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A Comparative Analysis of Literacy Proficiency in Writing and Numeracy Skills among ECE Students and Non-ECE Students at Primary Level in District Peshawar Khyber Pakhtunkhwa.

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ABSTRACT

The study aims to compare the quality of literacy skills; writing and numeracy of 2nd grade students who studied under ECE (Early Childhood Education) based schools and those in Non-ECE (Early Childhood Education) based schools in Peshawar. A comparative analysis was conducted to compare the literary skills; writing and numeracy among the 2nd grade students who studied in ECE (Early Childhood Education) schools and students in Non-ECE (Early Childhood Education) schools. This study was descriptive in nature. The sample of the study consisted of 30 students (15 students from five (5) ECE (Early Childhood Education) primary schools and fifteen (15) students from five (5) Non-ECE base schools. All the students taken for study were from public boys primary schools of Circle Hazarkhawani district Peshawar. The researcher adopted purposive sampling technique using the rule of thumb “sample to items ratio” for selecting samples and collected data through a self-developed achievement test. The study concluded that the Non-ECE basic school students were lower in writing and numeracy skills as compared to those students who studied in ECE (Early Childhood Education) primary schools. The study recommended that students at Non-ECE schools should be treated equally with ECE (Early Childhood Education) schools. Each and every Government primary school should have a well decorated room for ECE (Early Childhood Education) and also should have at least one trained teacher for ECE (Early Childhood Education) in every Government primary school. Training of teachers should be made mandatory in field of literacy especially in writing and numeracy skills. Activities, playful pedagogy, pencil grip exercises, and using latest apps for writing and numeracy skills were recommended for both ECE (Early Childhood Education) based and Non-ECE (Early Childhood Education) based schools.

Keywords: Literacy, Writing skills, Numeracy skills, Pedagogy, ECE Schools, Non-ECE schools.

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INTRODUCTION

Background of the study

Literacy is basic path and streamline for the development of a country. It is literacy which communicates all over the world. Literacy is the ability to modify data and helps to understand the data. Literacy is an art

and proficiency (Karis, 2014). It is concern with the achievement of basic skills like reading, writing and numeracy and it helps in the growth and development of a healthy nation, their living standards, and gender equality. The purpose of literacy should be easily to understandable (UNESCO, 2006).

Pakistan's literacy rate is very low. Economic survey of Pakistan results showed that Pakistan's literacy rate is 58% to 60%. Pakistan did not achieve target of quality education, global primary school enrolment, increase literacy rate and expand school system (Alif Ailaan & SDPI, 2016).

According to ASER Pakistan Report(2016) "The ability to write simple words, sentences, texts, and calculate simple number digits with understanding at normal speed, also tackle everyday life problems related to citizenship, gender sensitivity, health, ethics and technical know-how to improve life and ultimately the society." Keeping in view the skills essential to succeed the above description (National Literacy Curriculum, 2007).

According to ASER Pakistan Report 2016:

Arithmetic: 93 % grade 3 students cannot do two-digit multiplication and division.

English: 86 % grade 3 students not able to read simple words and sentences of English.

Urdu: 71 % grade 3 students not able to read grade 2 story.

Early Childhood is considered to be an important stage for a child's holistic development and future success. The fast increase of globalization as well as technologies has greatly influenced human life, with no exception of education. Therefore, the developed countries do plan for pre stages in order to enable their upcoming new generation for modern technological world. For this purpose, they want to build strong foundation of their children in early years through education (Gupta, 2014; Miller, Dalli& Urban, 2012).

Various studies like (Malik, Sarwar, & Khan, 2010; Shakil, 2002) on ECE (Early Childhood Education) programs have found that development in young children has many advantages for children, their families and society. Especially evaluation of ECE (Early Childhood Education) programs have established that children who are not enrolled in good quality programs are less successful in life as compared to the children who are enrolled or participate in programs like ECE (Early Childhood Education). Research confirmed that ECE (Early Childhood Education) helps in reducing dropout ratio, makes bridge between gap of achievement and increase social steadiness.

