



## ASSESSING MULTIPLE INTELLIGENCE OF (5-7 YEARS) STUDENTS IN EARLY CHILDHOOD EDUCATION PERSPECTIVE

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### Abstract

The study assessed the multiple intelligence levels among early childhood students. For this purpose, the respondents were selected randomly from early childhood education schools in district Lahore, Pakistan. The sample consisted of 100 early childhood students from five to seven years old age group. Data was collected using a multiple intelligence questionnaire that was developed under the supervision of the early childhood experts and validity and reliability based on the opinion of experts in the panel and Cronbach's alpha value coefficient. Results of the study were analyzed by descriptive statistics. Results of the study disclosed that majority of early childhood students had spatial intelligence from other types of multiple intelligence. The mean scores of bodily kinesthetic intelligence revealed significant difference between boys and girls ( $p=.017$ ) while no difference was found in the age level of early childhood students regarding other components of multiple intelligence.

**Keywords:** Multiple Intelligence, Assessment, Early Childhood Education .

### INTRODUCTION

Early childhood education is important for the future of children and considered most critical period of childhood. The development of physical, intellectual, social aspects is based on the children early years of life. Through stimulation, children learn quickly using their five senses and it helps their brain nerves to grow extensively. Children have hard time to learn things if they are not correctly guided (Gullatt, 2008). Students learn best when they perceive the things while learning. That is why the early childhood schools must give the attention before planning the educational activities for recognizing the dominant capability of the students (Munoz, Ross, & McDonald, 2007). Early childhood education is the most important period of a child life whether it is physical, psychological, or educational development because physical and mental capabilities of children grow more swiftly during the age of 8 to 7 years and 2 to 5 years are very important in this respect. These early years are critical and formative for the development of skills, attitudes and in acquiring the concepts that lay the foundations for lifelong learning (Bagnato & Neisworth, 2010). The basic purpose of early childhood education is to improve the cognitive skills such as thinking and reasoning. The development of communication skills enhance the questioning ability of students and solve new problems. Social development teaches the students how to maintain good relation with others (Miller, 2000). Multiple-intelligence is related to individual intelligence that is the combination of capabilities in different areas. Each human being is blessed with these competences used in daily life and more than

one from them can be dominant. From early childhood to childhood a successful transition depends on student's motivation and effectiveness of schooling to acquire survival skills of life (Akintug & Birol, 2011). The theory of multiple-intelligence replaces the old concepts of intelligence and focus on the ability to create products or solve problems that are important in specific culture settings (Mcmahon, Rose, & Parks, 2017).

The idea is conceptualized for assessing the multiple intelligence among early childhood students and to see the differences in sex and age levels. The study will be helpful for the teachers of early childhood education to know the area of strength in intelligence of their students and develop it to the optimum level. The aim of this study was to assess the multiple intelligence among Early Childhood students age group five to seven years. Based on the research purpose, answers of three following questions is given.

1. Which is the most prominent intelligence in the early childhood students?
2. What is the difference in multiple intelligence areas regarding gender?
3. What is the difference in multiple intelligence areas with reference to age groups of early childhood students?

