

Introduction:

It is almost axiomatic to say that education in real life situation is most effective. This is the basis of the old system of vocational education- by facing an apprentice to a craftsman.

As the complexities of the subject increased, engineering education tried, first "practical" then industrial /factory training and post education apprenticeship, While all these have helped to different extents, none of them have been entirely satisfactory. One area of education that did not give up its roots in the real life is Medicine. Medical education still requires a college to be attached to a hospital. The problem is particularly critical for rural areas, where after vocational education; there are no suitable places for apprenticeship.

Let us then take a cue from the medical education and attach a workshop to a school so that technical education gets its base in the real life situations.

Objective: Education or Profits?

Good education is the primary objective. But if the school unit is not economically viable, can it give good education? If our objective is to promote entrepreneurship then the answer to this question is No! A school that cannot run its workshop profitably cannot create confidence among the students that they can run a profitable enterprise,

The objective of sating profits and giving good education are congruent. In fact in vocational education good education means teaching how to make profits from the vocation. Having said this, we must accept that there are constraints in an educational institution operating as a commercial unit. We must therefore evolve the concept of "Semi commercial" operation.

The Constraints:

1. The business environment is lacking - The objective of the real situation is in fact to create the business environment.

2. The location is chosen for education not profitability:

This is a valid reason. We should therefore consider the profitability as an index and not the volume of profits.

3. Work culture; An educational institution works for much shorter periods than an industrial concern. This should change; A vocational institute should work like an industry. This is the leaning of real life situation.

4. Overheads of education cannot be borne by the school production centre. The salary of teachers should not be charged and the depreciation of equipment may be charged only in proportion that it is used. This is the concept of seal commercial operation.

5. Management system will not be well honed as when production becomes the main activity, As against this, the educational institution has greater opportunity to experiment and innovate and not charge it to costs. Only when the technique becomes "proven" it can be included in the commercial operation.

Semi commercial Operation:

The concept of semi commercial operation has been proposed to separate the constraints of an educational institution in conducting a commercial operation:

The costs may be calculated on the following basis:

All direct costs of materials should be charged. Direct labour should be charged on notional basis; the time cost may be decided on the basis of local rates. Time used figures -from optimum, to be achieved after practice.

Depreciation should be charged where the equipment is specifically for that purpose. Where the equipment is used for production for a short period only, proportionate depreciation may be charged if the usage is 50% or more.

In other cases, calculate the depreciation in a project proposal and charge the same rate per items.

Overheads; where overheads cannot be easily determined, use a figure of 10% on materials consumed.

We consider that after the costs as calculated above are recovered, one may add a margin of about 15% if there is a profit distribution scheme. We do not charge the margin on items of an experimental nature.

Our Experience

Over the last 10 years or more, we are convinced that a semi commercial operation is feasible; it brings realism to the work; staff remains alert and up to date; brings constantly new opportunities to light and most importantly encourages entrepreneurship. So many of our staff have left to start their own enterprises, because their stay with us has given them the confidence. We have found that the position on our staff has become a route to self-employment, fill the workshops in this region have been started by our ex students.

Two of the staff members from the other schools where this program was introduced, have also started their own enterprises and all these are prospering.

While the above situation is very encouraging, the disquieting feature is that all the enterprise is restricted to fabrication workshops. The other areas are not showing the same entrepreneurial success. Subject to the following notes.

Our Poultry Broiler operation is perhaps the best example of a successful Semi commercial operation. For almost 9 years now we have been operating a broiler farm, where the students invest and after completion of the course, get a share of the profits, in proportion to their investment. We have been distributing profits regularly to the students passing out. Many of them start their own poultry and at least two of them are successful poultry farmers. But unlike the workshop, the poultry has not been popular with the other schools, though they have shown they can operate profitably. The need for day and night presence and the kind of work does not make poultry -very attractive. But along the students, core poultries have been started by our ex students than the workshops.

Agriculture should have been the simplest to operate as a semi commercial operation, but there is very little interest and a lot of negligence which makes it difficult to operate successfully as a commercial operation.

But some area of this, particularly the fodder crops have been consistently making good profits.

Dairy is also an operation that can be run as semi commercial operation with a steady turnover. Like agriculture, it is not glamorous and does not attract students. The AI service for goats is another regular, but low volume semi commercial operation.

I would now like to turn the attention to some novel products and services. Water prospecting by the Vertical Electrical Sounding method has been one of the most popular and unique services, of a strategic value to the rural area. Added to this, we have been making and selling the electronic instrument for this also and on a low profit basis. The total values of the tests done till now are of the order of 17 lakhs of rupees (1700 tests, that cost commercially about Rs. 1000 per test now.) Two of our staff members set up their own enterprises, in the neighborhood.

The Rural Lab, giving medical diagnostic service has been operating on no profit no loss basis for about 6-7 years and has a net collection of about Rs. 390 p.m. This is not a large sum but the service is most appreciated and very strategic. This is a good example of a semi commercial service that is very important but not very good as income generating. It has a regular stream of girls coming for training.

There is scope for novel products of rural significance. I can give example of electronic products, (beside the ERM) and also engineering designs. The geodesic dome was a good operation until we set up one of the boys to do it as a commercial operation, which it is to this day. We now have the MechBull, which is likely to repeat the story. In the construction, there is consistent demand for boys to build geodesic domes, but we are not doing it on our own but pass onto our ex students who have become contractors. Because the service requires, stay outside for extended periods, we find it difficult to organise. But it has tremendous potential, perhaps in tens of lakhs per year

The Magnitude of the Community Services:

We shall now consider the magnitude of the services provided from the schools. Vigyan Ashram is an educational and a development unit combined. There has to be a difference between an ordinary school and Vigyan Ashram. We shall therefore first look at the quantum of services given by the three schools at Loni, Dhamari and Mukhai. These technical sections were run by instructors trained at Vigyan Ashram, but were operating on their own, with only one monthly coordination meeting.

