العنوان:	Developing Preschool Blind Children's Multiple Intelligences through a Program Based On Playing
المصدر:	المجلة المصرية للدراسات النفسية
الناشر:	الجمعية المصرية للدراسات النفسية
المؤلف الرئيسي:	منيب، تهاني محمد عثمان
المجلد/العدد:	مج20, ع69
محكمة:	نعم
التاريخ الميلادي:	2010
الشهر:	أكتوبر
الصفحات:	373 - 404
رقم MD:	1010406
نوع المحتوى:	بحوث ومقالات
اللغة:	English
قواعد المعلومات:	EduSearch
مواضيع:	علم النفس التربوي، الأطفال المعوقون، رياض الأطفال، الألعاب التعليمية
رابط:	http://search.mandumah.com/Record/1010406

Developing Preschool Blind Children's Multiple Intelligences Through A Program Based On Playing

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· **Abstract**

Special care is devoted to special needs children. It is a national concern. However, they are in need of more progressive contexts to improve different social, mental and psychological domains of their characters. The purpose of this study was to develop those children's multiple intelligences; depending on Gardner's theory to enhance their artistic, kinetic and logical intelligences. Thus, individual intelligences of blind children and their normal peers will be investigated and compared. 60 children participated in this study (30 normal – 30 blind) divided into experimental and control groups. And the following instruments were developed and applied : 1- Multiple Preschool Children Intelligence Scale. (Multiple Intelligence Scale) 2- Preschool Children Program based on play activities. 3- Socioeconomic Level of Family Scale.4- Verbal Ability of Bienet Intelligence Scale Results prove that the development takes place for the normal and blind children intelligences.

Keywords: Multiple Intelligences Child, Blind Child, Play Program. .

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Every preschool child, normal or special needs child, possesses unique talents. Some children shine during music time, while others excel at hands-on tasks. Still others flourish while interacting in groups. Preschool multiple intelligences explore the many ways in which young children exhibit ability. Howard Gardner proposes that there is not a single intelligence, but rather that there are seven, may be more: linguistic intelligence, logical mathematical intelligence, visual spatial intelligence, musical intelligence, bodily kinesthetic intelligence, natural intelligence and Interpersonal intelligence Gardner claims that we all possess all of these intelligences but in varying degrees in strength, skill and limitation.

Multiple Intelligences: It's a multidimensional approach to intelligence inspired by Howard Gardner's theory, allowing those exceptional in any one of seven areas to be identified as gifted.

Gardner identifies his list of intelligences:

1) Naturalistic: The ability to understand and categorize, classify, explain the things encountered in the world of nature.

2) Verbal – linguistic: the ability to use words and language.

3) Logical – mathematical: the capacity for inductive and deductive thinking and reasoning as well as and the recognition of abstract patterns.

4) Body – kinesthetic: The wisdom of body and the ability to control physical motion.

5) Musical – Rhythmic: The ability to recognize tonal patterns and rounds as well sensitivity to music.

6) Interpersonal: the capacity for person to person communications and relations.

7) Visual spatial: the ability to visualize objects and spatial dimensions and create internal images.

Howard Gardner viewed intelligence as " the capacity to solve problems or to fashion products that are valued in one more cultural setting (Gradner & Hatch, 1989)

Howard Gardner and the child:

Howard Gardner concern with children that he said "I want my children to understand the world, but not just because the world is fascinating and the human mind is curious. I want them to understand it so that they will be position to make it a better place" (Gardner, H , 1999 , 180).

Gardner shows that at any one time a child may be at very different stages for example in number development and spatial / visual maturation , Gardner has successfully undermined the idea that knowledge at any one particular developmental stage hangs together in a structured whole (Smith and Smith , 1994)

Early Intervention and blind children:

Just as for students with other disabilities, preschool education is vital for those with visual disabilities. During this time, the foundation of social skills, academic success and independence are laid.

These children are not stimulated like sighted infants and have limited opportunities for learning. They do not see their mother's smile or the toys in their cribs. So, a good preschool program can give preschoolers with visual disabilities . So that the disadvantages this disability can cause are minimized (Smith, 2007 , 414)

No doubt that play is a very important part of human development through play, young children learn to socialize, interact with others, and cooperate via discovery and exploration, which are encouraged through play activities, young children also learn about their environment, develop motor skill, and often enhance their language skills. Because of their disability, Children who are blind or have low vision play very differently from others and are also delayed about two years behind their sighted peers in the development of play skills (Hughes, D & Dolendo, S , 1998)

Characteristics of blind children play: Engaging in high rates of solitary play, not playing spontaneously, seeking play with adults rather than with other children, not taking conversational turns and selecting only concrete, familiar toys (McGaha , & Farran , , 2001, Traster , & Brambring , 1992 , 1994)

Delayed play - development may contribute to later difficulties in

social interaction and concept formation (Troster & Brambing , 1994)

Sighted children often find it difficult to adjust their play to the ability levels of blind children, who prefer noisy play activities to abstract or symbolic ones (Traster & Brambring, 1994).

They often find their play styles in conflict with those of their blind peers. The quick and sometimes unpredictable movements of sighted children can disorient children with visual disabilities some experts are convinced that simply providing inclusive opportunities does not ensure interactions and play among sighted preschoolers (Hughes & Dolendo, 1998; Mc Gaha & Farran, 2001).

The problem of the study:

Egyptian blind people receive health and psychological caring except one category from them, and this is blind children at preschool. This problem results from the little educational and psychological programs which are concerned with teaching and rehabilitating those children, caring for the different aspects of their characters, specially their multiple intelligences which can be improved through play.

So, this study attempted to develop those children's multiple intelligences depending on Gardner's theory to enhance their artistic, kinetic and logical intelligences by many methods of play.

This study attempted to answer the following main question:

To what extend can Arabic program based on playing develop the aspects of child multiple intelligences?

To answer this main question, the following sub-questions were also being answered:

To what extent the study variables (experimental/ control group), gender (males / females) and the interaction among them affect the scores obtained by the preschool normal children on Multiple Intelligence Scale after the application of the program applied.

To what extent can the study variables (experimental/ control group), gender (males / females) and the interaction among them affect the scores obtained by the preschool blind children on Multiple Intelligence Scale after the application of the program.

To what extent are there significant differences between the mean scores of the normal group and the mean scores of the blind group on the Multiple Intelligence Scale after the application of the program.

