



**CHANGING DIMENSIONS OF ONLINE AND ON: CAMPUS EDUCATION**

Shuchi Bansal\*<sup>1</sup>, Mr. Sanjeev Agarwal<sup>2</sup>

Lecturer, City Vocational Public School, Meerut, U.P.

<sup>2</sup>Registrar, IFTM University, Moradabad, U.P.

**ABSTRACT**

The great challenge for the Government and private technical Institutions in India is to impart quality education to generate industry competent professionals. In last ten years, a number of educational institutions came into existence. If we analyze the net outcome, we find – (i) Passing out students are semi-trained (ii) Institutes are facing acute shortage of experienced faculty (iii) Employees turnover rate is alarmingly high in these institutions. (iv) The prevailing situation is chronic and it is very much possible that institutions which were born in geometric progression may vanish at much faster rate. Now, a time has come to examine the strategies and tactics with the intention of efficient allocation of scarce resources to strengthen educational sector in India. In this competitive world of advanced technology where the changes and development run together, enough infrastructures has been developed in the sector and the private sector is ever willing to inject much more. In today's scenario, the world has shrunk and there is need to break the boundaries. Concrete attempts are required to make the complex, simple. The paper investigates Order from Chaos i.e. a confusion free solution and effective mechanism to design and develop online and on-campus methods of education and their optimum allocation for rigid quality assurance in Educational Sector.

**INTRODUCTION**

"Locke"–

"Plants are developed by cultivation and man by education."

"Dewey"–

"What food is for physical development, education is for social growth."

What is Education? What is the meaning of education? From where this word education is originated? For this, we can say that the word "Education" or "Shiksha" is originated from the Sanskrit Word Shiksha which means "to born" or "to study". Like this there is a same meaning word "Vidya" which is originated from the Sanskrit word 'Vid' which means 'to know' or "to gain knowledge". That's why we can say that "Education" means "to acquire knowledge".

In English, we say "Education" which is originated from different Latin words–

Educare – To nourish, to bring up.

Educere – To develop, to bad out.

Educacies – To teach, to brain.

Educo – To lead out, to develop within to move forward.

Educatum – Act of training

"Addison"–

"Education draws out to view every latent virtue & perfection which without such help will never make their appearance."

"Swami Vivekananda"–

"Education is the manifestation of perfection already in man."

If we look with a practical viewpoint, the word 'education' is used in two forms; one in the form of a process; and second in the form of the result of this process. When we say that his education is continuing well, it implies that the word 'education' has been used in the form of process. And when we say that he has received higher education, it implies the result or outcome of the process. However, the modern educationists accept education in the form of it being a process. They argue that a process also includes its outcome. Now, the outcome of educational process is expressed in the form of knowledge, skill and behavioural change.

In analyzing the form of educational process, the chief role has been played by philosophers, sociologists, political scientists, economists, psychologists and scientists. They all have examined and defined education from their own viewpoints and shall make an endeavour to understand and define education on the basis of the facts made out by them.

### **ASSIGNMENT PROBLEM**

Imagine, if in a printing press there is one machine and one operator is there to operate. How would you employ the worker?

Your immediate answer will be, the available operator will operate the machine.

Again suppose there are two machines in the press and two operators are engaged at different rates to operate them. Which operator should operate which machine for maximising profit?

Similarly, if there are  $n$  machines available and  $n$  persons are engaged at different rates to operate them. Which operator should be assigned to which machine to ensure maximum efficiency?

While answering the above questions we have to think about the interest of the press, so we have to find such an assignment by which the press gets maximum profit on minimum investment. Such problems are known as "assignment problems".

## The Hungarian Method

In order to find the proper assignment it is essential for us to know the Hungarian method.

The computational procedure is given as under:

**Step I** (a) Row reduction: Subtract the minimum entry of each row from all the entries of the respective row in the cost matrix.

(b) Column reduction: After completion of row reduction, subtract the minimum entry of each column from all the entries of the respective column.

**Step II** Zero assignment: (a) Starting with first row of the matrix received in first step, examine the rows one by one until a row containing exactly one zero is found. Then an experimental assignment indicated by ' ' is marked to that zero. Now cross all the zeros in the column in which the assignment is made. This procedure should be adopted for each row assignment.

(b) When the set of rows has been completely examined, an identical procedure is applied successively to columns. Starting with column 1, examine all columns until a column containing exactly one zero is found. Then make an experimental assignment in that position and cross other zeros in the row in which the assignment was made. Continue these successive operations on rows and columns until all zero's have either been assigned or crossed-out.

