

TEACHER'S PROFESSIONAL DEVELOPMENT THROUGH ICT RESOURCES & GADGETS

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ABSTRACT

Today there are many global investments in ICT to improve teaching-learning process in various educational institutions that has been initiated by many governments. Still we are lagging behind somewhat in ICT adoption or integration in teaching-learning rather than the investments in ICT infrastructure, equipments and resources. As the teaching without innovations and technology is meaningless, thus in order to facilitate teaching-learning process adoption of technology is must. And that adoption is possible by enriching the teacher education with latest technology and innovations, strengthening the pre-service and in-service teacher education programs and by the professional development of teacher incorporating technological based-gadgets in educational system. In order to cope up one with the student's need, reformats and up gradation in the professional developments of teacher is necessary. The teachers need to keep themselves upgraded with new ways of teaching. Today is the age of videos and podcasts and children can easily learn through this interactive media and hence teachers of current era need to keep up with the current technology. Most of the schools and universities in India have training program for teachers to upgrade their teaching skills. There is no harm in doing that as one should be open to learning new things. Learning never stops throughout the life, and for teachers to evolve, as a good teacher needs to explore themselves, and try innovative educational measures to teach children. This paper focus on the teacher's adoption towards ICT based gadgets and technology towards professional developments as one of the important aspect. It includes the new technologies, approaches strategies and techniques to be adopted in the classroom for strengthening the professional development of teacher's competencies to meet the global challenges.

Keywords- Professional Development (PD), ICT, Resources and Gadgets.

“India can become one of the developed countries in the world by 2020, if we adopt technology as our tool. For this, the teaching community should change its mindset and enthuse the students by means of technology.”

A.P.J. ABDUL KALAM (2008)

INTRODUCTION

We live in a rapidly changing world where legislative, social and economic developments directly affect the environment in which we live and work, and where technological advances provide radically different ways of working. Professional development opportunities provide a means whereby we can keep abreast of these changes, broaden our skills and be more effective in our work. To incorporate technology in the classroom means to enhance the classroom teaching-learning process using novel activities and innovations in the classroom. Effective use of best practices can motivate students, make our classes more dynamic and interesting and renew teacher enthusiasm as one learn new skills and techniques. Side-by-side teacher's adoption towards using ICT based gadgets and technology in the classroom like computers, video, audio and other technology, enhances and upgrade one's professional development also. Thos can all bring the positive change in the professional development of teacher, making them appear more realistic and helping students to understand any abstract concepts clearly.

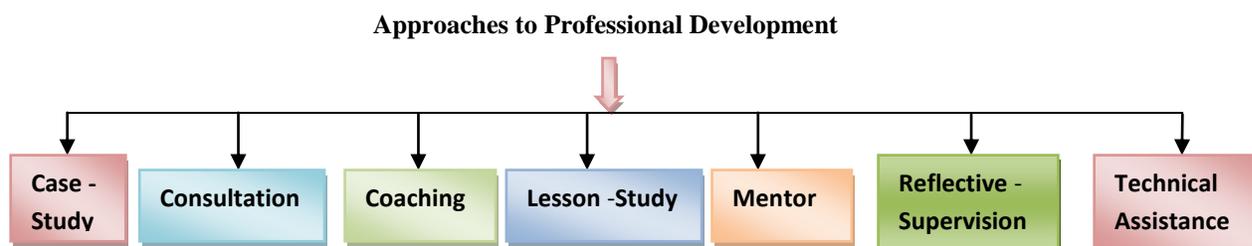
Various ICT-based gadgets can be used in the classroom teaching like audio is probably the easiest technology to introduce music, listening, exercises, including, accent training, voice modulation, and brings other native speakers into the classroom. The teachers use their subject matter, teaching and learning, and technology to facilitate experience that advance student learning, creativity, and innovation in both face-to-face and virtual environment. The teacher promote, support, and model creative and innovative thinking and inventiveness to engage students in exploring real-world issues and solving authentic problems using educational gadgets, digital tools and resources.