Early Childhood Education (ECE) plays a basic role in the cognitive, emotional, and social development of children. Researchers suggested that well established ECE programs no doubt contribute to children's readiness for school and long-term a success academic performance (Barnett, 2011; Camilli et al., 2010). ECE programmes offer a structured environment where children can develop essential skills, such as writing, language proficiency, numeracy, and problem-solving abilities of children can be develop which laying a strong foundation for future learning (Heckman, 2006).

No doubt, early years are important in the life of child and leave lasting impact in children therefore, present study designed to make a comparative analysis of literary skills; writing and numeracy between the students of ECE (Early Childhood Education) and Non-ECE students of Government primary schools. With these essential skills, ECE promotes socialization and emotional regulation, fostering positive relationships with peers and adults (Bierman et al., 2008). Early age experiences in structured educational settings help children learn crucial social skills like cooperation, empathy, and conflict resolution, which are vital for success in school and later in life (Jones et al., 2016).

This rapid increase and development of ECE (Early Childhood Education) programs compelled the researchers to investigate the role of ECE (Early Childhood Education) in deferent perspective like social development, moral development and developing literary skills like writing, numeracy, reading in children. Hence, the need was felt to conduct a study and explore the difference in literary skills like writing and numeracy between those children who studied through ECE (Early Childhood Education) and those who get early education through Non-ECE school system. This paper first discusses relevant review of literature, then methodologies and findings, which will be followed by conclusion and recommendations.

Objectives of the Study

- To compare the writing skills of 2nd grade students of ECE of primary schools with Non-ECE 2nd grade students.
- To compare the numeracy skills of 2nd grade students of ECE of primary schools with Non-ECE 2nd grade students.

Delimitation of the study

The study was delimited to public sector boys' primary schools of Circle Hazarkhawani Town IV District Peshawar.

Problem Statement

Literacy is important for country's development. It provides many opportunities for individuals. Low proficiency in writing and numeracy skills can restrict a person's success in life. The problems which were under investigation to compare writing and numeracy skills of the students studying in grade two (2) of ECE (Early Childhood Education) schools and Non-ECE (Early Childhood Education) schools. As writing and numeracy always remained untouched in researches so this study was conducted to fill the gaps in research.

Rationale of the Study

This study aims to compare the learning competencies; writing and numeracy among the students who studied through proper ECE (Early Childhood Education) schools and those who studied in Non-ECE schools. Furthermore, ECE (Early Childhood Education) plays a pivotal role in the holistic development of the students. The study is very helpful to know the difference in learning competencies of both the groups. By exploring this deference the concern department of education can take steps on the matter and policymaker can make such policies regarding the importance of ECE (Early Childhood Education) .The Government may take steps in this regard and make sure the well-furnished room of ECE (Early Childhood Education) in each and every primary school in KPK.

Significance of the Study

Students who are literacy proficient in writing and numeracy skills are better to achieve the goals and can

play multi roles for betterment of life. They can utilize their skills effectively. Literacy is essential, we should struggle to increase literacy rate of our country Pakistan. There is a lot of literature available on literacy skills; writing and numeracy worldwide, but it is limited in our country Pakistan. School going Students have to learn writing and numeracy skills to be able to cope. Current study focused on the comparison of literacy skills of 2nd grade students of ECE (Early Childhood Education) based schools and Non-ECE base schools. This study may also be helpful for educational institutions to provide appropriate innovative strategies for the development of literacy skills of writing and numeracy in the institutes.

LITERATURE REVIEW

The word "literacy" is not simple and different scholars and educationists defined it differently. However, over time, the term has begun to address a more complex understanding of "literacy" as defined by (Forster, 2009) Literacy is imperative for every student, children as well as for adult. They need to attain at least the basic skills which can help them to deal with issues and challenges they will face in their lives. Literacy means basic education for all, providing a clean educated environment that is important for achieving the goals and solving problems faced by the society like inflation, gender equality, child mortality, over population growth, sustainable development, harmony and consensus (United Nations, 2002). "A person is literate who can read and write simple words and statement easily in everyday life" (UNESCO, 2008). According to Global Monitoring Report (2006), France embraced the word "littérisme" which refers "the ability to read and understand".

