

Concept Development Status of Rural Preschoolers

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ABSTRACT The present investigation was carried out in rural areas of Hisar district of Haryana state. To assess the concept development status of rural children, baseline survey was conducted on 240 children of 3-5 years using Boehm Test of Basic Concepts – R (1984). For further in-depth study of children's conceptual development, half of the sample i.e. 120 children were continued with based on their relatively low conceptual scores. These 120 children were again divided into experimental and control group. So 60 children comprised of experimental group and rest 60 children were a part of control group. The results revealed that about half of children fell in average category in their performance. Further analysis of data revealed that 90 percent of experimental and control group children had clarity to 8 and 9 concepts in general. Half of the children could adequately answer 37 concepts in experimental and 39 concepts in control group out of a total of 50 concepts on Form 'C'. With regard to children's performance on 'Application', half of the children could perform 14-17 concepts out of 25 concepts.

Concepts are regarded as the fabric of mental life; they serve to carve up the person's world into functional units. To define 'concept', however, is difficult indeed; it is easier to describe and discuss various concepts than to formulate a definition. A dictionary meaning of concept is "an idea of some things formed by mentally combining all of its characteristics and particulars."

A concept is the basic unit of all types of learning. Human beings from the infancy to old age learn new concepts and use old concept in new situations of their daily life. Individuals differ in their level of concept formation on the basis of their age, intelligence and experience. A child of four years may have a different concept of plant than a teacher of biology. The word concept is used to designate both mental constructs of individuals and also identifiable public entities that comprise part of the substance of the various disciplines. We can also define a concept as ordered information about the properties of one or more things or class of things to be differentiated from and also related to other things or classes of things.

Logically, a concept refers to a phenomenon in a given field that is grouped together because of their common characteristics. For example the word square refers to a unique class of objects, which are manifestly distinct from triangles and circles. Kagan (1987) emphasizing the importance of concepts in life writes that concepts are fundamental agents to intellectual work. The theoretical significance of cognitive agents to concepts in psychological theory parallels the

seminal role of valence in chemistry; fence in biology or energy in physics.

The process of concept formation emerges from a big, buzzing, blooming, confusion in which the child is born. The child is endowed with certain biological inheritance at the time of his birth. He gets the knowledge of the external world through sense organs, which are the gateways of knowledge. Sensation is the conscious reaction of mind. This is the process through which human beings become aware of things in their immediate environment, which stimulates their sense organs. The building of concepts starts with the process of sensation.

The sense organs often operate independently and separately of one another. Sensations are disorganized, unrelated and meaningless. For example, a person may sense that an object is of a certain size, color, weight and shape. But before these impressions have any meaning, they must be organized, related to one another and compared with previously experienced sensation. The mental process by which this is done is called perception. Sensation and perception operate simultaneously. It is very difficult to have pure sensation of objects. One does not have sense and then perceive, he perceives while senses. The process of interpreting or giving meaning to sensation results in the formation of percepts. A percept is an organization of sensory experiences about a particular object. It is simply an image of the object, which is immediately presented to the senses. It may be stored in the memory and recalled in future to help develop concepts. The

process of concept formation proceeds from sensation, perception and conception. Flavell (1999) reported that infants developed concepts, which have readily perceptible instances as cat, dog, cow and tree. These are learnt readily than the concepts without perceptible instances as atom and eternity. With an increase in age, children learn through manipulating objectives and seeing them.

METHODOLOGY

In order to carry out an intensive study, rural area of Hisar district of Haryana state was selected purposively as the locale of study. A list of villages of Block I (Hisar I) and Block II (Hisar II) of Hisar district was procured from Block Development Office. Following a simple random selection, a survey of 10 villages, 5 from each block, was done. Further to meet the sample size, two villages namely Ladwa and Kharar from Hisar I and two villages namely Rawalwas and Neolikalan from Hisar II were selected purposively as they were found to be matching up to the maximum in their base line profile. Ladwa and Rawalwas from Block I and II respectively served as experimental group villages and Kharar and Neolikalan from Block I and II respectively served as control group villages

To assess the present status of children's conceptual development, baseline survey was conducted on 240 children of 3-5 years using Boehm Test of Basic Concepts-R (1984) (BTBC). As per requirement of the study, a sample of 60 children, (that is 30 children of either sex), was drawn from each of the four selected villages accounting for a total of 240 children. In respect of all the four villages, a separate list of boys and girls was prepared on the basis of general conceptual scores obtained by them. The conceptual scores of children (boys and girls separately) were further arranged in ascending order. From each of the experimental group village, 15 boys and 15 girls, who obtained lower conceptual scores relatively, were selected for intervention. So, experimental group comprised of 60 children in total, i.e. 30 from each experimental village. Similar procedure was followed for the selection of 60 children of control group making a total of 120 children as subjects.

