CHAPTER - I

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1.0.0 INTRODUCTION

Every evaluative model or practice responds to the conception that we have about the teaching and learning process which become visible in strategic decision we make concerning the design of the educational model and the related assessment model.

We have to distinguish between the evaluative strategies and instrumentations we apply in order to gather information about one relevant moment within on one hand and, on the other hand, evaluative model that has the main function of establishing guidelines for the integration of all gathered information in order to respond to the different objectives of the evaluative action.

Nowadays, the multidimensional and complex character of the domains to be assessed is clearly recognised, and so is the need to assessed them in combination with the application context.

Generally, big strategic decision in distance education are made taking into consideration to of its main aims to support adult students learning needs and to optimise the use of learning resources.

The use of ICT and, particularly, the Internet, learning virtual environment widen the options to develop a real learning

community in cyberspace, in which formative assessment should be the most important.

Within the framework of learning assessment, these trends are stronger. Even if some studies have been able to doubt of the aprioism of face-to-face methods are better than online ones (Russell, 1999), there is the need of developing solutions to increase not only the quality of online learning, but also its social perception.

Knowledge, education and learning are strongly linked with society and its evolution. One cannot teach or learn now-a-days the same way as a century ago. The IT (information technology) and internet communications revolutions of the past two decades have transformed teaching-learning norms and systems around the world — particularly in post-industrial societies of the first world — beyond recognition. With the introduction of ICT (information communication technologies) into classrooms of progressive schools worldwide, it is now possible to supplement and enrich chalk-n-talk and textbook teaching with live multi-media presentations on smart boards, to facilitate deeper understanding of curricular concepts and subjects. Moreover, the internet revolution has created a vast universal digital library accessible to all, enabling students to reach the world's best teachers with the click of a mouse.

The quick and deep changes brought by ICT (Information and Communication Technologies) have a strong influence on knowledge, teaching, learning. But pupils themselves are changing and evolving decade after decade. And, education must permanently adapt to the new generations of pupils. In terms of

information, communication, computers, and technology, youngsters have new abilities, new approaches and new concepts.

Technology is now available for new forms of learning. But a huge effort must be made concerning pedagogy. The gap between technology and pedagogy is increasing. The tendency of school systems is just to add new technologies to traditional pedagogy, to adapt traditional courses to some new technological tools, avoiding renewal of the pedagogy, avoiding integration of ICT into education (Interactive electronic blackboards – or whiteboards – are an interesting example: they put new technologies in the classroom without disturbing the traditional pedagogy, the traditional relationship between the teacher and the pupils). Research and innovation must address and ask pedagogy: how can ICT help enriching pedagogy, changing pedagogy; how can pedagogy really take all the benefits from new technologies.

Digital Technology. The Digital Technology has influenced all aspects of human life. Education is not an exception. Now the technology is in the process of change from Digital to Photon. Shortly Photonic Technology will be available for the use of the society. At present majority of devices are based on Digital Technology. One such device is Computer. The Computer is an electronic device that has the capacity to store, retrieve & process both qualitative & quantitative information fast and accurately. The computers were never developed for improving quality of teaching – learning process. But researchers started using Computers for teaching purpose. It gave

birth to Computer Assisted Instruction (CAI), Computer Managed Instruction (CMI), Computer Based Instruction (CBI), etc. People started developing CAI for teaching different subjects at School as well as Higher Education level. The developed CAIs were compared with the Lecture Method /Traditional Method and found that the developed CAIs were significantly superior to Lecture Method/ Traditional Method in teaching different subjects.

1.1.0 CONTINUOUS AND COMPREHENSIVE EVALUATION (CCE)

CCE stands for Continuous and Comprehensive Evaluation. This is the term give to a fairly new education system in India. CCE has been implemented in classes 9th and 10th all over India in schools which follow the CBSE guidelines. This system has been initiated by Mr. Kapil Sibal, the minister of Human Resource development in India. CCE has been started to improve the quality of Education and was meant to lessen the burden of studies on Students. It was implemented in the later-half of 2009 on students of the 9th class at that time.

The system preceding the CCE was the "Board Examination" system. There was one final board examination conducted throughout the country which would be marked by different teacher. This was to be given by all students of CBSE in Class 10. This earlier system has been criticized due to the lack of any real overall assessment and the complete focus being on getting marks in one final exam and not on overall quality education.