The process of obtaining literacy is laid from infancy and continues throughout the life (Robins, Treiman, & Rosales, 2014). This process is called readiness for numeracy and writing in schools and makes a child to facilitate the transition of children in primary school. Readiness for numeracy and writing means that skills should be develop children before starting formal learning or literacy (Elimelech & Aram, 2020).

Literacy has multiple dimensions for an individual as well as for community. As everybody knows that literacy is a basic tool toward progress and development. Illiteracy has an unfeeling cycle i.e., the illiterate is underprivileged, underprivileged are helpless and the helpless are illiterate (Shami & Hussain, 2005). Literacy is consider to bet the key source for constructing people's mentality, abilities and capacities to deal with the complications of life (UNESCO, 2015b).

Basic skills like reading, writing and numeracy are important to solve the problems occur in routine life (Burrus et al., 2013). Literacy in Pakistan is defined as the competency of an individual to be aware of a simple statement in a regional or national language, along with the ability of doing some simple calculations (UNESCO, 2003b). Writing and numeracy skills are integral components of lifelong learning, empowering individuals to acquire new knowledge, engage with complex ideas, and adapt to evolving professional and academic environments (Muthukrishna et al., 2020).

Our country Pakistan, officially defined literacy as: "The ability to read and write simple words, texts and sentences and can also calculate simple numbers and digits with normal understanding and handle everyday issues and problems of citizenship, gender sensitivity, health, ethics and technical knowledge that how to improve and develop life and society." (National Literacy Curriculum, 2007)

Writing and Numeracy Skills

i) Writing Skills

According to the definition of NAEP 2011; Writing is a complex, and meaningful action of communication that is proficient in a several situation, under some limitations of time and with the changes of languages sources and the language tools use scientifically. Learning of writing skills is the ability of initial stage of the students to sovereign learning or learning through the use of books or other print media. The official definition of literacy by Pakistan (1998) for census, and other states in the region have incorporated this important ability into their literacy definitions (NEP, 2017).

Writing skills enable individuals to express ideas clearly and concisely, facilitating effective communication in various contexts, including academic papers, business reports, and interpersonal interactions (Graham & Perin, 2007). Writing encourages critical thinking by requiring individuals to analyze information, evaluate evidence, and construct coherent arguments, fostering intellectual growth and analytical skills (Snyder & Snyder, 2008).

Writing is one of the basic literacy skills; it can also develop reading proficiency of students and school accomplishment (Gerde, et al., 2012). Writing ability is very important for school students and that is why the schools should spent 50% of their school time in writing activity (Mackenzie et al., 2013). Proficient writing skills are often correlated with professional success, as they are highly valued in the workplace for tasks such as drafting emails, creating presentations, and producing project reports (Klein et al., 2012).

ii) Numeracy Skills

The word “numeracy” is common in few states like South Africa, Australia and New Zealand (Goos et al., 2012). The Oxford English Dictionary (OED, 2011) defines numeracy as “the quality or state of being numerate; ability of number or knowledge of numbers.” According to Pakistan’s National curriculum for Literacy (2007) acquiring numeracy; literacy skills are important steps for life time learning of the students. It is one of the most proficient skills for spreading awareness to the people in the society. This skill helps students in their knowledge and also to take share in the socio-economic growth of the country.

Numeracy skills encompass the ability to understand and manipulate numerical information, essential for tasks such as budgeting, data analysis, and decision-making in both personal and professional contexts (Gal & Ginsburg, 1994). Numeracy skills are particularly vital in STEM (Science, Technology, Engineering, and Mathematics) fields, where they underpin concepts such as quantitative analysis, statistical interpretation, and mathematical modeling (Roth et al., 2019).

In 2008, the numeracy was officially added to the definition of literacy in our country Pakistan. Steen College and Northfield (2001) stated that literacy of numeracy is the ability to: deal with numerical aspect of someone life and also to plane those aspects in a proper way. The components of numeracy included: assurance with calculation; obligation of the antiquity of calculation and significance for understanding related problems and issues in the community realm; logical thinking and decision-making; mathematics use to solve day to day problems in different aspects; number sense and symbol sense; reasoning with data; and the ability to draw on a series of pre required mathematical knowledge and tools”(as quoted in Goos, Dole & Geiger, 2012).

