REVIEW PAPER

IMPLICATIONS OF KOREAN EXPERIENCES OF ICT IN EDUCATION IN INDIAN CONTEXT: A VIEWPOINT

By

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ABSTRACT

South Korea has achieved the rank of high tech nations of 21st century, 100% literacy and 100% schools with internet connectivity in a span of 20 years. There are several factors responsible for these notable achievements. Optimal and effective integration of ICT (Information and Communication Technology) in education is one of the main reasons behind successful journey of Korea in various socio-economic spheres. In this backdrop, present study was conducted to understand the journey of South Korea in reference to their initiatives and policies of ICT in education to draw useful lessons for India. This study is mainly based on the review of existing policies and practices, as well as other available literature and statistics related to use of ICT in education in Korea. On the basis of obtained findings, researchers figured out few lessons for policymakers and planners of India to integrate ICT in education in a more effective and efficient way.

Keywords: Korea, India, Education, Information and Communication Technology, ICT in Education.

INTRODUCTION

United Nations (UN) in the Millennium Development Goals (MDGs) has formalized the importance of education and consequently different countries have adopted specific individual goals across the globe. A person's sense of wellbeing, job satisfaction, capacity to absorb new ideas and technologies, increased community participation and improved health have been considered as the beneficial effects of education (Kozma, 2005). Because of economic and social benefits of education, UN launched its 'Education for All' initiative in 1997 and subsequently connected this effort to MDGs and Literacy Decade Initiative (UN, 1997, 2000, 2002a, 2002b). The extent of importance of education can be seen through analysis of different initiatives being taken by different agencies in global perspectives. Now in 21st century, education has witnessed two major paradigm shifts. The first shift is from traditional knowledge acquisition in a teacher centred classroom environment to the one that is learner centred, encouraging and collaborative and the other one is from traditional-means driven education to Information Communication Technology (ICT) supported education.

With the advent of technology, in 90s many initiatives have been taken for the use of ICT which reproduced remarkable opportunities for the policymakers, educationists, administrators, teachers, and students to go beyond their limitations both in quantity and quality and promote international collaboration and networking in education and professional development (Khan et al., 2012). Not only this, to meet the day to day challenges of education, ICT provided a variety of options ranging from videoconferencing to web based resources. UN and other major donor and developing countries brought ICT in mainstream of developmental policies (UNDP, 2001). For an instance, ICT is being used to provide equal and universal access to knowledge and to realize the goal of sustainable development (UNESCO, 2005b). In a brief, the term ICT as applied to education are those technologies, including computers, internet, broadcasting technologies, and telephony that can facilitate not only delivery of instruction, but also learning processes.

The ICT has been identified as an important tool for realizing a new paradigm of learner centered education that better supports learners' needs through differentiated and personalized instruction (Watson and Watson, 2011). ICT was credited to support learner centered instruction for diverse learners by providing interactive content, giving immediate feedback, diagnosing student needs, providing effective remediation, assessing learning, and storing of student work (Bush and Mott, 2009; Reigeluth, 2008). ICT in education has a multiplier effect throughout the education system, by enhancing learning and providing students with new sets of skills; by reaching students with poor or no access (especially those in rural and remote regions); by facilitating and improving the training of teachers; and by minimizing costs associated with the delivery of traditional instruction (UNESCO Institute for Statistics (UIS), 2014).

Like other countries of the world, South Asian countries are also investing considerable resources in education to solve the problems of quality, access, and mechanism with the integration of ICT. Although, there seems a stark difference in ICT development in South Asian regions. This region includes countries having high ranking in index of top twenty countries of the world as well as countries coming under index of lowest ten countries. South Korea and India is one such contrasting example. UNESCO (2014) states that despite many differences in reference to political systems, ideologies, historical backgrounds, and educational structures, Korea and India still share a common vision of growth and development on account of being members of Association of Southern Asian Nations (ASEAN). A closer examination of education system of these two countries presents Korea as a high performing system, whereas India appears to have a lot of scope for improvement. Korea has been recognized worldwide for its educational system enriched with technology and their accomplishment in the field (Mishra, 2012).

Policies are instrumental to reap the benefits of ICT in education. For nearly four decades, the education policymakers have been formalizing ICT policies as a part of educational renewal and reforms. Moreover, while not mentioned explicitly in the Education for all goals, it is arguable that ICT policies play a pivotal role in achieving these goals, including broadening access, eliminating exclusion, and improving quality (UNESCO, 2000). Within this context, UNESCO has also produced a number of resources for policymakers considering the use of ICT in Education, such as ICT in education (UNESCO, 2000), the ICT in Education Toolkit, and the ICT competency standards for teachers (UNESCO, 2008).

