MAINTAINING our SCHOOL

BASED on an EXPERIENCE in RANGAREDDY DISTRICT

ANDHRA PRADESH

Government of Andhra Pradesh
Department For International Development

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Based on Field Experiences in Rangareddy District Andhra Pradesh

WHY

The education buildings in each village, town or city are of vital importance in the government's drive to improve the educational standards of the country.

The structures are expensive to build and if they are to continue to function as safe, secure learning centres that children are happy to come to on a regular basis they must always be kept in a good condition.

If the building develops serious faults the teacher will be obliged to seek professional help to correct or halt the problem, however, with small minor defects the teacher will be able to affect the repair/correction themselves or solicit assistance from within the local committee.

Plants, weeds, shrubs or trees must not be encouraged to grow next to the building as the roots can damage foundations and footings.

Overgrown grass hides rodents and reptiles which causes damage to buildings or injure people who may step on them.

WHAT

The entire school compound and its' immediate surroundings should be maintained in a clean presentable manner. The primary school plays an important role in forming young minds. What children learn in their formative years largely forms how they will continue to lead their lives. This holds true for the practicalities of life as well as the academic side. Basic cleanliness, hygiene and a responsible day to day usage of their immediate physical surroundings are all important indicators of a person with a good community attitude.

HOW

Regular, prompt, positive action by the teacher and the community will save the building from falling into bad disrepair and eventually becoming unusable.

The teacher is also in a position to influence and train the pupils to make proper use of the building and treat its' various components with respect.

Basic preventive care does not need vast technical knowledge, in most cases just a matter of common sense.

With regular care and inspection, potential causes of damage to buildings can be detected at an early stage before it becomes serious.

Building interiors

Regular cleaning of all interior parts of a building is a must. This is the first aspect of preventive maintenance.

Do not stack anything against interior walls this damages painted surfaces and provides hiding places for dust, damp, termites and rodents. If unavoidable rest the stored items on supports so that the floor underneath can be easily cleaned. Regularly move all objects to clean the floor, shelves and walls where items are stored.

These regular movements and cleanings will give an early warning of any damage being created by dust, damp or insect/rodent attack.

Whilst in use doors and windows must be held open by hooks, special blocks or wire string ties and the like so that the wind cannot blow them shut. Excessive banging of doors and shutters will dislodge frames, break the door/shutter and shake hinges or holding screws loose.

Hinges and bolts must be regularly oiled to prevent them rusting or binding thus putting unfair stress on moving parts.

Never bang doors and children should not be allowed to swing from doors and window shutters. This puts unfair stress on hinges which will break.

Clean all traces of termites/white ants, spiders and the like from floors, walls and doors as soon as they are spotted within or around the buildings. Signs of termite invasion should be treated immediately with an appropriate medicine. Remembering that small children use the buildings, so all means of ensuring the child's safety must be ensured.

The surface of the chalkboard must be cleaned with a soft moist (not wet) cloth before and after use. The chalk powder should be collected and removed daily. Children should not be allowed to scratch the board surface with a sharp object as it damages the painted surface.

Damp patches or cracks an any wall or roof should be reported immediately for repairs.

Exterior of buildings and the compound

Do not stack anything against the external walls as this will cause moisture to enter through them creating damp patches and promoting the growth of mould, flies and rodents.

Any plant growth on the roof or walls must be removed quickly as their roots will penetrate their way into the plaster and eventually allow rainwater to enter the building.

The compound area should not have any deep holes or depressions that collects rainwater. Water so collected becomes stagnant allowing mosquitoes and other insects to breed in it. Such water can also seep into the foundations causing damage to buildings.

Undulations in the compound could be a sign of termites, rodents or other pests living under. All such traces, anthills and the like, should be dug up immediately and destroyed.

Loose stones, rocks and small mounds should be removed from the compound as they are a potential source of injury to anyone who trips on them.

The ground within the immediate vicinity of the buildings should be kept clean and sloping away from buildings to prevent water collection and ponding.

Services (water and electricity supply)

All drains including those from hand basins/sinks, water pump and the like should be kept clean so waste-water will flow into the designated soak pit.

Maintaining the hand-pump is the responsibility of the entire community, but it may require the teacher to initiate a system of regular inspection. Periodic checks must be made to ensure the pump is in good working condition and the waste-water drains are clean and in good working order. The pump and drains must be serviced from time to time and repairs carried out whenever necessary.

