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INFORMATION AND COMMUNICATION TECHNOLOGY- CHALLENGES AND PROSPECTS IN THE CONTEXT OF TEACHER EDUCATION

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ABSTRACT

Teachers are indispensable within the teaching – learning process. Hence, they constitute a major input in the accomplishment of educational goals and objectives in all nations. In India, teacher education has been bedeviled with a lot of challenges in the modern day technology of imparting knowledge in the teaching and learning process. Information and Communication Technology (ICT) is relatively a very new development in Indian educational system. ICT plays a significant role in teacher education. Hence, the objective of this paper is to discuss the prospects of ICT in teacher education as well as its challenges in India. The findings via descriptive research revealed that many teachers in India are not using ICT facilities in teaching learning process due to some challenges which include high exorbitant price of ICT facilities, lack of infrastructures in the areas of electricity supply, lack of adequate trained manpower for the development, maintenance and operation of ICT facilities, lack of commitment on the part of government towards the development of ICT, inadequate funding of internet connectivity and lukewarm attitude of many teachers to be computer literate among others. This paper proffers some probable ways of improving ICT in teacher education in India. It concludes that the importance of ICT in teacher education to improve the quality of teaching and learning process in schools cannot be over-emphasized.



KEYWORDS: Information and communication technology, teaching profession, e-teaching, teacher education, development.

INTRODUCTION

Today's age of 21st Century and it is also the age of information and technology (IT). Every aspects of life are related to science and technology. Huge flow of information is emerging in all fields throughout the world. Now information and technology is popularly using in educational field for making teaching learning process successful and interesting for students and teacher both. In 1998, UNESCO World Education report refers about student and teachers must have sufficient access to improve digital technology and the internet in their classroom, schools, teacher educational institutions. Teachers must have the knowledge and skills to use new digital tools to help all students achieve high academic standard. The quality of professional development of teacher education depends on the extent of ICT integration in teacher education programme. According to UNESCO (2002) "ICT is a scientific, technological and engineering discipline and management technique used in handling information, its

application and association with social, economic and cultural matters". Teachers are at the core of any living society. Technologies play an important role in training programme of teachers. Students' accesses knowledge and information through TV, digital media, cable network, internet and social media i. e. Facebook, Twitter, Whatsapp, Linkedinn, Igo, Line, Wechat etc. ICT is very important for Preservice teacher education programme in the 21st Century. Without proper knowledge of ICT teacher cannot perform in his/her class room and it could not be said to be a complete one.

LITERATURE REVIEW

Teachers in all nations constitute a major input in the accomplishment of educational goals and objectives. **The National policy on Education (1992)** in India reiterates that no education system can rise above the quality of its teachers. Hence, teachers are indispensable within the teaching – learning process. Also trained and effective teachers are the principal assets of any educational system. **Aminu (1987)** aptly observes that teachers constitute not only a vital input to education but also a major drive in the production process and in the determination of the output system. Teachers touch and shape destinies. **Ajayi (1997)** states that teachers are the ones to make it possible for a child to be grounded in his mother tongue, acquire one or more Indian languages plus English language. They are the ones to ensure a proper foundation of scientific education for the child. To explore the technology learning informally related to personal attributes

He & Zhu(2017) conducted a study. The analysis confirms that for digital learning informally personal attributes like attitude towards informal learning, competence and their creativity are major variables responsible for the informal learning of students digitally. The basic technical skills were not found as a limiting factor in this study.

Tondeuret al. (2019) conducted a study to examine the ability of pre-service teachers for technology integration in education. It was found that on the basis of teacher educators' ICT attitude, ICT self efficacy, different types of ICT competencies and their capability assist pre-service teachers for educational technology use revealed two profiles of teacher educators. The one was named as low ICT profile and the other one as high ICT profile. All the variables like attitude, self-efficacy, ICT competencies and their abilities to support the pre-service teacher educators were positively correlated to the both profiles.

In the light of this, it is impossible to think of education without the contributions of teachers. That teachers have a vital role to play is not in doubt, and this fact has been recognized by international development organization. In fact, teacher- training rates highly in the context of the **Millennium Development Goals (MDGs)**, which has now acquired the status of a framework for measuring development (**Omolewa, 2009**). It has been asserted that it must be cleared in our minds from the outset that at the centre for the attainment of these goals and vision is the teacher. For it cannot be disputed that the teacher basically determines the relevance, quality and sustainability of education. Indeed, the world has always been a teacher's world whether this is appreciated or not.