UNESCO has produced a world report entitled, "Toward Knowledge Societies" which recognizes that ICT have the potential to enable many individuals, firms, communities, in all regions of the planet to address economic and social challenges with greater efficiency and imagination (UNESCO, 2005b). ICT is also recognized as a supporting resource to pave the way of lifelong learning; quality education, diversified learning, and access to marginalize and undeserved communities. To reap these benefits, ICT policymakers of India are supposed to develop a supportive policy environment and framework at national level for integration of ICT into education system. For this purpose, lessons from South Korea regarding effective and efficient use of ICT in education can be of importance for policy framing in India. Taking this view into consideration, the present paper aims

- To understand the journey of South Korea in reference to their initiatives and policies of ICT in education.
- To understand the factors responsible for South Korea's emergence as a global leader in ICT and education.
- To draw some useful lessons for India from Korean experiences of ICT in education.

1. Methodology

The methodological approach to conduct this work includes documentary analysis. The documentary work is mainly based on the review of existing policies and practices, as well as other available literature and statistics related to ICT in Education policies and practices of Korea.

2. Korea's Educational Attainments in Global Perspectives

South Korea, officially the Republic of Korea, has achieved the rank for high tech nations of 21st century

mainly due to effective utilization of its human resources and initiative capacity (Dessoff, 2012; Korean Educational Development Institute, 2007). To strengthen and utilize its human power, Korea has focused on its education system, which follows nationwide standards and curricula organized and directed by Government rules and regulations. Korean Government has implemented many educational policies and strategies in education for the very purpose and use of ICT is one of them. Playing a key role in creation and maintenance of ICT and other major educational initiatives, Korean Government has made its school education commendable. The decade of 1980's witnessed a new movement of introduction of technology in education in Korea. To harness the utilization of ICT in education system, Korean Government proposed an initiative "Plan for the Renovation of Education". Korean educational policy was planned and implemented in connection with five-year Economic Development Plan, which proved to the backbone of Korean Economic Development (Korean Educational Development Institute, 2014).

Looking back into the history of Korean education system under its rapidly expansion scheme, Korea introduced compulsory primary education policy in 1954 and concentrated education budget on primary education. 75% of Ministry of Education budget was spent on primary education and in 1959; it succeeded in achieving the goal of universal primary education with 96% rate of enrollment (Korean Educational Development Institute, 2015). Gradually the country shifted its focus on secondary level of education and within a short period with its firm decision making and policies, Korea achieved universal education at secondary level also. Till now Korea has focused on the improvement of school education quantitatively. But to improve the quality of secondary education, the Committee of Education Reform was organized in 1995 came with a suggestion of innovative policies that advocated learner centered diversified education system, autonomous schools, and ICT integration in education. Especially the policy focused on advancement of ICT oriented 21st century schools and consequently Education Management and Information System were introduced (Korean Ministry of Education & Korean Education and Research Information Service, 2014).

Quality enhancement of Korean education can be directly seen in growing high achievements of its students who often rank high on international comparative assessments. Korean students have achieved outstanding results in international student assessment tests, such as TIMSS (Trends in International Mathematics and Science Study), PISA (Programme for International Student Assessment), and the International Science Olympiads (Korea Foundation for the Advancement of Science and Creativity, 2011). South Korea has also been one of the best high achieving countries in different stream. Korea ranked fourth in mathematics and sixth in science in PISA (Programme for International Student Assessment) in 2009 and first rank in Physics at 2011 International Science Olympiads (Freeman et al., 2015). To mention more, the Programme for International Student Assessment, coordinated by the OECD, ranks South Korea's science education as the third best in the world and being significantly higher than the OECD average. South Korea ranks second on math and literature and first in problem solving (OECD, 2014). UNESCO highlighted Korea's best practices in using information and communication technology, particularly its cyber home learning system for primary and secondary students (Korean Ministry of Education & Korean Education and Research Information Service [MOE and KERIS], 2014).

3. Korean Vision and Policies regarding ICT in Education

This seed of integration of ICT in education in Korea was germinated in decades of 80s. During 80s, Korea planned for providing computer education at schools. South Korea completed its journey of ICT in education in several phases and within a span of just 20 years (Kozma, 2003). Afterwards, Korea has reached to the level that their educational goal shifted from utilization of ICT to digitalize the entire school curriculum by 2015. Last 20 years have been the important foundation years, where the Korean Government focused on more creative education through the use of technology and at the same time

successful efforts were made to minimize the educational divide (Kozma, 2008). This journey of Korea to integrate ICT in education is not without an aim rather there has been a vision, i.e. to face future challenges and competition in sphere of education, science and technology and to cope with rapid changes in the economy and society worldwide. Korea aims to be a ubiquitous society, where constraints of time and space disappear by the integration of Real and Cyber world and expansion and integration of ICT in education was seen as a mean to achieve this vision (Bacsich and Proli, 2011).