The Aims of the study:

Conducting the present study, the researcher aimed to investigate:

- The effectiveness of playing program to develop some multiple intelligences for preschool normal children after the treatment.

- The effectiveness of applying program to develop some multiple intelligences for preschool blind children after treatment.

- The deference between the mean scores of normal children and blind children after the treatment.

Related Studies:

Preisler. G.M. (2006). Summarily a longitudinal descriptive and qualitative study, nine blind preschool children have been observed in natural inter-actionable settings in their nurseries. The objective was to give a detailed description of the blind child's activities and social situation in a group of sighted children. The results show that the blind child's overall behavior in the preschool setting was different when compared with the sighted children's behavior , as shown in activities like orientation , exploration and play . The blind children seldom participated in sighted children's play and they seldom initiated contact with the other children.

Al – Baluchi (2006). Present, a research to ICEVI world conference address "Enhancing multiple Intelligences in children who are blind "A Guide to improving curriculum.

This paper provides a guide to modify curriculum in the glance of the theory of Multiple Intelligences (MI) . The activities are designed to improve talents in children who are blind such as imagination, creativity, cooperation, social skills, linguistic abilities, critical thinking, scientific thinking and attitudes towards nature. Extra teaching methods that are used to enhance these talents are: cooperation learning, brainstorming, questioning, scientific inquiry, projects – based learning, learning cycle at last sample lesson plan are provided in this research.

Guss, (2005). Study "Dramatic play beyond the theory multiple intelligence what is solidarity with arts educators that emanate from this theory and the researcher provide a full picture of reflective skills manifested by young child play. He refers to symbolic play as "play – drama "viewing it as autonomous drama performed in socio - cultural context of children's collective playing. He views the capacity for expert dramatic playing as an executive capacity, a dramatic, and a motor intelligence which coordinates

the deployment of the mature symbols that constitute play – drama children's skills go beyond what Gardner proposes.

Also Ferguson , R et. al. (1995) studied the play behavior of young blind and its relationship to development scales by monthly observations made of the play behavior of (16) young blind children over period revealed a number of significant correlations between play categories and developmental scales. The main findings show that the children who had high score in developmental scales also had a high involvement in fantasy play.

Kuo, (2005) in his study is concerned with gifted handicapped preschoolers and their potential development through MI enrichment program in Taiwan focusing on reporting three gifted handicapped children's learning characteristics and talented performance.

Egyptian blind people receive health and psychological caring except one category from them, and this is blind children at preschool. This problem results from the little educational and psychological programs which are concerned with teaching and rehabilitating those children, caring for the different aspects of their characters, specially their multiple intelligences which can be improved through play.

So, this study attempted to develop those children's multiple intelligences depending on Gardner's theory to enhance their artistic, kinetic and logical intelligences by many methods of play.

This study attempted to answer the following main question:

To what extend can Arabic program based on playing develop the aspects of child multiple intelligences?

To answer this main question, the following sub-questions were also being answered:

a) To what extent the study variables (experimental/ control group), gender (males / females) and the interaction among them affect the scores obtained by the preschool normal children on Multiple Intelligence Scale after the application of the program applied.

b) To what extent can the study variables (experimental/ control group), gender (males / females) and the interaction among them affect the scores obtained by the preschool blind children on Multiple Intelligence Scale after the application of the program.

c) To what extent are there significant differences between the mean scores of the normal group and the mean scores of the blind group on the

Multiple Intelligence Scale after the application of the program.

Conducting the present study, the researcher aimed to investigate:

- The effectiveness of playing program to develop some multiple intelligences for preschool normal children after the treatment.

- The effectiveness of applying program to develop some multiple intelligences for preschool blind children after treatment.

- The deference between the mean scores of normal children and blind children after the treatment.

The researcher defines the blind children as those children who lost their sight totally since birth (total blindness), and those children who have visual acuity of 5/200 to 20/200 (partial blindness).

Those children, aged 4 to 7 years old, join blind centers in Egypt and have no other handicaps.

And the play program: It's a group of activities, games and practical practices planned to be developed to the preschool blind children. This in turn will help these children develop their multiple intelligences level as: Logical intelligence, musical intelligence, natural intelligence, visual-spatial intelligence, interpersonal intelligence, verbal linguistic intelligence, and body-kinesthetic intelligence.

It is hoped that the study will help direct teachers and parents to activities found useful in this study to see a very active preschool boy or girl that would rather dance, play, sing than draw and color on paper. Thus we can look for ways to enrich preschools experiences.

Moreover, the study focuses on multiple intelligences in preschool stage and gives the information to nurture the multiple intelligences for the normal and blind children in their lives.

Method

Participants:

The subjects of the all study consist of (60) (male and female) preschool children , the age of the children ranged between five and six years old , the IQ as measured by verbal ability of Bienet Intelligent Scale of the children ranged between 99 – 101 degrees and the socioeconomic level of the family (as measured by Abdul Aziz El Shakhs test , 2006) ranged between 43 – 44 (middle level)

Normal children group: Consists of (30) child (male and female) at El-salam school. The experimental group consists of (15) child, and the control group consists of (15) child.

Blind children group: consist of (30) child (male – female) at El Markaz El Namozgy for blind in Cairo. Experimental group consists of (15) Blind child total and partial handicapped (male and female) and control group consists of (15) blind child male and female) also.

Concerning the homogeneity of the study sample, the researcher matched between the normal children sample and the blind one in:

1- Intelligence as measured by verbal ability of Bienet Intelligent Scale

2- multiple intelligence as measured by researcher test

3- Age.

4- Socioeconomic level as measured by Abdul Aziz El Shakhs, 2006

This was by using the Triple Analysis of Variance which proved that is no effect of these variables on the children scores before applying the program.

Homogeneity of Normal and Blind Children at Experimental and Control Groups

1- Homogeneity of Chronological age, Intelligence and Socioeconomic Variables

The researcher listed chronological ages of normal and blind children at experimental and control groups as well as their scores on Intelligence Test and Socioeconomic Level Scale (prepared by Abd El – Aziz El Shakhs, 2006) and then compared between them using the Triple Analysis of Variance to calculate the significance of differences among them.

