



## ICT For Fostering Potential of ECCE's Kids at Punjab, Pakistan

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### ABSTRACT

The study was designed to determine the ICT as fostering potential factor in ECCE classrooms of Punjab province of Pakistan. The research design was quantitative and the mode of the study was descriptive research by nature. About 300 ECCE teachers from two districts of Punjab Province i.e. Sahiwal and Bahawalpur were selected randomly. A questionnaire was used to get the true picture from the sample of the study. Results revealed that although ECCE teachers have their own laptops / computers, but they are still reluctant in using ICT resources for teaching learning process in their classrooms. Additionally, a majority of ECCE teachers have no sufficient skills to effectively operate ICT tools, and many of them had not received any pre-service training to enhance their ICT competencies. The lack of ICT facilities, quality of internet, prior knowledge and insufficient skills of ICT were the major obstacles in successful integration of ICT at ECCE level. The government should take special initiatives to provide basic ICT infrastructure, allocate special grants and conduct adequate trainings for ECCE teachers.

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## 1. Introduction

Children are the important pillar of society, and early childhood is a crucial period to shape up the child's life. It is the time when a child experiences mental, physical and emotional development (Trawick-Smith, 2014). Healthy development of child is the fundamental right of child. Therefore, it is the first and foremost responsibility of family and society to take care of them, to love them, and to nurture them properly. We are breathing in technological era, where everything is dependent on one click. We just, click the button or touch the screen and can visit the universe, can do business, can book tickets, can transfer money, can receive call/messages from every corner of the world, and can get numerous information on our bed. So, in this technological society where everyone is using technology or technological gadgets and every field of life is inspired and covered by technological tools then how is it possible to keep far off our children from its usage and technological devices and features? As a result, our children have more familiarity with ICT tools and device. They use these devices and gadgets more expertly. They are the more active ICT users and respondents than us. They spend more time in using these tools. Campbell and Scotellaro (2009) described that our children know how to use play or stop on computer or laptop; how to play games, captures photos, type letters and run programmable toys better than us. They are always one step ahead of us in using ICT.

That's why we are prompted to call our children "digital kids" or "digital generation" (Jukes & Dosaj, 2006). Numerous studies have declared that the incorporation of ICT in ECCE classroom has changed the dimension of ECCE. Since, our children are surrounded by ICT tools and appreciate its features at home, so it would be a good idea to provide them chance to use ICT tools in a school setting as well as with their teachers, fellows and peers (Edwards,

2016). Dr. Perry contends that since ICT is reshaping the society in which the current generation lives and is not going away, it should be used to improve curricula and educational opportunities for kids. As early childhood education focuses on giving kids worthwhile experiences. ICT has a significant role to play in this regard. It includes every piece of technology that has a computer or microcontroller in it, such as handheld, laptop, or desktop computers as well as electronic or digital toys, game consoles, cameras, media players, and smartphones (Palaiologou, 2020). This type of equipment can help the kids to learn more effectively and interactively (Masoumi, 2015). Additionally, ICT gives teachers and students more opportunities to succeed in the contemporary, technologically connected society (Lawrence & Tar, 2018). The use of ICT in ECCE classroom aids helps the children to understand abstract concepts, and engage them in collaborative learning, reasoning, and problem solving activities (Arnott & Yelland, 2020). When teachers integrate and provide ICT oriented curriculum and direct experiences of ICT, the integration of technology improves the language and literacy outcomes, such as letter recognition, sequencing and sounds, listening and comprehension, vocabulary, and understanding concepts about stories and print. Consequently, many countries such as UK, China, Greece, Sweden, Newzeland, and Australia are integrating ICT in their Early Childhood & Care Education level. Pakistan is also a country who tries to keep its educational system updated. Pakistan is also struggling to introduce ICT and availability of ICT tools in their educational sector. In this article we will explore the usage of ICT at ECCE level in Pakistan.