### **Assessment of Multiple Intelligences in Early Childhood Classroom**

Gardner (1983) presented multiple intelligence theory and challenged old beliefs of intelligence about what it means to be smart. This theory uses the fundamentals in a creative way and discloses individual differences by using interest, capability, and ambitious in put into practice (Selcioglu, 2005). The early childhood teachers enlarge horizons in program development that concern with individual differences and develop the intelligence types. The types of intelligence represent the mental capabilities of an individual but cannot recognize who is a person (Teele, 2005). Multiple intelligence theory states that every individual has different intellectual capabilities rather than a single intelligence that is the old concept. Conversely, the levels of the intelligence types can be different in people. An individual may be expert and make progress in some types of intelligence and feeble in others types (Lazear, 2004). Gardner (2006) explains that intelligence is a set of capabilities that exist in diverse parts of the brain. The most important aspect of these intelligences is that they are not congenital and transmissible. These intelligences develop like our muscles and become more dominant through maturation. Moreover, human beings have the ability to become smarter that is depending on their social environment. Gardner (1993) defined that multiple-intelligence is based on biological and cultural values and explained that intelligence consists of multiple types that are largely independent and function separately from each other. Intelligence is not fixed at birth or assessed by intelligence quotient. Intelligence grows up and expands in someone's life with the passage of time. Gardner (2006) presented nine intelligences that are dynamic in nature: (1) Linguistic intelligence refers to the ability to learn, write, read, and speak languages for achieving desirable goals. (2) Bodily kinesthetic intelligence engages someone potentials in using whole body parts. (3) Musical intelligence is the capacity to appreciate or compose the music. (4) Intrapersonal intelligence is the capability of an individual to understand his/her own feelings, fears, and motivations. (5) Logical mathematical intelligence is the ability to manipulate and understand the mathematical tasks and to analyze problems logically. (6) Interpersonal intelligence is the competency to understand the desires, aims, and motivations of other ones. (7) Spatial intelligence is a potential to recognize and modify the patterns. (8) Naturalistic intelligence is the ability to interact with natural surroundings and to classify the natural phenomena. (9) Existential intelligence is the ability to think fundamental questions about the existence of anything.

Multiple intelligence can interact with meddling, catalysis, and compensation. Meddling means that someone who is weak in one area may hinder the potential in another area of intelligence. For instance, a student who is musically gifted and weak in the intrapersonal capabilities might face difficulties in learning piano composition because he/she cannot focus during presentation. The second form of interaction is catalysis where intelligence in one area increases the expression of other ones. In this situation, a student may use his bodily kinesthetic intelligence in playing the drum set. On the other hand, through compensation weak ones may support strong areas of intelligence. For

example, some popular music artists are better in writing music than writing lyrics (Oskooie & Salahshoor, 2014). These different types of interaction indicate that multiple intelligences should neither be assessed without considering the effect of context nor solely in a linear fashion. For instance, a student who obtains low grades in sports at school may be on the top position outside the school as a hockey player in a local team because he takes interest in only one aspect of curriculum area in the school (Lazear, 2004). Shearer (2009) analyzed the data from 22 countries for assessing multiple intelligences in different ways. Shearer's Multiple Intelligences Developmental Assessment Scales (MIDAS) uses for both quantitative and qualitative profile of students intelligences. The theory of multiple intelligences round about 35 years old but at present no valid or reliable tool easily available (Oskooei & Salahshoor, 20014).

### **Teachers Use the Multiple Intelligence Theory as the Basis for Changing in the Classrooms**

Many early childhood teachers have been recognized that students have unique differences and they modify their teaching methods for assessing multiple intelligences of their students. However, teachers must have a valid and reliable way for the identification student's intelligences (Tirri & Nokelainen, 2011). Unconsciously teachers adapt multiple intelligence theory sometimes into their teaching methods as using visual cards and playing a song. Multiple intelligence theory can be beneficial in the teaching process if teachers the structure of theory and its benefits. In the teaching process, teachers explore what they want to explore, discover what they want to discover and often learn what they learn (Hashemain & Adibpour, 2012). Instructions and assessment are two sides of the same coin and teachers can teach in ways that help students to acquire the skills to be successful in school and their lives. Hence, the intelligence types should be taken into consideration during assessment planning and it is suggested that arts should be integrated into the instructions of school values as academic abilities (Sternberg, 2008).

