IMPORTANCE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN PRESCHOOL EDUCATION.

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Abstract

An significant research topic is the use of Information and Communication Technology (ICT) in pre-school education, and a broad variety of research findings have therefore been published. The research results on the use of ICT in pre-school education in the past decade in India are examined and compared in this paper. The key framework for the study of this paper focuses on three aspects: I pre-school access and use of ICT; (ii) ICT and pre-school teachers; (iii) ICT and pre-school teachers. Finally, in the two nations, similarities and disparities in the use of ICT in preschool settings are addressed and concluded.

Keywords: ***Communication, Technologies, Preschool Education***

Introduction

In almost every aspect of modern life, and particularly in education, information and communication technology (ICT) plays a major role in living in the digital age and in a knowledge-based society. The value of ICT in education has been realised by many countries. They therefore released relative educational policies and invested in infrastructure, software, school internet access, and teacher training related to ICT. Some scientists also conclude that "there can hardly be a nation in the world that is not currently involved in the process of introducing ICT into its education system." The possible benefits of ICT in educational environments are well established at all levels of education, from preschool to higher education. In particular, the use of ICT in education will build new educational environments, include new teaching tools, alter the conventional relationship between teacher and student, and eventually increase the quality of education. ICT can therefore be regarded as a "potential tool for change and innovation in education." In addition, the use of ICT in schools is an efficient way of developing people who are proficient in ICT to meet the demands of the new information society.

Therefore, several studies have projected that "the importance of educational technology will continue to increase in the classroom." As the technology market is rapidly evolving, especially the early childhood education market, the availability and use of technology for young children is widespread and comes much earlier to serve young people. In a new age in which a wide variety of modern technologies are used, both at home and in preschool, young children are growing up. "As the researchers said, "in a media-saturated environment, even the youngest children live and the extent of their technical experiences varies dramatically from that of the previous generation. Significant international attention has been given to the topic of ICT use in preschool education in this context.

A variety of research topics have been reviewed, such as 'present landscape of ICT usage at home or at pre-school' ICT skill preparation and application of teachers in the educational environment' (Pange, et al., 2004; Chen & Chang, 2006; Toki et al., 2009; Pange, 2011). The purpose of this paper is to evaluate and compare relative research over the last decade on ICT usage in preschool settings in India. More precisely, this study explores three aspects in the light of research findings: I access to and use of ICT in preschool, discussion of ICT policies and projects, establishment of facilities, as well as the use of ICT by teachers in the classroom; (ii) ICT - preschoolers, reflecting on the effect of ICT use on preschoolers; (iii) ICT - preschool teachers examining the views and attitudes of teachers towards ICT

Objective

1. The aim of this paper is to analyze and compare relative research on ICT use in preschool settings in India during the last decade.

2. In instruction practice teachers usually use ICT more for teaching preparation, less for educational aims and activities

Access to and Use of ICT in preschool

In Greece, in the early 1990s, the government started to initiate a national plan for incorporating ICT into education (Tsitouridou & Vryzas, 2004). ICT inclusion in the education sector is encouraged by the Ministry of Education. Several projects aimed at further improving ICT hardware (computer facilities, networks and broadband connections) as well as software and services have been introduced under its sponsorship (educational software, educational portals, and educational services). As regional organisations, regional support centres (KEPLINET) were also set up to provide technical support, advice and training to educators working either in computer labs or in ICT networks at schools. A substantial amount of money for the use of ICT in education was invested by the European Union and the Greek government, such as the 'Information Society Programme' (2000-2006), which spent EUR 20 million per year on ICT-related facilities and services, and the 'Information Society Office Programme' (2000-2006), which also invested heavily in ICT infrastructure. The initiatives have substantially strengthened ICT infrastructures at all levels of education (Suhonen, 2011). Basically, almost all Greek schools have access to computers and the internet, including preschools, and their use is increasingly growing (European Commission, 2006). However, there is more room for change in the level of equipment and the implementation of ICT in class by teachers in Greek preschools.