## **2. ECCE in Pakistan**

In past, ECCE has not been formally recognized by the public sector in Pakistan and was referred to as 'Nursery class', with no special teacher, curriculum and classroom (Shakil, 2002). ECE was officially introduced in Pakistan in the 1970s, but later legally suspended during the 1980s. It was re-organised in 1992 National Education Policy but under this policy, no major steps were taken to improve facilities, learning material and teachers. As a result, hardly 10% children at the age of 3 to 5 were enrolled in any organised educational programme. In 1998-2010 the proper legal documentation and formalization in practical terms were proposed, with the aim of enrolling every child aged six to twelve in schools within five years. As part of the attempt to increase student achievement katchi would be implemented at primary level and effective aids would be used to enhance access to elementary education. Existing facilities and services would be utilized and new would be provided with the goal of improving primary education's quality accessibility and efficiency. The National Education Policy (2009) highlights the importance of ECCE with five policy actions;

Here are the five action plans: (a) First, early childhood education will incentivize growth through play and other forms of interactivity and will discourage memorization and other forms of memorization-based learning through testing, (b) Second, the 3-5 years old ECCE age bracket needs to be specified. The government must fund and mandate at least one year of early childhood education for all citizens, (c) Third, and elementary school must give extra funding, instructors and aids to support early childhood education, (d) There should be two year college degree program for early childhood teacher and, (e) Fifth, ECE should be involved in revising the national curriculum that this education is built on. It is important for early childhood education (ECE) programs and resources to reflect cultural diversity (Ministry of Education, 2009). Regrettably, for some reasons neither Universal Primary Education (UPE) nor The National Education Policy (2009) was fully implemented as intended (UNESCO, 2015). The first National Curriculum for ECCE was designed in 2002 and refined in 2007 consisting of 12 schemes of studies (Academy of Educational Planning and Management, 2017). In 2021, Single National Curriculum (SNC) was introduced at ECCE level to develop holistic development, universality and equity.

In 2015, Sustainable Development Goal (SDG)-4 was established with the aim of providing inclusive and equitable quality education, focusing particularly on promoting lifelong learning opportunities for all individuals by 2030 (Taysum, 2019). A concise summary of the targets set for SDG 4 is as follows: By 2030, SDG-4 aims to ensure that all girls and boys are enrolled in free, fair, and high-quality primary and secondary education, resulting in relevant and effective learning outcomes. Additionally, by 2030, every girl and boy should have access to high-quality early childhood development, care, and pre-primary education in order to be prepared for primary school (Bhutta, 2019). To achieve the established targets of SDG 4, UNESCO has adopted the Education 2030 Framework for Action. Pakistan, as a signatory to

the Education 2030 (SDG-4) vision, endorsed in the Incheon Declaration during the World Education Forum in South Korea on May 21, 2015, is committed to its principles. To fulfill this commitment, each province and area in Pakistan has formulated their Education Sector Plans (ESPs) and is actively working on implementation strategies for SDG-4, with a specific emphasis on Early Childhood Care and Education (ECCE). Additionally, the Inter-Provincial Education Ministers' Conference (IPEMC) serves as an active platform for discussing crucial issues, providing recommendations, and fostering collaboration among all provinces and areas.

Despite efforts made, Pakistan remains significantly distant from attaining the goals of Education for All (EFA), Millennium Development Goals (MDGs), and Sustainable Development Goal-4 (SDG-4) (Academy of Educational Planning and Management, 2018). This is primarily due to inadequate attention from policymakers and deficiencies in planning and management at both national and provincial levels. Insufficient access, substandard education quality, inequity, and governance issues further contribute to this gap. Additionally, budgetary constraints and weak management serve as external factors hindering progress (Academy of Educational Planning and Management, 2018). Multiple research studies have examined the state of the Early Childhood Care and Education (ECCE) program at the national level and have consistently concluded that substantial improvements are still required to fulfill international commitments (Hunzai, 2007). Currently, in the realm of Early Childhood Education (ECCE) in Pakistan, numerous government and non-government organizations are actively involved in enhancing its quality. Notably, various NGOs are playing a crucial role in this endeavor. However, despite these efforts, there is a pressing requirement to streamline ECCE practices to ensure optimal utilization of resources, promote economic growth, and maximize the benefits for the targeted group of children in the most effective manner possible.