The electric system should be thoroughly checked by a qualified electrician on an annual basis. However it does not take great technical skill or knowledge to replace a light bulb or repair a fuse.

Ensure that all joints in the earthing system are firm and secure. Water should be poured onto the earthing system every morning to ensure the surrounding soil remains moist at all times.

Sanitation system

Cleaning of the school's toilets has to be considered to be every bodies concern and responsibility. The teacher and school committee should be ensuring the children understand how to use the system and what their role is in maintaining it.

Do not allow anyone to throw any object of even a very small size into the latrine or sink. Such objects block the drainpipes and damage the system making it expensive to repair.

Ensure that rainwater cannot flood into the septic tank or leach pits as this will render them useless. The septic tank or leach pit should be cleaned periodically. The entire plumbing system should be checked and corrected by a qualified plumber on an annual basis.

Any signs of cracks or leaks in the system must be immediately reported for repairs to the appropriate authority.

However, it does not require great technical knowledge to perform simple tasks as replacing a worn out washer, cleaning a choked spout, un-blocking a choked toilet pan and the like.

Holiday periods

Whilst the building is not in use and its' occupants are away it must be ensured that all doors and windows are closed and firmly bolted/locked. The gate of the compound wall should be closed and locked with the keys being kept with a responsible person within the community.

Inspection schedules

To help the teacher and community to focus their attention on the various components and sections of the building that will require regular inspection a simple checklist has been provided for them. (see attached forms)

The completed forms must be kept in a file at the school. It is no good just filling up the form, filing it and neglecting to do the physical work.

Procurement of materials

The purchase of materials is the entire communities responsibility, but it will generally be a smaller group who will ultimately travel to the nearest market and make the purchasing arrangements. Before purchasing any material it is important to compare the prices and quality of material from different traders. Be

sure to collect bills for all the materials you buy and the transport charges. Give all the bills to the headmaster.

Checking material quality

It is essential that all materials used in the maintenance of your school be of the best possible quality. If you use poor quality materials, you may initially save money, but in the long run you will have to devote much time and money to constantly repairing your building. It is false economy to use poor materials and usually local knowledge concerning such materials as sand, aggregate, stone and timber is available within the village. When purchasing material such as cement and steel the shopkeeper may show you good quality items but after the negotiations are over he may try to supply inferior quality materials. Always ensure that you get what you paid for, and that should be quality.

Sand: Sand for all building purposes should be well graded and clean. It is essential to sieve it to remove all large stones and other objects. It must be free from silt and other organic matter. Preference will be given to river sand.

You can check the silt content by using a simple glass jar or bottle. Fill half the glass container with a sample of the sand. Then fill the container with clean water. Vigorously shake the container for one full minute until the liquid is a dirty brown/grey in colour. Stand the container down and leave it undisturbed until the sand has settled to the bottom again. You will know see three distinct levels of colour. The bottom will be the sand, the middle strip will be the silt and organic matter. The top will be the water. Measure the bottom (sand) and middle (silt) sections. If the silt section is less than 10% of the sand section then the sand is safe to be used. However if it is more then the sand will either have to be washed with clean water before it can be used or the community will have to look for an alternative supply.

Bricks: Bricks must be strong and not break easily. To know if the bricks are of a proper quality you can try the following tests.

Raise the brick to a height above your head and drop it. If the brick breaks, it is not of good quality.

Take two bricks in your hands and bang them against each other. They should ring like a bell. If either one breaks then the bricks are not of good quality.

Put a few bricks in a bucket of water and leave them over-night. If the bricks dissolve by the morning they are not of good quality.

Try such tests on a number of bricks. Only if all the tests prove positive should you use them.

Steel: For simple maintenance purposes it is doubtful if the school will be required to purchase steel, but it is good for the community to know a few basic observations when purchasing steel. There is a simple visual test for checking the basic quality of steel. It should be totally free from any form of corrosion, have no loose, flaking, scaly sections and be free from any oil contamination.

Timber: Use of timber construction purposes is frowned upon, but once again it is sensible that the community knows how to choose timber. All timber that is to be used for any component of your school building, frames, windows, doors and roof structures etc. must be free from knots and insects as both of these reduce the strength of the timber. It is also preferable to use dry well seasoned timber as wet timber will twist and shrink, spoiling the finished work.