The Earlier system also resulted in many students committing suicide, which is fairly common in India these days. CCE has been

a measure to relieve the students of tension and stress. CCE has been thought as a better set of innovations and ideas, many of them taken from other Education systems.

The CCE system divides the whole session into two terms. Each term comprises of one Summative Assessment (SAs) and two Formative Assessments (FAs). Formative Assessments refer to projects, small worksheets, group discussions and practical activities. SAs are simply examinations. SA examination papers are sent to each school by the CBSE.

A major difference between the earlier system and the CCE one is that answer sheets of students are not marked by teachers from other schools, but rather their own teachers. This does mean that the student does not remain anonymous but it has also been said that it is better as the teacher would be able to understand the child's work better while marking. The class 10 in India is extremely important for students, as this is when they are supposed to opt for their specific streams. Most schools in India offer three streams, which are the Humanities, Commerce and Science. These streams are allotted to students on the basis of their marks in each subject.

CCE implies that marks from CCE from Class 9 and Class 10 of the student be combined and reflected in a common mark sheet. This gives equal importance to both the classes. CCE involves Assessments throughout the year which means that students have to work hard throughout the year and not just the exams and this was an important idea behind the CCE system.

The Board examinations which CCE replaced were supposed to be optional, and thus students have been given a choice between SA-2 or Board examinations. The weightage for Exams is also greater in the CCE system as sixty per cent of the weightage is given to SAs. Thus, CCE is also similar to the earlier system in some aspects.

1.2.0 TYPES OF EVALUATION

There are many different types of evaluations depending on the object being evaluated and the purpose of the evaluation. Perhaps the most important basic distinction in evaluation types is that between **formative** and **summative** evaluation. Formative evaluations strengthen or improve the object being evaluated -- they help form it by examining the delivery of the program or technology, the quality of its implementation, and the assessment of the organizational context, personnel, procedures, inputs, and so on. Summative evaluations, in contrast, examine the effects or outcomes of some object -- they summarize it by describing what happens subsequent to delivery of the program or technology; assessing whether the object can be said to have caused the outcome; determining the overall impact of the causal factor beyond only the immediate target outcomes; and, estimating the relative costs associated with the object.

Formative evaluation includes several evaluation types:

- **needs assessment** determines who needs the program, how great the need is, and what might work to meet the need
- **evaluability assessment** determines whether an evaluation is feasible and how stakeholders can help shape its usefulness

- **structured conceptualization** helps stakeholders define the program or technology, the target population, and the possible outcomes
- **implementation evaluation** monitors the fidelity of the program or technology delivery
- **process evaluation** investigates the process of delivering the program or technology, including alternative delivery procedures

Summative evaluation can also be subdivided:

- **outcome evaluations** investigate whether the program or technology caused demonstrable effects on specifically defined target outcomes
- **impact evaluation** is broader and assesses the overall or net effects -- intended or unintended -- of the program or technology as a whole
- **cost-effectiveness and cost-benefit analysis** address questions of efficiency by standardizing outcomes in terms of their dollar costs and values
- **secondary analysis** re-examines existing data to address new questions or use methods not previously employed
- **meta-analysis** integrates the outcome estimates from multiple studies to arrive at an overall or summary judgement on an evaluation question.

1.3.0 ROLE OF EVALUATION

undergone change with the change in the approach and theoretical perception of the teaching and learning.

Assessment FOR learning is more commonly known as formative & diagnostic assessments. Assessment FOR learning is the use of a task or an activity for the purpose of determining student progress during a unit or block of instruction. Teachers are now afforded the chance to adjust classroom instruction based upon the needs of the students. Similarly, students are provided valuable feedback on their own learning.

Assessment OF learning is the use of a task or an activity to measure, record and report on a student's level of achievement in regards to specific learning expectations. These are often known as summative assessments.

Assessment AS learning is the use of a task or an activity to allow students the opportunity to use assessment to further their own learning. Self and peer assessments allow students to reflect on their own learning and identify areas of strength and need. These tasks offer students the chance to set their own personal goals and advocate for their own learning

Assessment must be planned with its purpose in mind. Assessment *for*, *as* and *of* learning all have a role to play in supporting and improving student learning, and must be appropriately balanced. The most important part of assessment is the interpretation and use of the information that is gleaned for its intended purpose.

Assessment is embedded in the learning process. It is tightly

assessment plays a constant role in informing instruction, guiding the student's next steps, and checking progress and achievement. Teachers use many different processes and strategies for classroom assessment, and adapt them to suit the assessment purpose and needs of individual students.