### **3. ECCE in Punjab**

Pakistan is a country composed of five provinces, with Punjab being one of them. Punjab is the most populous province in the country. Following the 18th amendment, the responsibility for ensuring quality education was delegated to the provinces. In Punjab, the focus on early education began in 2009, and in 2013, the Punjab Quaid-e-Azam Academy (QAED) officially took charge of Early Childhood & Care Education (ECCE). Since then, the QAED, in collaboration with private donors and UNICEF, has undertaken various initiatives to enhance ECCE (Government of Punjab, 2017). During the academic year 2014-15, a total of 1,225 ECCE schools were established in 36 districts of Punjab (divided into 9 divisions), with an enrollment of 80,000 children in Katchi classes held in these newly established ECCE rooms (QAED, 2019). In subsequent years, the QAED continued its efforts by establishing 1,400 schools in 2016-17. Moreover, comprehensive training programs were conducted, including the training of 326 master trainers, 9,648 teachers, 9,594 head teachers, 19,726 school council members, 6,004 caregivers, and 1,234 education managers in 2017-18 (QAED, 2019). In addition to these efforts, the support of UNICEF resulted in the establishment of 1,000 schools with ECCE programs, and the Program Monitoring and Implementation Unit (PMIU) contributed to the establishment of 1,475 schools in 2016-17.

According to the National report by Academy of Educational Planning and Management (2017), it is worth noting that none of the surveyed schools provided all the necessary facilities. The survey indicated that 85% of the respondents believed that drinking water and toilets were available for children. However, only 44% of the respondents reported that caregivers were provided for ECCE, and they were often compensated at the lowest salary level. Moreover, the survey findings revealed that caregivers were only available in Punjab, while other provinces lacked such arrangements. Despite advancements in Punjab, several researchers, including (Arshad & Zamir, 2018; Naz, Yousaf, & Arshad, 2019; Saif, Inam, & Abiodullah, 2020), have observed that the state of Early Childhood Care and Education (ECCE) in Punjab is still subpar. As highlighted by Shakeel and Aslam (2019), public ECCE schools lack satisfactory facilities, and the learning materials provided are of average quality. Moreover, there is a lack of awareness and implementation of new learning standards among teachers in public ECCE schools. To attain international standards and achieve the desired outcomes in ECCE within Punjab, effective planning, improved management, updated facilities, and well-trained staff are necessary.

#### **4. Study's Aim**

Early Childhood Care and Education (ECCE) serves as the fundamental building block for a child's future, and therefore, it holds significant importance within educational systems worldwide. Various countries are actively incorporating innovative techniques, methods, and technology into ECCE practices. Similarly, in Pakistan, ECCE has gained considerable attention, with the government and educational policies focusing on its improvement. In this context, the current study explored the importance, and current availability of ICT tools in ECCE classrooms specifically in the province of Punjab.

#### **5. Method**

##### **5.1. Research Design**

The research was conducted using a quantitative research design since this approach is thought to yield more trustworthy, valid, objective, and generalizable results. One of the advantages of the quantitative method is that it may be used with a large sample size by means of a questionnaire. Fraenkel and Wallen (1990) argue that researchers can better simplify remarks about the topic at hand if they collect data based on a representative sample of the community using a quantitative technique. Since this study used survey approach and questionnaire was developed to address research objectives and to obtain the data from the respondents.

##### **5.2. Populations and Sampling**

Population refers to the set or group of all the units on which the findings of the research are to be applied. The population used in this study was consisted on all the ECCE school teachers in two districts: Sahiwal, and Bahawalpur. Sampling is a method used in statistics to gain information about population by selecting a limited part of it (Kerckaert, Vanderlinde, & van Braak, 2015). In this study 300 (150 Sahiwal & 150 Bahawalpur) ECCE teachers from public schools in two districts: Sahiwal and Bahawalpur were selected randomly.

##### **5.3. Research Instrument**

A survey questionnaire with a total of 35 items was used as the main instrument in this study to ascertain the ICT as fostering potential factor in ECCE classrooms of Punjab province of Pakistan. 300 public primary school teachers were given questionnaire which used 5likert scale from 5= Strongly Agree 4= Agree 3 =Undecided 2= Disagree 1= Strongly Disagree. There were two sections to the questionnaire. The respondent's demographic background was covered in Part A. The questions in the other section of questionnaire were focused on highlighting the importance of ICT and accessibility of ICT resources in ECCE classrooms.