Talking about the phases of ICT integration in education, Korea started its first phase in 1996 with the launch of EDUNET Services and computerization for school records and continued with the beginning of 21st century. In 1997, plans for vitalization of Teacher's capability in utilizing information were formulated focusing on computer utilization in education. Then for next two years, the Government of Korea focused on the internet utilization with the launch of Research Information Sharing Services and also for implementation plan for certification system of student's information capability. ICT training and the plan for supporting children from low income families were also formulated. With the second phase in 2001, various plans took place for promotion of ICT utilization in education. 2001 witnessed reinforcement of computer education at school, approval of Cyber University, establishment of educational courses for utilization of IT at elementary and secondary schools.

Construction of nationwide sharing system for education information and the plan for vitalization of ICT at universities was initiated by the Government in 2002. E-learning support system, teaching-learning center, and cyber home study system were introduced in 2004. Sooner at the end of the phase the operations of U-learning research school taken and the plans for reforming teaching learning to improve substance of public education and the plans for information protection at education institutes were formulated (Hwang et al., 2010; Sanchez et al., 2011). Third phase came into force in 2006 with the promotion of enhancement services and the integration of ICT utilization in education. During this phase the promotional plan for digital textbook dissemination along with the construction of administrative and financial affairs system for local information and the strategic plan for supplying comprehensive information about teacher's training took place. The initiatives for opening of education cyber security center along with the construction of certification center for electronic signature for educational institutes were taken in 2008.

For integration of ICT in education, fourth phase started in 2010 with a purpose of smart education. In 2011, National Education Information System (NEIS) was launched with the strategies for promoting smart education (Kim, 2007). Construction and operation of website of National supporting center for parents and many new areas, such as Education System (EDS), E-learning online service, public disclosure service for kindergarten information, and Edufine New School Accounting System were introduced in 2012 followed by the introduction of national mobile app service. Within the final phase starting from 2014, Korean Government focused on enhancing lifelong learning and stabilizing educational welfare for equity (Hwang et al., 2010). Government of Korea distributed digital textbook, established model school service, and selected New Enterprise Incentive Scheme (NEIS) as the primary information communication infrastructure to focus on Smart Education in 2014. At initial stage to promote smart education through smart schools, Korea took two initiatives, i.e. free semester system and K-MOOC cloud campus education 3.0 focusing mainly on Just in time and Person Education Services (Hwang, 2016). Thus going through a process of five phases in 20 years, Korea achieved the tag of one of the best doing countries in ICT in education.

4. Responsible Factors for Successful ICT integration in Education in Korea

Today Korea is a successful country in ICT integration for educational purposes. There have been some unique factors that supported Korea to achieve its vision and mission regarding ICT in education. Looking back towards the ICT journey, it appears that Korea moved towards its goal systematically (Law et al., 2008). Small but firm steps

were taken to achieve the larger goal one by one. Korea started its work from ground level and touched the heights of success. Before targeting on making people efficient in digital technologies, Korea focused on bringing it into reach of its citizens. Its first phase of journey towards ICT started with the establishment of world class ICT infrastructure for initiating educational information services. Now the majority of the population in Korea is able to access the internet anytime and anywhere (Hwang et al., 2010). Even Ramirez (2017) claims that in Korea, nearly hundred percent of households have internet access. After infrastructural development, Korea has shifted its focus on quality education and open access to information along with capacity building program for teachers and on sustainable learning environment with flexible access and security.

Here the most notable thing is that Korea did not ignore the importance of a teacher. Efficient integration of ICT in education is not sufficient in itself unless the most important supporting factor of this infrastructure, i.e. teacher is not focused. Teachers play a very important role in shaping and constructing digital content and also curriculum design. Therefore, without strengthening a teacher no infrastructure can be successful in its functioning. Accepting this notion Korea attempted to provide quality ICT training to their teachers. With the passage of time, Government's focus shifted from computer literacy to curriculum integration, and accordingly teacher training framework for ICT has been developed (Hwang et al., 2010). To achieve the desired goal of education capacity building of teachers and the teaching profession has been given more value in comparison to any other profession in Korea (OECD, 2016). Going a step further, Korea has also started education in distance mode to support its teaching community (So, 2016).