Water: Any water that is to be used for maintenance purposes must be clean and free from any form of contamination. The easiest way of deciding this is to ask the question, "If I drink this will it make me sick?" If you are quite sure the water is safe for drinking then it is a fair assumption that it will be good for construction work.

Cement: When purchasing cement always buy a recognised brand name. Cement any older than six months should not be utilised.

You can check the approximate date of the cement you are purchasing by requesting to see the traders receipts, if he is not prepared to show them it may be better to look for a different supplier.

Another simple way of checking the age of the cement is to stand out-side the shop for a short while and count how many customers and bags of cement are sold. A lot of customers and a lot of bags of cement going out usually signifies a quick turnover and therefore reasonably fresh cement.

Aggregates: A regular mix of stone sizes between half and three quarter inch is required for good strong concrete.

The stones should be angular and irregular in shape. Do not use rounded pebbles from the river-beds. Limestone chips must not be used for concrete. All aggregate must be clean and free from mud, silt or any other form of organic matter.

Building stone: Before arranging for any building stone to be delivered to your school it is advisable to visit the quarry along with your head mason. He will know the difference between good stone and bad stone.

STORAGE of MATERIALS

All construction materials are expensive and as such when they are delivered to the school they must be stored in an orderly manner. If this is not controlled, wastage and damage will occur and this will mean that your money and hard work will have been wasted.

Cement: Cement must always be stored in a weather prove shelter, off the ground and not placed tight to any walls. If possible cover the entire stack with a polythene sheet. If the cement gets wet you will not be able to use it for construction purposes and all your money will be lost.

Sand and Aggregat: Sand and aggregate must be stored in heaps with simple side protection to prevent wastage. It is also a good idea to cover the piles of sand and aggregate with some thorny bushes to prevent goats and dogs from defecating on the materials.

WHO

Everybody using or deriving any form of benefit from the building has a responsibility to protect and maintain it.

Teachers at the school, the immediate community and the mandal education officers who make regular visits are very important people in the continual upkeep of the buildings.

The teacher is an important person in the chain that ensures school buildings remain in a clean, usable condition. The teacher uses the building on a regular basis throughout the year. He/she is in the best position to notice problems arising with the building.

Whilst the teachers are away they could request the neighbouring plot owner to keep an eye on the building.

During holidays/long periods of time when teachers are away the local community could be asked to help protect, clean and maintain the building.

It is the teachers' responsibility, with assistance from the committee, to organise the schools' cleaning. Between them they should ensure any required repairs are carried out or the need for such repairs to be brought to the attention of the relevant authorities.

WHEN

Regular daily cleaning is a must for classrooms, latrines and wash basins/sinks and the.

Daily	Sweeping and washing
Once a week	Inspection of school building and compound by the teacher
Once a month	Good cleaning for the building with everything being removed from shelves
Annual	Major cleaning of buildings and compound along with service inspection by electrical and plumbing specialists

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ANDHRA PRADESH EDUCATION INFRASTRUCTURE TIMELINE

1989-1993 Andhra Pradesh Primary Education Project builds 3500 primary school classrooms and 1104 teachers centres.

1993 February, end of project review by Department For International Development, notes a huge surplus of local currency due to the international exchange rate fluctuations throughout the project life. Recommendations made for utilisation of excess funding includes;

- Need for maintenance of existing education infrastructure.
- Explore design options for improving new educational infrastructure.
- Improve water and sanitation systems in all primary schools within the six major cities of the state.

April, Secretary of Education challenges DFID to help him address the huge shortfall of primary school classrooms by developing low-cost designs and delivery mechanisms.

July, DFID organises study tour across southern Indian states for senior engineers to see what others were doing to address this very issue.

September, DFID organises two-day workshop, invites 12 imminent Indian architectural and engineering practitioners to present to the state's top educationalists and engineers the varying options open to them.

October, DFID on behalf of GoAP contracts nationally renowned architect to conduct a nation wide and state specific resource mapping exercise to inform future decision making exercises.

1994 May, agencies and technologies identified as to being potentially able to fulfil the Secretaries requirements.

June and August, six-week training programme for 30 state engineers in all aspects of social mobilisation and practical requirements held. Basic classroom designs approved.