Table (1)

Triple Analysis of Variance for Children Scores on Chronological age, Intelligence and Socioeconomic Level Variables according to Group Variable (Normal / Blind), Treatment (Experimental / Control) and Gender (Males / Females)

Variable	Source of Variation	Square Sum	Freedom Degree	Square Means	"F" Value	Significance Level
Chronological Age	Group (Normal / Blind)	0.03	1	0.03	0.081	Insignificant
	Treatment (Experimental / Control)	0.715	1	0.715	1.949	Insignificant
	Gender (Males / Females)	1.107	1	1.107	3.021	Insignificant
	Group x Treatment	0.686	1	0.686	1.871	Insignificant
	Group x Gender	0.43	1	0.43	1.172	Insignificant
	Treatment x Gender	0.715	1	0.715	1.949	Insignificant
	Group x Treatment x Gender	0.686	1	0.686	1.871	Insignificant
	Error	19.062	52	0.367		
	Total	23.433	59			
Intelligence	Group (Normal / Blind)	13.376	1	13.376	0.442	Insignificant
	Treatment (Experimental / Control)	24.344	1	24.344	0.804	Insignificant
	Gender (Males / Females)	15.471	1	15.471	0.511	Insignificant
	Group x Treatment	1.63	1	1.63	0.054	Insignificant
	Group x Gender	7.243	1	7.243	0.239	Insignificant
	Treatment x Gender	1.811	1	1.811	0.06	Insignificant
	Group x Treatment x Gender	35.63	1	35.63	1.176	Insignificant
	Error	1575.179	52	30.292		
	Total	1675.65	59			
Socioeconomic Level	Group (Normal / Blind)	2.519	1	2.519	0.414	Insignificant
	Treatment (Experimental / Control)	6.876	1	6.876	1.129	Insignificant
	Gender (Males / Females)	4.725	1	4.725	0.779	Insignificant
	Group x Treatment	2.001	1	2.001	0.329	Insignificant
	Group x Gender	10.519	1	10.519	1.727	Insignificant
	Treatment x Gender	0.476	1	0.476	0.078	Insignificant
	Group x Treatment x Gender	3.868	1	3.868	0.635	Insignificant
	Error	316.679	52	6.09		
	Total	348.6	59			

It is evident from table (1) that there is no statistically significant effect of group, treatment or gender variables or the interaction between them upon the variation of children scores on chronological age, intelligence and socioeconomic level variables.

Homogeneity of Multiple Intelligence Level

The researcher compared between normal children scores before program application on Multiple Intelligence Scale (prepared by the researcher) using Two-Way Analysis of Variance (2 x 2). This is illustrated by the following table.

Table (2)

Two-Way Analysis of Variance for Normal Children Scores before Program Application on Multiple Intelligence Scale according to Group (Experimental / Control) and Gender (Males / Females) Variables

Dimension	Source of Variation	Square Sum	Freedom Degree	Square Means	"F" Value	Significance Level
Natural Intelligence	Treatment (Experimental / Control)	0.021	1	0.021	0.015	Insignificant
	Gender (Males / Females)	3.621	1	3.621	2.455	Insignificant
	Treatment x Gender	0.288	1	0.288	0.195	Insignificant
	Error	38.357	26	1.475		
	Total	42.3	29			
Musical Intelligence	Treatment (Experimental / Control)	1.05	1	1.05	0.667	Insignificant
	Gender (Males / Females)	0.288	1	0.288	0.183	Insignificant
	Treatment x Gender	1.05	1	1.05	0.667	Insignificant
	Error	40.929	26	1.574		
	Total	43.467	29			
Logical Intelligence	Treatment (Experimental / Control)	2.072	1	2.072	1.514	Insignificant
	Gender (Males / Females)	2.072	1	2.072	1.514	Insignificant
	Treatment x Gender	0.072	1	0.072	0.053	Insignificant
	Error	35.589	26	1.369		
	Total	39.867	29			
Social Intelligence	Treatment (Experimental / Control)	0.072	1	0.072	0.056	Insignificant
	Gender (Males / Females)	0.072	1	0.072	0.056	Insignificant
	Treatment x Gender	1.672	1	1.672	1.294	Insignificant
	Error	33.589	26	1.292		
	Total	35.367	29			
Kinesthetic Intelligence	Treatment (Experimental / Control)	1.934	1	1.934	1.5	Insignificant
	Gender (Males / Females)	0.815	1	0.815	0.632	Insignificant
	Treatment x Gender	1.001	1	1.001	0.776	Insignificant
	Error	33.518	26	1.289		
	Total	37.467	29			
Verbal Intelligence	Treatment (Experimental / Control)	2.834	1	2.834	0.86	Insignificant

	Gender (Males / Females)	5.372	1	5.372	1.631	Insignificant
	Treatment x Gender	4.301	1	4.301	1.305	Insignificant
	Error	85.661	26	3.295		
	Total	98.667	29			
Spatial Intelligence	Treatment (Experimental / Control)	0.086	1	0.086	0.05	Insignificant
	Gender (Males / Females)	0.01	1	0.01	0.006	Insignificant
	Treatment x Gender	2.752	1	2.752	1.606	Insignificant
	Error	44.571	26	1.714		
	Total	47.367	29			
Total Score	Treatment (Experimental / Control)	0.288	1	0.288	0.02	Insignificant
	Gender (Males / Females)	16.402	1	16.402	1.12	Insignificant
	Treatment x Gender	28.288	1	28.288	1.932	Insignificant
	Error	380.643	26	14.64		
	Total	425.367	29			

Table (3)

Two-Way Analysis of Variance for Blind Children Scores before Program Application on Multiple Intelligence Scale according to Group (Experimental / Control) and Gender (Males / Females) Variables

Dimension	Source of Variation	Square Sum	Freedom Degree	Square Means	"F" Value	Significance Level
Natural Intelligence	Treatment (Experimental / Control)	1.05	1	1.05	0.586	Insignificant
	Gender (Males / Females)	0.343	1	0.343	0.191	Insignificant
	Treatment x Gender	2.917	1	2.917	1.627	Insignificant
	Error	46.607	26	1.793		
	Total	50.7	29			
Musical Intelligence	Treatment (Experimental / Control)	0.434	1	0.434	0.161	Insignificant
	Gender (Males / Females)	0.072	1	0.072	0.027	Insignificant
	Treatment x Gender	1.101	1	1.101	0.408	Insignificant
	Error	70.161	26	2.698		
	Total	71.867	29			
Logical Intelligence	Treatment (Experimental / Control)	3.81	1	3.81	1.778	Insignificant
	Gender (Males / Females) ·	4.61	1	4.61	2.151	Insignificant
	Treatment x Gender	0.61	1	0.61	0.284	Insignificant
	Error	55.714	26	2.143		
	Total	64.967	29			
Social Intelligence	Treatment (Experimental / Control)	6.943	1	6.943	2.068	Insignificant
	Gender (Males / Females)	2.438	1	2.438	0.726	Insignificant
	Treatment x Gender	2.143	1	2.143	0.638	Insignificant
	Error	87.286	26	3.357		
	Total	99.367	29			
Kinesthetic Intelligence	Treatment (Experimental / Control)	3.529	1	3.529	1.107	Insignificant

