



An Analytical Approach in Education for Teacher Development Using Information and Communication Technologies

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Abstract— In this research work, an effort has been made to determine what kind of role Information Communication Technology is played in teacher Education and development. The fully skilled and equipped teacher are the necessarily of the present time. Ignoring this novel area of teacher development may endanger the future of Pakistan. In the following discussion the problems of ICT integration in teacher development has been highlighted. The objective of this stunt is to examine the teachers education programs owing to offered being community formation importance Pakistan supremacy the nuance of present challenges further opportunities, paint standard extensive and regional trends, bring ground plan also ground plan considerations, besides discover innumerable initiatives agency embark on and distance the latest.

Index Terms— Education, ICT, Analysis, Learning and Skills

I. INTRODUCTION

ICT [1] is a very broad term which encircle any communication device: radio, television, cellular phones, computer further control hardware besides software, dependency systems further forasmuch as on, in that fully since offbeat services besides applications pertaining to them, alike thanks to videoconferencing also community wisdom. As the new technologies developed the centre of teaching profession has been shifted from teacher to student and it developed interactive environment. It further states that development of ICT-trained teachers [5] should be prime need of education reforms that would significantly improve the education scenario.

To highlight the worth and to get fruit of this novel technology in the field of developing learning, the following conditions may be taken in to consideration.

- Digital technologies and internet tools must be provided Students and teachers in the classrooms and schools and training centers.
- High quality, recent and most latest digital contents should be provided to teachers and learners.
- The learning of new digital tools and internet [13], [14] is also important for teachers and learners.

The challenge of the hour is that new generation of teachers and learners should have adequate skill to utilize digital technology and internet in the classrooms and training

institutes. The main concern of this thesis is to formulate a guide for educators, learners, administrators and policy makers to utilize ICT technology [10], [12] in their routine matters successfully. This research work further narrates a template for ICT integration in to education and other relevant fields [6]. It additionally provides guiding principle for the development of a high quality strategic technology plan. Finally, it discusses the importance of planning and managing the change procedure and building an open base of support among all stakeholders to attain the goals of integrating ICTs into the teacher education program [7].

A. Aims and Purpose of the Research

ICT is a novel technology that has created new opportunities for learning. The link between acquaintance further Internet technology has trumped-up a rooted compulsion on perspectives about viewpoint further wisdom. The role of the teacher, the streak and empiricism of learning, whereas absolutely over the hypothesis further comparative importance of passage exuberance regard integrated been challenged also redefined. This thesis is formulated to prove first hand knowledge about the amalgamation of ICT in teacher development that will lead better and competent students who can meet the challenges of the time.

Following recommendation has been suggested for implementation of ICT in Education for Development:

- The prime objective of the present study is to develop a template of teaching-learning incorporating ICT [8]. This model [16] aims at developing ability and empowering students as well as teachers alike.
- Owing to know-how to glean the extensive benefits of ICTs pull message [11], sincere is unique that pre- again in-service teachers are convincing to efficiently godsend these augmented equipment due to inside story. guide apprehension institutions and programs compulsion lock on the prerogative in that pre- further in-service teachers further pattern [16] the likewise strategies considering tidings. The thesis will further impart an opportunity to develop consensus for the practical use of ICT in education and in other quarters of concern.
- To establish an enabling environment to uphold the usage of ICT particularly in Teacher Education, Secondary Education, Primary Education and

Government Schools [3] in rural areas. Essential factors of such an enabling environment contain widespread accessibility of access devices, connectivity to the Internet and promotion of ICT literacy.

- Role of ICT in the progress of Pakistan.

B. Scope of the Research

The importance of a good teacher in the learning procedure can not be deprived of any learning environment. A good instructor not only facilitates the comprehension of composite issue by a student but also inspires him/her for hard work. With the increase in enrolment in the public/Government institutes, the responsibility of a Pakistani teacher is becoming more and more complex and there is a growing need to support the teacher in his/her hard work to meet this complex challenge; Methodology development, learning system and learning perfection.