Evaluation is not just a testing programme or an administrative technique. It is not something to be resorted to at the close of the school term as a culminating activity, nor should it be viewed as an end activity to be done by the district and division supervisors of the Bureaus of Public and Private Schools.

In the modern school, increasing emphasis on the personal and social development of the child, as well as his academic achievement, has called for the corresponding development of a variety of techniques fur appraising all phases of child growth and development, of pupil achievement, of behaviour and of the teaching-learning processes.

Due to the large number of factors that enter into teaching and learning including such instructional variables as objectives, methods and techniques, and subject-matter on the one hand; and such human variables as pupils, teachers, and supervisors on the other, it has been difficult to appraise the validity of the pupil's achievement.

There is, therefore, a comparatively large subjective factor in the evaluation of teaching and learning that needs to be taken into account together with its objective features.

It cannot be denied that the evaluation of teaching and learning is an exceedingly complex activity. However, the efficiency of the teacher and the growth and achievement of the pupil can be evaluated through the use of such devices as check lists, rating scales, and tests of different aspects of teaching ability, interview, and questionnaires.

Through the use of such devices much valuable data may be gathered relative to many of the important aspects of teaching and learning.

The importance of evaluation in teaching can be summarized as follows:

1. **Evaluation is Important to the Class-room Teachers, Supervisors, and Administrators in Directing as well as Guiding Teaching and Learning**

   Evaluation, to be of importance to teachers and supervisors, should be diagnostic, i.e., it should reveal the specific points of strength and weakness in teaching and learning.

2. **Evaluation also helps to Measure the Validity and Reliability of Instruction**

   The effectiveness and success of any phase of teaching technique can be demonstrated through the nature of the results obtained. From a purely methodical point of view, the measurement of effective teaching finds its great value in the possibilities it offers for the improvement of teaching and learning.

All activities of the teacher should be evaluated in the light of their adequacy to promote the democratic way of life and on how nearly do the students realize the objectives of education.

3. Evaluation Aids in Devising more Effective Instructional Materials and Procedures of Instruction

Current educational literature is filled with enthusiastic advocacy of various cooperative researches, and if worked along this line, will determine the degree of success and effectiveness of evaluation.

4. Evaluation Helps Teachers to Discover the Needs of the Pupils

The purpose of any program of evaluation is to discover the needs of the pupils being evaluated and then to design learning experiences that will satisfy these needs. Traditionally, the results of evaluation have been used to compare one individual with another. It is an accepted fact that growth is a continuous process and that each individual grows at a rate that is unique for him.

5. Evaluation Stimulates Students to Study

A questioning teacher creates incentives for students to learn more. He sets up effective and definite goals for learning giving oral or written examination is a good incentive for the students to study harder or to do better work. It makes the learner familiar with his own results. Likewise, he needs to understand his own high and low potential for learning, but even more, he needs help in understanding the personal problems of human relations.

6. Evaluation Helps Parents to Understand Pupil-Growth, Interests, and Potentialities

The major responsibility of the school and teacher is to help the parents understand their children. Understanding a youth means understanding his progress in the various areas of the curriculum, his desires and motives and behavior they lead to, his potentialities for learning, as well as his achievement.

7. Evaluation can be used to Enforce External Standards upon the Individual Class or School

This method should be such as to encourage a flexible curriculum which is ever responsive to the changing needs of modern life and to the variations in local conditions. Local schools should be free to select and develop instruments for evaluation which are appropriate for their curricula

8. Evaluation, Likewise, Helps to Provide Objective Evidences for Effective Cooperation between Parents and Teachers

The increasing complexity of our present society has emphasized the importance of the cooperation of the school, the home, and the community in making significant educational progress

9. Evaluation is Helpful in Securing Support for the School from the Government, Local or National

The people frequently complain that public schools in this country are inadequately supported.

10. Evaluation is Helpful to the Teacher

It enables him to see how he can make his contribution to the accomplishment of the total goals or aims of the school system. It helps the teacher to coordinate his efforts with the efforts of others who contribute to the general educational goals

1.4.0 ALTERNATIVE EVALUATION

In today's educational parlance, different assessment techniques are in vogue. But in the present study, alternative techniques of assessment, such as, rubrics, portfolio, peer evaluation, self-evaluation, etc were used.