PROFESSIONAL DEVELOPEMNT OF TEACHER

The literally meaning of the term “Professional Development” is acquisition of skills, both for personal development and carrier advancements. Professional development encompasses all types of facilitated learning opportunities ranging from educational degree to formal coursework, conferences, refresher courses, in-service and pre-service teacher’s training programmes or other informal learning opportunities in a situated practice. It has been described as intensive and collaborative, ideally incorporating an evaluative stage. Besides this, there are a variety of approaches to professional development, including consultation, coaching, lesson study, mentoring, reflective supervision and technical assistance.

APPROACHES TO PROFESSIONAL DEVELOPMENT

There are enormous approaches towards facilitation of professional development of teachers. The term “Professional development, “, in broader sense may include all formal types of vocational education including pre-service and in-service professional development programs. These programs may be approached in be various forms like formal, informal, group or individualized or programs may be offered by human resource departments. In other words, the professional development skills may include cognitive learning skills, which sometimes may referred to as “Leadership Skills” or “Task Skills”. Professional opportunities may range from a single workshop to a semester-long academic course, or services offered by different professional development providers resulting widely learning experience with respect to the philosophy, content, and format of the learning experiences. Some examples of approaches to professional development include-



- **Case Study Method** - The case method is a teaching approach that consists in presenting the students with a problems/ case making one role-model as a decision maker facing a problem.
- **Consultation** - To assist an individual or group of individuals to clarify doubts, problems followed by immediate concerns systematic problem-solving process.
- **Coaching** - To enhance a person’s competencies in a specific skill area by providing a process of observation, reflection, and action.
- **Communities of Practice** - To improve professional practice by engaging in shared inquiry and learning with people who have a common goal
- **Lesson Study** - To solve practical dilemmas related to intervention or instruction through participation with other professionals in systematically examining practice
- **Mentoring** - To promote an individual’s awareness and refinement one’s professional development by providing and recommending structured opportunities for reflection and observation.
- **Reflective Supervision** - To support, develop, and ultimately evaluate the performance of employees through a process of inquiry that encourages their understanding and articulation of the rationale for their own practices
- **Technical Assistance** - To assist individuals and their organization to improve by offering resources and information, supporting networking and change efforts

POLICIES STRENGTHENING PD OF TEACHERS

ICT POLICY

Any initiative to integrate ICT into the classrooms to support the teaching- learning process are not likely to generate successful reform, since they are not aligned with strategies of the Ministry of Education and with the

vision and mission for ICT presented in the national ICT policy. Therefore the purpose of the policy formulation and planning for ICT for education includes:-

- The National ICT policy.
- The ICT strategic plan for education as developed by the MOE (Ministry of Education).
- Incorporating of ICT at the level of educational institutions.

NATIONAL POLICIES AND CURRICULUM MODEL- According to the Programme of Action (POA-1992) has pointed out the following in respect of Teacher Education.

- Professional Commitment and overall competencies of teachers leave must to be desired.
- The quality of pre-service education has not only unimproved with recent developments in pedagogical science, but has actually shown of deterioration.
- Professional development of teacher education programs consists mainly of pre-service teacher training, with practically not a systematic program of in-service training, facilities for which are lacking. So inculcation of refreshers courses, seminars, conferencing, telemetric etc. must be there.
- Increase in sub-standard institutions of teacher education and there are numerous reports of gross malpractices.
- The support system provided by the state of Councils of Education Research and Training (SCERTs) and the Universities Departments of Education has been insufficient and there is no support system below the state level.

UGC MODEL CURRICULUM (2001) acknowledges that newest technologies such as Internet, Telemetric, World Wide Web, E-mail, E-Commerce etc. are imparting education. Therefore, in order to be relevant and as a potent means of socio-economic reconstruction education must be responsive to these changes and challenges. There are several others research and communication tools available on the internet such as directories, search engines, ask the experts, net snippets, on the on-line conferencing, video conferencing, e-conferencing, Internet forum, news groups, blogs, Wikipedia, discussion board, chat rooms, e-journal, digital libraries etc. which can unitized in the teaching –learning process.