However, teacher education in India is bedeviled with a lot of challenges in the modern day technology of imparting knowledge in the teaching- learning process. Information and Communication Technology (ICT) is relatively a very new development in Indian educational system. ICT plays a significant role in teacher education to effectively surmount the enormous task of capacity and nation building. If India catches up with other developing countries at a very reasonable pace, the nation builders (teachers) will be abreast of all new development around the world more so that the world is now seen as a global village.

In the preparation of teachers at all levels of our educational system, ICT has a lot to offer in this direction. However, the usage of ICT in facilitating teacher education is still a myriad in India as many of the teachers are not ICT literate and those under training in Colleges of Teacher Education, District Institutes of Education and Training and Faculties of Education in Indian universities are not fully exposed to the use of ICT in the acquisition of skills and practical teaching. Before 1995, teaching profession had been an all comers job. Many of the teachers were not professionally qualified. It could be observed that less than 10% of the teachers in Indian primary and secondary schools are computer

literate. This is a great challenge facing the effective use of ICT in teaching and learning process in our schools.

What is E- Teaching?

Simply defined, E- Teaching is an electronic teaching. It is technically the same thing as regular classroom teaching except that e-teaching is presented in an electronic media. It has also been asserted that the internet has the potentials to bring about a profound change in education for all professions. Traditional approaches to teaching, lecturing and tutoring confined to classroom are now extended by modern approaches to teaching using the more recent technology of online classrooms, multimedia, courseware, distant course, online workshops, media education and video conferencing(Adako, 2006). With the use of internet services, the traditional method of disseminating information on universities courses through leaflets and other print outs are becoming obsolete. The internet is offering a different approach by making the universities worldwide to promote and advertise their academic programmes to much wider domestic and international audience. It is a perfect channel for distance education programme. Courses can be offered on the internet and students supervised, tutored and consulted through the internet. Learning materials can be down loaded and instructional programme given via e-mail and continuous assessments are carried out. For the institutions of learning, the internet can be ideal place to store lecture notes, course materials and assignment sheets. However, this is a recent development in Indian educational system and many of the undergraduate teachers in Indian universities only make use of internet facilities to carry out assignments and other research works. Some institutions in India have embraced the online registration for courses and fee payment but no academic teaching has been carried out online for students not to talk of examinations through internet. All students should be given laptops and two weeks intensive training on ICT to facilitate e-teaching and learning process in the university so that the development will be more although challenging. This could be a model for teacher training institutions to emulate in India to develop teacher education to a globally acceptable standard.

Methodology

The research method adopted for this study was descriptive as the researchers only describe the existing phenomenon based on the information in the available documents and personal observations in classroom teaching in various schools especially during supervision exercise. No research instrument was developed to collect data as the discussion of this research article was based on the existing situation as relates to teachers' use of ICT facilities in classroom teaching which has been one of the challenges facing the teaching profession in the country with particular reference to India.

The Present Status of ICT in Indian Education

In the present day society, computer is no longer a specialized tool used only by scientists but an instrument now been extended to education, commerce, banking, industry, administration, governance, health sector to mention a few. India as a developing nation is getting stronger by the day but one important index of strength is the quality of education provided her citizenry. Today, in most developed countries, nearly every aspect of human life including education is ICT driven. The education sector in India still lags behind in this aspect of technology. However, concerted efforts are being channeled towards this direction.

In India, it is pertinent to say that computer studies have been introduced into the school curriculum especially at the tertiary level but it is yet to be matched with required practical exposure to the utilization of these new skills for optimal productivity. Much of the intervention has been in the areas of providing some measure of literacy in the aspect of word processing. It is quite obvious that in spite of the copious exposure to computer education as a general studies course more than 80% of undergraduates and graduates are unable to adequately utilize the computer and more than 90% by conservative estimate of the secondary school students are unable to use computer, while at the primary school level, less than 5% of the total population is computer literate. The reason for this is not

farfetched. The teachers teaching these students and pupils are not skilled in computer education and application. This calls for the urgent need to address the present situation as teachers constitute a major influence on the use of ICT in the teaching and learning process.

Recent Trends in Teacher Education:-

Based on various changing needs of our society now emphasis is also given to the various educational theory and educational practices. According to these theories and practices changes are also undergo in teacher education also. It is natural that teacher education must include new technology. Teachers should also know the right attitudes and values, besides being proficient in skills related to teaching. As we know the minimum requirement of any training programme is that it should help the trainee to acquire the basic skills and competencies of a good teacher. Now-a-days new trends in teacher education are Inter-disciplinary Approach, Correspondence courses, orientation courses etc. Simulated Teaching, Micro Teaching, Programmed Instruction, Team Teaching are also used in teacher education. Now-a-day Action Research also implemented in Teacher Education. ICT acts as the gateway to the world of information and helps teachers to be updated. It creates awareness of innovative trends in instructional methodologies, evaluation mechanism etc. for professional development.

