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Learning While Doing - The Natural system

There is a school in Pabal, our village, where a new course called Rural Technology is being offered to 8th - 10th std. student. This is a novel course, not only in what it gets done through students, but also in what it can do to the village.

This year a group of girls from the 10th std. built a 6KVA-welding transformer. When it was completed, they invited the Headmaster and the girls did some welding job in his presence, using their own machine. The Headmaster narrated this proudly to other Headmasters of vocational schools visiting Pabal, especially to see this program.

Earlier, another batch of girls did blood grouping of about 60 students of the school. The boys built and erected double and single bar in the school grounds. Last year, two groups of boys built two WC blocks for the school, at a total cost of about Rs2.5 thousand each. These included, porcelain WC pans, cement brick walls, cement sheet roof, septic tank etc. Thus girls built a water tank and did the plumbing. If these projects surprise you, read what other kinds of jobs they have done earlier. A batch of girls, from an earlier year, built a cement slide, and also fabricated a steel sea-saw and merry go round, for the children of the local Balwadi. The boys and girls, together built a workshop shed of 900 sft for Rs 27,000 in 1987. They have built wheelbarrows, classroom benches and a host of other things of use to the school or the community. The girls have done hemoglobin estimations on primary school children and advised their parents for diet correction, where necessary; they have examined village drinking water samples for microbiological quality and also tested various methods for purifying these water samples. They have held vaccination camps for poultry in different hamlets.

School students doing these? As part of their S8C syllabus? Incredible but TRUE. This is now possible for any school that opts for the Rural Technology, for its SSC technical stream. An added attraction is that the capital equipment required for this course is about Rs. 50,000 only and the school can give paid services to the community, thus the school becomes a true Community Service Centre.

This is part of an innovative effort by Vigyan Ashram to bring modern science benefits to the rural areas, through Education. The motto is Rural Development through Education System.

Let us now see how this unusual concept has been thought of and implemented.

Introduction:

We learn in two important ways. The natural way and the class room way. The newborn child starts learning from the moment of birth- to see, to recognise faces, to speak, to walk and so many other skills we take for granted. This is the natural method of learning so easy; we do not even consider it as learning.

The child going to school, gets classroom lessons, and begins to learn, reading, writing, and the arithmetic – then other subjects all the way to the university. This classroom method, whether given as formal or informal, is so widely accepted, that we consider it as the only possible method of learning. Let us compare the two methods.

Comparison of the two systems:

Natural System	Classroom System
Deals with a concrete situation.	Generally abstract, through words.
Application, relevance is clear.	Application is also abstract.
Feedback on learning progress: Instant	Slow, After the Test!
No pass or fail- just learns	Examination "Sword" over the head.
Can often give some benefit/income	Generally with some cost incurred.
Is considered for only skills.	Is considered for all higher "learning".

The comparison raises doubts about the efficacy of the classroom method. It is widely accepted, but is it satisfactory?

After learning one language in the natural mode, during the first two years of its life, we find it difficult to teach another in the next 10 years of schooling! After going through the present classroom system, the child lacks self-confidence, is generally lacking in any additional skills that can help it to stand on its own legs. Some are so weak, intellectually, that they lose out in the competition that is life and need all sorts of 'protection'.

On the other hand, going to school, does not end the natural learning mode. Outside the school, they learn to cycle, swim, and so many other things. But in the classroom, it is only the classroom method.

Surprisingly, the natural method is also widespread, particularly among the people who do not consider themselves educated! When one goes to a garage / workshop, the mechanic there probably has not gone to school for learning his 'engineering' skills.

The house where we live has probably been built by masons, who did not have "vocational" classes, find all over the real life in India, we probably get repair services through people who learnt by working with another craftsman- they learnt while doing the job.

This natural system then is capable of teaching, even those whom the classroom has rejected. It is teaching them to a level, where they are the backbone of our labour force. Does it have something that we can adopt in our formal classroom system to improve it? Is this natural system of learning capable of being 'grafted' on to our classroom system, to produce better results?

Interestingly, there is one profession where the elements of the natural system are still preserved. The Medical education is never given, without a real life hospital attached to the college and the prospective doctors learn while working with a practicing doctor in a hospital. Can we consider making it obligatory for a productive workshop to be put along side an engineering college? Why not have an auto-engineering course linked to a regular service and repair garage?

Going to the fundamentals, the Piaget Theory of learning suggests that one cannot learn in the classroom unless and until, one has learnt the prerequisite 'concepts' by experience in the real life- the natural way. This can suggest a way of combining the two on the basis of giving the relevant experience in real life, through a practical exercise- actually doing a job, even if empirically. Then raising the curiosity of the learner, through questions and explaining the theory of it, if necessary in the classroom. So this can be our recommendation.

Objectives:

Our objective in general school education is to let the child realise its full potential. With a good education, the child must feel confident to face the world, and must be even eager to do something of its own.

