

Instructions for use of POLEIDOBLOCS in Free Construction sessions in schools



Introduction

Children think in action.

At the age of entering school, children are unable to focus for long on one subject; but it is natural for them to perceive several aspects of any given object at the same time; children respond to the world around them with a natural curiosity, they want to explore with all their senses, to construct, to take to pieces, to compare and to experiment.

Children do not use 'words' as tools for thought till much later, but they 'think' with the objects they handle just as later they will use logical thought to solve a given problem.

Poleidoblocs are designed to meet children just as they are when entering school and to go with them throughout school life. 'Learning' is something quite different from memorising. Children 'learn' in their own way: Poleidoblocs make it possible for them to combine several functions at the same time, focussed at a single point: while they work they acquire knowledge i.e. they learn.

In Infant classes children should be given opportunity for Free Construction sessions during actual school hours, for 2 – 3 terms before the teacher begins to utilise the knowledge the children have gained through Free Construction for actual teaching.

For Junior classes and upwards Poleidoblocs G should always be taken first. And worked with for at least one term. Poleidoblocs A can then be introduced and used until some familiarity with them has been gained.

Use of G. and A. then alternate; the teacher deciding on the rhythm according to the children's response. It should also be left to the teacher to decide how many Free Construction sessions the class and the individual child should be given before Poleidoblocs are used in actual teaching.

Introduction to the class

The full box should first be demonstrated to the whole class, the teacher removing the lid, and showing the children how nicely the blocks fit into the box, making a nice pattern. That is how they always have to go back after use.

The teacher should then in her/his own words say that these blocks are something quite different from ordinary building bricks; they come in different colours and different shapes (take one block of each kind out of the box and place them on the table in front of the box); explain that the blocks fit together in certain ways which the children themselves are going to find out, and that many different things can be made with them.

They are nice to touch and must be handled carefully; they are made especially for schools, so they are not playthings; each of the children will get their turn to use them.

The teacher then puts the blocks back into the box, each in its proper place, slowly and carefully, so that the children get the feeling of careful handling.

Administration

Free construction with Poleidoblocs should be part of ordinary classroom routine.

Two children a day should be selected to work with the blocks, at any time during school hours, when the rest of the class needs less attention.

Each child should work with a complete set and should be seated so that he cannot observe what the other child is doing.

The contents of one box of Poleidoblocs G should be placed in a casual heap on the table in front of each child, and the box removed; the teacher should say to the children,

“Now make with these whatever you like
and tell me when you have finished”.

The two children should then be left to carry on by themselves.

Time limit should be around 20 minutes, but if a child has been long in getting started and is in the process of finishing his construction, he should be allowed to do so, but the time should be never more than ½ hour in all.

If a child has not completed anything within this time, he will not that day be able to do so; many finish in less than the given time.

While the children are working, the teacher should devote as much time as can be spared to observe the way in which each child works in order to be able to fill in the Record Form.

When a child has finished, it is the teacher's task to find out what the child has intended to make, if anything. The teacher should avoid leading questions, and say something like, “this looks very interesting, would you like to tell me about it?”

Some children may feel that a certain response may be expected of them, being ‘school work’ (a ‘right’ or ‘wrong’ response); it is the teacher's task to reassure any children who seem to feel like that; tell them it is a ‘making-things-time’ and a ‘finding-out-time’.

Take time enough to talk to the child about his work, so he feels it to be important.

The blocks should then be put back into the box in the correct order; most children like doing this.

By having two children working with the blocks each day the whole class should be covered in about a month's time; then start again in the same order till they have all made

six-seven responses recorded on the Forms. It might be advisable to select one girl and one boy working at the same time, when possible and to make a different combination of the two children selected as the next 'round' starts.

Record Forms

One Record Form for each child.