RESULTS AND DISCUSSION

This section includes the results, which are taken to assess the existing level of concepts of children in rural areas. To find out the level of conceptual development among preschoolers, their performance on Form 'C' and 'Applications' of BTBC was recorded. Table 1 portrays the conceptual status of all the 240 children, who served as respondents for the Baseline survey.

Table 1: Percentile ranks of children on BTBC (N=240)

S. No.	Percentile rank	Components of BTBC	
		Form 'C' No. (%)	'Applications' No. (%)
1.	1-25	114 (47.6)	150 (62.5)
2.	26-50	60 (25.0)	46 (19.2)
3.	51-75	50 (20.8)	34 (14.2)
4.	76-100	16 (6.6)	10 (4.1)

To assess the existing level of cognitive concepts of children, raw scores of respondents and percentile ranks according to their performance on Form 'C' and 'Applications' were computed. Table 3 shows that maximum number of children i.e. 47.6 per cent fell below the 25th percentile ranks showing that they surpassed only 25 per cent of the total children and were surpassed by rest 75 per cent of children. Only 6.6 per cent children could reach up to percentile ranks between 76 and 100, indicating that they had surpassed 75 or more children of the group and were surpassed by only 25.0 per cent children. Out of rest of children, 25.0 per cent children achieved percentile ranks between 25 to 50 showing that they surpassed about 26 to 50 per cent children of the group and thus achieved middle ranks. Remaining 20.8 per cent children achieved percentile ranks between 51 to 75 per cent. Thus, the results showed that about 50.0 per cent of the children (45.8%) achieved middle ranks. While only 6.6 per cent children achieved higher ranks and 47.6 per cent achieved low ranks between 1 to 25 per cent. The results are in consonance with those of Sandhu (2001) who indicated that maximum percentage of children had retarded cognitive performance against norms.

Similarly in 'Applications' of multiple concepts, most of the children i.e. 62.5 per cent had achieved ranks between 1 to 25 followed by

19.2 per cent in the category of percentile ranks between 26 to 50 and 14.2 per cent between 51 to 75. Only 4.1 per cent children achieved higher ranks of 76 to 100. Thus the table shows that the pattern of performance of the children on both the forms was almost similar though the children felt the concepts of 'Applications' more difficult. Bjorklund and Brown (1998) studied cognitive development of children and found that by the end of infancy, if not earlier, children develop some understanding that people see things. They start using vision related words like 'see' correctly as early as 1.5 to 2.0 yrs. of age. They begin to use some simple concepts appropriately by the age of 2.5 to 3.0 years.

The results of present study revealed that in terms of concept development, about half of children fell in average category and the other half in below or above average category in their performance on Form 'C'. Whereas on 'Applications' more than sixty per cent children fell in below average category. The results are in collaboration with the findings of Rani (2001) who found out that majority of children fall in dull normal category in terms of general cognitive index.

The study by Kaliramna (1999) also supported the above results. She found moderate and low performance of preschoolers on total cognition.

Conceptual Status of Experimental and Control Group Children

This section includes the results related to the performance of children of Form 'C' and 'Applications' of BTBC (To assess the cognitive status of children, Boehm Test of Basic concepts - 1986 (BTBC) was used). It includes the analysis of Pre-testing scores of 120 children, finally selected after Baseline survey and dividing them into two study groups i.e. control and experimental groups. Table 2 and 3 shows the distribution of children according to their Pre-testing scores on Form 'C' and 'Applications' of BTBC in both the settings.

Concepts of Form 'C'

Table 2 illustrates the percentage of children of experimental group having clarity on the concepts of Form 'C' in descending order. As per the table, first eight concepts were clear to

more than 90 per cent children. Concepts of 'Away', 'Through' 'Top', 'First' etc. have been clearly understood by them. Next sixteen concepts were clear to 75 to 90 per cent children. Further look at the data shows that half the children could understand 37 out of total 50 concepts. Rest of the concepts was accurately answered by 25 to 50 per cent children. In general, however, majority of the children had clarity to about half of the concept items of the test. The performance of control group children according to Table 3 reveals that 90 per cent children had clarity of first 9 concepts. Concepts of Always, Top, Starting, Next to, Behind etc. were understood by them. Next thirteen concepts were clearly understood by 75 to 90 per cent. Thirty nine out of total of fifty concepts were clear to half of the children while rest of the ten concepts had clarity to only 25 per cent to 50 per cent children.