Now there are two possibilities: (a) Either all the zeros are assigned or crossed out, i.e., we get the maximal assignment. Or (b) At least two zeros are remained by assignment or by crossing out in each row or column. In this situation we try to exclude some of the zeros by trial and error method. This completes the second step. After this step we can get two situations.

(i) Total assigned zero's =  $n$

The assignment is optimal.

(ii) Total assigned zero's <  $n$ , Use step III and onwards.

Step III: Draw of minimum lines to cover zero's. In order to cover all the zero's at least once you may adopt the following procedure.

(i) Mark zero's to all rows in which the assignment has not been done.

(ii) See the position of zero in marked zero's row and then mark zero's to the corresponding column.

(iii) See the marked zero's column and find the position of assigned zero's and then mark zero's to the corresponding rows which are not marked till now.

(iv) Repeat the procedure (ii) and (iii) till the completion of marking.

(v) Draw the lines through unmarked rows and marked columns.

[ If the above method does not work then make an arbitrary assignment and then follow step IV.]

Step IV: Select the smallest element from the uncovered elements.

(i) Subtract this smallest element from all those elements which are not covered.

(ii) Add this smallest element to all those elements which are at the intersection of two lines.

Step V: Thus we have increased the number of zero's. Now, Assignment Problems modify the matrix with the help of step II and find the required assignment.

The assignment problems refers to another special class of linear programming problem where the objective is to assign a number of assets to an equal number of receivers on a one-to-one basis so as to minimize total cost of performing the responsibilities at hand or maximize total profit of allocation. Few applications of the assignment model are as follows:

- Assign salespeople to sales territories.
- Assign vehicles to routes.
- Assign accountants to client accounts.
- Assign contracts to bidders through systematic evaluation of bids from competing suppliers.
- Assign naval vessels to war sectors.
- Assign development engineers to several construction sites.
- Schedule teachers to classes, etc.
- Men are matched to machines according to pieces produced per hour by each individual on each machine.
- Teams are matched to projects by the expected cost of each team to accomplish each project.

## REVIEW OF LITERATURE

By on - campus education, we mean the Campus-based education at the school, college & the University levels where curricula & syllabi have certain established patterns. The age groups, training, methods of teaching, materials (text-book) used, evaluation etc. are known to the teachers & the taught. By non-formal education, we mean any other approach to take education to those who have not been able to get formal education. Distance education refers to the mode which does not require the physical contiguity of the teacher & the learner at all times.

Online education was started in the world as correspondence education. The teaching material was dispatched by the post to the learners, so its name was correspondence education. Another thing in this regard is that its form was limited to only instruction, so, it was considered to be a method of instruction. "Glaser & Wedell" has defined it as a system of instruction.

In their words–

"Correspondence Education can be defined as organized provisions for instruction & education through post."

Glatter & Wedell

But, at present, the form of correspondence education has become extensive. Now, any course of study is divided into units & the printed material & homework are dispatched by post, the learner study this printed material & complete the given work, the centres evaluate them & they are given instructions on this basis. Some centres also organize short-term contact programmes. In this system the remaining tasks of admission, examination & certificate issue are done just like formal education. So, in today's context, correspondence education should be defined as follows–

"Correspondence education in which teaching work is conducted through correspondence, assigned work & of its evaluation & by instruction & short-term contact programmes."

Online Education was first started by the inventor of short hand "Eisek Pitman". In 1840, he dispatched the short hand lessons by post to located learners & thus taught them short hand. A few years later in 1856, "Langen Sheet & Tausent"[13] of Germany started language teaching by correspondence. In 1873, an attempt was made to organize instructions by correspondence in America. In 1890, correspondence institutions [18] were established in Germany & Sweden. Gradually, it spread to other countries too. In 1938, the International Council for Correspondence Education (ICCE) [19] was set up.

Attempts have been and are still being made to define online education succinctly. It is, however, very difficult to arrive at a definition that may bring together, by the process of connotation and denotation, all the aspects that characterize Online Education.

Wedemeyer [20], (1977) has used the terms 'opening learning', 'distance education' and 'independent study' in his works, but favours the last term consistently. He defines 'independent study' as follows:

Independent study consists of various forms of teaching– learning arrangement in which teachers and learners carry out their essential tasks and responsibilities a part from one another, communicating in a variety of ways. Its purpose are to free on campus or external banners with the opportunity to continue learning in their own environments, and developing in all learners the capacity to carry on self-directed learning the ultimate maturity required of the educated person.