According to one study, in Greece, every 17 students can share a single computer, with only 13% of the internet linked through broadband, and 36% of teachers using computers at the bottom of the EU25 classroom. (Commission of Europe, 2006; Korte & Hüsing, 2006). Teachers in teaching practise usually use ICT more for teaching training, less for educational objectives and events (Economides & Zaranis, 2010). ICT for Mathematics, Physics and Computer Science is widely introduced, followed by General Primary Education, Humanities and Social Sciences and Technical Education. ICT is least educated on the subject of literature and languages, physical and artistic/craft education (Korte & Hüsing, 2006). The major obstacles and difficulties found by teachers in the use of ICT in education are: inadequate school facilities, limited abilities of teachers and subjects not appropriate for computer teaching (European Commission, 2006; Economides & Zaranis, 2010). While adequate and comprehensive information on the actual use of ICT by pre-school teachers is missing, the above studies on the entire education can also paint a picture for us. The implementation of ICT into pre-school education in China started in the 1990s, well later than in other European nations. As a consequence, studies and activities linked to ICT are now at an early stage (Guo, 2007). Although a number of ICT infrastructure and teacher training policies and initiatives have been developed and implemented by the central government, including the "School to School Network Project," "Teachers' Professional Development for ICT in Education," "Modern Distance Education for Schools in Rural Areas Projects," and "National Teacher Educational Technology Standards" (Zhao & Xu, 2010), these projects have been developed and implemented by the central government. In China, pre-school education is not part of primary education and is a separate part, so pre-school education and pre-school teachers are not included in the projects referred to above. In other words, there are no clear and direct policies and programmes at the government level for the introduction of ICT education in kindergartens. Recent studies in the academic sector (Liu, 2007; Guo, 2007) suggest that most Chinese kindergartens have made substantial progress in the field of ICT infrastructure. Most of them are fitted with laptops, printers, scanners, digital cameras and images, and have Internet access. Some better-conditioned kindergartens have built separate multimedia classrooms and computer classrooms (Han, 2003; Pu, 2005; Liu, 2007; Guo, 2007).

Some studies also report a problem that is common in India with regard to the use of ICT infrastructure, particularly in Mainland China, which is known as the "digital divide" between public and private kindergartens and kindergartens between urban and rural areas (Liu, 2007 Guo

et al., 2006). With regard to the status of ICT usage by teachers in Chinese kindergartens, the level of use and frequency of ICT facilities are found to be extremely low (Pu, 2005; Guo, et al., 2006; Liu, 2007), and hours of use are restricted (Pu, 2005; Guo, et al., 2006; Liu, 2007) (Liu, 2010). Teachers primarily use ICT to scan for online teaching tools such as photographs, texts and courseware for these ICT-related activities (Liu, 2007). In general, teachers mostly integrate ICT into science, language and art subjects, and rarely into social and physical fields (Liu, 2007; Guo et al., 2006). Although many educators are interested in incorporating ICT in classroom practises, it is very difficult for them to incorporate it in actual teaching practise (Han, 2003). The key challenges and barriers are summarised in: lack of guidelines, lack of resources and technical support, lack of Chinese-language educational software, inadequate ICT usage ability of teachers, illiterate parents of ICT, insufficient time, heavy workload and pure organisational climate (Leung, 2003; Li, 2006; Han, 2003; Meng, et al., 2011).

ICT and Preschool Teachers

In all the papers reviewed, the role of teachers in the implementation of ICT in preschool environments was well recognised. As reported globally, the viewpoints and behaviours of pre-school teachers are of crucial importance in maximising the educational potential of ICT (Violato et al., 1989; Czerniak & Lumpe, 1996; Tsitouridou & Vryzas, 2004). They can become predictors of the actions of teachers by integrating ICT into the teaching and learning of students (Nikolopoulou &, Tsitouridou & Vryzas 2004; Pange; 2008, Gialamas, 2009; Pange et al.2011). The level of ICT expertise of teachers and effective preparation also have a positive impact on the successful introduction of ICT into the classroom (Ashton & Webb, 1986; Nikolopoulou & Gialamas, 2009; Gialamas & Nikolopoulou, 2010). Studies in Greece refer to the views of teachers ('views-intentions' are referred to in some studies) and attitudes towards ICT at the level of preschool. In general, preschool teachers display positive attitudes towards the use of computers and/or ICT in education (Tsitouridou & Vryzas, 2003, 2004; Gialamas et al., 2008; Pange 2008). While the teachers often present reservations and temperate attitudes due to the potential side effects of ICT on youngsters (Tsitouridou & Vryzas, 2003, 2004). The views and attitudes of teachers are also affected by a variety of variables, such as years of service, ICT expertise and experience, computer ownership and use at home, trust in skill, in-service training, etc (Tsitouridou & Vryzas, 2003, 2004; Gialamas et al., 2008). About Petrogiannis (2010). The readiness of teachers for computer adoption is closely linked to other psychological parameters, including internal control ability, perceived stress, computer attitude, perceived usefulness, ease, and anxiety. Although there are some variations between pre-service and in-service preschool teachers (pre-service teachers show greater self-efficacy and ICT experience, whereas in-service teachers show more optimistic opinions) (Gialamas & Nikolopoulou, 2010). Pre-service teachers often appear to benefit from the use of ICT, although there is ample space for growth (Pange et al. 2008; Toki et al., 2009).