	Gender (Males / Females)	0.262	1	0.262	0.082	Insignificant
	Treatment x Gender	0.729	1	0.729	0.229	Insignificant
	Error	82.875	26	3.188		
	Total	87.2	29			
Verbal Intelligence	Treatment (Experimental / Control)	2.752	1	2.752	1.994	Insignificant
	Gender (Males / Females)	3.621	1	3.621	2.623	Insignificant
	Treatment x Gender	0.086	1	0.086	0.026	Insignificant
	Error	35.893	26	1.38		
	Total	42.3	29			
Spatial Intelligence	Treatment (Experimental / Control)	0.015	1	0.015	0.006	Insignificant
	Gender (Males / Females)	2.215	1	2.215	0.843	Insignificant
	Treatment x Gender	0.815	1	0.815	0.31	Insignificant
	Error	68.304	26	2.627		
	Total	71.367	29			
Total Score	Treatment (Experimental / Control)	1.672	1	1.672	0.097	Insignificant
	Gender (Males / Females)	0.648	1	0.648	0.038	Insignificant
	Treatment x Gender	0.072	1	0.072	0.004	Insignificant
	Error	445.946	26	17.152		
	Total	448.3	29			

It is evident from the above table that there is no statistically significant effect of treatment or gender variables or their interaction upon the variation of normal children scores on Multiple Intelligence Scale and scale total score. This indicates the homogeneity of normal children in both experimental and control groups in their multiple intelligences before program application.

It is evident from the above table that there is no statistically significant effect of treatment or gender variables or their interaction upon the variation of blind children scores on Multiple Intelligence Scale and scale total score. This indicates the homogeneity of blind children in both experimental and control groups in their multiple intelligences before program application.

In addition, the researcher compared between the scores of normal experimental group (first group) and those of blind experimental group (second group) before program application on Multiple Intelligence Scale (prepared by the researcher) using "T" Test. This is illustrated by the following table.

Table (4)

The significance of differences between normal experimental group and blind experimental group before program application on Multiple Intelligence Scale

Dimension	Experimental – Normal (n = 15)		Experimental – Blind (n = 15)		"T" Value	Significance Level
	Mean	Standard Deviation	Mean	Standard Deviation		
Natural Intelligence	12.67	1.345	10.73	1.387	3.875	0.01
Musical Intelligence	13.27	1.28	12.87	1.598	0.757	Insignificant
Logical Intelligence	13.33	1.291	12.27	1.438	2.138	0.05
Social Intelligence	13.8	1.014	12.27	1.58	3.164	0.01
Kinesthetic Intelligence	13.73	0.961	11.73	1.751	3.878	0.01
Verbal Intelligence	13	1.964	12.6	1.121	0.685	Insignificant
Spatial Intelligence	13.8	1.265	11.6	1.502	4.338	0.01
Total Score	93.6	4.12	84.07	3.731	6.643	0.01

It is evident from table (4) that there are statistically significant differences between the means of the scores of experimental group normal children (first group) and experimental group blind children (second group) before program application on all Multiple Intelligence Scale dimensions and scale total score except the two dimensions of musical and verbal intelligences, which are statistically insignificant. This indicates the heterogeneity of the two groups in their intelligence level before program application.

Design

The researcher adopted a pre-tests; post-test, control group, quasi-experimental design the present study is quasi–experimental in which two intact normal preschool children were assigned to an experimental group and control group, and the same for the Blind preschool children, with regard to matching the 4 groups in age, IQ and socioeconomic level.

The two experimental groups (normal and blind) the program have been applied to the program.·

Table (5)

Sample of the study

Group	Gender		Total
	M	F	
Normal group			
Experimental	8	7	
Control	8	7	
Total	15	15	30
Blind group			
Experimental	8	7	
Control	8	7	
Total	15	15	30
			60

The participants applied this instruments

1- The verbal ability of Bienet Intelligent Scale .

2- Socioeconomic level of Family Scale (Abd El – Aziz El Shakhs, 2006).

3- Multiple Intelligence Scale perceived by the teacher (by the research): To verify the validity of the scale, the researcher used the internal coordination validity. Using this method, the researcher calculated the correlation coefficient between the scores of the sample on every statement of the scale and their total scores on every demission. This shows that the scores of the correlation coefficient are statistically significant at the 0.1 & 0.5 % level.

The researcher also calculated the correlation coefficient between the scores of the sample for every dimension and the total scores of the sample on the scale as a whole. This has resulted in being certain that all the correlation coefficients are statistically significant at the 0.1 level. All these methods prove that the scale is valid.

For the stability of the scale, the researcher used Alpha – Kronbach method and the method of reapplying the scale after two weeks of the first application. These statistical methods proved that the study scale is stable.

Verifying the validity and reliability of Multiple Intelligence Scale:

A. Scale Validity:

To verify scale reliability, the researcher used both arbitrators' validity and internal coordination validity.

Arbitrators' Validity:

The scale was reviewed by professors specialized in psychology and mental health. And depending upon their guidance, the researcher modified some items in accordance with their view points.

Internal Coordination Validity:

Correlation coefficient was calculated between the sample scores on each scale item and its dimension total score. Table (6) illustrates the values of correlation coefficient.