Engage	These activities mentally engage the students with an event or question. Engagement activities help students make connections with what they know and can do.
Explore	Students work with one another to explore ideas through hands-on activities. This exploration provides a set of common experiences for all learners. Under the guidance of the teacher, students begin to clarify their understanding of major concepts and skills.
Explain	Students construct explanations of the concepts and processes about which they are exploring and learning. Teachers clarify students' understanding of concepts and help them develop skills.
Elaborate	These lessons challenge students to apply what they have learned to a new situation and to build on the students' understanding of concepts in ways that extend their knowledge and skills.
Evaluate	Students assess their own knowledge, skills, and abilities. These lessons also allow teachers to evaluate students' progress and inform instruction.

Portfolio:

A **student portfolio** is a systematic collection of student work and related material that depicts a student's activities, accomplishments, and achievements in one or more school subjects. The collection should include evidence of student reflection and self-evaluation, guidelines for selecting the portfolio contents, and criteria for judging the quality of the work. The goal is to help students assemble portfolios that illustrate their talents, represent their writing capabilities, and tell their stories of school achievement... (Venn, 2000, pp. 530-531)

e-Portfolio:

The use of e-portfolios was a widely discussed topic across the UK and the Republic of Ireland. In England and Wales, portfolios of student work are replacing external examinations in some instances, and being used to report on achievement of National Curriculum standards in others. "To enhance consistency of judgements by subject teachers, schools are submitting sample portfolios of pupil work in every National Curriculum subject for scrutiny and feedback, backed up by school visits and verifier reports." (Daugherty, 2009, p.64). Similarly, Scotland's new Curriculum For Excellence requires that, by 2012/13, students transitioning from primary to high school have an S3 Profile which records their progress and achievements in all subject areas. In some schools, these will include "learner statements" in which students reflect on the skills they have developed as well as *how* they have learned. Across the UK, an increasing number of schools have students developing these portfolios electronically (mostly due to ease of storage and sharing) with students reflecting on their own learning, both in terms of individual work pieces and on their progress over time. Professor Harry Torrance, Manchester Metropolitan University, suggests that electronic portfolios provide an outstanding opportunity to capture student learning as "expandable balloons". That is, they are an example of 'divergent' assessment, "oriented towards identifying what students can do in an open-ended and exploratory fashion." (Torrance, 2007, p. 291).

Rubrics Assessment:

A rubric for assessment, usually in the form of a matrix or grid, is a tool used to interpret and grade students' work against criteria and standards. Rubrics are sometimes called "criteria sheets", "grading

schemes", or "scoring guides". Rubrics can be designed for any content domain.

A rubric makes explicit a range of assessment criteria and expected performance standards. Assessors evaluate a student's performance against all of these, rather than assigning a single subjective score. A rubric:

- handed out to students during an assessment task briefing makes them aware of all expectations related to the assessment task, and helps them evaluate their own work as it progresses
- helps teachers apply consistent standards when assessing qualitative tasks, and promotes consistency in shared marking.

e-Rubric Assistant can be used at all educational levels and with electronic, paper based assessment or other assessed tasks e.g. practical task, performances or presentations. If you are grading an electronic document you can paste the e-Rubric into the document and return it via email or your Learning Management System. If you are marking a paper assignment or a presentation you can print the e-rubric to return it.

e-Rubric Assistant (free) is a free rubric generator which works on Windows and Macintosh com.

ICT-based peer and self-assessment strategies

Given the importance of peer and self-assessment in improving learning outcomes, and the opportunities provided through ICT, there is a range of ways in which these two crucial approaches to student learning can be married. Outlined herein are a number of suggested strategies which can be used in the Science classroom and easily adapted for many other subjects.

Audio and video strategies

In addition to the importance of ongoing feedback from teachers, educators are aware of the importance of ongoing assessment by peers and learners themselves. There are several ways that audio and video can be used to provide detailed, ongoing feedback to students on their work. One such example is video to 'screen capture' to provide verbal feedback on a piece of ICT-based student work. This involves the teacher or peer assessor using the computer's microphone, combined with standard computer tools such as the cursor and highlighter, to point to and provide detailed commentary on a student work sample. This might be something as simple as an essay, or as complex as a film, which the teacher or student can pause as required. There are many applications that can facilitate this type of feedback. At Queens University Belfast, lecturers are using a free Web 2.0 tool, *Jing*, for this purpose but *Debut Video Capture* can be used in a similar way. The feedback can be packaged as a flash file or saved on the internet which is also convenient when students are provided feedback in person, as the feedback can be recorded for the student who can then take it away and watch it as many times as required.

