Reinventing the Paradigm of Teaching

Implication for Teacher Education

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Abstract

At every stage and development of education, quality has always been a great concern. The great Indian thinkers emphasised on developing inner potentials of individuals. The NCF-2005 states that the curriculum must enable students to find their voices, nurture their curiosity to do things, to ask questions and to pursue investigations, sharing and integrating their experiences with school knowledge rather than their ability to produce textual knowledge. ICT provides to play an active role to the students necessary for quality learning. The web-based teaching-learning practice is the art, craft and science of using network technologies. It provides to the students a wide range of scopes for integrating varied learning experiences and making learning a holistic one.

Introduction

The progress of any country depends upon the quality of education offered and its practices. Indian education was well known for its Gurukul system of education in the Vedic age. Education in India has undergone various phases and stages of development starting Vedic age to post-independence period. At all stages of development there was a concern for bringing in the quality education reflecting on the practical aspects in education. The great Indian thinkers also emphasised on developing inner potentials of individual by reflecting on unique potential of individual. Getting educated is solely dependent upon the individual teachers role to set conditions, generate environments for learning.

School education till 1976 was under the State control and centre would advice state for policy issues. Latter the Constitution was amended to include education in the concurrent list. The NPE 1986 recommended for a common core component in school curriculum throughout the country and NCERT was given the responsibility for developing National Curriculum Framework and

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review the framework at regular intervals. In spite of the various recommendations as per NPE 1986 the school education remained to be exam oriented, bookish and information loaded devoid of practical aspects. The recent National Curriculum Framework–2005 focuses on the following issues:

- Connecting knowledge to life outside.
- Shift from rote learning to constructing knowledge.
- Providing wide range experiences for overall development of a child.
- Bringing flexibility in the examinations.

The development in technology has changed the world outside the classroom; it is more eye-catching and interesting for a student than the classroom setting. As a result students find classroom instructions as dull and devoid of life and do not interest them for learning. The information technology has made learner WWW afflicted:

WWW Share discoveries and discussions.

WWW Continually provide students with enrichment outside of class hours.

WWW Provide follow-up on weekly activity schedules.

WWW Maintain instructions for groups and individuals.

WWW Encourage students to make more efficient and intense use of computers.

Teacher has a tough time to arrange for different kind of learning experiences for catching attention of students, persisting their motivational level, energizing them to work in new situations with limited resources.

As per *National Curriculum Framework–2005*, "The curriculum must enable children to find their voices, nurture their curiosity – to do things, to ask questions and to pursue investigations, sharing and integrating their experiences with school knowledge rather than their ability to produce textual knowledge".

The most important aspect of learning are developing capacity for abstract thinking, reflection and students learn in variety of experiences like reading, experimenting, listening, thinking, reflecting, writing , expressing oneself in speech, etc. Thus, conceptual understanding can be developed by engaging students actively in learning process. Active involvement involves exploration, enquiry, questioning, discussion, reflection leading to creation of ideas. Hence, before the teacher the challenge is process of active involvement and learning various concepts. The curriculum framework emphasises developing critical thinking among students making them active learners this can be made possible by taking advantage of ICT and working on multiple intelligence models.

Emphasising Critical Thinking by way of Multiple Intelligence in Educational Practices

The above mentioned discussion indicates that the new curriculum framework is very decisive about developing critical thinking. Critical thinking emphasises the ability and tendency to gather, evaluate and use information effectively (Beyer, 1985). The researches conducted in the area have identified several distinct skills

related to an overall ability for critical thinking.

Finding analogies and other kinds of relationships between pieces of information. Determining the relevance and validity of information that could be used for structuring and solving problems. Finding and evaluating solutions or alternative ways of treating problems. There are several generally recognised "hallmarks" of teaching for critical thinking (Beyer, 1985; Costa, 1985) like:

Promoting interaction among students as they learn – Learning in a group setting often helps each member achieve more.

Asking open-ended questions that do not assume the "one right answer" – Critical thinking is often exemplified best when the problems are inherently ill-defined and do not have a "right" answer. Open-ended questions also encourage students to think and respond creatively, without fear of giving the "wrong" answer.

Allowing sufficient time for students to reflect on the questions asked or problems posed – Critical thinking hardly ever involves sudden judgments; therefore, posing questions and allowing adequate time before seeking responses helps students understand that they are expected to deliberate and to ponder.

Teaching for transfer – The skills for critical thinking should "travel well". For this teachers should provide opportunities for students to see how a newly acquired skill can be applied to other situations and to the student's own experience.

Further, if we have a look at the Gardner's 'Theory of Multiple Intelligences' it encourages educators to start thinking of intelligence as a set of many different abilities and skills that help an individual learner comprehend, examine, and respond to many different types on content in order to solve problems or to make something that is valued in one or more cultures (Checkley, 1997). Gardner notes that individuals do not necessarily have the same strengths in each area and can improve at each of the intelligences. Gardner makes it clear that his theory merely describes a learning behaviour and should not be labeled as a learning style. He states that learning styles are "claims about ways in which individuals evidently approach everything they do...You could say that a child is a visual learner, but that's not a multiple intelligences way of talking about things. On the contrary "here is a child who very easily represents things spatially, and we can draw upon that strength if need be when we want to teach the child something new." (Checkley, 1997).

