

Continuing education-a tool for industrial and academic development

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ABSTRACT

In an age of exploding knowledge, obsolescence is a natural phenomena unless efforts are made to keep one self updated. That is continuing education. The strategy of organising continuing education programmes rest on academia-industry and society. Selection of a theme, target groups, resource person are all need based. Continuing education programmes can be of short or long duration. The preparation of course material, communication skills and motivated recipient are essential for success of such programmes. Every continuing education programme should be evaluated as to its content, resource personnel and efficiency of transmission. The advantages of such exercise is for both academic development and industrial progress.

INTRODUCTION

The mankind is engaged in the task of building a society to improve the standard of living of people. This is achieved by a series of activities where the resources of nature are transferred to articles of greater use through the application of science and technology. The game of value addition for the comfort of mankind is going on for time immemorial. The changing environment often imposes limitations on the process of production where value additions are made. The economic factors, the environmental compatibility factors and the social factors continuously are changing creating a dynamic situation, forcing the manufacturers of various goods and services to evaluate the methods regularly. On top of this the brilliant mind of man through the process of investigations is engaged in the pursuit of never, hitherto untried novel methods. This is a situation where new knowledge surfaces and provides a never opportunity to explore newer technology for production.

A society which is unable to take advantage of the continuing developments is termed obsolete. Thus in a static environment obsolescence grows, this is a helical spiral where one set of obsolete conditions can lead to sympathetic obsolescence in other areas. The professional education, activities of production and management of social needs are all interdependent and the strength or the weakness of has a direct impact on the other. An inert

traditional system not alive to changing surroundings moves to obsolescence. The means to keep obsolescence away rests on the basic philosophy of looking at alternatives the latest knowledge to create goods and service in a cost effective and socially acceptable manner. Thus such changes can be brought about by the process of continuous education of all concerned.

2. KNOWLEDGE EXPLOSION :

Knowledge of Science & Technology and in professional fields is increasing by leaps and bounds. It is felt that half of the existing knowledge is invented in last half of a century. This is remarkable when one looks at some of the recent developments like Laser & Masers, micro computer, and super conductors etc. One can conceive the changes from long table to slide rule to pocket Calculator to personal computer.

Living in on exploding knowledge is exciting. Even more exciting is the participation in the advancement of knowledge. But the foremost challenge is how to acquire this knowledge and use it effectively. It is said that if two individuals have an idea each, by sharing they have two ideas each. This is the key to the philosophy of continuing education. There is a need to share and transmit knowledge.

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One can find innumerable examples of this. The application of membrane technology in industrial separation has come from the field of human physiology. The science of bio chemistry is providing inputs in such industrial processes as fermentation, aerobic/anaerobic treatment processes or bio-pulping. Knowledge of distillation, absorption and extraction will be useful in design of organo solvent extraction processes. These applications can be meaningful only when the knowledge crosses the boundaries of disciplines and reaches the intended uses. Continuing education is the means towards this end.

Every professional who is static will become obsolete. The half life of such a professional is 5 to 10 years. The upheaval caused by the new processes and thinking put the professional knowledge in transition. This fast transition has to be absorbed by professional teachers and practitioners so that the society gets the benefits of knowledge explosion. The big question is how to transmit the transitional knowledge to the people concerned? It has to be kept in mind utilization of any knowledge must ensure benefits in terms of not nearly economic advantage but necessarily be of social and ecological value.

3. KNOWLEDGE TRANSMISSION :

Imparting of the knowledge is the fundamental aim of Institutes of higher learning. Thus continuing education which keeps obsolescence at bay, falls under the orbit of such institutions. However, it must be remembered that obsolescence is a disease which can encompass all including the Institutes of higher teaching if not be fought with a planned strategy. Thus continuing education programme should address itself to the receiver or the sink and the source or the giver. The identification of the continuing education programme is based on the needs identified by a continuous interaction between the three agencies the industry, the academia and the society. The society poses questions and seeks answers from industry and academia. The industry as exponent practice through the theoretical challenges for scientific investigations and systematic analysis for academia to pursue. Academia on the other hand show the plausible solution of the problem and seek the cooperation of the practitioner to convert an idea to a reality. Continuing education, thus forms a strong chain linking the present with future in a most appropriate manner. If this does

not happen, there is bound to be a fast relative downward slide due to obsolescence. So the continuing education has many facets. These include definition of continuing education programme, structuring the contents, identifying the target groups, selection of resource persons, selection of site for conduct of programmes and fixing the duration. The sequencing of these stages will depend on individual signatures. The most important elements in continuing education are necessarily the resource persons, the receiver and the subject matter. The receiver of one programme could be a resource person in another. The interdisciplinary approaches now being used extensively for problem solving often requires persons to have a fair share of knowledge in associated areas. This makes it necessary to have opportunities for gathering knowledge in the associated areas.