### **METHODS AND MATERIALS**

The nature of the study was quantitative and survey research design was used for assessing the multiple intelligence of students at early childhood education level. The population of the study was all students of Early Childhood Education in district Lahore. The sample consisted on Johar town and Iqbal town from district Lahore in Pakistan. Early Childhood Education public schools were taken randomly from the cluster of selected towns. From the selected Early Childhood Education schools, there were five schools taken purposively for obtaining the sample size. Criterion for selecting the schools was the age of students. Finally, a sample of 100 early childhood students were selected, 45 in the age group of five, 44 in age of six and 11 in the age of seven year was the sample for this research study. As a tool for assessing the multiple intelligence of ECE students a questionnaire was developed by the researcher for data collection and consisted on 25 items on two point Likert scale (YES, NO). There are only two appropriate tools, Teele Inventory of Multiple Intelligences and Multiple Intelligences Developmental Assessment Scales for measuring the multiple intelligence of children. The instrument was constructed after reviewing these two scales and under the supervision of the supervisor. The supervisor checked the content validity and the five experts in the area of early childhood education also examined the instrument. Piloting of the instrument was done with 30 respondents and the reliability co-efficient of the scale was .722. Some statistical techniques were used for analyzing the data. For testing the significant difference between groups, Independent samples t- Test and One-Way ANOVA were employed. Eight components of multiple intelligences were constructed after the factor analysis as linguistic intelligence, mathematical intelligence, bodily kinesthetic intelligence, spatial intelligence, natural intelligence, musical intelligence, interpersonal intelligence, and intrapersonal intelligence.

## RESULTS AND DISCUSSION

Table 1: Distribution of Students' Intelligence Areas (N=100)

Sr#	Intelligence Areas	n(%)	Sr#	Intelligence Areas	n(%)
1	Verbal	44(16%)	5	Musical	9(3%)
2	Logical	17(7%)	6	Kinesthetic	50(18%)
3	Natural	30(12%)	7	Intrapersonal	11(4%)
4	Spatial	62(24%)	8	Interpersonal	41(16%)

Note. *n* is number of responses

The highest response of students participated in the study related to visual or spatial intelligence with 62 (24%) students followed by kinesthetic intelligence with 50 (18%) students and verbal intelligence with 44 (16%) students were third in the intelligence rank. Eleven students (4%) with intrapersonal intelligence and musical intelligence 9 (3%) were observed that showed least students related with this dominant. Mostly students perform well in arts. According to Gardner (2006), entry points of all the intelligences are based on arts. This study disclosed the similar results to the earlier research studies Steele (2005) conducted a research, through a multiple intelligence instrument determined the dominant intelligence types of 4000 early childhood students, and affirmed that most prominent types of intelligences were ranked as spatial intelligence, bodily kinesthetic intelligence, and verbal linguistic intelligence. Gullatt (2008) argued that these types of intelligence are designed in a way that engages students in making connections across the curriculum. Gouzouasis, Guhn, and Kishor (2007) suggested that the arts-based learning has positive effects on social and academic development of students. There is an intrinsic relationship between various aspects of human development and the arts.

Table 2: One-Way ANOVA Used for Multiple-Intelligence on Three Age Groups of Early Childhood Students

Age	5years (n=45)		6 years (n=44)		7 years (n=11)		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P</i>
Linguistic intelligence	63.70	28.26	67.45	30.04	51.51	31.13	2.08	.130
Logical-mathematic intelligence	54.81	26.73	60.60	28.99	42.42	30.15	1.92	.153
Kinesthetic-bodily intelligence	65.55	33.40	70.45	28.04	60.18	27.70	.645	.527
Spatial intelligence	66.11	23.92	72.15	24.24	68.18	33.70	.037	.964
Naturalistic intelligence	62.22	38.66	63.63	37.91	68.08	33.68	.110	.896
Musical intelligence	49.62	28.08	50.75	25.40	42.42	26.20	.432	.650
Intrapersonal intelligence	60.00	24.09	66.55	18.72	62.22	19.45	1.14	.324
Interpersonal intelligence	62.22	49.03	65.90	47.94	63.63	50.45	.064	.938

\* $p < .05$ ,  $p > .05$

Results in Table 2 reveals that there are no statistically significant differences in multiple intelligence components for the participants according to their age levels ( $p > .05$ ). Five to seven-year old early childhood students have the tendency in visual spatial intelligence. Secondly, five to six year old students were dominant in kinesthetic bodily intelligence while seven year old students were smart in natural intelligence. Verbal linguistic intelligence for five and six years old students and interpersonal intelligence for seven years used as third in rank. Elibol (2000) researched and found that firstly, children had the tendency of using their visual spatial intelligence then they interested in bodily kinesthetic intelligence and their third choice was interpersonal intelligence. Students who had high

level tendency in visual spatial intelligence were good in to use the colors and to cut the figures. They were also good in to create the images in their brains. The curriculum of Early Childhood Education often involves in those activities that lead to use of visual spatial intelligence. Bodily kinesthetic intelligence among five to six year old children was dominant. Because the developmental factors of these age groups are fast and the children discover the world based on their experiences that is made by movements. Elibol (2000) asserted that musical intelligence was the slightest preference of early childhood students that was consistence with the results of this study.