Portable devices might also be used to capture audio or video feedback for peer and self-assessment purposes. Madeline Murray from the National Centre for Technology in Education (NCTE), Dublin, Republic of Ireland, discussed this increased uptake of cheap portable devices such as flip cameras and *plug and play* MP3 microphones in schools. In many schools, flip cameras capture feedback from students on their own or peers' work, particularly in primary school or when students experience difficulty writing.

Students are also using video cameras to capture debates, speeches and drama performances which they can then watch to peer and self-assess.

Plug and play microphones allow students to provide feedback to their peers, or reflection statements on their own work for their teacher in audio form. In some classrooms, this is a precursor to a more formal written self-assessment. Alternatively, this technology can be used for viva voce, with students refining and reworking their response, as required, to ensure they submit the best possible product prior to it being, summatively, assessed. Professor Stephen Heppell, Bournemouth University, discussed with me the merits of such an approach in his EVIVA project some years ago. In this project, students had the opportunity to use their mobile phones for their viva voce on a major research project, "anytime, anywhere". In this instance, the university worked with a telecommunications company to harness the power of voice recognition software to ensure validity < http://rubble.heppell.net/archivediscussions during group work, both for the students to keep as a record and for the teacher to be able to access the conversations of all students in any given class.

Electronic Documents

A number of schools throughout the UK are using simple but effective software applications to engage students in peer and self-assessment on an ongoing basis. At Saltash.Net, students are engaged in cross-form peer assessment through shared Microsoft OneNote notebooks. Storing notebooks that are shared by a whole class on the school's intranet allows students to view the work of, and provide feedback to, students in classes other than their own

using the audio tool. With the success criteria clearly visible on the relevant notebook page, it is easy for peers to insert an audio file giving feedback on how effectively they believe a work sample has met the given criteria; what evidence they can find to support their assessment; and what the student needs to do to improve their work further. In ICT lessons, students were using the screen clipping tool in OneNote to provide evidence of having achieved each criterion as part of the self-assessment process. The Deputy Head, Dan Roberts, reported that teachers have worked hard with students over a long period of time to build a culture where peer and self-assessment is the usual and expected practice.

At Sturminster Newton School, students are doing something quite similar using Microsoft Excel spreadsheets. I observed students developing advertising logos, with peer assessment occurring within the same class. After the class co-wrote the success criteria together, the teacher pasted these into a spreadsheet and emailed them to the class. Students then had to provide feedback to a peer on the logo they had developed according to the agreed criteria. The next step was for students to respond to the feedback they had been given, justifying the choices. The spreadsheet was colour-coded so that students understood which components needed to be filled in by themselves and which needed to be filled in by their peer assessors. Finally, students incorporated the relevant feedback into their refined logo. In other schools students were using *track changes* and comment boxes in Microsoft Word to provide commentary on their own work as well as feedback as a peer assessor. The success of these simple but highly effective methods was based on students' deep understanding of the predetermined

learning intentions or outcomes and often co-constructed success criteria.

At a more technologically sophisticated level, students at St Ninian's High School in East Renfrewshire, Glasgow are participating in the *e-scape Scotland* project using 'fizzbooks' in a largely paperless classroom. In this project student work including photographs, audio files and written documents, is automatically collated into a portfolio on which the teacher provides ongoing written and verbal feedback . Students duplicate this process as peer assessors, editing and annotating each others' work to refine and improve it. Students are highly engaged in the process, with teachers reporting a significant improvement in the quality of student work as a result.

1.5.0 ROLE OF ICT IN EDUCATION

IT was limited only to the textual mode of transmission of information with ease and fast. But the information not only in textual form but in audio, video or any other media is also to be transmitted to the users. Thus, the ICT = IT + Other media. It has opened new avenues, like, Online learning, e-learning, Virtual University, e-coaching, e-education, e-journal, etc. Third Generation Mobiles are also part of ICT. Mobile is being used in imparting information fast and cost effective. It provides e-mail facility also. One can access it anywhere. It will be cost effective. The ICT brings more rich material in the classrooms and libraries for the teachers and students. It has provided opportunity for the learner to use maximum senses to get the information. It has broken the monotony and provided variety in the teaching –

learning situation. The ICT being latest, it can be used both at school and higher education levels in the following areas:

- Teaching
- Diagnostic Testing
- Remedial Teaching
- Evaluation
- Psychological Testing
- Development of Virtual Laboratory
- Online Tutoring
- Development of Reasoning & Thinking
- Instructional Material Development

Networking of computers gave birth to Information Technology (IT). UNESCO considered Information Technology as "Scientific, technological and engineering disciplines and management techniques used in information handling and processing, their application, computers and their interaction with men and machines, and associated social, economical and cultural matters". According to Smith & Cambell (1982), a mosaic of technologies, products and techniques have combined to provide new electronic dimensions to information management. This mosaic is known by the name of Information Technology. OECD (1987) treated Information Technology as "a term – used to cover technologies used in the collection, processing and transmission of information. It includes micro-electronic and info-electronic based technologies incorporated in many products and production processes and increasingly affecting the service sector. It covers inter alias computers, electronic office equipment, telecommunication,

industrial robot and computer controlled machine, electronic components and software products."

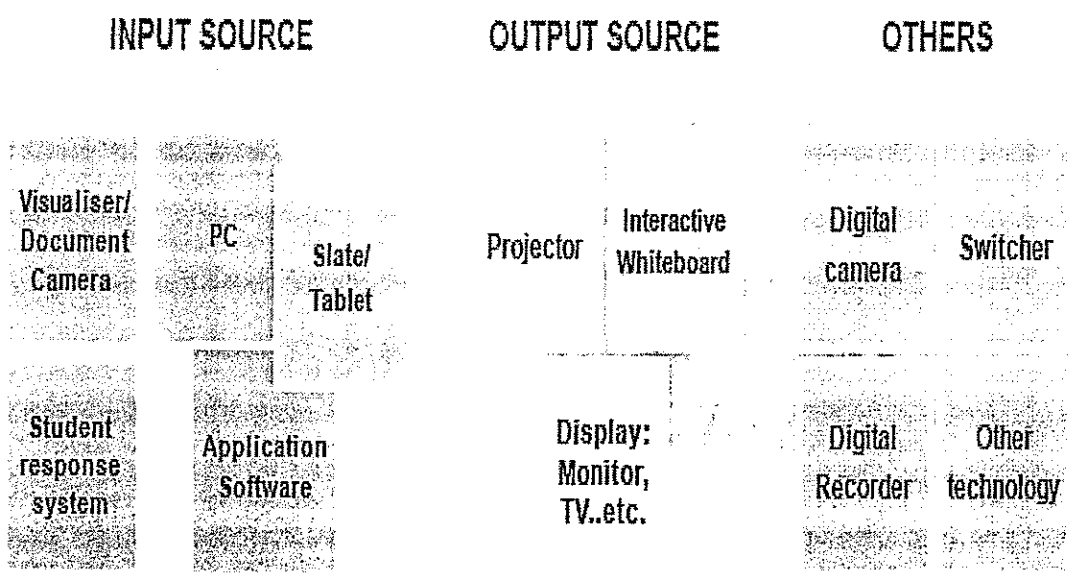
Darnton and Giacoletto (1992) defined IT as the systematic study of artefacts that can be used to give form or description to facts in order to provide meaning or support for decision making, and artefacts that can be used for the organization, processing, communication and application of information. Sansanwal (2000) defined IT as the use of hardware and software for efficient management of information, i.e storage, retrieval, processing, communication, diffusion and sharing of information for social, economical and cultural up-liftment.

The Information Technology leads to development of Websites. Government, Corporate sector, educational institutions, etc. started uploading the information on their websites. It provides facilities for Chat, e-mail, surfing, etc. It opens up a new source of information which increased the limitation of access to information. Prior to IT, people were using only the print material for searching the information. It limited the search. This limitation has been overcome by the IT.

Educational ICT tools can be divided into 3 categories: Input source, Output source and others.

1.6.0 ROLE OF ICT IN EVALUATION

At present the paper pencil tests are conducted for evaluating the academic performance of students. These tests are conducted in the group setting. The content coverage is poor and students cannot use



them at their own. These tests are evaluated by the teachers and they may not give feedback immediately to each and every student. It may be due to this that students are unable to know their weakness and do not make any attempt to improve upon them. The ICT can be made use in the evaluation. One such attempt has been made by Sansanwal and Dahiya (2006) who developed Computer Based Test in Research Methodology and Statistics. It has been titled as Test your Understanding: Research Methods and Statistics. This test can be used by individual student to evaluate his learning. The student can instantaneously get the feedback about the status of his understanding. If the answer is wrong, he even can get the correct answer. It goes a long way in improving the learning and teacher has no role to play in it. It is left up to students to use it. Such tests can be uploaded on the website for wider use. The students from other institutes can also make use of it. Not only the students even the teachers can also use it to assess their own understanding of the subject. If used by teachers before teaching the topic, they can prepare the topic properly. Such software can be

used for internal assessment. Thus, ICT can be used to improve the quality of pre as well as in-service teacher's training.