Table (6)
Correlation Coefficient Values between the Score of each Scale Item and its Dimension Total Score

(n = 100)

Natural Intelligence		Musical Intelligence		Logical Intelligence		Social Intelligence		Kinesthetic Intelligence		Verbal Intelligence		Spatial Intelligence	
Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient
1	0.45	2	0.53	2	0.52	4	0.39	5	0.24	6	0.55	7	0.47
8	0.39	9	0.47	10	0.32	11	0.53	12	0.34	13	0.43	14	0.44
15	0.43	16	0.34	17	0.37	18	0.32	19	0.39	20	0.29	21	0.51
22	0.35	23	0.44	24	0.38	25	0.38	26	0.52	27	0.35	28	0.38
29	0.37	30	0.39	31	0.26	32	0.36	33	0.53	34	0.38	35	0.27
36	0.41	37	0.42	38	0.34	39	0.41	40	0.55	41	0.36	42	0.33
43	0.46	44	0.29	45	0.39	46	0.40	47	0.49	48	0.42	49	0.52
50	0.51	51	0.50	52	0.55	53	0.53	54	0.54	55	0.40	56	0.46

Significance Level at $(0.01) = 0.257$, $(0.05) = 0.197$

It is evident from the above table that all correlation coefficient values are statistically significant at a significance level of (0.01) except item no (5) that is significant at a significance level of (0.05).

Then the researcher found correlation coefficient between sample scores on the dimension score and the scale total score. The following table illustrates internal coordination coefficients for scale dimensions and its total score.

Table (7)

Internal Coordination Scores for Scale Dimensions and its Total Score
(n = 100)

Dimension	Correlation Coefficient
Natural Intelligence	0.648
Musical Intelligence	0.598
Logical Intelligence	0.536
Social Intelligence	0.702
Kinesthetic Intelligence	0.643
Verbal Intelligence	0.561
Spatial Intelligence	0.667

Significance Level at (0.01) = 0.257, (0.05) = 0.197

It is evident from the above table that all correlation coefficient values are statistically significant at a significance level of (0.01).

B. Scale Stability

For the stability of the scale, the researcher used Alpha – Kronbach method and the method of reapplying the scale at an interval of two weeks between first and second scale application. This is illustrated by the following table.

Table (8)

Stability Coefficient Values of Multiple Intelligence Scale Dimensions and the Scale as a Whole

Scale Dimensions	Alpha – Kronbach Coefficient (n = 100)	Reapplication (n = 40)
Natural Intelligence	0.716	0.753
Musical Intelligence	0.739	0.783
Logical Intelligence	0.635	0.701
Social Intelligence	0.698	0.722
Kinesthetic Intelligence	0.699	0.703
Verbal Intelligence	0.701	0.726
Spatial Intelligence	0.822	0.845
Natural Intelligence	0.873	0.894

* All Coefficient Values of Multiple Intelligence Scale Dimensions are significant .

It is evident from the above table that all stability coefficients are plausible indicating scale stability..

4- Treatment Program (by the researcher): This program aimed to investigate the effectiveness of some games, plays, toys and some activities in developing multiple intelligences. The program consists of some activities (every activity takes 3 sessions), to design the program the researcher followed the following procedure:

- Selecting activities: after searching a lot of activities have been chosen by researcher, the researcher considers activities. These conditions in choosing the program activities:

- Valuable in enhancing normal and blind children's multiple intelligences, natural, logical , musical , linguistic, kinetic, spatial, interpersonal intelligences.

- Interesting and engaging for the all children.

- Suitable for the children age.

- From different sources.

The preschool classrooms were assigned for solitary and small and large group activities. It included a fine motor area with beads and puzzles, table with related materials, art area. With easels, a reading book (with Braille adapted book in blind class) music area, building and blocks area, and housekeeping area and toys and games area.

The teachers who applied the program were experienced holding advanced degrees in education.

Multiple intelligence program: depends on problem solving ability development for normal and blind preschoolers to provide opportunities of nurturing their special talents and problem solving experiences beside guiding the children during activity, teachers of these children have a comprehensive understanding of their characteristics and needs as the best reference of the study program. The participants of this program are normal children and blind.

Table (9)

The program activities play.

Type of intelligences	Objects	activities and techniques
1- Natural	- Different classification skills - Discriminates of names	- Lets eat fruits and vegetables - Going to gardens and play. - Going to zoo and play. - Listening to birds and animals.
2- Logical and math	Basic operations of addition, subtraction multiplication and division.	- Going to markets - Working puzzles. - Ask questions play. - Brainstorming plays.
3- linguistic	- Listening - Linguistic expression. - Problem solving abilities	- Big problem in a small story. - Role – play - Creative poetry and hummer
4- Musical	- Moving according to the music. - Clapping in accordance with the rhythm with the body. - Creating rhythm absolute sense of musical notes.	- Dancing to the music. Speaking via rhythm. - Listening & singing
5- Spatial	- Quantity of figures - Expression of shapes - Expression of movement -Expression of spatial arrangement	- Content of drawing a person. - Drawing a story. - Block plays. - Hide and seek play. - Balloon bells. - Hand-on activities.
6- Bodily – Kinesthetic	- Performance of different ways of moving. - Balance & steadies of body. - Standing on one food. - Exactness of throwing balls.	- Performance of moving skills - Dancing in groups - Performance on steady skills
7- Interpersonal	- Acting performance	- Group play activities - Psychodrama. - Modeling. - Reinforcement.

Table (10)

Two-Way Analysis of Variance of Normal Children Scores on Multiple Intelligence Scale after Program Application according to both Treatment (Experimental/Control) and Gender (Males/Females) Variables

Dimension	Source of Variation	Square Sum	Freedom Degree	Square Means	"F" Value	Significance Level
Natural Intelligence	Treatment(Experimental/Control)	177.45	1	177.45	143.378	0.01
	Gender (Males / Females)	21.038	1	21.038	16.999	0.01
	Treatment x Gender	9.45	1	9.45	7.636	0.01
	Error	32.179	26	1.238		
	Total	235.467	29			
Musical Intelligence	Treatment (Experimental / Control)	319.815	1	319.815	265.631	0.01
	Gender (Males / Females)	1.548	1	1.548	1.286	Insignificant
	Treatment x Gender	0.215	1	0.215	0.178	Insignificant
	Error	31.304	26	1.204		
	Total	353.2	29			
Logical Intelligence	Treatment (Experimental / Control)	346.529	1	346.529	312.026	0.01
	Gender (Males / Females)	21.263	1	21.263	19.145	0.01
	Treatment x Gender	4.929	1	4.929	4.438	0.05
	Error	28.875	26	1.111		
	Total	408.7	29			
Social Intelligence	Treatment (Experimental / Control)	400.238	1	400.238	332.618	0.01
	Gender (Males / Females)	12.343	1	12.343	10.258	0.01
	Treatment x Gender	24.771	1	24.771	20.586	0.01
	Error	31.286	26	1.203		
	Total	457.2	29			
Kinesthetic Intelligence	Treatment (Experimental / Control)	320.688	1	320.688	171.536	0.01
	Gender (Males / Females)	15.238	1	15.238	8.151	0.01
	Treatment x Gender	21.488	1	21.488	11.494	0.01
	Error	48.607	26	1.87		
	Total	418.667	29			
Verbal Intelligence	Treatment (Experimental / Control)	460.952	1	460.952	279.412	0.01
	Gender (Males / Females)	28.288	1	28.288	17.147	0.01
	Treatment x Gender	25.752	1	25.752	15.61	0.01
	Error	42.893	26	1.65		
	Total	545.467	29			
Spatial Intelligence	Treatment (Experimental / Control)	285.863	1	285.863	247.012	0.01
	Gender (Males / Females)	24.048	1	24.048	20.78	0.01