METHODOLOGY

Design of the Study

A causal comparative research design was used to conduct this study. It is generally used to examine differences among two or more groups. In this study, researcher has three independent variables (ECE School, Non-ECE school and students) and literacy skills sub categorized as writing and numeracy is a dependent variable. Literacy skills of students were measured according to the skills proposed in national curricula. Literacy test was developed based on single national curriculum of Elementary and Secondary Education KP.

The following process was adopted to develop instrument.

1. Those questions were considered for test from the text books of Math, English and Urdu which could measure literacy skills. For Proficiency in writing skill, the researcher selected a simple paragraph from 2nd grade Single National Curriculum text book of English and Urdu.
2. Test items were based on multiple choice questions, constructed response and dictation items for better marking.

Population of the Study

The population of the study was all government primary schools for boys in district Peshawar. There were 594 public primary schools for boys in Peshawar. (EMIS Khyber Pakhtunkhwa, 2023).

Out of which 113 schools have proper ECE rooms and also one teacher of each of these school got proper training regarding ECE under the supervision of ISU (Implementation Support Unit) Directorate of Elementary and Secondary Education Khyber Pakhtunkhwa under the technical and financial support of UNICEF (ISU report, 2023).

Target population

- The targeted population of the study was all schools (ECE and Non-ECE) in Circle Hazarkhawani Peshawar. There are forty eight (48) schools in Circle Hazarkhawani in which Nine schools are ECE and rest 39 are Non-ECE schools in Circle Hazarkhawani Peshawar.

Sample of the study

The rule of thumb “sample to items ratio” was used for selecting samples. According to which the sample size should be based on number of items in the study. The ratio should not be less than 5- to-1 (Suhr, 2006).

There were six (6) items in the questioner so; samples would be according to the rule $5 \times 6 = 30$. The total number of selected schools was 10, where 5 schools have ECE system and 5 were from Non-ECE schools. From each school same number of students ($n=3$) were selected randomly. Thus, total number of participants ($n=30$); where 15 students who had studied in ECE system while 15 students who had gotten Non-ECE like traditional Katchi class or without ECE.

Pilot study

To determine the reliability and consistency of the research instrument, a pilot study

was conducted. A sample of four teachers from four different schools other than the research sample was used for the pilot study. The reliability of the questionnaire was assessed in terms of Cronbach alphas.

Rapport

To build a successful rapport with the respondents, the researcher used personal visits to each and every school and soft reminders like cell phone calls, social media like what's app, messenger, etc

Data Collection

A self-developed (based on relevant literature and personal classroom observation) questionnaire was used for data collection. In order to make it understandable to the participants, Urdu translation of each item was also given. The questionnaire consists of two constructs (writing and numeracy), where each constructs has 4 open ended items.

DATA ANALYSIS

Table 1: Literacy skill comparison between ECE and Non-ECE schools

Variable	school Group	N	Mean	SD	t	df	Sig
Literacy Skill	ECE Schools	15	17.46	3.61	2.66	82.4	.009
	Non-ECE Schools	15	14.90	5.75			

*p<0.05

The above table 1 shows the literacy skills comparison of both ECE and Non-ECE based primary schools. The value of t =2.66, df= 82.4, p<.009 was Statistically significant.It means there is statistically significant difference between ECE primary school and Non-ECE primary schools regarding attaining 'Literacy skills' in 2nd grade students. ECE school respondents scored (Mean=17.46, SD=3.61) and non-ECE respondents scored (Mean=14.90, SD=5.75). It shows that ECE primary school respondents were good achiever in literacy skills as compared to non-ECE basic school respondents.

Analysis of Writing Skill

Table 2: Writing skill-based comparison between ECE and Non-ECE schools.

Variable	Group	N	Mean	SD	t	df	Sig
Writing Skill	ECE school	15	7.64	2.34	2.76	84.1	.007
	Non-ECE School	15	5.96	3.60			

*p<0.05

The above table shows that value of $t = 2.76$, $df = 84.1$, $p < 0.007$ (it is below from p value $p = 0.05$) was statistically significant. It means that there was a major difference between ECE and non-ECE respondents of sub-scale 'Writing Skill'.