ICT –MEANING AND IMPORTANCE

Information and Communication Technologies (ICT’S) -The ICT (Information and Communication technologies), has also become an integral part of today’s teaching-learning process. Countries across the world are using ICT in facilitating information dissemination and communication in all areas of education and training. ICT are the “technological tools and resources that are used to communicate, to create, disseminate, store, and manage information.” They include ‘hardware, software and Netware’, as well as institutional, financial, cultural and application- related parameters that determine how ICT will shaped and developed by society at large for improving quality in teacher education.” Thus one should make of these technologies in the classroom that enable students to become active participants in their own learning process, such type of technologies are called “**INTERACTIVE TECHNOLOGIES**”. For example: e-learning, blended learning, collaborative-co-operative learning, m-Learning, u-learning etc. to be used in the classroom by the teachers to provide students with access to such technologies and guidance in using them in a way that will enhance their learning. And in an ICT-supported learning environment must be established for the professional and on-going developments of the todays and would be teachers. Also, school leaders must communicate a vision for ICT in the educational institutions and foster an ICT culture that allows all school staff to be regular users of ICT.

Challenge Based Learning (CBL) requires real-world tools, so one needs ubiquitous access to technology that is commonly used in 21st century life and work. This ideally includes ICT, computers, rich media creation tools, internet, and mobile devices for anytime, anywhere access to information, content, and communication. In addition, to make students to work in teams and not all of the work will take place during class, one has to need inculcating ICT and collaborative workspace that is available to everyone 24/7 in during teaching-learning.

TEACHER’S PD TOOLS AND RESOURCES

Teacher make use of many educational resources and innovative practices can be used to serve to facilitate classroom management tasks, assist with academic tasks, assist with academic tasks, or provide support for

instruction, not only related to the classroom practices but also to meet the global challenges. Below are the variety of resources are available to create collaborative workspaces.

- **Apple tools:** iWeb, iWork.com, Mobile Me, and resources included with Mac OS X provide a set of tools for building a collaborative environment to support challenges.
- **Wikis and other free web-based tools** can be configured to work with classrooms and community groups.
- **Online Publication-** It supports on-line educational journals via the Internet.
- **Professional Organization-** Professional organizations of teachers- a web presence, teacher's union's, professional associations, content area groups, technology groups, and many other have websites ranging from modest to robust in quality.
- **Educational Portals** - Websites, which include services such as search engine, news, e-mail, conferencing, electronic shopping, and chat rooms are called portals.
- **Links and Bookmarks-** Some of the best online resources are discovered through hot links from one site to another. Websites often link to other sites similar to the content of their own site. When one can find a useful website, it is a very good idea to check its link page and explain related sites. E.g. <http://www.nea.org>
- **Classroom Management tools-** Classroom management tools in the web include downloadable or online tools that assist one in the tasks required for the classroom. One creates online or paper tests and, if they are online, grade them for one and send one the result. These test generators can create tests by randomly selecting questions within their database of questions or one can select the questions to be included
- **Academic tools and resources** - These are the most popular tools include worksheet generators of many types that may help one to make interesting student activity sheets. These tools help one to create content specific crossword puzzles, word searches, cryptograms, mathematical exercises, and multimedia flashcards.
- **Web- Enhanced Instruction** - Classroom website can enhance teacher- student student-teacher and student-student communication in the classroom website can contain daily, weekly, or unit assignments and complete directions on how to complete them. It can also answer anticipated student questions on a 'frequently asked questions' page. It can use web-based multimedia with voice, animation, or motion, video to present key points in formats that address multiple learning preferences.
- **Community Building** – The technology can be used to reinforce communities of practices, especially between other learning events or after the formal training is over. Community meetings and special presentations can take place without people having to leave their home or worksites. Threaded discussions, online chats, news groups, online conferencing, instant messaging, and personal web pages are some of the techniques that make the vital online community experience work.
- **Online Conferencing-** Synchronous technology can help facilitate meetings by people who are separated by distance. The technology offers many enhancements over traditional conference calls, including the capability of combining voice, graphics, audio, live video, and the sharing of software applications.
- **Personal Digital Assistant (PDAs)** -PDAs offer pocket versions of basic office software, providing opportunities to capture information and access learning resources on the move. Wi-fi cards can allow users to connect to a college network and GPS cards can convert these devices into location-sensing tools. The addition of SIM cards can enable PDAs to work as mobile phones. The two most popular kinds of PDAs are the Palm OS PDAs and the Microsoft Pocket PC.
- **iPOD-** An iPod is a hand-held device that allows information to be downloaded and received as an audio and occasionally visual file. This device is a brand of portable media player, designed and marketed by Apple Computers, which is currently the world's best. It is one of the latest advancements that are a hand-held device, which allows users to download and receive audio and visual features, called podcasts. In iPod, iTunes software is used that allows iPod users to upload music, photos, and videos onto their iPod.
- **Robotics-** Computer controlled robots are playing important parts in modern industries. They are doing the tasks that are laborious, tedious and also dangerous for human beings.
- **Notebook Computer** - A notebook computer can fit into a briefcase and weight lighter than microcomputers, yet it can compete with the microcomputer. A larger, heavier version is called a laptop computer. Notebooks generally cost more than microcomputers but can run most of the microcomputer