	Treatment x Gender	10.529	1	10.529	9.098	0.01
	Error	30.089	26	1.157		
	Total	359.2	29			
Total Score	Treatment (Experimental / Control)	15903.905	1	15903.905	2260.2	0.01
	Gender (Males / Females)	1.548	1	1.548	0.22	Insignificant
	Treatment x Gender	12.172	1	12.172	1.73	Insignificant
	Error	182.946	26	7.036		
	Total	16112.7	29			

Results

(1) Hypothesis :

There are statistically significant differences of the treatment variable (experimental & control group), the gender (males & females), and the interaction between them on the **normal children's** scores on the Multiple Intelligences Scale after applying the program

To verify this hypothesis, the researcher used the two way analysis of variance for the normal children's scores on the MIS after applying the program according to the treatment variables (exp & con Group), gender (males & females) and the interaction between them. This shows that the **first** hypothesis has been proved to be correct.

First Hypothesis Verification

It is evident from the above table that there is a statistically significant effect of treatment variable after program application on all Multiple Intelligence Scale dimensions and scale total score. In addition, there is a statistically significant effect of gender variable and interaction between treatment and gender variables on all Multiple Intelligence Scale dimensions except both musical intelligence and scale total score.

(2) Hypothesis:

There are statistically significant differences of the treatment variable (experimental & control group), the gender (males & females), and the interaction between them on the **blind children's** scores on the Multiple Intelligences Scale after applying the program

To verify this hypothesis, the researcher used the two way analysis of variance for the normal children's scores on the MIS after applying the program according to the treatment variables (exp & con Group), gender (males & females) and the interaction between them. This shows that the **second** hypothesis has been proved to be correct.

Second Hypothesis Verification

Table (11)

Two-Way Analysis of Variance of Blind Children Scores on Multiple Intelligence Scale after Program Application according to both Treatment (Experimental/Control) and Gender (Males/Females) Variables

Dimension	Source of Variation	Square Sum	Freedom Degree	Square Means	"F" Value	Significance Level
Natural Intelligence	Treatment (Experimental / Control)	2.917	1	2.917	2.054	Insignificant
	Gender (Males / Females)	0.688	1	0.688	0.484	Insignificant
	Treatment x Gender	2.917	1	2.917	2.054	Insignificant
	Error	36.929	26	1.42		
	Total	43.867	29			
Musical Intelligence	Treatment (Experimental / Control)	104.002	1	104.002	47.174	0.01
	Gender (Males / Females)	2.143	1	2.143	0.972	Insignificant
	Treatment x Gender	0.002	1	0.002	0.001	Insignificant
	Error	57.321	26	2.205		
	Total	164	29			
Logical Intelligence	Treatment (Experimental / Control)	6.562	1	6.562	2.829	Insignificant
	Gender (Males / Females)	3.001	1	3.001	1.294	Insignificant
	Treatment x Gender	0.029	1	0.029	0.013	Insignificant
	Error	60.304	26	2.319		
	Total	69.867	29			
Social Intelligence	Treatment (Experimental / Control)	196.801	1	196.801	84.351	0.01
	Gender (Males / Females)	50.405	1	50.405	21.604	0.01
	Treatment x Gender	30.134	1	30.134	12.916	0.01
	Error	60.661	26	2.333		
	Total	328.7	29			
Kinesthetic Intelligence	Treatment (Experimental / Control)	226.601	1	226.601	159.156	0.01
	Gender (Males / Females)	0.648	1	0.648	0.455	Insignificant
	Treatment x Gender	3.001	1	3.001	2.108	Insignificant
	Error	37.018	26	1.424		
	Total	264.8	29			
Verbal Intelligence	Treatment (Experimental / Control)	378.101	1	378.101	275.671	0.01
	Gender (Males / Females)	20.372	1	20.372	14.853	0.01
	Treatment x Gender	56.101	1	56.101	40.903	0.01
	Error	35.661	26	1.372		
	Total	472.667	29			

Spatial Intelligence	Treatment (Experimental / Control)	378.101	1	378.101	87.834	0.01
	Gender (Males / Females)	20.372	1	20.372	4.436	0.05
	Treatment x Gender	56.101	1	56.101	0.009	Insignificant
	Error	41.446	26	1.594		
	Total	189.367	29			
Total Score	Treatment (Experimental / Control)	4703.405	1	4703.405	345.291	0.01
	Gender (Males / Females)	134.301	1	134.301	9.859	0.01
	Treatment x Gender	149.405	1	149.405	10.968	0.01
	Error	354.161	26	13.622		
	Total	5250.667	29			

It is evident from the above table that there is a statistically significant effect of treatment variable after program application on all Multiple Intelligence Scale dimensions and scale total score except the two dimensions of musical and logical intelligence dimensions. In addition, there is a statistically significant effect of gender variable on social, verbal and special intelligence dimensions and scale total score. Moreover, there is a significant effect of interaction between treatment and gender variables on social and verbal intelligence dimensions and scale total score.

In order to realize the trend of difference significance resulting from treatment and gender variables, the researcher divided the subjects into 4 sub-groups in accordance with such two variables. Then she compared between them using Schefee Test for post-comparisons. This is illustrated by the following table.