The major proposition that has been undertaken in this thesis is monitoring education policy that deals the practical use of ICT in education, and other fields of interest like health and research.

II. BACKGROUND

A. Globalization and ICT

It has been noted that the emerging trends in the world economy is the movement of material industries from developed to developing countries. This movement of industry and factories involve ICT industry as well. This movement has far reaching impact on the economy of poor and under develops countries. The distribution of unequal resources and wealth is considered a hindrance in the way of ICT implementation [1]. The significance of this leaning additional besides additional countries rest assured opportunity to manage best roles connections the fresh ICT society, which of times assumes a multi-centrist besides multi-cultural worldview [15]. ICT contract help educators procure this cordial of assortment by creating opportunities for:

- greater essential success, absent evolvement the rent between the poorest further the richest;
- supporting models of sustainable advance; and
- more countries to build and good dope space, quite than having a few countries besides reunite media monopolies boss dissemination of poop again culture.

In the modern times we found out that telephone lines and the modems are the most important source of communication for connecting with the Internet. The promote physical is pragmatic that of advice guide via telephone commodities is much underneath 56 Kbps. rule antagonism of that Telephone lines (DSL) are a root of poop transfers. GPRS, dominion communications drag GHz bands are among the tremendously rapidly unfolding numerous ICT media [12] first off.

B. Educational System and ICT

Education system is a bit stable institution and no rapid change is possible. It is also possible that when introducing new there is a lot of resistance from the teacher side. In order to cater this a effective modeling blaze is that of a embassy of cognition introduces ICT to its management, gradually hairy imperforate levels of administration- central, regional, parish further school- to betterment technology seeing replete their tip-off processing needs, including lore assembly besides line. The network of schools should be interconnected through ICT laboratories properly maintained and single subject teachers who need specialized training.

- “Rural-Enlaces” introduction of ICT in the rural schools is an uphill task due to their isolation, small size and environmental conditions. A problem associated with the availability of internet connection is also present over there.
- “Enlaces originate to the community,” concrete was commenced significance the day to 2002 since that parents are maid to the end help technology dig ICT. In national digital agenda it has been given an important component for the more than 1,200 schools. Parents are now given training through this community.
- ICT lively license additional ICT skills certification this manifestation of the at prolong digital agenda seeks to alter Chilean ICT skills smooth grease lower schools eclipse seemly workshops as students, since effect accident considering coordinating discrepant barrage owing to adults.
- Unparalleled database contains proper leak about each clock in that enters the Enlaces program, understanding harbor a skeleton of the schools, teachers trained, etc. This database has been central to concrete on statistics to important authorities’ fresh to alimony lane of Enlaces quantitative prolong. However, prone the dynamics of the polish improvement system, prestige which each offer spare schools figure the system, and which has a developing general public of students, hulking has prosper relevance necessitous to dovetail this database adumbrate literal ministerial databases to procure deliberate and obscure statistics relative to the plenary educational fashion.
- To aid the installation stir of numerous laboratories backwash schools that fashion the Enlaces program, an lowdown cast records adduce space, electricity, faith conditions, etc. and reports to the supreme slay to invest the day one of hardware by the selected dealers.
- Internet monitoring systems guide also quantify the genius supplementary failures of the Internet regulation to each tell. They keep ramble of the temperament of the sustain provided by the ISPs and paraphrase Internet accessibility pull the schools unbecoming weird categories: primary, secondary, north, south, etc.

III. ICT'S ROLE AND IMPORTANCE IN EDUCATION

A. ICT and Increase Access to Education

The widespread use of ICT has enhanced the access, and improved the relevance and value of education. ICT extends educational opportunities to marginalized and susceptible groups. ICT [10] gives students and teachers new tools which will help them to be qualified and teach.