Prospects of ICT in Teacher Education

The pace of development of ICT in every facet of human life is quite appreciable. In as much that ICT has been found to be an indispensable tool in various facets of human society, education too has adopted ICT in various ways since it has been found to be of useful support in teaching and learning process. Teachers as nation builders cannot afford to be left behind in the revolutionary approach to modern day knowledge. It becomes highly imperative for the educational planners to be concerned with evolving effective strategies for teaching and learning of instructions in our various schools. Modern education techniques will have to be increasingly used and improved at all levels of the educational system.

ICT possesses a great potential for education and capacity building. It allows for systematic gathering, processing and dissemination of information through the use of creative tools for managing and delivering subject matter. **Oliver, Chapman & French (1992)** opine that a teacher could benefit from the dynamism of ICT to demonstrate some difficult concepts, theories and principles, thereby giving meaning to classroom instruction and making class presentation an exciting one. Teachers can use computers to simplify teaching, make learning experiences more effective and to offer students access to a variety of learning tools, expert opinion and alternative view points. Hence, it affords teachers and students to appreciate positively their cardinal tasks of teaching- learning and research activities.

ICT has been a veritable tool that could be used to enhance quality of education in various ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. **Daramola (2006)** affirms that ICTs are transformational tools which when used appropriately can promote the shift to a learner- centered environment.

The commitment of the government in investing on ICT usage in education is enormous, substantial and highly justified considering the backwardness in education. The Government of India made a laudable achievement in this direction by putting in place physical ICT infrastructures. Even it has been mandated all college teachers to be computer literate. Expectedly, the Government has put ICT and teacher education in the fore front as one of the parameters for ensuring the achievement of the Millennium Development Goals (MDGs). This is a lofty development that needs to be sustained with a view of improving quality of teachers in the state.

It therefore becomes highly imperative for teachers to take advantage of ICT to enhance their skills to keep abreast with global developments. Indian teachers would be able to compete favorably with their counterparts in the advanced nations only if they expose themselves to the available knowledge in the realm of ICT. Concerted efforts should be made by all stakeholders to ensure that teachers are always in tune with new global developments in their profession.

Challenges of ICT in Teaching Profession

The challenges militating against the effective use of ICT in teaching profession are of multifarious dimensions. As rightly observed, the corps of teachers who are expected to bring reform into education system went through the traditional 'old' system without any exposure to ICT. It becomes a difficult problem for these set of teachers to acquire adequate mastery of skills and content that are embedded in ICT. The re-orientation and re-directing our value system towards the latest development around the world has put many teachers in a state of disarray to whole heartedly embrace the e-teaching technology as many of the teachers lack the basic skills and access to computers. It has been observed that the initiation and development of Information Technology service in India is militated against by certain human and materials factors. Some of these are highlighted as follows:

- ICT facilities are expensive and unaffordable to many individuals, private and some government establishments.
- Necessary infrastructures such as electricity and telephone for the operation of ICT components are lacking or grossly operated at epileptic level.
- Lack of adequate trained manpower for the development, maintenance and operation of ICT facilities to service the increase demand of Information Technology service.
- Poor remuneration for the inadequate personnel in ICT which consequently keep them away from labor markets.
- Lack of total commitment on the part of government towards the development of ICT sector.
- Inadequate funding of internet connectivity because it is capital intensive.
- Lack of adequate knowledge among the educational planners, administrators as well as the society on the importance of ICT in educational system.
- Lukewarm attitude of many teachers especially at the primary and secondary school levels to be computer literate. The capacity building of teachers in ICT is very low and this must be urgently addressed by educational policy makers and school administrators.

Probable Ways of Improving ICT in Teacher Education in India

Based on the problems highlighted above, the following ways are hereby suggested through which the influence of ICT on teacher education could be improved.