1. Information about the child and the teacher's comments, if any (for instance slow, backward, unable to concentrate, bright, quick etc. in regard to other subjects).
2. Date of session.
3. Attitude at beginning and end of session should be noted.
4. Some children start sorting the blocks; if so this should be noted and described on the back of the Form.
5. Type of construction according to its overall shape; some move blocks about; others experiment with how many of these go to make this, etc.
6. Final result. Objects include everything given a name; external scenes may be towns, villages, gardens, stations, rocket sites etc; interior scenes include anything inside a building, rooms with furniture/people, stable with horses, garages with cars etc; phantasy anything non-realistic. Abstract includes everything not given a name; asymmetry may be intentional; amorphous means anything without a 'gestalt'.

The mode of construction is indicated in the next three columns; a story may be related, please record on back of the Form.

7. The teacher's estimate should be based on his/her view of the completed structure, regardless of the child's ability in other subjects.
8. Name of structure if given by the child and short description.
9. Any questions made by the child during his session concerning the blocks should be answered by the teacher and the questions recorded on the back of the Form.

Ask the child if he likes what he has done; (some say No).

10. Time taken.

All queries from section 3 – 7 inclusive and first column of section 9 should be marked with a tick in the relevant column.

It is important to record the children's remarks while at work if they are relevant to what they are doing.

Please remember to indicate on the Record Form whether G. or A. blocks are used.

1. Any spontaneous remarks made by child } on back of sheet, please
 2. Any other observations made by teacher }

Pleidoobles 9/7 Free Constructions		Attitude		Type of construction		Final result		Teacher's estimate		General	
School		start	and	did	he	Represent. Abstr.		estimate			
		Date of construction									
		eager									
		indifferent									
		bored									
		indifferent									
		stopped before time									
		not want to stop									
		compare sizes									
		" shapes									
		arrange blocks in any order									
		in height (castle etc.)									
		in width (bridge etc.)									
		distributed on surface as									
		village, town, etc.									
		actual moving blocks, as									
		trains, cars, etc.									
		experimenting									
		objects									
		external scenes									
		interior scenes									
		people / animals									
		fantasy									
		symmetrical									
		asymmetrical									
		amorphous									
		one completed structure									
		several attempts									
		nothing completed									
		any story contents									
		any name given									
		brilliant execution									
		good "									
		average "									
		poor "									
		short description of construction									
		did he ask questions									
		was he pleased with the result Yes / No									
		time taken in minutes									

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P.T.O.