software and are more versatile. Like other computers, notebook computers are getting faster, and more functional.

- **Tablet PC's-** Tablet PC's are traditional notebook computers with the ability to process digital ink by writing with a stylus. The Tablet PC was used in the classroom as a digital whiteboard by connecting it to a data projector. The lecture material was archived and accessed electronically for future reference by the students. To capture real-time gesturing and audio commentary, the content is recorded using screen capture technology. Outside of the classroom, the Tablet PC is also a useful tool for grading, creating lecture material, and capturing meeting notes. Student feedback regarding use of the Tablet PC has been extremely positive.
- **Handheld -**Handhelds, unlike desktops and laptops, are portable so they can be taken and used outside the classroom
- **Laptops-** Laptops supports access to various on0line sites, educational portfolio' and provide network functionality and widen participation by disadvantaged or hard-to-reach learners.
- **Mobile Phones-** It supports digital cameras, media players and PDAs, connectivity, games playing, email, stills camera, video camera, personal information management, keyboard, audio recording, music and video playing facilities. One can send course information to learners via bulk SMS text messages.
- **Electronic Voting Systems -** These can add a dynamic interactive element to large group teaching contexts. Learners are provided with a handset to answer multiple choice questions and responses are read by a receiver in the room.

SOFTWARE DEVICES AND GADGETS FOR PD

Software devices can provide a medium for ICT used in the classroom for teacher's professional development. The following software devices are discussed as below: -

Software Devices	Functions
Bluetooth	Wireless communications technology enables the beaming of data between Bluetooth-enabled devices e.g. from one PDA to another.
GPRS	Web-browsing and instant messaging
Bog	A web page containing periodic entries compiled by either an individual author, or as a collaborative exercise by a group within a community of practice.
Community of practice	Form of social learning that occurs when people with a common interest in a subject collaborate to communicate ideas, find solutions to problems and define principles and terms relating to that subject.
ESOL	English for speakers of other languages'.
GPS	Global Positioning System', a satellite linked navigation tool capable of pinpointing an exact location.
Handheld	Wireless computing device that fits into one hand. Examples include PDAs, 'smartphones', games players and personal media players.
Magikeys	Allows millions of Govt. school students to surf the web, e-mail, chat and write documents in mother tongue. It supports 11 Indian languages namely Hindi, Marathi, Gujarati, Kannada, Tamil, Malayalam, Punjabi, Urdu, Telgu, Bangali and Konkani.
Mobile Phones/PDA	Reflective and evaluative skills are developed through mobile access to e-portfolios. Mentoring