Table (12)

The Significance of Differences between Means of Blind Children Scores at the 4 sub-groups on Multiple Intelligence Scale Dimensions using Schefee Test

Dimension	Group		n	Mean	Means Differences and their Significance		
					1	2	3
Natural Intelligence	1-	Experimental – Males	8	12.5	-		
	2-	Experimental – Females	7	11.57	0.929	-	
	3-	Control – Males	8	11.25	1.25	0.321	-
	4-	Control - Females	7	11.57	0.929	0.00	0.321
Musical Intelligence	1-	Experimental – Males	8	15.63	-		
	2-	Experimental – Females	7	16.14	0.518	-	
	3-	Control – Males	8	11.88	3.75**	4.268**	-
	4-	Control - Females	7	12.43	3.196**	3.714**	0.554
Logical Intelligence	1-	Experimental – Males	8	14	-		
	2-	Experimental – Females	7	13.43	0.571	-	
	3-	Control – Males	8	13.13	0.875	0.304	-
	4-	Control - Females	7	12.43	0.1571	1	0.696
Social Intelligence	1-	Experimental – Males	8	16.25	-		
	2-	Experimental – Females	7	20.86	4.607**	-	
	3-	Control – Males	8	13.13	3.125**	7.732**	-
	4-	Control - Females	7	13.71	2.536*	7.143**	0.589
Kinesthetic Intelligence	1-	Experimental – Males	8	16.38	-		
	2-	Experimental – Females	7	16.71	0.339	-	
	3-	Control – Males	8	11.5	4.875**	5.214**	-
	4-	Control - Females	7	10.57	5.804**	6.143**	0.929
Verbal Intelligence	1-	Experimental – Males	8	16.75	4.393**		
	2-	Experimental – Females	7	21.14	4.375**	-	
	3-	Control – Males	8	12.38	5.464**	8.768**	-
	4-	Control - Females	7	11.29		9.857**	1.089
Spatial Intelligence	1-	Experimental – Males	8	15.5	-		
	2-	Experimental – Females	7	16.43	0.929	-	
	3-	Control – Males	8	11.13	4.375**	5.304**	-
	4-	Control - Females	7	12.14	3.357**	4.286**	1.018
Total Score	1-	Experimental – Males	8	105	-		
	2-	Experimental – Females	7	113.71	8.714**	-	
	3-	Control – Males	8	84.38	20.62**	29.34**	-
	4-	Control - Females	7	84.14	20.85**	29.57**	0.232

**Significant at (0.01) level   *Significant at (0.05) level

It is evident from the above table that there are statistically significant differences at a significance level of (0.01) between the means of the scores of:

- Male and female children at experimental group on social and verbal intelligence dimensions and scale total score to the trend of females.

- Male children at both experimental and control groups on all Multiple Intelligence Scale dimensions except both natural and logical intelligences to the trend of males at experimental group.

- Male children at experimental group and female children at control group on all Multiple Intelligence Scale dimensions except both natural and logical intelligences to the trend of males at experimental group.

- Female children at experimental group and male children at control group on all Multiple Intelligence Scale dimensions except both natural and logical intelligences to the trend of females at experimental group.

- Female children at both experimental and control groups on all Multiple Intelligence Scale dimensions except both natural and logical intelligences to the trend of females at experimental group.

In addition, it is evident from the above table that there are no statistically significant differences between the means of the scores of:

- Male and female children at experimental group on natural, musical, logical, kinesthetic and spatial intelligences.

- Male children at both experimental and control groups on both natural and logical intelligences.

- Male children at experimental group and female children at control group on both natural and logical intelligences.

- Female children at experimental group and male children at control group on both natural and logical intelligences.

- Female children at both experimental and control groups on both natural and logical intelligences.

- Male and female children at control group on all Multiple Intelligence Scale dimensions and scale total score.

(3) Hypothesis :

There are statistically significant differences between the mean scores of the normal children (the first experimental group) and the mean scores of

the blind children (the second experimental group) on The MIQ after applying the program.

To verify this hypothesis, the research used t. test to obtain the significance of the differences between the mean scores of the two experimental groups.

Here the results indicate that there are statistically significant differences between the two groups on almost all the dimensions of the MIQ and the total score after applying the program in favor of the normal children. This in turn refers to the improvement of the normal children generally compared with the blind children.

Third Hypothesis Verification

Due to the heterogeneity of the two groups in their intelligence and the differences between them before program application, the researcher calculated the difference between scores of the children of both groups in the pre- and post-scales on Multiple Intelligence Scale. Thus she considered these differences as the raw scores of each group. Then she compared between the two groups using "T' Test for separate groups. This is illustrated by the following table.

Table (13)

The significance of differences between normal experimental group and blind experimental group after program application on Multiple Intelligence Scale

Dimension	Experimental – Normal (n = 15)		Experimental – Blind (n = 15)		"T" Value	Significance Level
	Mean	Standard Deviation	Mean	Standard Deviation		
Natural Intelligence	5.267	1.438	1.333	0.488	10.034	0.01
Musical Intelligence	6.6	2.098	3	1.732	5.125	0.01
Logical Intelligence	6	1.813	1.467	0.915	8.646	0.01
Social Intelligence	7.4	2.063	5.467	1.922	2.655	0.05
Kinesthetic Intelligence	6.2	2.111	4.8	1.521	2.084	0.05
Verbal Intelligence	8.4	2.098	6.2	3.028	2.313	0.05
Spatial Intelligence	5.933	2.434	4.333	1.589	2.132	0.05
Total Score	45.8	4.395	26.733	5.391	10.617	0.01

It is evident from the above table that there are statistically significant differences between the means of the scores of experimental group normal children (first group) and experimental group blind children (second group)

after program application on all Multiple Intelligence Scale dimensions and scale total score. This indicates that normal children improved better than blind children.

(4) Hypothesis

There are no statistically significant differences between means of the scores of normal children (first experimental group) in the post- and follow-up scales on Multiple Intelligence Scale.

Fourth Hypothesis Verification

To verify this hypothesis, the researcher used "T" Test for related groups. The results are illustrated in the following table.