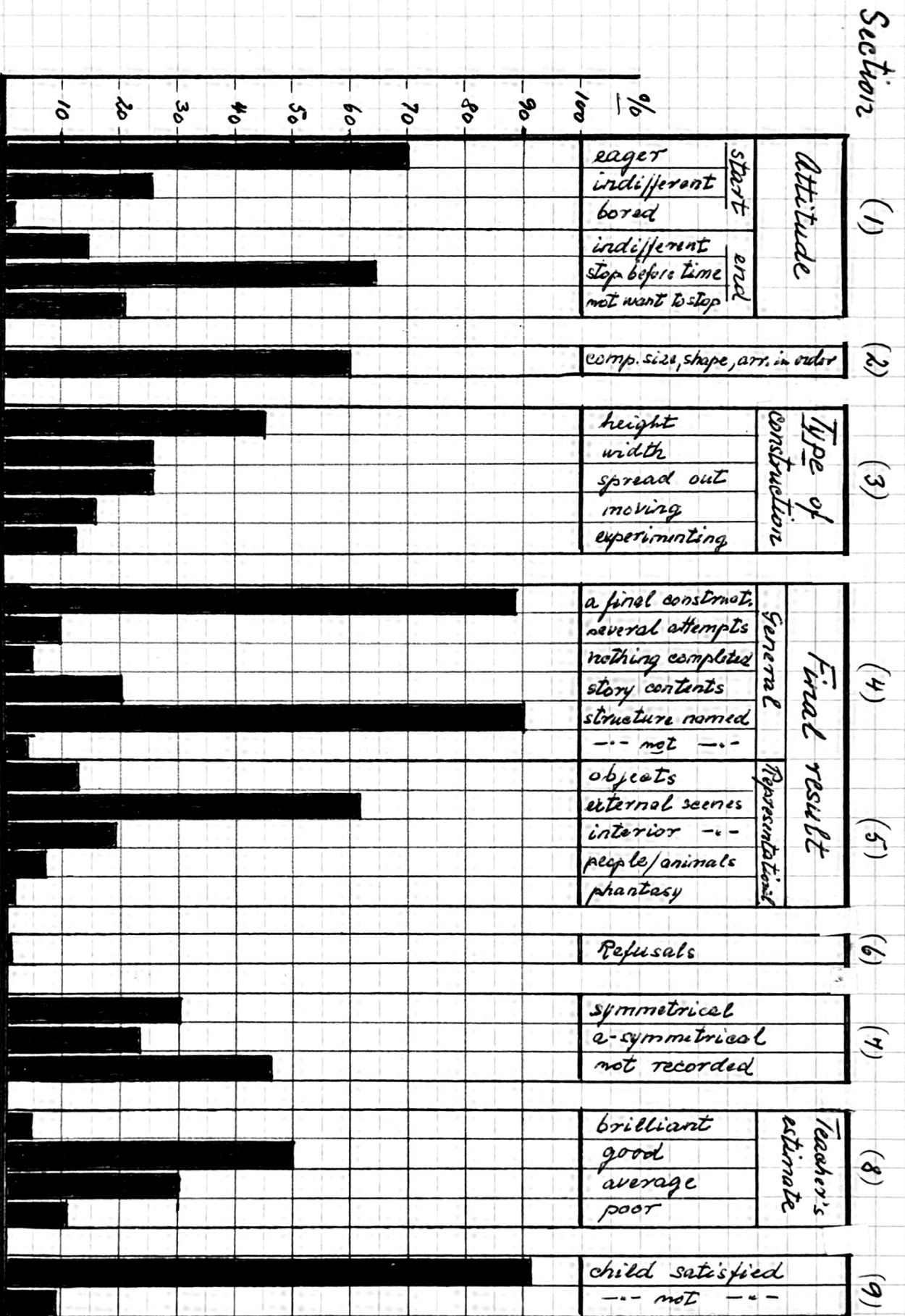
Record Form for sit sessions of Free Construction

(1)									
Pileidobloes									
G / H									
school									
class									
teacher									
name of child									
boy / girl age									
general comments on child by teacher									
date of session									
(2)									
Attitude					start				
					and				
eager									
indifferent									
bored									
refused									
indifferent									
stopped before time									
not want to stop									
(3)									
at start did he					compared shapes/sizes arr. blocks in any order				
(4)									
Type of construction					in height				
					in width				
					spread out				
					enclosure (s)				
					experimenting				
(5)									
Final results					in general				
					representational				
construction (s) completed									
several attempts									
nothing completed									
story contents									
structure named									
-- not --									
objects									
external scene (s)									
interior --									
people / animals									
fiction / fairy tale									
(6)									
if single construction, was it symmetrical									
(7)									
Name of construction & description as given by child					(back of sheet can be used also)				
(8)									
Teacher's estimate					brilliant execution				
					good --				
					average --				
					poor --				
(9)									
child satisfied with his result					-- not --				
(10)									
Time taken in minutes									

1. Any spontaneous remarks made by child
2. Any other observations made by teacher

Chart I Free Construction with Polidobles 5.

(Hanson experiment 1966/67)



Analysis of individual responses from 5-6 year old Infant School children.

57 boys with 180 responses
 72 girls -- 250 --
 129 children of 430 responses

Chart II

Free Construction with Polydroids G.

(Hahn experiment 1966/67).