1.7.0 SIGNIFICANCE OF THE STUDY

The main function of educational research is to improve the educational procedures, existing process of teaching and system through the refinement and extension of knowledge. The researcher in this study wants to see the effectiveness of computer in science teaching. It is well accepted fact that today a single teacher is not capable of giving up-to-date and complete information in his own subject. Computers provides better technology to present content, which helps learner in concentrate and better understanding and long retention of information, which is not possible otherwise.

The technology based teaching is a new way of thinking, it acts as a powerful enabling device to promote active learning and open new learning approaches. The CAI based teaching is helpful in making active learner than passive. The student can develop the quality of interaction with teacher as well as computer system. I.T, Multimedia and CAI packages have changed the pattern of teaching where the learner uses technology through critical thinking to manipulate and query data in newer way instead of just lecturing and reading activity.

Number of efforts has been initiated for bringing about quality improvement in education. As a result of consistent efforts one idea emerged that education should be treated as an individualized activity. This concept led to the involvement of new instructional strategies i.e., Computer Assisted Instruction (CAI). A learner can at his own pace with the help of computers.

The relevant studies conducted in India, are few in number in this field and these conducted by Prabhakar and Sansanwal (1989), Bhardwaj (1990), Jeyamani (1991), Mahapatra (1991), Reddy and Ramau (1999), Shah and Agrawal(1999),The studies which are conducted aboard is by Paul (1985), Barbara (1986), Henry (1986), Eric (1987), Calvin (1988), Moore (1988), etc. All these studies, primarily aimed to assess the effectiveness of Computer Assisted Instruction in terms of student's achievement in various subjects. Sansanwal and Dahiya (2006)

NCF-2005 has popularised the word ***'constructivism'*** in the circle, in India. Constructivism is applied both to learning theory and to epistemology. Constructivism is a philosophy of learning founded on the premise that, by reflecting on experiences we construct our own understanding of the world we live in. The term refers to the idea that individuals, through their interaction with the environment, construct their own knowledge and meaning (Fosnot, 1996; Steffe and Gale, 1995).

In the constructivist classroom the focus shifts from the teacher to the students. The classroom is no longer a place where the teacher pours knowledge into passive students, who wait like empty vessels to be filled. Students are actively involved in the learning process and given opportunity to construct knowledge based on their own background. In specific terms, a constructivist classroom bears the following characteristics (Brooks and Brooks, 1993):

a. Students autonomy and initiative are accepted and encouraged
b. The teacher asks open-ended questions and allows wait time for responses

c. Higher level thinking is encouraged
d. Students are engaged in dialogue with the teacher and with each other
e. Students are engaged in experiences that challenge hypotheses and encourage discussion
f. The class used raw data, primary sources, and manipulative, physical, and interactive materials.

In constructivist pedagogy, assessment is inherent in the teaching-learning process. Assessment is regarded as an integral part of the teaching-learning process. It cannot be done in isolation. The word 'continuous' itself describes the continuity in the whole academic process. It is not conducting the regular tests. It may take various shapes and use of different techniques. Only, tests are not the appropriate and one measurement or assessment technique. In order to continuously and comprehensively assess the learners both in summative and formative formats, different techniques of assessment, such as, portfolio, rubrics, peer evaluation, observation, etc have to be adopted by the teachers. Evaluation concept is attached to learning in different forms, such as evaluation of learning, evaluation in learning, evaluation for learning and evaluation as learning. The main emphasis will be given upon the concept of 'evaluation as learning'.

Among the alternative assessment techniques, rubrics, portfolio, peer-evaluation and self-evaluation are the most important. As the constructivist pedagogy encourages co-operative and group learning, therefore rubrics and portfolio are of great importance for the teachers as well as learners. Through the use of ICT rubrics can be made. Electronic/digital portfolio can be developed by using the

ICT. Therefore, the proposed package may be developed and used through the application of ICT.