Table (14)

The significance of differences between normal experimental and control groups at the post- and follow-up scales on Multiple Intelligence Scale (n = 15)

Dimension	Post-Scale		Follow-up Scale		"T" Value	Significance Level
	Mean	Standard Deviation	Mean	Standard Deviation		
Natural Intelligence	17.93	1.792	17.67	1.839	1.468	Insignificant
Musical Intelligence	19.87	1.125	19.8	1.474	0.25	Insignificant
Logical Intelligence	19.33	1.543	19.47	1.506	-0.807	Insignificant
Social Intelligence	21.2	1.781	21.4	1.549	-0.823	Insignificant
Kinesthetic Intelligence	19.67	1.877	19.8	1.781	-0.695	Insignificant
Verbal Intelligence	21.4	2.293	20.6	2.849	0.978	Insignificant
Spatial Intelligence	19.73	1.792	19.87	1.922	-0.695	Insignificant
Total Score	139.13	2.386	138.6	3.397	0.738	Insignificant

It is evident from the above table that there are no statistically significant differences between the means of the scores of experimental group normal children (first group) at both post- and follow-up scales on all Multiple Intelligence Scale dimensions and scale total score. This indicates that children continued to improve till the follow-up duration

Discussion and Conclusion:

With regard to the development of a blind child, we should realize that a blind child is a normal child. He/she can still play, feel, think and create. The only thing abnormal with him/her is that he/she needs to be carefully supervised and assisted in attaining his/her optimal development and building

upon his/her potentials and strengths. Unfortunately, the parents of a blind child rarely understand their roles in this regard. They exhaust their efforts in feeling sorry for having a blind child. However, they should understand that the loss of eyesight does not bring about a loss in intelligence and hat a blind child just needs some amendments in the surrounding environment and atmosphere in order to act as a normal child. He/she also needs some activities to enable him/her to learn through real-life situations that depend upon direct exposure. This can be achieved through play. When a blind child takes part in a game and encouraged to run, jump, use his/her mind and be creative, this results in an enormous development of his/her multiple intelligences. When he/she is given freedom of movement, this will develop his/her muscular coordination skills (kinesthetic intelligence). When he/she is given the chance to play intellectual games, this will develop his logical thinking and creativity (logical intelligence). When he/she is given the chance to be a game leader, this will develop his verbal and interpersonal skills (verbal and social intelligence). When he/she is given the chance to play in a garden or to raise up animals and grow plants, this will develop his sense of environment (natural intelligence). When he is given the chance to build a small pyramid, this will develop his sense of place and spatial relations (special intelligence). In addition, when a blind child is given the chance to play, this might lead us to discover an area in which he/she excels in particular. He/she can also develop positive habits and self-esteem.

To conclude, the researcher can say that the activities : role playing, going zoo, creativity, dancing, drama, hand-on, puzzles, telling stories, problem solving, modeling, reinforcement of the program are highly effective on both the normal children and the blind children. Moreover, these results go with the results of (Ferguson , R & Buultijens ,1995 , Lyle , L.M , 2000 , Guss , Faith Gabielle ,2005 , Al Balushi , S , 2006, Preisler , G.M , 2006, Smith , D , 2007 , Kuo , c , 2005) .

Recommendations:

In the light of the findings of the present study, the following recommendation is made:

- Implement the program on preschool children, normal and blind, by teachers and parents.

- Engage the children in activities done by hand and take them outdoor places to have a close relation with nature and the environment around them.

Developing Preschool Blind Children's Multiple Intelligences

- Adapting the program to meet multiple intelligences special needs children.

- Brailing some activities in advance.

- Using models, actions, flannel, sound effects, and cassette tapes to faster multiple intelligences of normal and blind children.

- Incorporating songs, games, telling stories, and block building to discover and develop talents and multiple intelligences in this stage.

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تنمية الذكاءات المتعددة عن طريق برنامج لعب

لدى الأطفال المكفوفين في مرحلة ما قبل الدراسة

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ملخص البحث

تعتبر رعاية وتربية الأطفال ذوى الاحتياجات الخاصة عامة ، والأطفال المكفوفين خاصة واجبا قوميا لما يشكلونه من نسبة كبير من مجموع السكان ، ويحظى المكفوفون فى جمهورية مصر العربية بكثير من أوجه الرعاية الأجتماعية والنفسية والتربوية إلا أن هناك فئة منهم لا تحظى بالرعاية الكافية وهى الأطفال المكفوفون فى مرحلة ما قبل المدرسة ويرجع ذلك إلى ندرة البرامج التربوية والنفسية التى تهتم بتعليمهم وتأهيلهم ومساعدتهم على نمو جميع جوانب شخصياتهم وبالأخص قدراتهم الذهنية وذكاءاتهم المتعددة .

من هذا المنطلق اهتم البحث الحالى بتنمية قدرات أولئك الأطفال وذكاءاتهم المتعددة – فى ضوء نظرية جاردنر – واستثمار هذه القدرات ورفع كفاءاتها من خلال برنامج يعتمد على أشكال اللعب الحركى والتمثيلى والتخيلى والفنى والتركيبى وحل المشكلة .

وتهدف الدراسة الحالية إلى معرفة الفروق فى مستوى الذكاءات المتعددة لدى الأطفال المكفوفين مقارنة بنظرائهم الأطفال المبصرين فى مرحلة ما قبل المدرسة وتنمية الذكاءات المتعددة من خلال برنامج لعب حركى وفنى وتمثيلى وتركيبى لدى الأطفال فى ضوء ما تسفر عنه نتائج الدراسة .

وقد تضمنت عينة الدراسة مجموعتين من الأطفال الأولى : من الأطفال المبصرين قوامها ٣٠ طفلا وطفلة من روضة مدرسة كلية السلام والثانية قوامها ٣٠ طفلا وطفلة من الأطفال المكفوفين كفا كليا وجزئيا بروضة المركز النموذجى للمكفوفين بجسر السويس بالقاهرة وبعد مجانسة العينتين من حيث العمر والمستوى الاقتصادى والاجتماعى والجنس والذكاءات المتعددة قامت الباحثة بإعداد أدوات الدراسة للتأكد من ثباتهم وصدقهم ومن ثم تطبيقهم على مجموعتى الدراسة وهذه الأدوات هى :

١- مقياس بينيه للذكاء اللفظى .

٢- مقياس المستوى الاجتماعى الأقتصادى للأسرة المصرية .

٣- مقياس الذكاءات المتعددة لأطفال ما قبل المدرسة (كطبقة المعلمات) إعداد الباحثة .

٤- برنامج لتنمية الذكاءات المتعددة لأطفال ما قبل الدراسة إعداد الباحثة .

وقد أسفرت النتائج عن وجود فروق بين مجموعتى الدراسة فى مستوى الذكاءات المتعددة لصالح المبصرين ، كما تبين فاعلية البرنامج المستخدم فى تنمية الذكاءات المتعددة لدى مجموعتى الدراسة من الأطفال المبصرين والمكفوفين على حد سواء .