##### **5.4. Validity of Tool**

Validity is a measure of how well a measuring instrument fulfills its intended purpose and relates to whether the behavior or quality it is designed to assess is captured by the instrument (Anastasi & Urbina, 1997). According to Whiston (2016), validity is the ability to collect data that is suitable for the intended use of measuring instruments. To assess a measuring instrument's validity, there are several kinds of validity. In this study, the validity of the tool was assessed using face validity and content validity. The primary tool in this study was a questionnaire, which was conducted using a quantitative approach. The questionnaire was designed and then sent to a variety of professionals to verify its face and content validity. The questions were reformulated in light of their insightful comments.

##### **5.5. Pilot Testing**

According to Kelley, Clark, Brown, and Sitzia (2003), who also emphasized the importance of pilot testing, research instruments should be used on a pilot sample of the research population in order to verify their validity. Pilot testing involved five ECCE teachers from Public Primary School who were employed in Punjab Province at the time. The ambiguous and imprecise items were brought to light via the pilot testing.

##### **5.6. Reliability**

According to Aday (1998), the stability of the instrument is what defines reliability. Put simply, an instrument's reliability is its capacity to produce results that are comparable when used at various times (Taherdoost, 2016). Using SPSS, the statistical test Cronbach's alpha was used to assess the reliability of study.

## 5.7. Data Collection

This study used a survey approach and was quantitative in nature. Survey is a method which is considered most appropriate for quantitative research. A questionnaire allowed the researcher to convert the response of sample to numerical data that can be analyzed by using statistical software like SPSS. Keeping in mind the same setting, researcher administered a questionnaire consisting on 35 items and personally visited the public primary schools of both Bahawalpur and Sahiwal districts of Punjab Province.

## 5.8. Data Analysis

The most important step came after collection of data is data analysis. In this study for data analysis Statistical Package for Social Sciences (SPSS) was used. Frequency, Percentage was applied to illustrate the data.

## 6. Results and Discussion

### 6.1. Analysis of Teachers

First statement illustrates the availability of personal computers/laptops among teachers. According to the data, 71.3% of respondents reported owning a personal computer/laptop at home, while 28.7% stated that they do not have a personal computer/laptop for use at home. The second statement was on the availability of internet facilities at the school for teachers. The findings indicate that 28.4% of the respondents reported having no internet facility at their school, while 71.6% responded affirmatively, stating that they have internet facilities at their institutions. The third statement of given table presents data on whether teachers are trained to use Information Communication Technology (ICTs) in teaching learning process. According to the findings, 72.6% of the respondents stated that teachers are not trained to use ICTs in the teaching-learning process, while 27.6% of the respondents reported that teachers are trained to use ICTs in the teaching-learning process. The last statement collected the responses regarding whether responses regarding whether teachers received training in Information Communication Technologies (ICTs) prior to starting their current job. Among the respondents, 57.7% indicated that they did not receive any ICTs training before joining their current job. On the other hand, 42.3% of the respondents reported that they did receive ICTs training before joining their current job.

**Table 1**

Statements	Options	Frequency	Percentage
Teachers Personal Computer/ Laptop	Yes	220	71.3
Teachers opinions about internet facility at school	No	80	28.7
Teachers are trained to use ICT in teaching learning process	Yes	215	71.6
	No	85	28.4
Have you got ICTs training before joining this job?	Yes	82	27.4
	No	218	72.6
	Yes	127	42.3
	No	173	57.7

