data collection), varied accordingly. In Part Three, we showed the important

role teacher-teacher collaboration, principal support (neglect or opposition), and supervisor assistance played in building teacher skills. Only one of the 10 teachers in the "High" category (the secondary teacher from Pirunwittaya) failed to benefit from one or another form of such assistance, largely because of principal opposition to the project. Even primary school teachers in the "Low" category participated in follow-up assistance in such activities as lesson planning, which may explain their generally positive views of the assistance they received.

Exit interview data, moreover, suggest that teachers gained valuable experience in learning how to develop lesson plans, in delegating authority for learning, in thinking about alternative evaluation strategies, and in coming to value more the potential contributions community members could make to the teaching and learning process. As a result of their efforts, regardless of category, teachers said they saw student learning improve in a number of areas. We argued that these represent experiences which may encourage greater effort during the next and subsequent try-outs.

Student responses to Exit Interview questions showed they preferred this method of instruction over the kind used the previous semester, felt they improved skills in writing, speaking, and general confidence to express themselves, and, overall, felt they learned more, especially about their own communities. These findings applied to all students; they did not depend on the level of teacher implementation. As such they strongly suggest that the process of learning inherent in the case study approach captures student interest and engagement.

Interview and observational data on principals showed generally that they have yet to "buy into" the project in any substantial way. Most lack skills in supervising teachers, curriculum development, and strategies for

improving the teaching and learning process. At least one is "coasting" into retirement, two are preoccupied with expanded school projects, and two (at the secondary level) are not supportive of the project. The two more academically oriented primary school principals used the skills they already possessed to help teachers in their building implement the project as intended, although one principal devoted his efforts to only one teacher. Few, if any, new skills were the result of the First Term Pilot for principals.

For all supervisors, training in the new method of supportive supervision (classroom observation combined with debriefing) proved to be an important learning experience. All eight supervisors improved their understanding of this technique, each experimented with the technique, and one developed a proficiency comparable to that of the MOE official-MSU graduate student. Additional progress, however, is needed if the follow-up system is to approach the goals envisioned by the project. The cross-school meetings, organized and led by supervisors, proved to be of particular help to teachers as they shared problems and brainstormed potential solutions.

Community members interviewed by students gained an understanding of the project and experience in answering questions and working with both students and teachers. Their positive response to interviews created the opportunity for students to return during subsequent visits.

2. Curriculum Development

During the First Term Pilot an important distinction emerged between lesson planning and curriculum development. During Team B training in late September, early October, 1993 prior to the start of the second semester, several days had been devoted to lesson planning. These efforts continued, especially at the primary school level, with teachers in Province A meeting before the opening of school and teachers in Province B meeting soon after

school started for the express purpose of developing lesson plans. During the term, moreover, lesson plans were a topic for cross-school meetings. As a result, teachers during Exit Interviews talked about the importance of this component of effective teaching. But teachers and supervisors also talked about the need to link planned activities more closely to curricular objectives. Discussions about how to carry out the steps involved in doing a local history did not include sufficient attention to key concepts in the curriculum that students were supposed to learn. This led to increased frustration for some teachers who became concerned about what the students were supposed to learn from this experience. To some degree, this development may be evolutionary. It may be that only after teachers learn how to plan activities and gets them underway that they are able to see the need to link such activities more clearly to content, even though the planning team has seen the need from the beginning. Thus, while considerable progress was made in helping teachers learn how to develop lesson plans, the need to help them link activities to curricular objectives has become both immediate and critical.

Teachers at the primary level also raised questions about sequencing activities in the future. If both fifth and sixth graders supposed to study community history during this pilot phase, were both to carry out a case study of a local problem related to deforestation? If so, was this to occur in the same or different communities? If not, could fifth grade continue to study the local history as a skill-building activity, leaving the case study to grade 6? At the secondary level, little progress was made in integrating activities by social studies and science teachers. How will it be possible to accomplish this?

3. Community Understanding

In seven of the eight schools (Piruniwattaya is the exception), principals and teachers met with community members to explain the project and gain approval for implementation. As a result key powerholders understood the general purposes of the project. Community members interviewed by students generally understood what the students were trying to learn. They also expressed satisfaction with their interactions and the interview process. They came to see some of the contributions they could make to the teaching/learning process, which made them feel proud. Their response and the positive views of teachers and principals suggest an increased role in school learning for indigenous knowledge is possible. Finally, school and community members both felt that information and communication between the two had improved as a result of the projects students had carried out.

The biggest problem for the future of the project is the limited participation of community members. Besides officials such as headmen and religious leaders, only a handful of elderly persons were interviewed by students. This raises questions about the validity of findings regarding the community history and whether teachers really understand the need to involve a broad cross-section of community members in any study.

4. Completing a Discrete Activity

This objective was accomplished. That all but one teacher (who withdrew from the project) were able to carry out some form of community experience reflects considerable effort on their part. During the second semester, all schools were involved in a number of activities (e.g., sports days) which took considerable time to plan and meant students were not in class. Such an effort came with a price: increased teacher workload and extra classes for both teachers and students.