Similar factors such as years of training, self-efficacy of ICT and access to ICT at home can influence the opinions and attitudes of pre-service teachers (Nikolopoulou & Gialamas, 2009). According to Gialamas and Nikolopoulou (2010), in order to help teachers develop scientific opinions and attitudes towards ICT, attempts should be made to devise and introduce teacher training programmes. In Greek universities, early childhood education departments have incorporated ICT modules into the curriculum of students, aimed at improving the competence of pre-service teachers to use ICT in education (Nikolopoulou & Gialamas, 2009; Toki & Pange, 2011).

"With regard to in-service pre-school teacher training, a number of training programmes have been launched at national and European level, such as "Teacher Training in ICT in Education" and "Teacher Readiness for the Information Society/Initial In-service Training for all Teachers in Information and Communication Technologies (Nikolopoulou & Gialamas, 2009; Tsitouridou & Vryzas, 2004). In addition, there is plenty of empirical data relating to ICT literacy and

preparation for teachers (Pange, 2004; Toki, et al., 2009; Pange, 2011; Toki & Pange, 2013). In comparison, Gialamas et al. (2008) point out that pre-school teacher preparation programmes are far behind systemization and marked by a techno-centered orientation. Similarly, a wide range of studies in Indiareport that recognised the value of ICT by pre-school teachers (Liu, 2010) and considered ICT as a helpful tool not only in teaching practise, but also in the professional development of teachers (Pu, 2005). Nevertheless, the self-confidence and capacity of pre-school teachers to incorporate ICT into education is relatively poor. In particular, they have basic skills (retrieval, processing, information management, etc.) and may use some simple teaching software (PowerPoint, flash, Photoshop, etc.), but lack advanced skills, especially in the integration of ICT and teaching activities (Liu, 2007, 2010; Tian & Liu, 2009; Pu, 2005). Research in China shows that most kindergartens have started courses to encourage teacher preparation, and most teachers have taken training courses on different ICT subjects and at different levels of education (Liu, 2007; Pu, 2005; Guo et al., 2006). It is seen, however, that the result of the training was not satisfactory and that teachers did not benefit much from their teaching process. In the meantime, numerous questions arise in the training of pre-school teachers, including opportunities for single teacher training, difficult to relate theory to practical practise, offer of non-systematic courses and diversity from the needs of teachers (Liu, 2007; Meng, 2011). Liu (2011) believes that teacher training modules need to be reorganised and expanded (national, regional and kindergarten level).

ICT IN INDIA

If I were asked under what sky the human mind created some of its most chosen gifts most thoroughly, pondered most profoundly on the greatest problems of life, and sought solutions, I should point to India." Max Muller India recognised the importance of ICT in education, particularly in 1984-85, when the Computer Literacy And Studies in Schools (CLASS) was initially introduced as a pilot project witnessing a pilot project." A total of 12,000 such computers were distributed by state governments to secondary and senior secondary schools. The project was subsequently implemented during the 8th plan (1993-98) as a Centrally Funded Scheme and was extended to include financial grants to BBC Micros institutions and also to cover new Government Assisted Sec./Sr. Sec. Sec. Oh. Schools.

The assistance included an annual repair grant for BBC microphones and the procurement and maintenance of new school equipment. During the 8th plan for providing instructors, maintenance of hardware, consumables and textbooks for students and training of teachers in schools, 2598 schools with BBC Micros were covered under the CLASS scheme. In addition, new hardware and services involving Rs.1.00 lakh for hardware configuration and Rs.1.30 lakhs per annum for recurring costs is covered by 2371 schools. As the recurring expenses for schools that had already been covered under the BBC-Micros scheme, Rs.0.80 lakh per year was retained. To finalise the contract for the supply of hardware, NIC was described as the nodal agency. There was limited usage and supply of devices, and coverage was limited to Sr. A Computer Course Module was required for secondary schools and the students of Classes XI and XII. Relevant recommendations were made by the Prime Minister's National Task Force on Information Technology and Software Development (IT Task Force) in July 1998 to implement I.T. In the field of education, particularly in schools, such as:

The Vidyarthi Computer Scheme, the Shikshak Computer Scheme and the School Computer Scheme enable students, teachers or schools to purchase computers in attractive financial packages. These schemes will be sponsored by a series of initiatives such as lowering PC rates, simple instalment bank loans, IT companies and other business houses donating computers, NRI organisations donating bulk computers, importing vast amounts of bargain prices, multi-lateral funding, etc.