Updating knowledge in the primary purpose of a continuing programme. This updating has several corollaries. It gives a satisfaction of the intellect. It creates the necessary zeal in a person to be in the game of continuous updating by providing the needed driving force. The person can stimulate those around him for attaining excellence. The best example of this is a good teacher in a University. He is the foundation of exemplary teaching around whom will flock the student community, the researchers, the junior colleagues and a host of knowledge seekers. This will continue as long as the teacher concerned is up to date.

The second consequence of this is its economic advantage in problem solving. An organisation planning diversification in a new area can first get a set of individuals trained who in turn can be used in problem solving in a systematic manner. A paper mill for example, planning to venture into the area of coated papers, can send a few of its process/development engineers for a well planned short term course in coating subsequently this can be associated in large scale experiments in selected institution in gaining first hand experience in operational parameters and subsequently optimising parameter. Then would follow a stage of commercial exploitation of process finalisation, equipment selection, procurement, erection and commissioning. Thus it can be seen that significant commercial advantages can be seen in application of continuing educational concepts. A similar case exists when one

looks at such situations like software development and computer applications, productivity imparments, energy and invironment management problem solving or plant modernisation and technology upgradation.

Similarly a teacher can be the receiving person when he gets with the continuing education game firstly he learns new methods/techniques by interacting with those who are knowledgable. This could be within or outside country. He can be associated in a interdisciplinary problem solving project where he combines his expertise with experts in other fields and there by gathers knowledge of other areas. This knowledge push will make the teacher uptodate and more useful.

4. Methodology for conduct of contining education programmes. As idncicated earlier the selection of a problem or theme of a continuing education programme its target groups, resource persons are all need based. The duration and location is a compromise of convinience of all concerned. The sucess of the programme however lies entirely on how well a programme is conducted and how receptive are the participants and how well does a resource person transmst knowledge.

All continuing education programmes can be broadly clarified as under :—

- Short term refresher courses ranging for 2/3 days to acouple of weeks (upto 8-12). Here courses is built to give sufficient the oretical knowledge and problem solving ability participants in well established areas.
- Short term training/workshops of 2-3 days to 10-12 days where a few resource persons involve the participants in problem solving by group interactions. The solution focus on various limitations and attempts at finding acceptable alternative.
- Short term courses where only one or two resource persons (may be a few more) are involved in giving indepth inputs in a frontier area where published information is very little. The idea is to make a beginning on possible applications. The receivers are also persons who have high level of attainment and resource persons are acknowledged experts. The sessions are essentially of a brain storming nature.

- Medium or long duration quality improvement programmes where persons are involved in the process of gaining knowledge. These could be a combination of class room courses/laboratory excercises/specific experiments or milll based training. Alternarely they are all laboratory based extensive experimentations with associated analysis. These programmes often lead to academic distinctions or degrees and diplomas. Hence the numbers are usually small (often individual specific) in research programmes while it may be a group for class room based programmes.

The short term courses must have very well defined objectives which are announced in advance to attract correct target groups. The course materials, the resource persons as well as laboratory/design excercises must be well formulated by esource faculty. The diverse inter disciplinary inputs require to be well intergrated to fit into the course objectives. Otherwise it will turn out to be a set of dis-jointed components, some times over lapping into one another and some times totally irrelevant. The practical components in such programmes must receive proper consideration. Thus it will be seen that sucess of a programme depends on a well structured contents, proper course material preparation, first ate communication skill, proper selection of examples/case studies, sufficient degree of discussions/group presentations. The audio/visual methods can prove to be very effective. Proper infra structure, suitable reource persons with desired communication skills can make the sucess of a programme when the receivers are motivated.

5. EVALUATIGN OF CONTINUING EDUCATION PROGRAMMES :

The conduct of a continuing education programme is need based Thus the sucess of a programme can be evaluated by finding out hhw much of the objectives have been met. The programme evaluation must have components from receiver as well as reource persons. At ihe end of the programme the programmes must be monitored on all the inpute components. There have been instances when participanss join a quality improvement programmes as it gives them an oppertunity to be away from their place of work, enables them to visit places other wise difficult to visit and the parti-

participant has least interest in the programme as such. Similarly if a resource person is unaware of the participants background or if he talks on a Subject without necessary preparation and has poor communication skills the results are poor. Net result of such situations is a total failure of the very programme. The reactions from the participants, the sponsorers, the organisation/resource persons conducting a programme and independent competent bodies must be made in each programme. Every programme must have a documented proceedings inform of lecture notes, case studies, video cassetts, slide, project reports or thesis reports. Repetition of a programme should be done only after a proper discussion on the conduct of an earlier programme as to its achievements. Often the advisory bodies, industry-academy interfaces are right forum to discuss such issues to continously improve the content, conduct and quality of such programmes.