The package would facilitate and equip the teachers to implement CCE meaningfully in the classroom. This material would address different facets of CCE, that is, how to carry out assessment *during the teaching-learning process,* assessment after teaching-learning process, recording *and* reporting the child's progress, etc. At the primary stage, generally one teacher teaches all the subjects. Therefore, for this stage, a comprehensive document has been developed covering examples from different subjects. This would not only help primary teachers to follow an integrated approach to teaching-learning across different subjects but also reduce the curricular burden by avoiding overlap of the content. '*Comprehensive*' is considered as combining various aspects of child's behaviour in isolation from the curricular learning. Personal-social qualities (empathy, co-operation, self-discipline, taking initiatives, etc.) are judged in isolation and are being graded on four/five-point scale which appears impractical. Evaluation is equated as record keeping exercise. As a result of this, teachers are highly confused and they complain about being engaged in compiling the assessment records/data of CCE during their teaching-learning time, resulting in the loss of time meant for 'actual' teaching-learning.

Therefore, in the absence of the clear description and the process of preparation of the alternative techniques of assessment, our teachers are not in a position to develop these. Moreover, when a new method/technique is introduced, the people are not in an affirmative mentality to accept that. Therefore, it is necessary to

motivate and encourage them to accept the change by providing them the right materials which describes the correct concepts with clarity. Exemplar materials related to the contents are to be developed. This package will, mainly, deal with the different kinds of rubrics and portfolio. So, it is proposed to develop the ICT-based CCE material/package by using alternative assessment techniques at elementary level.

The ICT is an inseparable part of today's educational system. The academic increasingly depends on the ICT for educational purposes. A majority of academic and research institutions provide ICT service to students, teachers, and researchers. Today's generation of student are known to be tech savvy, in that they make use of various types of ICT in the education. ICT is also known to be very effective and popular tool used by the student for education as well as variety of other purpose including entertainment, social networking, finding solutions of their problems, etc. ICT provides an interactive environment for sharing as well as seeing of information on a wide, diverse and variety of subject. It delivers information in the form of text, images, graphics, animation and audio video capsules. ICT is a versatile medium to meet the information needs of today's student; as a result it has become very popular among the students' community.

The Purpose of the study explores the extent to which the use of ICT in the classroom practice can be associated with these school factors. Furthermore, the impact of teachers' perceptions of ICT school policies on ICT integration in the class and development of ICT based evaluation in school practices.

1.8.0 STATEMENT OF THE PROBLEM

The problem may be worded as follows:

"EFFECTIVENESS OF ALTERNATIVE TECHNIQUES OF ASSESSMENT FOR TEACHING SCIENCE TO CLASS VII STUDENTS OF CBSE"

1.9.0 DEFINING THE KEY TERM

ICT:- ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them.

Evaluation:- Evaluation is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards. It can assist an organization, program, project or any other intervention or initiative to assess any aim, realisable concept/proposal, or any alternative, to help in decision-making; or to ascertain the degree of achievement or value in regard to the aim and objectives and results of any such action that has been completed.

1.10.0 OBJECTIVES OF THE STUDY

1. To study the effectiveness of the material developed for the alternative techniques of evaluation in terms of
   a. The students' achievement in Science.
   b. Students participation in the classroom
2. To compare the achievement in Science of the students of experimental and control group.

3. To study the relationship between the intelligence and achievement in Science
4. To study the relationship between the personality and achievement in Science
5. To study the effect of gender, intelligence and their interaction on the students' achievement in Science
6. To study the effect of gender, personality and their interaction on the students' achievement in Science

1.11.0 HYPOTHESES

Following hypotheses were formulated for the study:

1. There is no significant difference in mean achievement score of the students taught through the of the ICT-based alternative techniques and the students taught through the traditional method.
2. There is no significant relationship between intelligence and achievement in Science.
3. There is no significant relationship between personality and achievement in Science.
4. There is no significant effect of gender on the students' achievement in Science.
5. There is no significant effect of intelligence on the students' achievement in Science.
6. There is no significant interactional effect of gender and intelligence on the students' achievement in Science.
7. There is no significant effect of personality on the students' achievement in Science.
8. There is no significant interactional effect of personality on the students' achievement in Science

1.12.0 DELIMIATIONS OF THE STUDY

The study will be conducted under the following constraints:

1. The school was affiliated to CBSE.
2. NCERT published Science book was used in the school.
3. Only, one topic/unit was taught.
4. The school was English medium.
5. 10 days treatment was given.