By the year 2003, computers and the internet will be made available to schools, polytechnics, colleges and public hospitals throughout the country.

The idea of SMART schools with a focus on information technology and the use of skills and values deemed significant, gained traction in the next millennium to start on a pilot demonstrative basis in each state, with sufficient investments (about 1-3 percent) of the total budget providing computer systems to all educational institutions up to Higher Secondary/ Secondary Schools In December 2004, a centrally funded 'Information and Communication Technology (ICT) in School' scheme was launched to provide secondary state students with opportunities to improve ICT skills and the ICT-aided learning process as a major catalyst to bridge the digital divide among students with different socio-economic and other geographical barriers. "The scheme assisted State/UTs in developing computer labs on a sustainable basis and aimed at establishing SMART schools in Kendriya Vidyalaya and Navodaya Vidyalaya to serve as "technology demonstrators" and to encourage the dissemination of ICT skills among neighborhood school students.

In both government and government aided secondary and higher schools, the scheme is currently being implemented. Help is offered for computer and peripheral acquisition, instructional software, teacher training, Internet access, etc. Financial assistance is offered to state and other institutions on the basis of approvals given by the Project Monitoring and Evaluation Group (PM & EG) headed by the Secretary of the M/HRD Department of School Education and Literacy. With a focus on the computer literacy programmer, the scheme aims to serve as a learning and teaching aid to increase participation and engagement in classroom learning. Through initiatives such as Gyan Darshan, launched in January 2000, with three fully digital and round-the-clock television channels dedicated to education, the focus is also on the self-learning aspect; Gyan Vani and FM radio channels were launched in November 2001 with various FM stations in the country (GOI Ministry of HRD Press Release, Oct 21, 2003).

Among other initiatives, mention needs be made of the following key notes:

Providing access to global information sources was made a priority goal under the National Curriculum Framework for school education released by NCERT in 2000 (NCERT website), besides other stated goals like:

The formulation of plans for the integration of computers into the curriculum and the creation of a framework for enhancing learning opportunities using ICTs¬ across the curriculum.

Towards these stated goals, NCERT released PDF copies of all its textbooks from Class I to Class XII on its website in 2006. (NCERT Website). National council for teacher education (NCTE) took a landmark decision in the year 2000 to make ICT literacy a compulsory part of pre-service teacher education courses, producing and supplying a series of CD ROMS on, 'IT Literacy' to all teacher education institution in the country and providing on-campus orientation of teacher educators in the workshop mode and in turn to produce every year over 2, 50, 000 teacher trainees conversant with ICT pedagogy to help improve quality of teacher education an through it the quality of teachers at different levels of schooling. It uploaded all its major publications on its website.

The Indian Government launched a project called Vidya Vahini In 2002, to provide for IT and IT enabled education in 60,000 schools in India over three years, as a part of Rs. 6,000 crore project. Beginning with a pilot covering 150 schools, the Government proposed to equip each school with a computer lab equipped with internet, intranet and television to facilitate video-conferencing, web-broadcasting and e-learning.

EDUSAT, India's first dedicated education satellite, Launched in September 2004 at a cost of USD 20 million

The Government of India, Ministry of HRD, Department of Secondary and Higher Education issued an order on May 20, 2006, for the Broadband connectivity in all the secondary schools during the eleventh five year plan, mooted as 'National Educational Plan' by the Prime Minister with an allocation of over 19% of the gross budgetary support for this new thrust area lay emphasis in secondary education, flushing out its mid-term review suggestion to universalize

secondary education on lines of the Sarva Shiksha Abhiyan, with a budget permission of Rs. 411 billion to set up ICT labs for computer-aided learning and Edusat Centers for distance learning programmers.

At the international level, the United Nations too have generated their "Global• School and Communities initiative" (GeSci), a special campaign to promote the use of technology in education from their Bangalore base in collaboration with the Indian Ministries of Information Technology and Education, facilitating Policy Support, technical assistance and global resources for the initiative.

A plethora of Public-Private Partnership (PPP) initiatives State Governments and big private sector organizations and multinationals too have come up to promote computer enabled education to the people in their on respective ways such as

'Head Start' : Computer-Assisted Education in Madhya Pradesh, one of the largest computer enabled education programmes initiated in 2000 by the Rajiv Gandhi Shiksha Mission (RGSM) of Madhya Pradesh Government, essentially aiming at improving the quality of class room learning through the use of computers in the primary and middle schools. Launched as a pilot project in about 648 schools, it later expanded to over 2,718 rural schools across the state at the elementary level.