The passive way of learning fails to engage student in his/her own learning. A learner-centred approach in which students take a greater responsibility for what goes on in their own minds and hence are responsible for their learning. "The ways in which intelligences combine and blend are as varied as the faces and personalities of individuals" (Edwards, 1995). Both student and teacher must find active ways to tailor each individual's multiple intelligences to best acquire new concepts, ideas, and knowledge.

The boon of technological developments should be taken in the education process to promote learning.

TABLE1

Multiple Intelligence and Internet as a tool for learning (Edwards, 1995)

Bodily/Kinesthetic	Navigating through software- or web-based scientific inquiries, dissections, and Web Quests with the use of a keyboard, joystick, mouse
Interpersonal	Collaborating online via list serves, chat rooms, newsgroups, and e-mail
Intrapersonal	Computer assisted instruction; simulations that only rely on the computer's response, self-assessments, designing homepages, and word processing class assignments.
Logical/Mathematical	Generating database and spreadsheet programmes; Engaging in problem-solving software; Using online calculators; Utilising multimedia authoring programmes.
Musical/Rhythmic	Listening to *.wav, MPEG, or MIDI files associated on software and Web pages; Creating presentations that require the recording of sound(s). editing of video.
Naturalist	Using real-time images of the natural world as a basis of a comparison study; Digitize images or the natural world captured on videotape or digital camera.
Verbal/Linguistic	Comparing online articles from scientific journals, magazines, businesses, schools, and independent sources; desktop publishing, voice annotations, and speech output.
Visual/Spatial	Designing and interpreting graphical layouts; Using draw- or paint programmes; Charting data in spreadsheet applications; Capturing/manipulating images from a digital camera, video, scanner, or web page; Manipulating objects in three dimensions using JAVA script.
Existential	Art replica, planetarium, stage drama, classic literature, classic philosophy, symbols of world religions, virtual communities, virtual art exhibits, virtual field trips, virtual reality, simulations.

As technology provides a wide scope to cater to the individual differences as can be seen from Table 1.

Thus, multimedia and internet is a boon for teachers to structure lessons that reach all students which are not met in the traditional classroom. ICT provides a support to the student to take an active role in the learning process and strengthen all of the multiple intelligences necessary for quality learning. ICT applications open up a whole new world of discovery and learning. The Internet provides both an ideal resource and platform for developing critical thinking by way of multiple intelligences. Not only planning the lesson activities but also many of the classroom activities may find a place on the Internet for student use. Even

TABLE 2

Internet Based Multiple Intelligence (MI) Activities (Sally Bergman, 1995)

Logical/Mathematical	Analyse statistical historical data, create graphic representations of historical data, create hyperlinked timeline.
Verbal/Linguistic	Compose essays, poetry, etc. for publishing on web page, critique written resources through an annotated bibliography.
Visual/Spatial	Construct thematic web pages that include various visual images (e.g., posters, political cartoons, broadsides, photos, illustrations), construct hyperlinked timelines and maps.
Musical/Rhythmic	Analysis of song lyrics, composition of song lyrics, design and publish Power Point presentations which incorporate music and visual elements.
Body/Kinesthetic	Internet-based simulations, cooperative web searches or web quests, role-playing activities that incorporate Web resources, classroom presentations.
Naturalist	Design virtual landscapes; analyse computer simulated topographic cities, maps, etc.
Interpersonal	All of the above activities that might be designed to incorporate cooperative learning in groups.
Intrapersonal	All of the above activities that might be completed through reflective individual projects.

TABLE 3

Worldwide Web MI Resources (David G. Lazear, 1996)

Logical/Mathematical	Charts, diagrams, government reports, statistical demographic and population data.
Verbal/Linguistic	Government documents, personal narratives, historical documents, letters.
Visual/Spatial	Maps, diagrams, illustrations, battlefield representations, historical timelines.
Musical/Rhythmic	Lyrics or audio files of patriotic, protest, period and other historical music.
Body/Kinesthetic	Illustrations and descriptions of historical costumes, cooking, dance, etc. for role-playing or simulation.
Naturalist	Illustrations, paintings, maps, personal narratives and photographs of historical and contemporary environments.
Interpersonal	All of the above resources that might be used in cooperative MI activities.
Intrapersonal	All of the above resources that might be used in reflective, individual MI activities.

Gardner believed the potential impact of computer technology would not be felt until the next century, 2013 to be exact (Howard Gardner, 1999).

Table 2 and 3 depicts how Internet could help teacher in preparing lesson plans with an entirely different dimension. The promise of marrying technology with the pedagogy is one that can be realised today. The Internet based pedagogy gives a scope to the teacher to incorporate flexibility to meet individual needs.