Section (1) (2) (3) (4) (5) (6) (7) (8) (9)

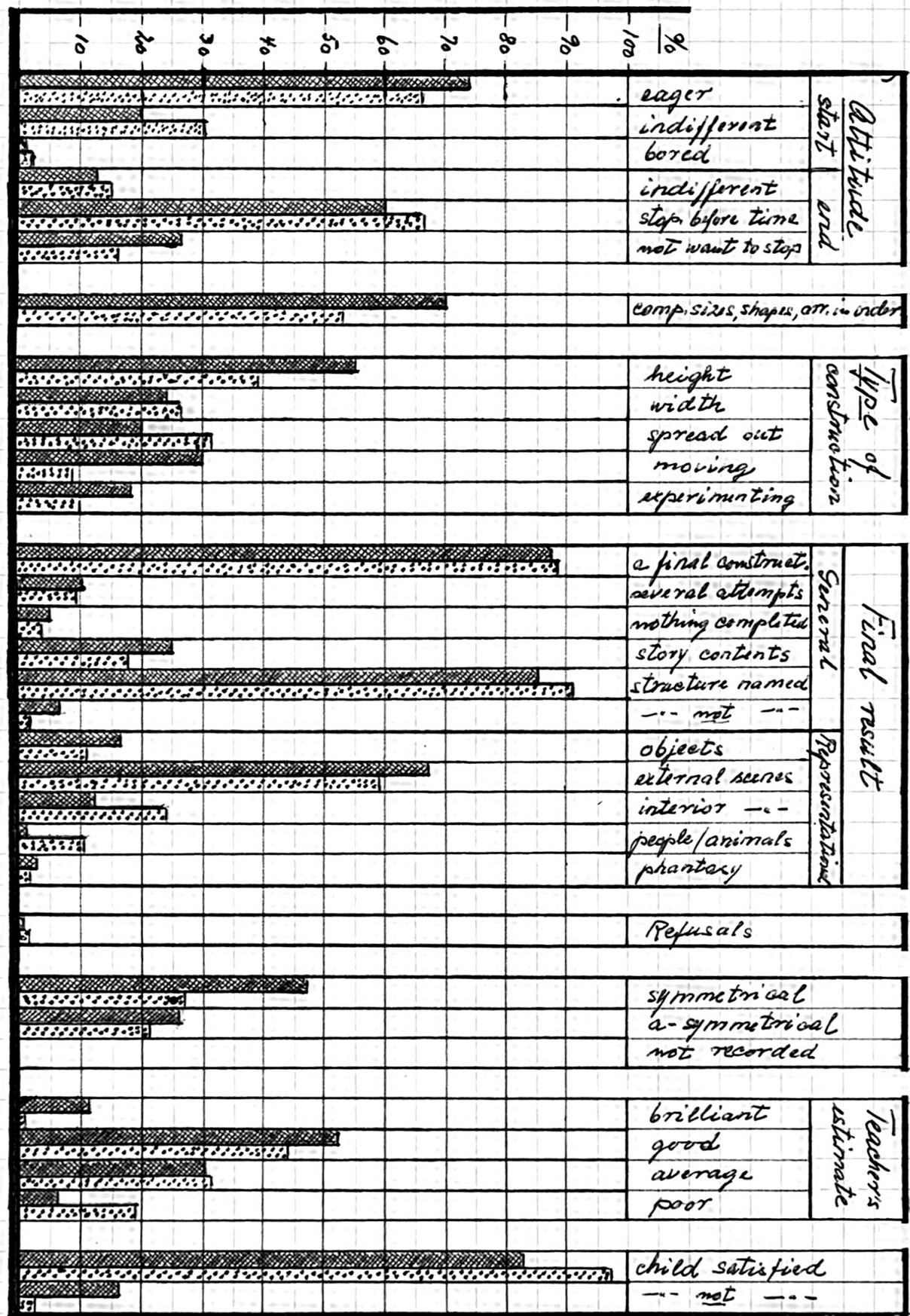


Chart I analysed into:-

boys' responses
girls' ---

diagrams
for total responses

I individuals

II & groups

Group responses.