Moore [15], (1973) is more explicit in so far as the characteristics features of distance education are concerned. According to him distance teaching may be defined as the family of instructional methods in which the teaching behaviours are performed a part from learning behaviours, including those that in a contiguous situation would be performed in the learner's presence, so that communication between the teachers and the learners must be facilitated by print, electronic, mechanical or other devices.

Dohmen [5], (1977) of Germany defines distance education as a systematically organized form of self-study in which student counseling, the presentation of learning material and securing and supervising of student's success is carried out by a team of teachers, each of whom has responsibilities. It is made possible at a distance by means of media, which can cover long distances.

Peters [16], (1973) defined distance education as "a method of imparting knowledge, skills and attitudes which is rationalized by the application of division of labour and organizational principles as well as by the extensive use of technical media, specially for the purpose of reproducing high quality teaching materials which makes it possible to instruct great numbers of students at the same time wherever they live. It is an industrialized form of teaching and learning.

Holmberg [8], (1981) defines distance education as that kind of education which covers the various forms of study at all levels which are not under continuous, immediate supervisor of tutors present with their students in lecture rooms on the same premises, but which, nevertheless, benefit from the planning, guidance and tuition of a tutorial organisation.

## **RESEARCH METHODOLOGY**

This study is based on secondary sources of information from published reports, annual statements and newspapers. The information so collected was supplemented by the material information collected from libraries and websites. Our purpose is to find out techniques on which further techniques can be built up which may be utilized to maximize the usefulness of any combination of education methods.

### **Design and Development of online and on-campus methods of education**

Managerial decision-making may bring professionalism in managing trainings and education. Following resources and their management are suggested to cope with the problem.

1. Institutes should sign Memorandum Of Understanding (MOUs) with leading institutions and experienced faculties who may deliver lectures to their students through video conferencing.
2. Guest faculty from reputed institutions and industry may be invited to interact with students.
3. e- learning should be promoted.
4. Quality courseware and audio- visual tools may be developed for house in use.
5. Groups of individuals (faculty members) who are collectively considered specialists may constitute special Units within the institutions to deal with strategies and tactical problems of various methods adopted to improve the quality of training keeping in view the work aptitude of the 'teaches' and 'taught'.

The situation considered herein is to assign five different methods of teaching to five different sections of 60 students each with different satisfaction levels resulting from each method as shown in table below to find maximum possible satisfaction through optimal assignment.

Sections	Teaching Methods				
	Video conferencing	Guest faculty	e-learning	Audio-visual tools	Group of individuals
A	40	30	37	40	28
B	36	40	24	27	21
C	35	40	32	33	30
D	36	25	38	40	36
E	39	29	62	41	34

Since it is a maximization problem, we convert it into the minimization, by subtracting the all of these terms from the largest term. New one is now:

Sections	Teaching Methods				
	Video conferencing	Guest faculty	e-learning	Audio-visual tools	Group of individuals
A	22	32	25	22	34
B	26	22	38	35	41
C	27	22	30	29	32
D	26	37	24	22	26
E	23	33	0	21	28

Subtract the smallest term of each row from every term of that row and then subtract the smallest term of each column from every term of that column get the following reduce table.

Sections	Teaching Methods				
	Video conferencing	Guest faculty	e-learning	Audio-visual tools	Group of individuals
A	0	10	23	0	8
B	4	0	16	13	15
C	5	0	4	7	6
D	4	15	2	0	0
E	23	33	0	21	24

Draw the minimum number of lines ( horizontally and vertically ) which cover all the zeros. And we repeat this process till to we get the optimal solution. The optimal solution of this one is,

Sections	Teaching Methods				
	Video conferencing	Guest faculty	e-learning	Audio-visual tools	Group of individuals
A	0	16	3	0*	4
B	0*	0	12	9	11
C	1	0*	4	3	2
D	4	19	2	0	0*
E	23	37	0*	21	24

The allocation of each section with maximum satisfaction of each student to different teaching methods is,

Sections	Teaching Methods
A	Audio- visual tools
B	Video conferencing
C	Guest faculty
D	Group of individuals
E	e- learning

From which the satisfaction level of each student section-wise will be improved and it become,

$$40 + 36 + 40 + 36 + 62 = 214 \text{ units ( number of students )}$$

**It is called the optimal result with maximum satisfaction of the students.**

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