The following table shows the rupee value of services given by the three schools, quarter wise from 1989 Jan.

Table IV

Value in Rs.: Community Services.

| Quarter/school | Loni | Dhamari | Mukhai |
|----------------|----------|---------|----------|
| 1 | 476 | 16611 | 692 |
| 2 | 372 | 840 | 156 |
| 3 | 1766 | 5678 | 772 |
| 4 | 1214 | 1909 | 6540 |
| 5 | 9352 | 13736 | 13204 |
| 6 | 14636 | 5438 | 52362 |
| 7 | 23594 | 3771 | 13613 |
| 8 | 16503 | 5612 | 3616 |
| 9 | 3738 | 1863 | 8366 |
| 10 | 6786 | 12995 | 19410 |
| 11 | 12802 | 8737 | 1619 |
| 12 | 3614 | 9651 | 6109 |
| 13 | 12093 | 3497 | 11412 |
| 14 | 3365 | 10991 | 2662 |
| Total Rs. | 1,10,311 | 86,329 | 1,48,899 |

The above table shows that the schools have given substantial services to the community for which the community has paid. Such amounts have been accounted for by the schools in separate bank accounts.

A glance at the figures quarter wise shows, that the services, by value have varied a lot from quarter to quarter and school to school. This is because when prodded the services increased; and otherwise there was a tendency to take it easy. This shows the potential that the school technical group has and also the need for an incentive system and community control on the services, to do the prodding.

Another way of looking at these is to consider the services as a % of the Grants received. The non-grant expenditure is what is paid for by the community. He have been able to reach a level where roughly 1/4 to 1/2 our total expenditure comes from locally generated funds, through community services. In other words, were spending that much more than our funds provide for.

The figures for some years are given below,

Table III Expenditure from Grants and Non Grant sources.

| Institution | Period | Grant Rs. | Non Grant |
|----------------|-------------------|-----------|-----------|
| Vigyan Ashram | Jan 1987-Nov89 | 10,43,785 | 7,09,999 |
| Vigyan Ashram | Oct 1991-March 93 | 9,40,900 | 3,85,403 |
| Loni School | 1988-91 | 2,56,000 | 77,961 |
| Dhamari School | 1988-91 | 1,56,000 | 51,782 |
| Mukhai School | 1988-91 | 1,56,006 | 1,16,309 |

The per year non grant expenditure of Vigyan Ashram has remained around Rs. 2.5 lakhs, but the grant expenditure has increased substantially from new projects.

Nature of Services

We have already seen the different type of services provided by Vigyan Ashram. In the schools however the services were predominantly workshop services. The services in Electrical, water prospecting and agriculture being rather low. This was more due to the apathy of the instructors. Under pressure, they have shorn that they can rear poultry and run poultry courses. This adds substantially to the monthly service figure. For example 50 birds per month adds more than Rs. 1500 to the service quota, But It involves attention outside the working hours, And so poultry was never popular, among the instructors, And boys from their village would come to us for poultry training.

Over the years, the quantum of services from Vigyan Ashram has remained fairly constant, but the nature has changed. The following figures illustrate this.

Year Amount in Rs. of services.

| | | | |
|-------------------------|----------|----------|--|
| 1992 | 2,76,702 | | |
| 1993 | 2,67,637 | | |
| 1994 Jan-July, 7 months | | 2,05,989 | |

The break up by subject is as follows:

| | | | |
|----------------|--------|-----------------------|--------|
| Dairy | 21,381 | Fees | 5,512 |
| Poultry eggs | 2,500 | Interest | 502 |
| Broilers | 18,721 | ERM instrument | 1,348 |
| Goats | 600 | Workshop | 6,427 |
| Farm | 17,972 | Water Resource | 1,000 |
| Agri. Products | 4,784 | Rural Lab | 1,987 |
| Miscellaneous | 4,005 | MechBull | 14,107 |
| Energy | 4,595 | Publications | 3,555 |
| Electronics | 240 | Rural Business Centre | 25,000 |

Total for April -July 4 months Rs. 134,510

Lessons for the Future:

1. A service-production-training centre is a feasible program for the rural area, including the smaller villages of less than 10,000 populations.
2. We can expect these training centres to complement the vocational education and facilitate the economic development of the region.
3. The facility could be attractive enough for the community; to induce them to invest in the infrastructure for the centre.
4. The success of such a centre will depend on the "work culture" of the institution. If they want to work as a commercial unit, they must work like one. The 10.30 to 5pm 200 days in year system will have to go.
5. The staff should have an incentive system by which they get a core salary and the balance is linked to their productivity.
6. It is to be expected, that if the centre is successful, many of the staff would leave to start their own enterprises and new staff will have to be trained. This should be an on going process.
7. This could be a selection process for attracting candidates with an entrepreneurial spirit or ambitions to the vocational school and this would be good for the education.
8. Agriculture and animal husbandry are well situated for production with a view to supplementing the income of the institution or reducing the dependence on government support. However suitable top-level management will be necessary.
9. Engineering subjects are suited for the service industry and may not contribute much to resource generation. However they will nurture demand for engineering products and help in creating new employment opportunities.
10. As a policy such Service-Production Centres should not compete with small engineering industry in the rural area but act as pathfinders.
11. A successful Production Centre will be an ideal method for demonstrating the need for change in our work culture and related values.