The Intel® Teach Program Launched in February 2000 in India in the cities of Delhi, Bangalore and Mumbai has impacted over one million teachers all over country both in In-service and Pre-service segments within a span of nine years. "With the help of technology,, in India) India teachers will be leaders in the transformation of education around the world." – Craig R. Barrett Chairman, Intel Corporation.

Shiksha India (December 2001), a non-profit organization set up by the Confederation of Indian Industries (CII), has created a teacher's portal using open source tools and technologies (Shiksha India Website).

Edu Reach (ICT) Educomp, with a record of implementing large scale PPP projects, in partnership with thirteen (13) State Governments, namely, Government of Assam, Karnataka, Orissa, Tripura, Gujarat, Uttar Pradesh, West Bengal, Delhi, Haryana, Jharkhand, Rajasthan, Chattisgarh and Andhra Pradesh covering more than 12000 government schools and benefiting 5.5 million students studying in government schools in India, has as its main objective, to equip each student teacher with technology - based educational skills to make teaching and learning more interactive and interesting.

An initiative towards the use of ICT in Non-Formal Education includes computer Based Functional Literacy Program (2004) of Tata Consultancy Services in Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Maharashtra, Utter Pradesh and West Bengal Hole-in-the Wall training system (2002-2003) developed by NIIT is yet another(Tata Literacy Programme Website). initiative involving international finance co-operation, a world bank subsidiary which has invested $ 1.6 million for computer kiosks in more than 60 locations to enable underprivileged children in India to learn from web-based curriculum (UNESCO With a substantially increased provision for the scheme "Mission in Education Website) . through ICT" to Rs.900 crore in the Union Budget for 2009-10, India has the demographic advantage of a large percentage of young population being converted into dynamic economic units enjoying the right to education and ICT skills

ROLE OF ICT IN EDUCATION

Any country's success depends on the standard of the education and practises offered. In the Vedic period, Indian education was well known for its Gurukul Method of Education. From the Vedic era to the post-independent period, education in India has undergone various stages and stages of growth. There was a concern at all levels of growth to put about quality education, focusing on the practical dimensions of education. In the 21st century, teaching and learning

should be markedly different from previous periods, as teaching and learning are now taking place in a more and more online environment.

Traditionally, learning environments were confined to face-to-face delivery or where distance learning was carried out, delivery was primarily characterized by posting printed tools and contact was always sluggish and cumbersome. It has been found that incorporating technology into teaching-learning transactions transforms the role of the teacher from being the conventional 'Sage on the Stage' to also being a 'Guide on the side,' and the roles of students also shift from being passive recipients of content to being more active participants and partners in the learning process.

In order to enhance the learning of students, ICTs offer great potential and benefits, as revealed by Lopez (2003), among others. First, through the provision of immersive learning environments, information and communication technologies deliver a constructivist approach to learning. Second, ICT learning is more productive as it offers opportunities for the use of various technologies (video, computer, telecommunications, etc.), offering simulation helps in the internationalization of difficult concepts and processes and understanding them. This provides opportunities for connections between theory and practise to be provided. Third, ICTs give learners opportunities to develop important programming skills that are German in today's job market. In order to facilitate learning, ICTs also provide students with a variety of tools. Students have access to current and up-to-minute data; students can easily revise and upgrade the tools available to them for learning. The use of ICT in education will improve memory retention, increase motivation and enhance comprehension in general (Dede, 1998). Selinger (2004) argued that ICT can enhance the quality of education because digital content helps to clarify and describe difficult concepts in ways that conventional teaching tools and methodologies have previously made unavailable.

CONCLUSION

This thesis reviewed and compared data from similar studies on the use of ICT in Greek and Chinese preschool education. It was noticed, according to the evidence, that both India had made great progress in research and practice on the use of ICT in pre-school education, though more work had to be done for the further implementation of ICT in kindergartens. In conclusion, the two countries showed the following common points: the availability of ICT hardware and software was substantially enhanced, and their use grew gradually. In terms of degree, frequency, time, topic and time of use, the use of ICT by teachers for teaching processes leaves a sustainable room for development. A consensus was reached on the benefits of ICT for pre-school teachers: early exposure of children to ICT in pre-school settings contributed positively to their learning and development, which was verified in different fields and subjects of learning. The majority of teachers, including pre-service and in-service teachers, favored the use of ICT in the classroom, but lacked the required knowledge and skills, particularly to incorporate ICT into teaching activities. Governments and kindergartens sponsored teacher preparation, and similar training programmers were conducted, while productivity and validity were relatively poor. Much of the programmers were inclined to be techno-centric, without the ICT application having an educational goal. Teachers have faced common challenges and obstacles, including insufficient facilities and services, lack of capacity and inadequate preparation.

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