- There is urgent need to review our educational policy strategies and techniques as well as the teaching methodologies of developing our teachers.
- There is need to introduce the teaching of ICT in the school curricular at all levels of our educational system with emphasis on practical application.
- ICT as a course should be made compulsory for lecturers and students of teacher education programme as these students will graduate to teach our school children in schools.
- Supportive infrastructures such as electricity and telecommunication services should be improved and adequately enhanced for effective services.
- The ICT professionals should be encouraged through good remuneration based on improved salaries and conditions of service.
- ICT facilities should be made available at affordable price to be procured by teachers at government subsidized rates.
- ICT centers should be established at all strategic and governmental levels to provide services to people especially the teachers. While there are clarion calls on the government to get connected to the internet, nongovernmental organizations should be encouraged to assist in connecting the nation to the internet.
- Re-orientation and re-directing our value system towards the latest development around the world will put our teachers in a state of readiness to whole heartedly embrace the E-Teaching technology. This could be achieved through teacher in-service training programmes such as conferences, seminars and workshops that are based on ICT and teaching and learning process in schools.

Implication of Study

This study would help to reposition the teaching profession in India in the preparation of teachers in both the Colleges of Teacher Education and Universities with emphasis placed on adequate knowledge and application of ICT in teaching –learning process in their teacher education programmes. There is also the urgent need for the training and re-training of all teachers in both primary and secondary schools on the use of ICT in classroom teaching while the governments at local, state and federal levels should pay adequate attention to the provision of ICT facilities in our various schools in a bid to create an enabling environment that could help the teachers to perform optimally.

CONCLUSION

The importance of ICT in teacher education to improve the quality of teaching and learning process in schools cannot be over-emphasized. The relevance of India in the educational development programme in the 21st century solely depend on the degree of free flow research works and ideas, findings and innovation in education and curriculum information. These can be fully achieved through full integration of the nation into the global highway which is ICT oriented. ICT should be more emphasized in teacher education programme. ICT should always be seen as a tool for teachers to use and not as a substitution for teachers. Government intervention in the areas of funding and providing necessary infrastructures to ensure success of ICT in teacher education programme must be urgently addressed. Government should stop paying lip-service to ICT but rather make frantic efforts to develop and sustain ICT policy in the nation's educational programme. This will go a long way to effectively implement the use of ICT in teaching and learning process in all spheres of our educational system. More also, this will help to guarantee the success of the new teaching technology and teachers will be forced to be abreast with the modern development in the global educational standard, of which ICT plays a vital role.

REFERENCES

- Adako, L.B. (2006). E- teaching profession: Prospects, problems and remedies, *Journal of Research in Vocational and Technical Education* 3(1) 12- 16.
- Ajayi, A. (1997). Towards a Culture of Science and Technology. *Journal of Teacher Education* 2(1) 18- 22.
- Agarwal, J. P. (2013): Modern Educational Technology. Black Prints, Delhi.
- Aggarwal, J. C. (1996), Essential of Educational Technology, Vikas Publishing House, New Delhi. 8. ICT in Education (2006). Information and communication technologies in teacher education: A planning guide.
- Aminu, J. (1987). *Quality and Stress in Nigerian Education*. Kaduna: Baraka Press and Publishers.
- Aturamu, A.O.(2006). Information and communication technology (ICT) resources for teaching agricultural economics in schools. *Journal of Research in Vocational and Technical Education* 3 (1) 23- 29.
- Daramola, A. (2006). Information communication technology (ICT) and educational development in Nigeria. A lead paper presented at the 2nd National Conference of the School of Education, College of Education Ikere- Ekiti, Nigeria.
- Goel, D. R. (2003), ICT in Education, Changes and Challenges in ICT in Education. M. S.University, Baroda.
- He, T., & Zhu, C. (2017). Digital informal learning among Chinese university students: the effects of digital competence and personal factors. *International Journal of Educational Technology in Higher Education*, 14(1), 1–19. <https://doi.org/10.1186/s41239-017-0082-x>.
- Kirwadkar, A & karanam, P. (2010) : E-learning Methodology. Sarup Book Publishers Pvt Ltd. New Delhi.
- Ojo, M. O. (2005). Information and communication technology (ICT) and teacher preparation for basic education. *Journal of Teacher Education* 8(1) 39- 46.
- Oliver, E.C., Chapman, R. J. & French, C.S. (1992). *Data processing and information technology*. London: DP Publications Ltd.

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- Tondeur, J., Scherer, R., Baran, E., Siddiq, F., Valtonen, T., & Sointu, E. (2019). Teacher educators as gatekeepers: Preparing the next generation of teachers for technology integration in education *British Journal of Educational Technology*, 0(0), 1–21.
- Venkataiah, N. (1995) "Educational Technology" Atul Publishers, daryaGanj, New Delhi.
- Vanaja, M. & Rajasekhar, S. (2009), Educational Technology and Computer Education, Neelkamal Publications Pvt. Ltd., Hyderabad.