5-6 year olds.

%	Attitude		Type of construction	Final result		Teacher's estimate	Group work
	start	end		General	Representational		
100	eager			a final construction	objects	child satisfied	worked on his own
95	indifferent	indifferent		several attempts	external scene	not	with others
90	bored	stop before time		nothing completed	interior	poor	copying
85		not want to stop		story contents	people/animals		silent
80				structure named	fantasy		discussed w/ others
75				not			
70							
65							
60							
55							
50							
45							
40							
35							
30							
25							
20							
15							
10							
5							

Total 490 rep.

girls 245
boys 245

Individual responses. 5-6 years olds.



total 430 responses

250 girls
180 boys

diagrams for
boys' & girls' responses

I Individual
II in groups

boys	180
girls	<u>250</u>
total	430.

boys
girls

Final result

Contract

Aggravated

Teacher's Estimate

Group work

Poles

Blalock : Harlow

Total responses in percentage
comparison

Blaby 5-6 years olds.

girls resp. total 285
boys = 265
490

combined
average
response

proportion
completing

proportion
completing

start: cage 188 girls + 229 boys = 417 of 490 resp. = appx.
undiff. 35 " + 31 " = 66 of 490 " = "
bowl 0 " + 5 " = 5 of 490 " = "

undiff. 79 girls + 73 boys = 152 of 466 resp. = "
end: slope b. kin 71 " + 100 " = 171 of 466 " = "
not w. st. 70 " + 73 " = 143 of 466 " = "

compared
size, shape
c. arr. in order
46 girls + 65 boys = 111
104 " + 117 " = 221
1 " + 7 " = 8

height
width
spread
incomplete information

moving
experimenting
12 girls + 14 boys = 26 of 490 resp. = appx. 5% ✓
not recorded

objects 8 girls + 15 boys = 23 of 490 = appx. 5% ✓

ext. rec. 211 " + 251 " = 462 of 490 = " 94% ✓

interior " 11 " + 0 " = 11 of 490 = " 2% ✓

people/animals 4 " + 0 " = 4 of 490 = " 1% ✓

phantasy 2 " + 2 boys = 4 of 490 = " 1% ✓

a final structure
rev. attempt 222 girls + 261 boys = 483 of 490 resp. = appx. 98% ✓
(not reliable information)

nothing compl. 3 girls + 4 boys = 7 of 490 = " 1% ✓

strong content 1 girls + 3 boys = 4 of 490 = " 1% ✓

name given 229 girls + 265 " = 494 - 490 = " 100% ✓

not recorded

not recorded

refusal 1 girl (%3.61)

to

refusal

group work:

work on h. own 172 girls + 199 boys = 371 of 466 = appx. 80% ✓

" w/ others 44 " + 48 " = 92 of 466 = " 20% ✓

copying 0 " + 1 " = 1 of 466 = " 1% ✓

silent 0 " + 3 boys = 3 of 466 = " 3% ✓

disc follow 192 " + 231 " = 423 of 466 = " 91% ✓

Satisfied 120 girls + 154 boys = 274 of 490 = appx. 56% ✓

Not " 105 " + 111 " = 216 of 490 = " 44% ✓

120 girls + 154 boys = 274 of 490
105 " + 111 " = 216 of 490

boys 80% girls 80%

boys 20% girls 20%

boys 4% girls 0

boys 3% " 0

boys 94% " 90%

boys 58% girls 58%

boys 42% " 47%

(X)