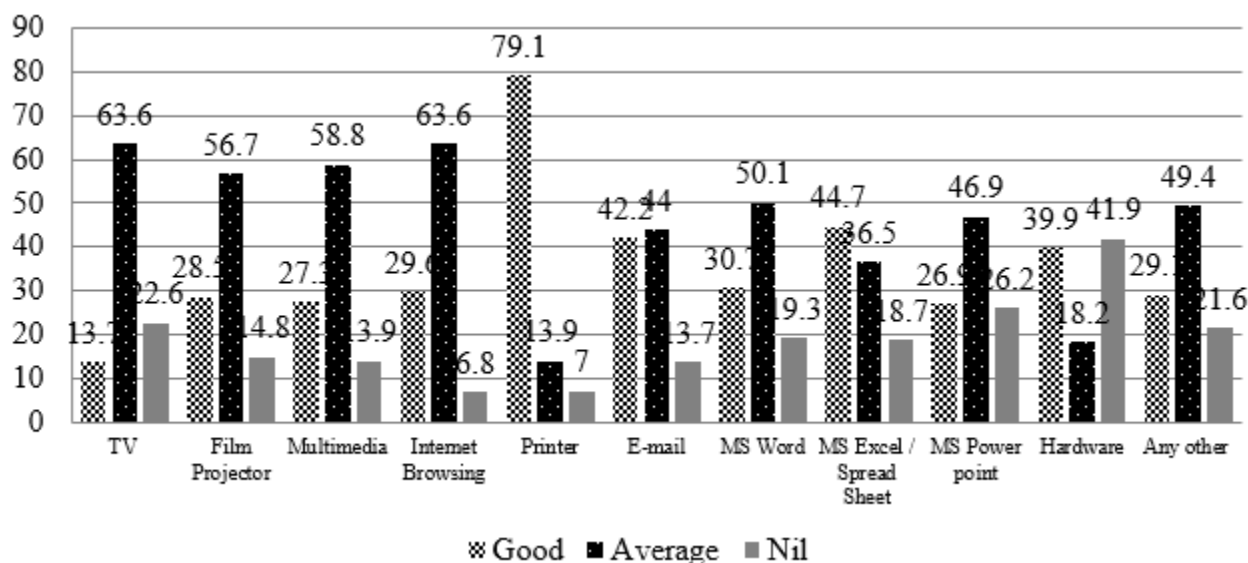
**Table 2: How much time you spend in a week to visit websites for teaching learning process**

Options	Frequency	Percentage
No Response	0	0.0
No Time	59	19.6
1-3 hours	65	21.7
4-6 hours	41	13.6
More than 6 hours	135	45.0
Total	300	100.0

Table 2 reveals that 19.6% of the respondents reported that teachers do not spend any time visiting web pages for the teaching-learning process per week. Additionally, 21.7% of the respondents indicated that teachers spend 1-3 hours per week visiting web pages for teaching-learning purposes, while 13.6% of the respondents stated that teachers spend 4-6 hours per week on web page visits for the teaching-learning process. Furthermore, 45% of the respondents stated that they spend more than 6 hours.

Figure 1 presents frequencies and percentages indicating the level of skills for using ICTs. The data reveals that 13.7% of the respondents described having good skills for using TV, while 63.6% described having average skills, and 22.6% stated having no skills for using television. Regarding film projectors, 28.5% of the respondents described having good skills, 56.7% described average skills, and 14.8% reported having no skills. For multimedia, 29.6% of the respondents described good skills, 63.6% described average skills, and 16.8% had no skills. In terms of internet browsing, 29.6% had good skills, 63.6% had average skills, and 16.8% had no skills. When it comes to using a printer, 79.1% described having good skills, 13.9% had average skills, and 7% had no skills. For emailing, 42.4% had good skills, 44% had average skills, and 3.7% had no skills. For MS Word, 30.1% had good skills, 50.1% had average skills, and 19.3% had no skills. For MS Excel/Spreadsheet program, 36.5% had good skills, 44.7% had average skills, and 18.7% had no skills. In terms of MS PowerPoint, 26.9% had good skills, 46.9% had average skills, and 26.2% had no skills. For hardware, 39.9% had good skills, 41.9% had average skills, and 18.2% had no skills. Lastly, for any other skills, 29.1% had good skills, 49.4% had average skills, and 21.6% had no skills.

**Figure 1: Describe your level of skill for the use of following ICTs\_**



**Table 3: ECCE Teachers Perception on the Effectiveness & Integration of ICT**

Sr No	Items	Operations	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree
1	ICT helps to accomplish teaching task faster.	f %	135 45%	60 20%	258 .3%	45 15%	35 11.6%
2	ICT offers great opportunities for effective learning.	f %	105 35%	75 25%	15 5%	45 15%	60 20%
3	The quality of teaching learning process has improved by integration of ICT.	f %	55 18.3%	45 15%	20 6.6%	40 1.3%	140 46.6%
4	Lack of ICT skills affects teaching learning process at ECCE level.	f %	40 1.3%	75 25%	15 5%	140 46.6%	30 10%
5	ICT helps to convey several abstract concepts to ECCE students.	f %	35% 11.6%	80 26.6%	25 8.3%	110 36.6%	50 16.6%
6	Integration of ICT in ECCE classroom is increasing productivity.	f %	87 29%	33 11%	20 6.6%	86 28.6%	74 24.6%
7	ICT-based teaching is making my work interesting.	f %	60 20%	65 21.6%	15 5%	75 25%	85 28.3%