The policymakers of Korea have been very clear in their approach. Shifting from quantitative to qualitative approach, Korea tried to cover all the sectors of education from primary to tertiary. For the attainment of educational goals, Korea not only focused on policy making, but also on its implication and evaluation. For this purpose, Korean Government established a proper structure having three key players responsible for the organization of expansion of ICT and its integration in education both at national and regional level. Ministry of Education, Science, and Technology (MEST), Korea Education and Information Services (KERIS), and Metropolitan Provincial Offices of Education (MPOE) strongly support each other and have undertaken the responsibility of all processes from planning to implementation of ICT policy. KERIS plays significant role in developing implementation details of National ICT policy, guidelines, evaluation, monitoring progress and performance analysis (Hwang et al., 2010). The coordination of all these players laid foundation for the successful efforts and participation of all areas of society, industry, the public, and the private sector for ICT integration in education in Korea (Sanchez et al., 2011).

By developing plans and strategies targeted at low income group, Korean government attempted significant steps in solving the problems of equity and access in ICT integrated education (OECD, 2016). Air and Correspondence High Schools (ACHSs) and Cyber Home Learning System (CHLS) now named as Cyber Learning System (CLS) are two milestones in this direction. ACHSs were mainly established to provide secondary education to underprivileged section of the society. These ACHSs have been affiliated with public schools and provide facilities and quality of public school education to the underprivileged section of society through ICT. With CHLS, Korea has brought online learning content, cyber teachers and tutors, and private learning spaces on cyberspace in access to all by providing free online services (Hwang et al., 2010) and thus sought out the way to expand private tutoring out of the school which has been a major concern in Korea.

The other striking thing about Korean successful journey of ICT integration in education has been to provide opportunity to its citizens to give their share in educational development of the country. By creating a voluntary educational environment through National Service in 2014, Korea has motivated its citizens to be a part of the education system for their children. National Service is a

national portal which provides student/parents service, home education service, educational support service, private academic service, and survey service (Hwang, 2016). Thus Korea has presented an example before the world that in spite of having limited resources and disadvantageous geographical location, a country by utilizing its human power systematically can achieve the rank of high tech nations of 21st century (Korean Educational Development Institute, 2007). Korean journey of ICT in education is a motivational example for countries like India where there is no scarcity of human resources and ICT infrastructure as well.

5. Key Learning's for India from Korean Experiences of ICT in Education

India has recognized the importance of ICT in education as early as in 1984-85 with launching of Computer Literacy and Studies in Schools (CLASS) as a pilot project. But unfortunately the project did not gain much success and ended up with low achievement of targets. Then again at the start of 21st century, revised CLASS project came with broad global trend, but it also proved to be a failure by the evaluation committee (MHRD, 2014). Both, Korea and India started their attempts in direction of technology enhancement and ICT integration in education by the introduction of computers in schools in 1980s. But at present they are in different zones regarding ICT integration in education. A comparison shows that Korea has become one of the leading educational hubs around the globe and experienced 100% literacy rate, whereas India is still struggling to achieve a satisfactory level in this direction. MHRD (2016, p. 49) in its recent draft for New Education Policy 2016 states, "ICT needs to be harnessed and adopted in Indian conditions to meet diverse objectives in many fields where meaningful experimentation have taken place, as also new as yet-tried out fields to be covered". Many fields of ICT integrated education in India still needs further consideration by the policymakers and related persons to achieve the desired educational objectives. In this backdrop, following learnings from the Korean journey of ICT in education may be of immense use to Indian counterparts.

5.1 Learning 1: Focus One Sector at a Time

20 years have been the important foundation years, where the Korean Government has focused on more creative education through the use of technology and at the same time efforts targeted towards bridging the educational divide (Kozma, 2008). And this journey of Korean educational system has made it clear that success is achieved step by step. Taking lessons from five phases of Korean system, India needs to set small goals targeted to be achieved within the proposed time and should focus on ground necessities required, to get success in the field. Indian journey in terms of adopting ICT shows that the country is proceeding with the multi tasking strategies to infuse ICT in education instead it should focus on one sector at a time.