satisfic

Not --

Hurlow 5-6 year olds.		girls resp. 250 boys 180 430	combined average response	comparisons comparatively:	
30%	ages: 168 girls + 134 boys = 302 of 430 resp. =	70%	✓	boys 71% girls 67%	
15%	start indiff: 78 " + 36 " = 114 of 430 =	26%	✓	boys 26% girls 30%	
0%	boyl: 7 " + 2 " = 9 of 430 =	2%	✓	only 2 boys against 7 girls	
33%	indiff: 29 girls + 20 boys = 49 of 344 resp. =	14%	✓	boys 13% girls 15%	
32%	end step. b. time: 132 " + 88 " = 220 of 344 =	64%	✓	boys 64% girls 67%	
32%	not w. st: 35 " + 40 " = 75 of 344 =	22%	✓	boys 27% girls 16%	
girls 70%	compared sides & shapes in ans. in words	$\left\{ \begin{array}{l} 47 \text{ girls} + 42 \text{ boys} = 89 \\ 47 \text{ girls} + 42 \text{ " } = 89 \\ 38 \text{ girls} + 41 \text{ " } = 79 \end{array} \right\}$ 267 of 430 resp. =	60%	✓	boys 70% girls 50%
	in height	94 girls + 100 boys = 194 of 430 resp. =	45%	✓	boys 55% girls 38%
	in width	67 " + 43 boys = 110 of 430 " =	26%	✓	boys 24% girls 27%
	spread	78 " + 35 " = 113 of 430 " =	26%	✓	boys 20% girls 31%
girls 5%	moving	20 " + 54 " = 74 of 430 " =	17%	✓	boys 30% girls 8%
	experimenting	26 " + 32 " = 58 of 430 " =	13%	✓	boys 18% girls 10%
girls 4%	objects	29 girls + 29 boys = 58 of 430 resp. =	13%	✓	boys 16% girls 13%
girls 94%	external sc.	147 " + 121 " = 268 of 430 resp. =	62%	✓	boys 67% girls 59%
" 5%	interior	59 " + 23 " = 82 of 430 resp. =	19%	✓	boys 13% girls 24%
" 2%	people/animals	28 " + 3 " = 31 of 430 resp. =	7%	✓	boys 2% girls 11%
" 1%	phantasy	1 " + 4 boys = 5 of 430 resp. =	1%	✓	boys 2% girls 0%
girls 98%	a final structure	220 girls + 157 boys = 377 of 430 resp. =	88%	✓	boys 87% girls 88%
	resembl. att.	28 " + 19 " = 47 of 430 " =	10%	✓	boys 18% girls 9%
girls 1 1/2%	nothing compl.	11 " + 9 " = 20 of 430 " =	5%	✓	boys 5% girls 4%
" 1/2%	story contents	42 " + 44 " = 86 of 430 " =	20%	✓	boys 24% girls 17%
but on	name given	227 " + 153 " = 380 of 430 " =	90%	✓	boys 85% girls 91%
	symmetrical	68 girls + 77 boys = 145 of 430 resp. =	30%	✓	boys 43% girls 27%
	asymmm.	52 " + 47 " = 99 of 430 " =	23%	✓	boys 26% girls 21%
	additions	not recorded = 18% of 430	4%	✓	0
	brilliant	2 girls + 21 boys = 23 of 430 resp. =	5%	✓	boys 12% girls 1%
	good	110 " + 94 " = 204 of 430 " =	50%	✓	boys 52% girls 44%
	average	79 " + 40 " = 119 of 430 " =	30%	✓	boys 32% girls 32%
	poor	45 " + 13 " = 58 of 430 " =	13%	✓	boys 7% girls 18%
to	refusal	4 girls + 2 boys = 6 of 430 =	1 1/2%	✓	boys 1 1/2% girls 1%
girls 80%	(X) structures completed, but not named: girls 5				
girls 20%	boys 12				
girls 0	17 of 430 = 4%				boys 7% girls 2%
" 0					
" 90%					
girls 53%	satisfied	242 girls + 149 boys = 391 of 430 =	91%	✓	boys 83% girls 86%
" 47%	Not --	8 " + 31 " = 39 of 430 =	9%	✓	boys 17% girls 3%

named 227 ✓
 not -- 5 ✓
 nothing compl 11 ✓
 refusal 11
 227
 247

Blaby

1961.