Table 3: Boys and Girls Comparisons using Independent Samples t-Test for Multiple-Intelligence at Early Childhood Education Level

Gender	Boys n=(47)		Girls (n=53)		Independent samples t- test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i> (98)	<i>P</i>
Linguistic intelligence	62.41	26.57	67.92	30.63	-.955	.342
Logical-mathematics intelligence	58.86	27.10	53.45	29.48	.950	.344
Spatial intelligence	65.95	24.68	71.69	25.49	-1.14	.257
Kinesthetic intelligence	64.70	37.89	59.09	37.44	2.43	.017
Naturalistic intelligence	60.63	32.86	71.69	33.26	-1.66	.098
Musical intelligence	56.02	25.16	43.39	26.62	-.450	.654
Intrapersonal intelligence	59.27	18.59	67.38	23.16	-1.91	.058
Interpersonal intelligence	57.44	49.97	69.81	46.34	-1.28	.202

\* $p < .05$ ,  $p > .05$

As seen in Table 3, there was significant difference between the mean scores of boys kinesthetic intelligence and girls kinesthetic intelligence; ( $t(98) = 2.43$ ,  $p < .05$ ). The mean score of the boys in kinesthetic intelligence ( $M=64.70$ ,  $SD=37.89$ ) was higher than the girls scores ( $M=59.09$ ,  $SD=37.44$ ). It was found that there was no difference in gender on other types of intelligences except the kinesthetic intelligence. An extensive body of literature reports that significant gender difference is found in the multiple intelligence factors (Furnham & Mottabu, 2004; Furnham & Chamorro, 2005). On the other hand, Barnard and Olivarez (2007) pointed out no significant gender differences in multiple intelligences that is supported with the results of this study. This study indicated that boys were higher in kinesthetic and mathematical intelligences than girls. Whereas girls scores were higher in linguistic, naturalistic, music, spatial, intrapersonal, and interpersonal intelligences than boys. Campbell, Hombo, and Mazzeo (2000) stated that girls make more progress in language at the early developmental stages. They start earlier to talk and their vocabulary grows faster. Girls achieve high scores in reading and writing tests throughout the school years because left side of cerebral cortex in human being is somewhat large and rapidly matures in females than males (Diamond, Jhonson, Young, & Singh, 2012). These confirmations suggest that gender difference of bodily kinesthetic intelligence is rooted biologically in boys because they are physically superior. Kerns and Berenbaum (1991) claimed that sex differences in spatial intelligence appear during the middle childhood and continue for the whole lifetime.

## CONCLUSION AND RECOMMENDATIONS

The results of the study concluded that the most prominent intelligence from eight types of multiple intelligences were ranked as visual spatial intelligence, bodily kinesthetic intelligence, and natural intelligence among early childhood students (5 to 7 years). Logical-mathematical intelligence and musical intelligence were least in rank. Multiple intelligence results revealed significant difference between boys and girls kinesthetic intelligence. The boys were better in kinesthetic intelligence to girls. The division of early childhood students regarding their age (5 to 7 years) no differences found in multiple intelligences. Teachers and Parents should cooperate with each other in identification of multiple intelligences. They should use motivational strategies for utilization of early childhood talent. For developing the awareness in parents about multiple intelligence, educational institution should



organize workshops and campaigns. Majority of the parents do not have understanding about the new terminology of multiple intelligence. Parents still believe in IQ and 3Rs (Reading, wRiting, and aRithmetic) and judge their children performance through grades and mark sheets.

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