INTEGRATION OF EDUCATION AND DEVELOPMENT

Abstract:
There is a growing divide in India and perhaps most third world countries between urban and rural sections. This divide extends in all spheres - educational, economic and political. Inevitably this slows down development, because the rural section lagging behind cannot contribute as much as the educational; advanced urban section, in bringing in new technologies. Unless the divide is bridged, the slower development will result in an increasing gap between the developed and the developing countries. No nation can progress rapidly if III of its population lacks concepts and skills needed for the present age.

The average educational attainment of the rural section indicates that they are severely handicapped with regard to the mental operational skills required for all modern technologies including industrial, agricultural, and organisational. While the genetic potential for intelligence is the same for every one in the human species, its development is not uniform in all individuals, because of differences in the stimulation they receive in the growing period.

The attempts to generate development, in the rural sector, through intellectual and skill inputs from outside is therefore likely to achieve partial and temporary success at best. Similarly aid schemes can only be 'fire fighting' operations.

The only lasting solution is to stimulate their intellect so that they can produce sustained and continuous progress. The essence of intelligence is the ability to visualize and this is now known to be stimulated by physical activity of the right type. It is therefore possible to design a course with the right proportion and type of physical activity, to acquire skills, enough to assimilate these and an opportunity to practice them in the society, all as part of the education system.

This then is the basis for integrating education and rural development. One such system is being experimentally implemented in Pabal village, near Pune in Maharashtra for the last few years.

This system is based on: 1) Learning by Doing; 2) Problem solving orientation; 3) Community Paying for services received. 4) Some earning while learning.

The training is multiskill and problem solving orientating is sought through involving students in the problem is of the region. The variety of skills being inculcated are related to water resource development, construction, workshop technology, energy, transport and environment, agriculture and animal husbandry, and health and health. Engineering drawing is also taught as it enlarges the visualization ability and gives access to the international language of technology transfer.

The course is designed for the 14-20 age group and given in the formal schools in the 8th, 9th and 10th Stds and in the non formal system as a one year full time course for school dropouts. The activities the students do as service to community are illustrated in the following slides.

1. Students give water exploration service to rural community. They carry out Vertical Electrical Soundings.
2. A geodesic dome fabrication, and erection is an example of work in construction.
3. Workshop repair services play a critical role. Welding repaired a wheel of the road roller.
4. A diesel cart being developed.
5. Pest control service is an important agricultural service.
6. Poultry training; the students operate it semi commercially and go with the profits.
7. Home and health includes the traditional sewing and knitting and nutrition, food preservation, child care and health service.
8. Engineering drawing gives access to the world of technology.

It is believed that this system is nurturing demands for new services, even where they are only nascent, in addition to the main objective of stimulating intellect and making self-confident youth. The overall cost of the system is less than colpative systems because the facilities of staff and equipment are fully utilized.
Introduction:
Attempts have been made in the past, to use the school system for development activities- e.g. using the services of schoolteachers for promoting family planning or small savings etc. These have been criticized as putting a burden on teachers, devaluing their teaching role and so on. The school facilities have also been used for social activities. But these cannot be tried as integration of education with development because the other activities had no relation with the education given. The "Nai-Talia" advocated by Gandhiji, on the other hand was an attempt at integrating education and development. But for various reasons this system did not take roots and has virtually been given up. Perhaps the main reason why it did not enthuse the people) was that the development activities incorporated were not in tune with the changing world scenario.
Education should be the cutting edge of Development, but in our country, it has rather played the role of supplying the skilled manpower demand created by the Development Process. Strictly education is part of the 'infrastructure' and the lost important one that leads to development. How can we design a system that will do this?

STIMULATING THE INTELLECT
If we compare the brain and the computer, while their are many similarities, the difference that strikes us is that the computer is perhaps more precise, but the brain is far more flexible in action and can tile very complex decisions that the computer finds too difficult particularly the information is incomplete. This is considered to be due to the brain working through formation of pattern and storing and recognizing them, an against the numerical methods of the computer. Very simply we say consider intelligence as the ability to visualize and recognize patterns. The psychology of learning also says it consists of internalizing concrete operations thereby doing the same in the mind rather than in the physical world. It is known that this process of internalizing continues throughout our life. Thus physical action is the starting point for thought and learning processes.

Working with hands helps us to develop the visualization ability- it can help us learn new skills and these skills can serve the community. Therefore we chose "Learning by Doing" in this sense of perusing an activity with the objective of stimulating the intellect, gaining skills and using these for the community. This is the basis of our scheme for integrating Education and Development of the region and society.
The intellectual stimulation has to be broad spectrum and not the "single track" type. Multiskill training not only does this effectively but also suits rural needs better than specialist training.

Another weakness of our education system is the lack of problem solving orientation among our students. Every student must strive to be creative and make deliberate efforts at identifying problems and finding solutions to these. This is the path of invention. It is also the route to excellence, as each one strives to do better than ones best. One of the hardies in this is our fear of failures. We do not look at failure as a stepping-stone to success nor do we look at problems as potential opportunities. So our Education must include this problem solving orientation. And we think this is best done by involving the student in our endeavors to solve the problems of the community and using these exercises to inculcate the skills and the concepts we want to teach.
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Finally any services to the community should not be free but must be paid for by the community. This not only enables the trainees to earn while learning, but the community also begins to demand certain level of quality and value for money paid.

A third and important benefit is that a service fade available through the education system, nurtures the demand for such services and ultimately makes commercial operations viable, thus creating new income generation opportunities.