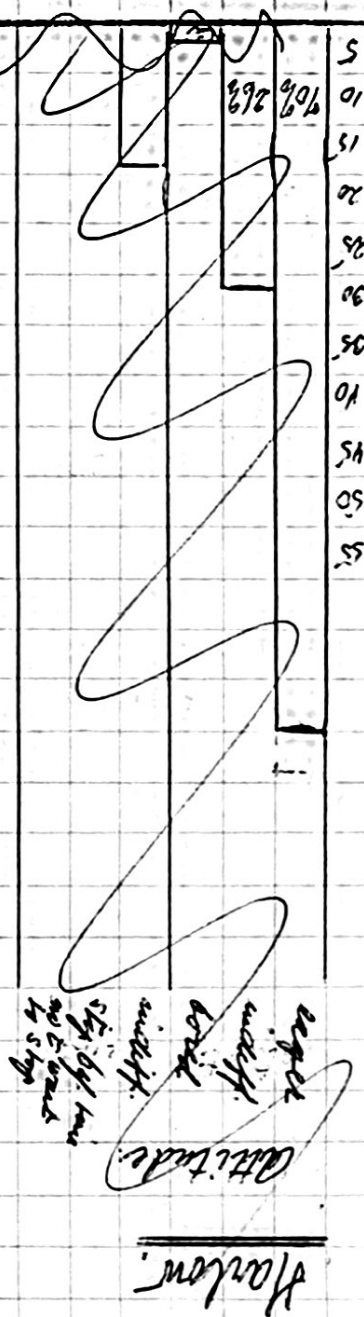
group sessions

Spring term 1961
Summer " 1961

[illegible]

Constructions named
analysed into categories

Blaby



Individual resp (Harlow) 1966/67

Comp.

- 34 { 4 houses (1 American)
1 building w/ fountain
13 churches (one on wheels
" where they go for tea)
7 factories
3 shops
1 farm
1 garage
1 parking station
1 Power station
1 Radio Station
1 prison

- 61 { 1 wedding reception
29 castles
3 enclosures w/ towers, places
6 forts
11 towers (control, patrol etc)
1 museum
2 Tower of London
1 Big Ben, River Thames
1 London Bridge
4 Tower bridge
2 Tower of Pisa
1 Harlow hospital, ambulance

- 21 { 1 tunnel
1 motorway
6 train lines
2 bridges
2 swimming pools
2 air fields
2 aeroplanes (one Thunderbird)
2 cars
1 ship (w/ rockets aboard)
1 aircraft carrier
1 lift in a shop

- 6 { 2 milk machines
1 bulldozer w/ a plough
1 round-about w/ cars
1 'sort of bed'
1 Toy Town village

- 22 { 19 rocket stations, rockets, missiles
launching pad, radar, factory for rockets
1 secret compartment of rocket
1 Rocket take-off fr. Cape Kennedy
1 Battle 10 rockets station

- 3 { 1 space bulldozer w/ instruction tower
1 two planets w/ roadway between
1 space control engine

- 1 { 1 oiling station & oil tower

- 4 { 1 Witch's house
2 Galeb station & headquarters
1 Dr. Syn's mch. game & drill for oil

group responses 1961

- X { 54 houses (one with 2 wells)
3 bungalows
7 churches
18 shops
7 farms (one w/ rockets in)
14 garages (" - - -")
1 petrol station
1 power station
1 engine shed
1 cinema
2 shelter & shop ("Bus?")
1 stable
1 garden
1 bull hut
2 pigsties (one w/ guns outside)
2 chimneys (one smoking in
top of tower)
1 old building bombed down