ECE school's respondents (Mean=7.64, SD=2.34) and non-ECE school respondents (Mean=5.96, SD=3.60) respectively. It shows that ECE school respondent was higher in writing skill as compared to non-ECE school respondents. So, the null hypothesis 'There is no significance difference between ECE and non-ECE education school system regarding attaining writing skills in 2nd grade students.' is rejected.

Analysis of Numeracy Skill

Table 3: Numeracy skill-based comparison between ECE and Non-ECE schools.

Variable	Group (Schools)	N	Mean	SD	t	df	Sig
Numeracy Skill	ECE schools	15	7.82	1.66	1.73	98	.086
	Non-ECE Schools	15	6.14	2.84			

*p<0.05

The above table shows that value of $t = 1.73$, $df = 98$, $p < 0.086$ that is below p value ($p = 0.05$). It shows that p value is statistically significant, which means that there was significant difference between ECE and non-ECE respondents of sub-scale 'Numeracy skill', ECE school respondents (Mean=7.82, SD=1.66) and non-ECE school respondents (Mean=6.14, SD=2.84) respectively. Mean score showed major difference and it was statistically significant. So, the null hypothesis 'There is no significance difference between ECE and non-ECE education school system regarding attaining numeracy skills in 2nd grade students is rejected.

Discussion and Conclusion

Current research was primarily concerned with the comparison of literacy skills (writing and numeracy) of the Early Childhood Education (ECE) based schools and Non-ECE based primary schools. First objective of the study was to comparison of writing skills of ECE and Non-ECE students who have accomplished the 2- year primary education. The analysis shows that the students at ECE schools are higher in writing skills as compared to Non-ECE students. It is clear that those schools where a well decorated Early Childhood Education (ECE) room exist have more resourceful for developing learning skills like writing and numeracy while those schools having no well decorated and proper Early Childhood Education (ECE) room do not have resources for students to acquire skills like writing and numeracy.

Some studies reviewed that incompetent teachers are the cause that promote rote learning rather than creative skills (Mansoor, 2005; Rahman, 2002; Siddiqui, 2007). Students' writing skill can be developed by their interest, inspiration, and pleasure for writing, through technology (Graham & Perin, 2007). It is necessary that attitudes towards writing and dealing with these problems are changed. Teachers must employ new strategies and ideas from students to be penned down on a piece of paper to endorse their writing ability. Besides, instant and critical response needs to be given on their output, so that their confidence is raised (Haider, 2012).

The second objective of the study also showed that the students who studied in ECE (Early Childhood Education class were found strong in numeracy skill too as compare to those who did not attain Early Childhood Education) class before primary school.

Conclusion

The conclusion of the study clearly depicts that the results of literacy skill regarding writing and numeracy skill of ECE (Early Childhood Education) and Non-ECE based primary schools. The results showed statistical difference between ECE (Early Childhood Education) based primary schools and non-ECE (Early Childhood Education) based primary schools in writing as well as in numeracy skills. The ECE (Early Childhood Education) based schools' students have more confidence on writing and numeracy skills as compared to Non-ECE learned students.

Recommendations

- By keeping in view the findings of the study, in an Early Childhood Education (ECE) based schools, training of teachers like Early Childhood Education (ECE) training may be recommended which may be based on new and innovative techniques according to writing and numeracy skills.
- In Non-ECE based schools, training of teachers may be done according to the recognition of words and develop creative writing skills in students.
- In Non-ECE based schools, assignments and quizzes may advised for the development of numeracy skills in students. Activity based teaching may be introduced for writing and numeracy skills.
- Each and every primary school may have a well decorated rooms and trained teachers for Early Childhood Education (ECE).
- Training of teachers may be made mandatory in both Early Childhood Education (ECE) and Non-ECE based schools in field of literacy especially in writing and numeracy skills.

- Games and playful pedagogy, pencil grip practices, and using latest apps for writing and numeracy skills may be recommended for both Early Childhood Education (ECE) and Non-ECE based schools.
- In the same line, further researches may be conducted taking a larger sample consisting gender based (boys/girls) and different geographical locations.
- Further studies may also be conducted taking other literary skills like reading and listening skills.

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