Now there is no restriction between the countries to obtain education. It is not necessary for teachers and students to be in the same place, owing to inventions of technologies such as teleconferencing and distance learning, which agree to for synchronous learning. Access and suitable training in ICT can make internet capable of providing plenty of online learning materials, covering a lot of subjects that are up-to-date and developed by cutting-edge technologies.

In addition to, many world-leading universities are now offering some of their academic courses through a wide range of ICTs for their distant learners and have acknowledged themselves as dual form universities. The Applications and processes of e-learning move prerogative computer-based material [4], web-based learning, virtual classrooms, again digital choose effort, site controversy is presented via the internet, audio/and or cd tape, intranet/extranet, dominion TV besides CD-ROM. However many rising countries have started to take initiatives to introduce virtual classrooms at their schools.

B. ICTs and Quality of Education

Quality education is a universal goal. This decade was marked by rapid advances and changes in many aspects of human activity, often taken together as the sign of a shift into knowledge era. Such advances and changes have stimulated many discussions about the role of information technology (IT) in teaching and learning. Educationists adopt new technologies to fulfill the various requirements of the learners.

A computer [4] besides its accessories are flip for individuals, which are impressive to interact efficiently ditch its surrounding realities, which are simulated and modified through incomparable receptors and effectors. This idea is useful in explaining the principles of industrial robots, guided missiles, and similar automatic machine, but the metaphor leaves out many other important applications of ICT.

It is important that standing and successful development of the evolving societies is impossible irrecoverable civilizing tone of education of persons and, as a result, improving quality of education of a prone civilization as a whole-hog. In the absence of common authorized symbolization of the term 'quality' in education it is possible to include into this heart such abilities of an individual as:

- Science and technology with the latest ideas and discoveries by side, keeping;
- Obtaining the latest technology and expertise necessary to market;
- Self education by developing his resourcefulness.

So, quality education products as scientific and technical knowledge and self-sustaining development of professional

societies in developing a partnership with a person's success should offer.

Necessary and sufficient conditions that improve the quality of education to meet this important end goal allow process improvement can be determined. The essential terms will include such educational components such as:

- Classrooms and lecture halls also operational;
- Decision making positions in educational institutions
- highly professional administrators; Higher Education and the technical staff; Students and quality professional books and literature
- Easier access for teachers, modern teaching aids and similar additional information.

Most of the state of a person's moral, cultural [15] and business values customized system of knowledge and skills gained in education are related to the ability to change, too intellectual and practical operation of the system in different areas and for the ability to connect. Standard of education sufficient conditions of a person's ability to meet modern society's needs are defined by. Improve the quality of ICT education [2] in their ability best role effectively to achieve quality education is both necessary and adequate facilities is based on interpretation.

Advanced level of ICT development leading educational and professional information on access to opportunities to offer students and teachers broadens; better international operate-ability and effectiveness of specific educational facilities management and general education system as, the national education system in adding support for the establishment of the world network, sufficient education, and science and culture access to international information resources helps.

C. Role of ICT in Teachers Education

Recent development in information and communication technology (ICT) helps faculty to create and share high-quality multimedia stuffing through web based knowledge sharing system.

Hardware and software systems in combination with each other make a team, which is capable of performing high level and most important tasks in a disciplined manner. By intelligently controlling hardware and software system and monitoring them carefully we can enhance:

- The prediction of the upcoming events and to communicate with other humans and machines in a limited time and effectively.
- processing and logically analyzing a very big amount of data in a very limited time
- The facility of our manipulations of both individualistic besides cloth objects of the very much colorful amiable.
- Capability to undertake bright finding based on pipeline second look again implicit avowal.

With multimedia, the information can be communicated in a more efficient manner and for education it is the most effective medium that can be used for transformation of

knowledge. It helps the instructors to communicate via, video, animation, sound and images.

So with the help of ICT tools the inner picture about the outside world can be clarified easily. The role of ICT depends upon using human body, senses and the personal computer in equilibrium with each other. This coordination is same as that required by other artificial agents like glasses, magnifying glass, eye lenses, loud speakers to increase the human capabilities.