	through SMS messaging reinforces behaviours and provides feedback.
Moodle	Open source e-learning software package, also known as management system, learning management system or virtual learning environment, through which we can write presentations, slides and make software to teach. It is web-based application we can write our online teaching sites
PRS	‘Personal Response System’, a system for wireless communication using infra-red signals to collate and display multiple responses to questions, for example by students in a lecture or class.
Portal	An online gateway to other web pages.
Smartboards	The piece of technology allows us to make our lessons totally interactive.
Smartphones	Handheld device that integrates personal information management functions, e.g. calendar, clock, diary and email functions, and mobile phone capabilities in the same device.
Teleconferencing	It includes the information exchange and problem solving ability. It includes a new 20-line, audio-teleconferencing bridging system and new telephone units that allow a group of people to participate at each of the designated stated locations.
VLE	Virtual Learning Environment’, integrated software tool for the management and delivery of online learning, which typically includes tracking and communication tools and learning content.
19Pencils	19Pencils is another great up-and-coming tool that allows teacher’s to more easily manage and share class content. Through the site, which is still in beta testing, teachers can build a class website to which they can post lessons, links to other class sites, quizzes, and even fun educational content for students.
Prentice Hall Writing Coach	The PHWC is an online curriculum that guides teachers and students through a series of activities and projects designed to bolster writing skills.
Three Ring	Using Three Ring, teachers can easily digitize student work, create online portfolios, and even assess student progress. Even better, it can all be done right from a smart phone.
Class Dojo	Through the site, teachers can offer students real-time feedback on their behavior and can print out daily reports for students and parents. It could quickly become a popular way for teachers to spend less time on classroom management and more time on actually teaching lessons.
CAVE Technology	Computer Augmented Virtual Environments, allows students to strap on VR glasses and enter a 3-D, immersive, multi-person environment, where students can quite literally become immersed in their lessons with so many amazing and highly futuristic applications, more schools.
Cognitive Tutorial Programs	It is an AI-based educational program offers some great possibilities for students who are struggling or those who just want to test their skills, and could prove to be a valuable educational tool for any school willing to develop their own versions of the software.
Fast For World	Fast ForWord is one example of a new product, designed around neuroscience research on dyslexia that helps students with difficulty reading and writing improve their skills and reach grade-level standards.
EEG	Teachers unprecedented insights into the minds of students, and as neuroscience research exerts greater influence over classroom practices, teachers could find themselves administering their own brain wave analysis to check student learning.

Simulation technology	Give students at all levels a better biological education. It is more advanced versions of simulation software are being produced that more adequately replicate real-life scenarios for learners.
Socrative	Engaging students through educational games and exercises via smartphones, laptops, and tablets. Teachers simply choose activities for students that relate to their lessons, students interact with the content, and teachers can then measure how much students are taking away from a lesson.
HMS Fuse	It's designed to help keep students motivated and to raise their test scores, boasting in-app homework help for students and tracking capabilities for teachers as well.
Global Scholar	It is designed to help teachers meet district standards, organize records, develop lessons, and even engage in professional development.

CONCLUSION

“Good education requires good teachers” means that it becomes essential that the most capable and appropriate people be recruited into the teaching profession, provided with a high quality. In the era of Innovations and Technological advancements, everybody wants to bring about a change in the present educational system to some extent. But the same does not seem to be transmitted in actions. And it is the Teacher, who is given an unassuming importance for ensuring the innovative teaching strategies in the field of education, who is the successive key role player in enhancing the quality based education. Teacher education system is an important vehicle for improving quality-based education system. Therefore, the professional development teacher must be taken into account for various domains that include instructional technologies, innovative teaching-learning strategies that can be used in the classrooms for developing new programme and tools, to meet STEM (Science, Math, Engineering and Technology) requirements of all students, use of military-inspired simulation tools, and high- tech system for strengthening networking in the field of teacher –education at a wider level.

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