From the data provided table 3 on teachers perception on effectiveness and usage of ICT declares that most teachers in Punjab Province are well aware of benefits of integration of ICT in ECCE classrooms. Most teachers realized that although while ICT is very useful in bringing abstract notions, but insufficient ICT skills can also have impact on teaching. Many educators acknowledged that productivity of teaching has grown as a result of integration of

ICT in ECCE classrooms. Similarly, the majority of teachers firmly believe that the incorporation of ICT is changing their work in an engaging manner.

## **7. Results and Discussion**

Information Communication Technology has revolutionized the world and brought significant advancement in various fields including education. Its importance and significance have led it to become a central aspect of educational institutions. As children are referred to as assert, and early education is considered the foundation, so to reap its benefits and leverage its potential ICT is being introduced in ECE classes. Numerous research studies have proven the immense advantages of integration ICT in ECCE classes. According to Light, McNaughton, and Caron (2019) reported that the use of ICT in ECE classes increased the children's motivation to participate in learning activities. This study investigates the current state of integration of ICT in ECE classrooms of Punjab. So here we discuss the findings of the study:

Pakistan is a progressive country it is struggling to integrate ICT at all the levels including ECE. Due to this, there is limited availability of research using ICT in ECE classroom. Therefore, we will compare its findings with secondary level. The objective of study was to identify the current status of ICT at ECCE level. Teachers' play a crucial role in successful integration of ICT at ECCE level (Tondeur, Hermans, van Braak, & Valcke, 2008). The findings of study revealed that although ECCE teachers in Punjab have access to internet at schools and possess laptop/computer, but they are still hesitant in using online resources they spend minimum time searching websites for designing the learning activities of kids. This research is consistent with Nikolopoulou and Gialamas (2013) observations where ECCE teachers expressed feeling overwhelmed and reluctant when it comes to using online resources and ICT tools. Similarly, Lawrence and Tar (2018) studies showed that ECCE teachers exhibit discomfort or unease with ICT resources due to lack of time and fear of making mistakes. This study also aligns with Shakeel and Aslam (2019) who conducted a case study in secondary schools and found that at present still there is lack of ICT tools as well as teachers are not prepared to use ICT resources in public classroom.

The latest technology, availability of hardware, software doesn't work until someone operates them efficiently. The findings of study declared that ECE teachers have no considerable skills to operate and use ICT tools and Microsoft office tools such as MS word, PowerPoint and Excel. Additionally it highlights that majority of these teachers did not receive pre-service training to enhance their ICT skills and effectively incorporate technology in their teaching practices. The same study was reported by Kerckaert et al. (2015) where ECE teachers were facing problem to integrate ICT into teaching because of their lack of ICT skills and expertise. These findings corroborated with Nazir, Nadia & Mehak (2021) who discovered that most of ECE teachers were unable to effectively incorporation of ICT due to lack of ICT skills and inadequate trainings. Ahmad (2021) conducted a research to explore the challenges and issues of secondary schools in Punjab and reported that ICT is beneficial and result oriented for overall development of students at secondary level, but lack of basic infrastructure, and teachers' knowledge and expertise towards ICT is the major hurdle.

## **8. Conclusion & Recommendations**

This study examined the current state of ICT in Early Childhood Care and Education (ECCE) settings in Punjab, Pakistan. The findings indicate that a significant number of ECCE teachers in Punjab lack access to ICT facilities, skills, and implementation practices. It is crucial for management and stakeholders to take specific initiatives to provide the ICT resources, Specific grants and conduct adequate trainings to develop the ICT skills among ECCE teachers in Punjab. Future research should focus on investigating the integration of ICT in public schools of Pakistan, taking into account the gender differences among ECCE teachers.

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