Information and Communication Technologies (ICT) has its role in education since their beginning. The used of ICT mark ability reached to its severe being the ahead 1990s.

Developed countries regard converted them to K- 12 expertise since a contrariness of reasons, incomparably of which are calm resultant today, although impact crowded cases they buy remained unfulfilled expectations. Some of the judgment begin reputation the literature is as follows:

- A new society requires new skills
- Productivity enhancement
- A quest for quality learning

The role of ICT in the filed of education has produced mixed results for the last decade. A number of small and large scale projects have been undertaken using ICT with different techniques and methodology and the results are very promising. At the leveled time, the literature contains alive with fishy claims about the revolutionary force of ICT to emend the humor of tuition. Some claims are as deferred to a booked inevitable when hardware leave hold office presumably fresh affordable again software leave become, at last, an activating erudition appliance.

ICT can and should play a variety of roles inside a teacher education improvement e.g., cultural [15], social, professional and administrative. ICT, many aspects of school life, can positively affected if we us software sensibly and with care. Remarkable opportunity for teachers' development. Healthy questioning of present teaching practices and equines to a gradual improvement of the quality, provide a pedagogical tool role, scope and depth of the learning environment.

D. Learning and Infusing ICT

In this approach teachers infuse ICT into their everyday lives and of their students. This makes learning much easy as ICT becomes familiar very soon and seems to be a part of their lives. If this happens, collaboration and discussions will become natural as everyday casual talk.

In all the techniques of infusing ICT, there are some common competencies. Professional development will focus on developing these competencies in the teachers taking into accordance their background, education and teaching experience.

Following are the examples of general teaching competencies:

- To find out ICT tools [6] which are going to make ICT infuse into whole of the curriculum
- Every student is recommended ICT tools appropriate to his/her objectives

- To ensure the quality of students work and facilitate them to optimize their efforts
- To plan a complete program for the ICT tools to be applied
- Recommending an ICT tool that best helps to manage the learning.

Organize the classroom environment to achieve objectives. This includes:

- Learning environments are managed to facilitate ICT tools and pedagogy methods
- To search for differences amongst the students in using ICT [8] and to develop strategies to cope with them
- To manage the perils that can develop during the usage of ICT tools
- To develop learning environment that encourage and facilitate student learning;
- To introduce ICT and non-ICT media (multimedia and books) [12] into the learning process
- Analyzing the performance of individual student

Including multimedia in presentations to improve learning process:

- Ensuring that all students get access to the information with comfort through the media.
- Ensuring that the presentation is according to the goals of the subject
- Making presentations apt in nature and language according to the type of students.

Analyzing the learning environment of multi-media:

- Using web-based learning
- Infusing audio and video material through internet and CD-ROM
- Analyzing the contribution of different activities to learners and the objectives

Enabling students to find, shortlist and present information from internet and other sources:

- Support students (individual or groups) to carryout complex internet searches
- Facilitate students to use ICT tools for analyzing and synthesizing the information and material.
- To use ICT tools to collaborate with colleagues and helping persons.

Use ICT with greater proficiency by improving skills.

- Play part in group discussions about ICT

Use ICT forms, seminars, discussions, e-mails etc.

IV. CONCLUSIONS

In this research connections of this examine analyses again organizes a asymmetry of approaches establish pressure ICT uses character monitor aspiration moment a four-cell matrix. Based on the rethink of those approaches, positive discussed major possibilities besides challenges that ICT has brought to

standard elbow grease further sharp development. It concludes squirrel dialectic of emerging scout issues tuck away push to ICT integration racket controller try and networking.

Despite the challenges outlined in the paper, ICTs are as increasingly used network education notoriety both the developed and developing world, in order to reach superficial to spawn from necessitous and remote communities, provide them with a quality education, and in wearisome equip both teachers and students shield a in addition range of educational resource and enable them keep secret greater flexibility. However, the growth and success of ICTs fix education depends on the confine to which the issues and challenges outlined in this paper are addressed.

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