5. Summary and Issues

In summary, the initial implementation of the Environmental Education Project accomplished the limited goals for the First Term Pilot to varying degrees. During the try-out a number of issues emerged that must be addressed if subsequent terms are to build on this experience:

o **Can the problems identified by teachers and students be addressed?** The additional teacher workload for lesson planning could be reduced over time through experience and in-depth training in how to connect content to fieldwork. Extra classes, however, suggest that teachers have yet to see how the project can integrate content across areas, thereby reducing this need. Minimal participation by some students suggests the need for additional attention to strategies for effective groupwork. Logistical arrangements may improve over time, but safety issues will not go away and may require support for insurance, more creative ways to plan visits to communities, and greater parental or community involvement (e.g., to accompany students).

o **Can teachers learn to link activities to the curriculum?** While serious training is an obvious answer, underlying this issue may be other, more difficult, problems that will take longer to address. These include:

1. **The implications of increasing teacher autonomy for creating and implementing curriculum.** Both teachers and principals expressed anxiety over whether they were "doing the project right." While this is natural, the centralized nature of the Thai educational system and the deference those lower down on the administrative scale pay to higher levels means that cultural change is also required to carry out the project successfully. Building teacher/administrative judgement means developing the confidence that there are, indeed, many "right" ways to accomplish the curricular goals established by Bangkok. Will it be possible to overcome the habit of looking to higher administrative agencies for specific, detailed direction? Will higher administrative agencies actually allow this increased autonomy? Under what conditions?

2. **The need to build the skills of principals and MOE supervisors to provide effective support for curricular innovation.** Teachers can, and did, learn much from each other; but without knowledgeable guidance and support from administrators and MOE's follow-up team, these efforts can only go so far. Evidence from the First Term Pilot suggests the need to address important skill deficits in this area for both groups.

o **Can more teachers be encouraged to commit to the project?** The components leading to teacher change are many, complicated, and contextually based. Understanding the components that affect each

teacher's individual "cost-benefit" calculation can help efforts to manipulate factors which may encourage teachers to take the risk to become more engaged. This requires serious attention to improving these various components. In addition, the issue of extrinsic incentives is worth discussing. There is a process whereby teachers can use classroom based "action research" to improve their salaries. Teachers have expressed interest in learning more about the process to apply for such increments. Is it possible for the project to respond to this need?

o **Can goal clarity be achieved?** MOE officials and teachers negotiated a limited set of goals for the First Term Pilot. Given teachers' and principals' anxiety over whether they are "doing the project right" and the natural interest in predictability, is it possible to move beyond community histories to the study of actual tree and forest-related problems? Is there a risk that the project might stop at this first level without addressing the central issues it is designed to examine? In a project of this nature, is it even possible to achieve goal clarity?

o **Can principals' support for the project be improved?** For a variety of reasons, not much attention was given to principals during the First Term Pilot. On their own, they did not provide much support for the project, with some exceptions. The project was seen as simply one of a number of activities the school was supposed to carry out. In general it was seen as another requirement imposed from above. In several cases, neglect, even opposition (tacit or direct), characterized principal response. In thinking about how to change this situation, two questions arise: "Under what conditions will principals make support for this project a higher priority?" "What kinds support can principals provide?" These questions go beyond simply building skills to participate more effectively in the teaching and learning process, an obvious need based on results from the First Term Pilot.

o **Can the follow-up system be improved?** Providing supportive support through classroom observations and debriefings represent a significant departure for supervisors who traditionally just visit schools, talk with teachers (and sometimes students), and check records. The positive effects of the follow-up system were clearly demonstrated in the activities of the MOE official-MSU graduate student and one other supervisor. While other supervisors observed the technique and did some initial experimentation, they have yet to develop sufficient competency to carry it out as intended. How can this competency be increased to the degree needed to implement this project?

This question is especially relevant, given the time constraints placed on district and provincial supervisors involved in the project. In Province B, these constraints played a major role. The district supervisor in charge of the follow-up system there (who was also a member of the project's planning team) had to change his schedule from weekly visits to schools to monthly visits to accommodate other demands on his time. Other supervisors felt the same time pressures. Is it possible for such supervisors to find the time needed to create a viable follow-up system?

The skill levels of supervisors, especially in the areas of lesson planning and linking fieldwork activities to the curriculum also need improvement. Can this be done?

o **Can a broader cross-section of the community become involved in the project?** While the First Term Pilot traditional community leaders and elderly in interviews about community history, the number and diversity of those interviewed was very small. Do teachers understand the need to capture the views of a wide range of community members, especially when conflicting interpretations of events might be the result? This issue raises a number of underlying dilemmas for the project:

1. If one of the ultimate project goals is to change community tree and forest management, can this occur if students interview only traditional leaders who already make decisions about the way the community uses trees and forests? How widespread does community participation need to be to insure the development of sustainable forestry alternatives?

2. To what degree is the educational establishment able to move beyond a view that the community provides a laboratory for learning the school's curriculum to a view that the community can also use the knowledge generated by the school to improve its ability to manage its natural resources? There seems to be a tension between the development of a one way flow of information from the community to school and development of a school-community partnership where information flows two ways. While the project structures the relationships between schools and communities in a way that flow of information is facilitated, it remains to be seen whether technical information about trees and forests will actually pass from schools to communities and whether this information affects community behavior.

3. To what degree is the educational establishment willing to recognize the contributions indigenous knowledge can play in learning about a local problem and in developing alternative solutions? While considerable progress was noted during the First Term Pilot, the implications for different ways of knowing and differential status are important and will become more so as the project unfolds.

4. To what degree is the educational establishment willing to acknowledge and use knowledge from other organizations (e.g., Royal Forestry Department, Community Development Department, Chiang Mai University) as well as community members in other villages to understand local issues and alternative solutions?

Answering these questions may help to understand how to create greater community involvement in the project during subsequent try-outs.

The First Term Pilot had limited goals. To the degree these were accomplished, it is important to keep their limitations in mind. Community histories developed important skills. Carrying out a case study represents a significantly greater challenge.