Thus by basing the education system on 1) Learning by Doing 2) Problem Solving Orientation, 3) Community Paying for services received and 4) some earning while learning, we hope to produce cadre of youth who are multiskilled, capable of further learning on their own initiative, who have an insight to the problems of their area, and who can practice the scientific methodology of observation, measurement, recording, hypothesis and experimentation. Youth educated in this way will not only meet the demands of the ongoing development but will promote development themselves. Depending on the benefits that such system confers on the community the demand for such an education will originate from the community itself.

This is the hypothesis on which we at Vigyan Ashram, Pabal, have evolved a system and program known as "Rural Technology", which integrates education and development of the rural area. The program has now been recognized by the Maharashtra State Board of Secondary and Higher Secondary Education. It is given as a formal course for school drop outs as a one year full time course.

Educational Features:
The themes around which the curriculum is formulated, include, Water Resource Development, Construction, Workshop Technology, Energy and Environment, Agriculture, Animal Husbandry, Home and Health and Engineering Drawing, the international language of all technology. The practical work covers about 2 hours for every one hour of classroom lecture. The class room work is not just the theory of the practical exercises but gives our own texts, where the concepts are explained in simple language rather than information being crammed into the lessons. The lessons are put on audio tapes so that they don't load the teachers memory. After 20 minutes of planning the taped lecture, the teacher has 40 minutes for face to face discussion.

For practicals, an introduction to tools and materials used, the procedure to be followed, safety procedures, demonstration of the technique and then students doing the practicals and writing the report-these constitute the practical exercises. In later exercises the practicals include the field work, including services to the community and project work.

An important concept introduced in the practical exercises is to get students to produce articles that can be used rather than give graded exercises that give skills only. Thus not only are students building up assets but it is easier to relate the job to the needs.

Development Features:
Along with the educational activity, we have a group that carries out development activities – that can be fed into the school system. Here new technology or designs are tested, adapted or adopted, so that they can be given to the school for implementation. The schools should thus be enabled to "grow" both in assets and sophistication. Thus we have built through students/ trainees, school benches, desks, stackable chairs, drawing boards, pantographs, workshop tables, workshop sheds, power hack saw, welding machines, bench vices, lamp protection devices, wheel barrows, hand carts, pneumatic wheeled carts, tube vulcanizing heaters, heat
treatment furnaces etc. We have in hand designing a diesel cart, poultry houses, folding cages etc.
The linking of education and rural development activities will ensure not only a dynamic educational system but also reduces the cost of both educational and developmental work.
The Hurdles:
Every system has a tendency to drift in the direction of least resistance. Unless we build appropriate linkage with community and other agencies, the education program can become a monotonous repetition of the activity again and again. This happens particularly if the local group feels isolated, lacks input of challenges, ideas, information and resources – material and financial. Difficulties and problems become challenges and opportunities, only when one can see the possible lines of action and a hope of achieving solution. For this we need to build up groups around the educational set up, who can formulate their problem, collect reliable quantitative information and define small steps for progress towards their nations high tech establishments, through the intermediate polytechnics and agricultural and engineering colleges etc.
Practicing the methodology of science to solve the development problems of rural communities will be the surest way of spreading the scientific temper. The problems of rural areas do not come only from lack of resources or skills or bureaucratic and political indifference. Many of them come from only from lack of weakness in our society. Some of these are lack of discipline, not having pride in our own work, not being able to work effectively in a team, etc. It is only to be hoped that these will gradually be overcome, when their ill effects are noticed as they are in this program.
Pabal is a village of 3000, with hamlets around adding another 6000. It is situated about 60 kms north of Pune 20 kms off the Nasik or the Ahmednagar highway. It has a high school and junior college, is electrified and has a sub-health centre.
It lies in the rain shadow region of the western ghats and has an average rainfall of 460mm per annum, which is very irregular. Because of the rolling terrain there is no canal irrigation system even visualised. There is a piped water system in the village but it didn't operate for three years from 1985 on account of shortage of drinking water.
The rural technology course program is now given to about 500 students distributed in 4 schools in and around Pabal. It is given as a 3 year course of 7 hours per week in VIII, IX and Xth standards and as a one year full time course for about 15 school drop outs. The latter give more community services and earn some monet. The same facilities are also used for giving short non-formal courses such as poultry, sewing and knitting, workshop practice etc. to other irrespective of educational qualifications. Because of the intensive use of capital investment the cost per student completing the training is reduced. For 120 students completing the formal training and 30 in the non formal group, the cost is capital Rs.750/ Student and recurring Rs.300/ Student year. The detailed syllabus and other requirements are available from the secretary, Maharashtra Board of Secondary Educaiton, Shivajinagar, Pune 411010
Services Provided to the community through students.
Prospecting for water Pest control on farms/ homesteads
Land Measurement and Survey Nursery
Plumbing, laying pipelines Animal Health Services
Borewell Pump Repairs. Sewing and Knitting
Workshop repairs/ fabrication Electricals services.
Tyre/ tube vulcanising
Building up Assets and Potential Services
Low cost Housing Electric Motor Repairs.
WC pans; septic tank, soak pits Biogas plant Maintenance
Water Tanks silos etc. Design Development
Diesel/ petrol engine services
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<th>Projects : in hand/ completed</th>
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<td>Geodesic Dome house kits</td>
<td>Diesel driven carts</td>
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<td>Low cost workshop sheds</td>
<td>Green Irrigation system</td>
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<td>Power Hack saw</td>
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<td>Goat and cow dairying</td>
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<td>Motorised Bike</td>
<td>32 bird layer cage house.</td>
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<td>Modular Poultry House</td>
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