Classification of Concepts of Form 'C'

Table 2 and 3 depict the children's performance of concepts in Form 'C' in experimental and control group at different levels. All the 50 concepts of Form 'C' were categorized into A, B and C level based on the percentage of children performing these concepts in both the study groups. There were 24 'A' level concepts in experimental and 21 'A' level concepts in control group. These were the easiest concepts as judged by accurate performance of 75 per cent children. Second or 'B' level concepts are those, which were performed by 50-75 per cent of children. This level included 13 concepts in experimental and 18 concepts in control group. Third and last level or 'C' level concepts included remaining 13 concepts in experimental and 11 concepts in control group. 25-50 per cent children performed these in general.

Concept of 'Applications'

Table 4 represents the percentage of experimental group children having successful operations of the combinations of concepts of 'Applications' form in descending order. The table shows that first six concepts are the ones, which were clearly understood, by 80 per cent of experimental group children and there were four such concepts in control group (Table 5). Next 8 concept (experimental) and 6 concept

Table 2: Performance of experimental group children on concepts of Form 'C' (N=60)

S. No.	Concept	Frequency %	S. No.	Concept	Frequency %
'A' Level Concepts					
1	Top	59 (98.3)	26	Seperated	43 (71.6)
2	Away	58 (96.6)	27	Left	43 (71.6)
3	Through	58 (96.6)	28	Forward	42 (70.0)
4	Several	57 (95.0)	29	Farthest	41 (68.3)
5	First	56 (93.3)	30	Before	39 (65.0)
6	Behind	56 (93.3)	31	Corner	38 (63.3)
7	Always	56 (93.3)	32	Some,not many	37(61.6)
8	Most	54 (90.0)	33	Right	35 (58.3)
9	Over	53 (88.3)	34	Between	35 (58.3)
10	Beginning	53 (88.3)	35	Row	33 (55.0)
11	Front	52 (86.6)	36	Center	32 (53.3)
12	Side	52 (86.6)	37	Alike	31 (51.6)
13	End	51 (85.0)	'C' Level Concepts		
14	Next to	51 (85.0)	38	Narrowest	29 (48.3)
15	Part	51 (85.0)	39	Every	27 (45.0)
16	After	50 (83.3)	40	Different	26 (43.3)
17	Whole	49 (81.6)	41	Match	25 (41.6)
18	Bottom	49 (81.6)	42	Fewest	22 (36.6)
19	Half	48 (80.0)	43	As many	22 (36.6)
20	Widest	48 (80.0)	44	Medium size	21 (35.0)
21	Starting	47 (78.3)	45	Skip	20 (33.3)
22	Few	46 (76.6)	46	Third	19 (31.6)
23	Last	45 (75.0)	47	Pair	19 (31.6)
24	Below	45 (75.0)	48	Second	17 (28.3)
'B' Level Concepts			49	Other	16 (26.6)
25	Above	44 (73.3)	50	Never	15 (25.0)

Table 3: Performance of control group children on concepts of Form 'C' (N=60)

S. No.	Concept	Frequency %	S. No.	Concept	Frequency %
'A' Level Concepts					
1	Always	59 (98.3)	26	Side	39 (65.0)
2	Top	59 (98.3)	27	Part	38 (63.3)
3	Starting	58 (96.6)	28	Other	37 (61.6)
4	Next to	57 (95.0)	29	Away from	36 (60.0)
5	Behind	56 (93.3)	30	Few	36 (60.0)
6	Through	56 (93.3)	31	Farthest	35 (58.3)
7	Front	55 (91.6)	32	Separated	34 (56.6)
8	Several	55 (91.6)	33	Some,not many	34 (56.6)
9	After	54 (90.0)	34	Row	33 (55.0)
10	Bottom	52 (86.6)	35	Different	33 (55.0)
11	Over	52 (86.6)	36	Left	32 (53.3)
12	Most	51 (85.0)	37	Corner	31 (51.6)
13	Half	50 (83.3)	38	Medium size	30 (50.0)
14	Widest	49 (81.6)	39	Right	30 (50.0)
15	Below	48 (80.0)	'C' Level Concepts		
16	Before	48 (80.0)	40	Never	29 (48.3)
17	Between	47 (78.3)	41	As many	27 (45.0)
18	Center	46 (76.6)	42	Forward	27 (45.0)
19	Above	46 (76.6)	43	Second	26 (43.3)
20	First	45 (75.0)	44	Alike	23 (38.3)
21	Last	45 (75.0)	45	Narrowest	22 (36.6)
'B' Level Concepts			46	Third	22 (36.6)
22	Every	43 (71.6)	47	Match	21 (35.0)
23	Beginning	43 (71.6)	48	Skip	20 (33.3)
24	Whole	42 (70.0)	49	Pair	19 (31.6)
25	End	40 (66.6)	50	Fewest	17 (28.3)

(control) combinations are those, which have clarity to about 60-80 per cent children. Further 5 and 6 concepts; respectively have clarity to about 45 per cent children in experimental and control group settings. Rest of the 7 and 10 concepts of 'Applications' form was clearly understood only by 20-40 per cent or even less than that of children in experimental and control group respectively. Snow and Strobe (1991) in a study examined the development of mental rotation matching skills among six to eleven years old children. No sex differences were found but there was an effect for age with older children performing significantly higher. Younger children performed poorly on matching skills than older children.