6. INSTITUTE OF PAPER TECHNOLOGY AS A PERSUER OF CONTINUING EDUCATION PROGRAMMES :

The Institute of Paper Technology is a part of Roorkee University, a premier Technical University engaged in spreading the technical knowledge for a long time. This University is a firm believer in the concepts of continuing professional education quality improvement and persuance of excellence. It believes in knowledge updating in bringing practice to class rooms and in exposing the frontier areas to its audiences.

The target groups in quality improvements include the teacher, the supportive staff, and the professional. Accordingly it will be seen that the teacher/supportive staff are encouraged to obtained new knowledge, add academic laurels and improve technical communicative skills. This is reflected in the support given to staff to persuer for higher academic degrees, persume research for Phd. involve in guidance of research, attend programmes inside and outside the country like MS doctoral and post doctrol programmes and participate in seminar. The support is given for industry training. The result of such activities is a teacher aware of

industry needs, conversant with mill practices and knowledable in advanced areas. He is a motivated teacher who is capable of performing well in class rooms.

The University believes in strong industry interactions interms of assoeiation of senior industry executive in lectures, course formulations, evaluation programmes, mill training and structuring short term programmes. The short term courses for professionals have been made essentially through these interactions.

Institute of Paper Technology has tried to lift the level of competence of faculty and this can be gained from the fact that since 1978. more than 10 faculty members could get better academic qualifications, mill exposure, advanced training in many institutions/mills with the country and abroad. The Institute faculty is engaged in research activities, consultancy actively. The faculty is encouraged participate in seminars and symposia. New courses are offered as electives and flexibility has been brought. A number of programmes have been sun as short tesm programmes for quality improve ments essentially for professionals. In many of these programmes the faculty was involved both as receivers and as give of knowledge. A lisi of such programmes conducted in recent years is indicated in tab e-1.

It may be mentioned that the back in many of these programmes is mixed. The improvement is possible only through as active involvement of industry, industry associations, professional bodies like IPPTA, IICHE or IE (I). Institutional collaboration is a new area for such activities. The collaborations have be planned for long term objective fulfilment. The continuing education programmes can be conducted either at the institute or in a mill permises or at both places in parts. The relevant technology/engineering inputs must be included. The preparation of course material inselected areas in form of text, charte, diagrams, slides, transparenciez, video taped material should be given top prioritp. Well known experts should form core groups in preparation and monitoring of such material. Groups of experts should over view the programmes as watch dogs for continuous improvemant in contents, methodology of

TABLE-1
Short Term Courses/Seminars/Workshops Conducted At IPT After Merger With The University.

S. No.	Details	Period	Number of participants
1.	Stock preparation and paper making.	3 weeks 10-3-80 to 22-3-80	10
2.	Pulp and Paper Technology (course for AISPMA) Nominees	6 weeks 16-6-80 to 26-7-80	17
3.	Process Instrumentation in Pulp and Paper Industry	1-6-81 to 15-6-81	11
4.	Stock preparation and Paper making	2 weeks 31-5-82 to 12-6-82	22
5.	ISI Workshop on Educational Utilization of standards in Pulp and Paper based packaging materials.	2 days 17-18 April, 1983	150
6.	Second Zonal conference of IPPTA on Man power planning and maintenance of small mills	2 days 15-16 December, 1983	200
7.	Paper inspection and testing (DGS&D Nominees	3 weeks 2-5-84 to 19-5-84	21
8.	Instrumentation and control in Pulp and Paper industry	3 days 18-11-84 to 20-11-84	13
9.	Coating and Speciality Papers	10 days 10-9-85 to 19-9-85	24
10.	Pulp and Paper Technology (For Tanzanian Nominees)	8-5-89 to 10-6-89	5
11.	Energy conservation in pulp and Paper Industry —For supervision/Engineers —For middle level executives —For presentation of case studies	2 weeks 20-2-89 to 4-3-89 1 week 13-3-89 to 18-3-89 1 week 22-5-89 to 27-5-88	9 16 9
12.	Entre preneurship awareness camp (DST Sponsored) for students from local colleges	3 daga 27-3-89 to 29-3-89	70
13.	Pulp and Paper Technoioy (Tanzania Nominees)	6 weeks 22-1-90 to 8-3-90	4

transmission. These resource persons should be responsible for shaping the matters, getting standards. evolving ethics through their personal examples. Commitment to continuing education and persuit of excellence are philosophies which must must be supported from the top of an organisation.

CONCLUSION :-

Professional education is intransition. The exploding knowledge can reach the correct destination for societys advantage only through well conducted continuing education programmes. The thrust should be to

keep obsolescence away in class rooms, in uommunication and in practice. Excellence in the watch word. Motivation of all concerned, good industry academy interface and relevance of programme can make the task of running a continuing education programme a rewarding experience. Newer thoughts, newer practices, newer alternatives will emerge from these programmes. The pulp and paper industry will be the gainer in the exercise as continuing education wili act as a tool for development of both industrial and academic development. The level of technical training will improe while the industry performance through modern technological practices will improve.