	September-November, social mobilisation exercise conducted in four districts where physical construction programme was planned.
1995	April, location of demonstration/prototype building exercise is changed to Rangareddy district by the secretary of education.
	June, physical construction process begins on 29 sites.
1996	October, physical works completed. The exercise proved that it was possible to provide quality education infrastructure at a lower cost. Average savings across the 29 sites were 30%.
	November, four day national sharing workshop held. The terms Vidyalayam and Cost-effective Construction Technology become synonymous with improved primary education infrastructure. The book and video 'Vidyalayam' launched. From this workshop many DPEP states begin to utilise the Vidyalayam experiences to supply their education infrastructure.
1997	October and November, evaluation of the entire process conducted by a nationally renowned engineering institute with specialist support form 2 international experts. One-day national workshop held to present evaluation findings. DFID makes a commitment to make the necessary minor architectural adjustments that most of the prototype buildings required.
2000	January-March, physical adjustments and minor maintenance requirements carried out. The process well documented for future records.

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INSPECTION FORMS

BUILDING and COMPOUND MAINTENANCE CHECKLIST

NAME OF SCHOOL.....DATE.....
INSPECTED BY.....INSPECTION NUMBER.....

INTERIOR INSPECTION

	Activity	Yes	No
	Doors and windows; includes all doors and windows on the compound, toilets, cupboards and the like.		
1	Are the shutters easy to open and close		
2	Are all screws in the hinges in place and tight		
3	Do all tower bolts and all drops operate easily		
4	Do all shutters have hooks or blocks to hold them open		
5	Do all locks operate smoothly		
6	Are all the frames firm in their position		
	Flooring and steps		
1	Is the floor easy to clean		
2	Has the floor cracked since the last inspection		
3	Does damp come through the floor		
4	Are the steps broken/cracked		
	Roof		
1	Is there any sign of soaking		
2	Is there any spot where water drips through		
3	Has this begun to happen since the last inspection		
	Walls and Shelving		
1	Are the reapers securely fixed		
2	Are all the shelves strong and usable		
3	Is the chalkboard in good condition		
4	Does the chalkboard require painting		
	Electrical system		
1	Are all exposed cables pinned securely to walls and ceilings		
2	Are all switches, controls etc safe to use		
3	Are all lights and sockets fixed and working correctly		
4	Are all joints in the earthing unit secured firmly		

Exterior inspection

	Walls	Yes	No
1	Is any plaster broken or cracked		
2	Is any vegetable matter growing from the walls		
3	Is anything stored against the wall		
	Roof and window overhangs		
1	Is any vegetable matter growing from the roof		
2	Are there any cracks in the grading cover plaster		
3	Are any reinforcement bars showing		
	Hand pump		
1	Does excess water drain away from surrounding areas		
2	Is the cement apron in good condition		
3	Does the pump require greasing		
	Toilet		
1	Are the toilets clean		
2	Does the toilet and septic tank work properly		
3	Is the toilet regularly used		
	Compound		
1	Is the compound wall and gates in good shape		
2	Is the compound clean		
3	Is the soil around the building sloping away		
4	Are there any area on the compound where water may collect		
5	Are there any trees or bushes growing very close to building		

Actions taken to rectify any problems;.....
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General observations on the physical condition of the buildings and compound;.....
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The Department For International Development has been assisting the Government of Andhra Pradesh to develop their primary education system since 1984.

The classroom and school compound environment plays an important role in assisting the teachers to carry out their educational duties, as such it is important that they are aware of their and the communities role in maintaining the physical structure that has been placed in their care. This booklet is designed to help everybody within the hamlets, villages, towns and cities of India to safeguard the countries educational infrastructure for the future generations.

The Rangareddy experience.....
For further information contact: Executive Engineer, Panchayat Raj Engineering Department, Rangareddy District.

In the effort to universalise basic education a lot of effort and money has gone into building new education infrastructure throughout the country. Unfortunately, this drive for more and better-suited buildings has tended to overlook the millions of existing classrooms. Much of this infrastructure is failing to provide a safe, healthy, interesting learning/teaching environment. The problem of poor utilisation and maintenance has cancelled out many of the apparent infrastructural gains that have been made in recent years. It also makes it difficult to upgrade the school environment by providing better furniture, teaching aids and the like.

Moving beyond the physical inventory, there is a widespread failure to create a pleasant and attractive school atmosphere. There are examples, unfortunately far too few, of teachers and communities transforming their particular school environment through simply maintaining clean infrastructure and surrounding compound.

It is hoped that this booklet will enable more teachers and communities to understand that a vibrant lively learning/teaching environment is not a matter of huge amounts of money being available. It is more about commitment and interest in the nation's children of the future.

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