Steps to Incorporate WWW in the Teaching-learning Process

- Step one would be to collect multimedia Web sites. Generally referred as Hot list containing bookmarked sites that are most useful, interesting, and/or peculiar for a given topic and a variety of learners.
- Second step would be the collection of online newsletters, desktop slide presentations, and Hyper Studio stacks that would focus on providing links to a variety of subject-related multimedia resources. All these can be grouped together in a Multimedia Scrapbook which is built around what the individual learner defines as meaningful and helpful.
- Third step to target specific-learning behaviours using online multimedia resources by posing questions that motivate students and generates curiosity for learning. Treasure Hunt as designed by teacher where students are given a list of specific sites that hold information that appeal to several multiple intelligences and are essential for understanding a given topic.
- Fourth step the Subject Samplers where teacher presents six to eight captivating Web sites organised around a main topic. Students develop a sense of connection with the topic because they are asked to respond to Web-based activities like to explore or compare interpretations of pictures, data, or sounds and share (by posting online) experiences they have had.
- Fifth step Web Quests help students go beyond learning basic facts. It requires student to work in groups with a challenging task, provides access to an abundance of online resources and scaffolds.

Networked technologies add new dimensions in organising learning experiences:

- Revealing the quality resources.
- Preparing students for the work environments of the future.
- Networking at various levels like among students, among faculty, and among students, faculty, and professionals beyond the University.

Thus, web-based teaching-learning practice generally called as Webagogy is the art, craft, and science of using networked technologies. As it is rightly pointed out by Boettcher (1997) "Now that the Worldwide Web is providing a whole new context for teaching and learning, we have the need to return to the core principles of teaching and learning, and create a new model of teaching and learning. Technology, applied in conjunction with pedagogical concepts can create an effective student-

centred environment and enhance Learning outcomes.

Carr (1997) agrees with Boettcher: 'without appropriate pedagogy, use of High capacity communication services cannot provide significant Improvements in learning outcomes. In general, it is the pedagogy that provides for learning, not the technology or the software alone.'

But there are various issues of web-based learning which needs to be taken care by the teacher like intellectual property. Using educational tools appropriately and obtaining the necessary permissions from its owners would be essential. Another major problem would be of security should to protect networked systems, login IDs and passwords should be kept private and servers and scripts designed to preventing hacking. Every individual learner on the net has a right to privacy which must be respected.

Pedagogy is primarily associated with, formal school education. There are significant differences between the two terms pedagogy and wabogogy in terms of independence/dependence of the learners, resources for learning, motivation, and the role of the teacher. Context of learning is important, as learning is context and situation-specific. Web-based teaching provides a materials-based educational experience, which means that although it can be a material-rich, and stimulating, learning situation it can also be a socially poor and lonely, learning situation. (Kirshner and Whitson, 1997). Hence learning depends upon the will and the learning style Gardner, 1985 preference of the learner. Some learners will undoubtedly thrive in the new liberating learning situation, while others will hesitate. Here lies the important role to be played by the teacher to monitor, interpret and then to try to alleviate such situations. The teacher' s role in Web-based teaching has already been identified as being very different from the teacher' s role in formal education, with words like facilitator, referring to the person who is online and interacting with the students in various ways. It may be the same person who produces the materials. Also the on-line teacher will need to arrange range of activities in which they will engage students, and a range of roles which they will fulfill. In Web-based teaching the teacher would be engaged in preparation and organisation of the materials-based on same kind of assumptions about the learners as are done by the textbook writer.

In Web-based teaching the personal dimension can be taken care by teacher by way of discussion forums managed and facilitated by the teacher. Of course the Web also allows students to organise their own networks for support and motivation without there being management by the teacher. This is how students learning can be made more meaningful and connected to real life experiences. Internet provides a wide range of scope for integrating varied learning experiences and making learning a holistic one. Teachers need to work out from the given topics in the textbook that could be easily dealt in the manner shown above. All these resources developed by an individual teacher could be shared in a web forum for further refining the lesson plans.

According to Plato "The purpose of education is to make the individual want

to do what he has to do" (Gardner, 1999). Every good teacher has to find better ways to motivate students and inspire quality learning in the classroom. Students enjoy tasks in which they can predict success. Thus, offering them different opportunities to draw upon their multiple intelligences strengths is an excellent way to ensure quality learning.

Students should often be given (and asked to memorize) explicit rules for classifying information. Such active learning typically results in better understanding and better retention of the concepts and related material than is possible with a more directive teaching method. One of the most important practical thinking skills is knowing how to identify a problem. Problem finding is an excellent group activity, particularly if two or more groups work on the same task independently and then come together to compare strategies. In this way, each student has the benefit of exposure to several ways of solving the problem. Enhancing the environment critical thinking in the classroom is facilitated by a physical and intellectual environment that encourages a spirit of discovery.

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