- 40 { 9 castles
4 'japanese' forts
2 sentry boxes (one of a bridge)
22 towers (1 w/ bridge under
2 Blackpool)
X { 3 bells fixed together

- 56 { 5 tunnels
3 roads (2 with shops)
7 trains
7 bridges (1 w/ house
1 w/ train shed)
5 steam rollers
9 lorries (one w/ firework)
1 car
3 railway station
5 ships/boats (one 'police')
6 Japanese warships
4 torpedoes (3 w/ houses)
1 lift w/ 'things' on

- 12 { 2 slides
1 round-about
1 saw-saw
1 Toyland town
1 Ice cream trolley
2 Record players
1 skate
X 1 mouse trap
X 1 daddy's tool box
1 'sand-castle'
all fixed together

- 39 { 37 rockets (one w/ 'bricks')
2 rocket stations

- 1 { 1 'Christmas' house

CONSTRUCTIONS NAMED

Analysed into categories.

BOYS

Group responses (Blaby 1961)

*environment
ordinary
surroundings*

(117)

- 54 houses, (one with 2 wells)
- 3 bungalows
- 7 churches
- 18 shops
- 7 farms (one with rockets in)
- 14 garages (one with rockets in)
- 1 petrol station
- 1 power station
- 1 engine shed
- 1 cinema
- 2 shelter and stop (bus?)
- 1 stable
- 1 garden
- 1 bull hut
- 2 pigsties (one with outside)
- 2 chimneys (one smoking in top of tower)
- 1 old building bombed down

*places visited
or heard of*

(40)

- 9 castles
- 4 'Japanese' forts
- 2 sentry boxes (with with a bridge)
- 22 towers (1 with bridge under, 2 Blackpool)
- 3 wells fixed together

traffic

(56)

- 5 tunnels
- 3 roads (2 with shops)
- 7 trains
- 3 railway stations
- 7 bridges (1 with houses, 4 with train shed)
- 5 steam rollers
- 9 lorries (1 with fireworks)
- 1 car
- 5 ships/boats (1 'police')
- 6 Japanese warships
- 4 torpedoes (3 with houses)
- 1 lift with 'things' on.

Misc.

(12)

- 2 slides
- 1 roundabout
- 1 seesaw
- 1 Toyland town
- 1 ice cream trolley
- 2 record players
- 1 shute
- 1 mousetrap
- 1 daddy's tool box
- 1 daddy's sand castle.

space

(39)

- 37 rockets (with with bricks)
- 2 rocket stations

play

(1)

- 1 'Christmas' house

(265)

CONSTRUCTIONS NAMED

Analysed into categories.

GIRLS

Group responses (Blaby 1961)

<i>environment, (ordinary surroundings)</i>	62	houses
	4	bungalows
	30	churches
	1	factory
	9	shops (1 with stairs and toilet)
	3	farms
	9	garages
	3	cafes with toilets
	2	flowers in garden
	1	'little town)
	1	station
	6	bus stop/shelters
	1	platform
	1	chimney
	2	stables (1 with houses)
	1	people/house and tower
	1	path
	3	birds and fowl houses
	1	caravan
	1	pigsty
<i>places visited or heard of</i>	1	jail
	1	'mummy writing'
<i>group effort</i>	1	1 dentists surgery with 3 rooms
	16	castles and palaces (1 big and 2 baby castles)
<i>Traffic</i>	4	towers
	5	yard containing sheds, house, a well, floor boards and walled garden
	2	tunnels
	3	trains
	3	bridges
	2	cars
	1	fire engine
	1	bus
	1	army jeep
	1	bicycle
<i>Space</i>	8	boats/ships
	1	lift with 'things' on
	28	rockets (3 with toilets, 3 with houses)
	2	record players
<i>Misc.</i>	1	dustbin
	1	bomb
	1	toad stools
	1	crab
<i>fiction / fairy tale</i>	1	'Christmas' house
	1	Santa Claus reindeer

(229)