The earning for a living is incidental. The real life is "own contribution" for the community progress. On these criteria, our education system has failed- miserably. So we should talk about how to make general education meet these criteria. We are not talking of how to give 'vocational' education to some, so that they get some earning. We are talking of giving basic skills as an integral part of general education.

The major faults of the school systems are:

1. It is too abstract and dull for most of the learners, from primary stage.
2. If they miss out on the early stages, it becomes even more difficult to catch up later, and they are doomed to "fail".
3. Even if they do succeed, the returns of this education are uncertain for the majority.

The correction we seek for the classroom system is through the following:

1. At every stage, the teaching must start with concrete action. 'Practical' must come before the "theory".

2. Every skill must be learnt through its application, Use it and then understand the why of it.

3. Stills must be internalised by constant application, inside and outside classroom,

4. The system must provide for different pace of learning for different students. We should not force the pace, at least not in the primary stage of education.

5. While a "syllabus" is necessary for our present day education system, it should allow for flexibility in detail.

The student should have a choice in doing things that he wants, even if the skill to learn is fixed in the syllabus.

We should distinguish between information and knowledge. Knowledge comes only from information that has been **experienced**. So unless information is put to use, we do not get knowledge. Knowledge is a tool; it is software, a 'program' in the computer jargon. We should not rush through education, until we give the child the joy of learning a new skill- it must enjoy using the acquired skills where ever it wishes. This way it will internalise it and then it can go on to the next.

We should concentrate on giving the skills and leave the child to choose the material on which to use it. Thus reading is a skill, writing is a skill. Mathematics is a skill in handling numbers, a) are how to use a railway timetable, or a library catalogue. We need to have skills that can help us shape the world around us- the clay, the soil, the wood and in the modern world the steel, the energy sources- sun, fuel wood, electricity, diesel, kerosene and petrol. We need to have the skills that will make our living easier, that can help to concretise our ideas, our inventions.

In the modern education, it is not enough to be able to think, we must have the capability to act- and this air general education does not even try to give.

How to do this kind of education?

1. The balance between concrete and -the abstract-is maintained by giving practical exercise for the student to do. These practical exercises will comprise of skills that are relevant in modern society. Thus the learner sees the relevance? And he learns while using trying to make something useful for himself or the society. Having understood, what he is trying to master, some shoptalk tells him more about it - the theory part.

2. We also give opportunity to practice these skills by giving services, to the society, whereby not only the learner can internalise the acquired skills but also get the satisfaction of doing a socially needed job. This increases his self-respect .as also self-confidence.

A course designed on the above basis, entitled "Rural Technology has been recognised by the Maharashtra State Board of Sec and H.Sec Education, since 1985. It gives multi skill training, by the above graft of natural system and classroom system. The students learn about water resource development, construction skills-, workshop fabrication and repairs, about electrical wiring, diesel and petrol engines, agriculture, animal husbandry and many topics in Home Science, including, sewing and knitting, nutrition and food preservation, and simple laboratory techniques in medical, water and soil analysis. This wide range of skills are easily taught and enjoyed by the students because they learn while doing. The same syllabus is covered in the usual classroom style would be impossible to cover.

They do not become master ruffs men, in any of these skills. But they have learnt enough, to know what it is all about, whether it suits their aptitude, and also get a wide general awareness about the modern technology. In short they acquire technological literacy. They can proceed from here to master any of the skills of their choice just by another 3 months training in a given skill; or they can choose, as many do, to go higher (technical) education, which they can understand and better, because of this course at school level.

An additional important feature of this course and system is, the school can also take non-formal students- school drop cuts who wish to specialise in any of the above skills -and benefit the school as also the community.

It is not our claim, that if this course is introduced in-all schools, every school will be able to do similar "miracles". We have shown what can be done by the school students, provided the prosper environment is given. This environment includes, instructors who like to work with their own hands, a school management that is willing to cooperate, by cutting down the red tape in procedures for buying and selling etc. And some networking whereby technical guidance is made available from other institutions. We consider, that to make this system effective, when introduced in many schools, we need the following 3 conditions:

1. A community desire, indicated by collecting Rs.40, 000 for the equipment and some other infrastructure, for the course.

2. A group of instructors, who have been trained and are given a fixed core salary, but are encouraged to operate a "business" in the school, using the school facilities, to earn additional income for themselves and hands on training to students, formal and non formal.

3. An effective feed back system, preferably computerised, which gives good two ways communication, to manage the implementation and solve any operational problems. We have worked out schemes by which computers can be put in the school at modest costs and these costs can be recovered by giving students computer training at Rs. 10-20/student per month fees.

If we are going to do some thing ambitious, something very much different, we have to change many things, and the foremost among them, is our mindset. If we do this, the above system, which has been proven on experimental basis in four schools for over six years, is capable of making school education effective. The decision is now for the society to take.