Classification of concepts of 'Applications'

Table 4 and 5 represent the multiple concepts of 'Applications' form as divided in three levels on the basis of proportion of children performing the concepts. First level of concepts i.e. 'A' level include eight and six concepts that received accurate responses by more than 75 per cent of

experimental and control group children respectively.

'B' level or second category of concepts represents the concepts, which were responded by about 51-75 per cent children. These included seven concepts in experimental and six in control group. Rest of the eight and ten concepts was performed by 26-50 per cent experimental and control group children respectively, and was termed as 'C' level concepts. These concepts were the difficult ones for the children as these received less accurate responses. Three and four concepts respectively were the most difficult ones as they were performed by 25 per cent or less of experimental and control group children so they are termed as 'D' level concepts. In a study by Batra and Kaur (1993) it was found that the development of basic relational concepts occur in children between 3-4 years of age. It was found that more than 75 per cent of the respondents performed accurately on most of the concept items indicating that children of this age have a general understanding and mastery over these concepts. However, these concepts were found difficult to answer when used in combinations

Table 4: Performance of experimental group children on concepts of 'Applications'.

S. No.	Concept	Frequency	%
<i>A Level</i>			
1	Every and through	56	93.3
2	Longest and top	55	91.6
3	Across and bottom	53	88.3
4	Outside and inside	53	88.3
5	All, big, black	50	88.3
6	Shortest between tall	48	83.3
7	All, wide	45	80.0
8	Large over small	45	75.0
<i>B Level</i>			
9	Every center	44	75.0
10	In order	42	73.3
11	Below and above	41	70.0
12	Equal number	39	68.3
13	Each same as first	38	65.0
14	Equal number	36	63.3
15	Left end of middle row	33	60.0
<i>C Level</i>			
16	In order	31	50.0
17	Farther than one but not farthest	30	50.0
18	More than one and less than another	30	48.3
19	All, long, below	28	46.6
20	Taller than one and shortest than other	26	43.3
21	Left, first, ship	23	38.3
22	In order	21	35.0
23	Every one on right side	18	30.0
<i>D Level</i>			
24	Right and back	14	23.3
25	Second pair	14	23.3
26	Right and left	11	18.3

Table 5: Performance of control group children on concepts of 'Applications'.

S. No.	Concept	Frequency	%
<i>A Level</i>			
1	Top and longest	55	91.6
2	All, big, black	52	86.6
3	Every and through	50	83.3
4	Across and bottom	50	83.3
5	All, wide	47	78.3
6	Large over small	45	75.0
<i>B Level</i>			
7	In order	41	68.3
8	Equal number	39	65.0
9	Every center	37	61.6
10	Each same as first	36	60.0
11	Outside inside	34	56.6
12	Equal number	32	53.3
<i>C Level</i>			
13	In order	30	50
14	Below and above	30	50.0
15	Shortest, between tall	26	43.3
16	All, long, below	26	43.3
17	Left end of middle row	25	41.6
18	Every one on right side	22	36.6
19	Right and left	20	33.3
20	More than one and less than another	19	31.6
21	Second and pair	18	30.0
22	In order	16	26.6
<i>D Level</i>			
23	Left, first, ship	14	23.3
24	Taller than one and shorter than other	12	20.0
25	Right back	10	16.6
26	Farther than one but not the farthest	9	15.0

of 2 or 3. Concepts of match, pair, medium sized etc and alike were found difficult by children.

The results thus revealed that the performance level of both the study groups was almost similar. Ninety percent of experimental and control group children had clarity to eight and nine concepts respectively. Half of the children could adequately answer 37 concepts in experimental and 39 concepts in control group. There were 13 concepts, which were termed difficult by, experimental and 11 by control group children. Thus, it can be concluded that the trend of concept development was similar in both the study groups. Similar trend was observed in the performance of children on 'Applications' of BTBC confirming the similarity in concept development level of children in experimental as well as control group. Rani (1993) too corroborated the results of present investigation while assessing basic concepts among preschool

children. She concluded that 12 concepts were termed as 'C' level and 2 as 'D' level concepts by the children. The children could adequately answer rest of the 36 concepts during pretesting.

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