To make the argument clear, consider an example of Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDSA) (Ministry of Electronics and Information Technology, 2017). Under this scheme, the Indian Government has targeted to make 60 million people in rural areas digitally literate. Reaching around 40% of rural households, PMGDSA aims to cover one member from every eligible household by 2019. Concerning on report of a survey 2014, only 6% households of rural areas of India have computers. This huge difference is very clear from the first sight. Although Government has taken an initiative to make electronic services available for its citizens by improving the infrastructure, i.e. increasing the connectivity of internet in 2015, but a gap of 34% is very huge and needs a lot of resources in terms of time and money. The notable fact here is that in order to make one efficient in digital skills it is necessary to bring technology in their practices, which is possible to access at any time. Here accessing any time does not only refer to internet connectivity, but also to basic needs like smartphones, laptops, and other digital gadgets. This is still lacking in India, so to get success in its attempt to make digital India, Government of India should to be very concise and active in developing ICT infrastructure rapidly.

5.2 Learning 2: Empower Teachers to use ICT

The educational policies can be best implemented

where teachers participate to learn policy related materials (Cohen and Hill, 2001). Korean Government was judicious enough to connect policy framing with actual classroom practices with the development of structured teacher training framework for the development of digital literacy and their implementation in actual classroom. Following the success of Korea, India needs to make ICT skills and their usage as integral part of teacher professional development as well as teacher appraisal. Government should also come up with provisions to guide and counsel the teachers on individual and collective level to help them overcome their fear with the use of ICT in education. In order to produce globally competitive teachers, Government of India can take initiatives like Korean National Service Program. The National Service program of Korea has helped to encourage the patriotic sentiments among teachers and motivated them to contribute to the achievement of educational aims and objectives. Creation of a National Service digital platform in India will provide a unique opportunity to teachers to render their services for the sake of the country's educational attainments.

5.3 Learning 3: Offer ICT based Coaching Classes for Students

The fierce competition in job market in India had given rise to increasing doubts and insecurity among students and their parents. Thus, increase in out of school coaching and tuitions to excel in academic studies have become a common trend in India. Out of school services have proved to be burdening the mind of our future generation and the output seems to be trivial in sense of educational attainment. Korean Government took this challenge with great care and came with Cyber Home Learning System (CHLS). Through CHLS, a student can get learning aid with the required learning material online as well as individual guidance through the cyber teachers who are always online on the portal to give assistance to the students. Indian Government can also think of providing similar kind of online services to Indian students. Creation of a Cyber Learning System will also be a platform for generation of new employment opportunity in the form of cyber teachers. This initiative will certainly be useful for both students and teachers.

5.4 Learning 4: Establish Digital Schools for Underprivileged Students

As India is a land of vast population and diversities, it has been very difficult for policymakers to fulfill educational needs of different sections of the society. To make things easier, Government of India has made a provision of 31.5 billion Indian Rupee exclusively for ICT in school education in its budget allocation of year 2013-2014 (Thakur, 2014), but still we have to go a long way to overcome these differences as well as to bring equity in educational attainment between Government and public schools. Korea's Air and Correspondence High School (ACHS) has proved to be of great help in providing secondary education to underprivileged section of the society. Such schools have been attached with public schools digitally and all the learning programs and quality education are made available to the larger section of the society. By bringing a concept of ACHS, Korea has given an opportunity to make quality education accessible to all. Emulating such type of schools will help India to provide access of quality education to different sections of the students. This type of schooling will help to achieve a cherished goal of providing quality education to government and private schools.

5.5 Learning 5: Promote e-learning in a better Way

Korea has not only focused to produce e-content, but also has changed its context by renovating pedagogy, classroom settings, educational system, and environment. To mention, Korea has not only built a top ranked IT infrastructure but also formulated 'Facilitating E-learning Industry Law' (Hwang et al., 2010). Thus to bring the seeds of e-learning to committed fruition, the Indian Government needs to plan the proper channel for quality control, training programs, and feedback system. Here it will be worthy to mention that India has also taken a number of initiatives to promote digital education and for this 85,127 ICT enabled schools were established in the country (MHRD, 2016). But all these initiatives in India are running in the traditional context of e-learning. E-learning provides an opportunity to study and learn at an individual

level. But at the same time it is required to establish quality control assurance system using certain criterions. Various training programs for e-safety and e-ethics need to be organized by the authorities in a planned structure at all levels of education system. Effective monitoring and evaluation systems will definitely help in structuring the e-learning modules for every learner. Measures need to be taken to bring the private and public sector to co-operate optimistically for the national growth and development.

Conclusion

After the keen observation of the policy implementation, plans and strategies adopted by South Korea, it can be concluded that focused, organized, structured, and time framed approach is hallmark of fruitful integration of ICT in education. Like Korea, India is also trying to transform the education system with the use of ICT and a focused and time framed approach will certainly help to achieve this target. Researchers of the view that learnings from identified Korean experiences will be useful for policy planners in India in the integration of ICT in education for achievement of educational goals and to harness the potential of the human resource at best.

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