

Interaction between girls and boys: working with construction apparatus in first school classrooms

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*LEAC started in 1987 and in 1988-89 consisted of 8 local authorities. Ealing was one of the original members. Thirty two Ealing schools were in the project in 1988-9. This article was originally published in the Ealing Gender Equality Team's Occasional Paper No.2 edited by Hilary Claire.

□ Introduction

During 1988 and 1989 I was Primary Advisory Teacher for Equal Opportunities (Gender) in Ealing. At the invitation of teachers I spent quite a lot of time in different classrooms, observing the ways boys and girls interacted. In each case I was able to take detailed notes in a way which is impossible for teachers with sole responsibility for their classes.

In addition to the observations, I was able to make a short video in a nursery and a reception class which was invaluable in refining and extending my analysis of interactions. This paper is based on observations in three First Schools, all of which had committed themselves to developing their equal opportunities practice and policy, through membership of the Local Education Authorities Consortium for Equal Opportunities*.

Each school in the project had undertaken to set itself a definite programme in working on equal opportunities issues. The three schools which feature here (of 32 in Ealing which belonged to the Consortium) felt that detailed observation of children's interactions would be an important starting point for understanding the problems and setting realistic goals. The expectation was that I would support individual teachers in understanding what was going on in their classrooms, but there was a further commitment to give feedback to the whole staff and facilitate reflection and discussion on the nature of young children's interactions.

This paper is not an academic report on a research study — for the work was never undertaken in that context — but a working document. There is no review of the literature, no particular hypotheses to be tested and no attempt to meet academic criteria. It is something for practising teachers to consider. I hope it will be read in that spirit.

The observations share a common context, namely that in all classes some children were involved in construction play. I have a particular personal interest in how girls fare in design technology; in 'free choice' construction apparatus has traditionally been a boys' domain. The teachers I worked with were also concerned to know in more detail what was happening to girls given the opportunity to work with construction apparatus, and to understand the nuances of interaction and engagement with the material, which might facilitate empowering girls in this curriculum area.

□ The schools and classes

Ealing is a large and diverse borough spanning Southall in the West, Greenford in the North, Hanwell to the South, and Acton to the East. Each quadrant has its own 'flavour' and characteristics and different ethnic and social composition. The pseudonyms for the three schools bear no relation to their original names or any local features. All three classes were taught by white English speaking women.

Falcon First School is in Southall and has 99.9% Asian intake, mostly Punjabi Sikhs. Many of the children are bilingual in their mother tongue and English, but many need support for English. I worked in the reception class — 5-6 year olds, and all the children were Asian in origin. English

was the second language for all, but not one child was heard using her or his home language during the observation period.

Eagle Nursery and First School is in Acton and has a more mixed intake. In 1988-9 65% were 'white indigenous' with English as their first language, about 10% Afro-Caribbean in origin, 10% Asian though not as homogeneous in origin as the Southall school, 6% Middle Eastern with Arabic as their first language, 4% 'other European' e.g. Spanish, Serbo-Croat, French), 3% African and 2% Chinese. In addition, the intake is of very mixed social composition. The children I observed were in the final year of the First school, and were 8 years old. Their ethnicity/'race' and English language proficiency is noted in the transcript.

Kestrel First School is in Hanwell, and like Eagle has a mixed social composition and ethnicity. Here 62% were classified as 'white indigenous' with English as their first language, 17% Afro-Caribbean, 11% Asian from different groups, 10% 'other' — e.g. Polish, Afghani, Japanese, Iranian. My observations were in a reception class of 5-6 year olds. The 'race'/ethnicity and English language proficiency of the individual children observed is noted in the transcript.

I spent nearly one hour in each classroom. The children did not know me, and I did not attempt to be 'a teacher' but was introduced as someone who was interested in what they were doing. However who and what I would observe was negotiated with the teachers in advance.

In Falcon School, the teacher was interested in how boys and girls would interact and work together with big bricks, placed outside the classroom in the playground, on a large mat. In Eagle School the teacher asked me to observe a mixed group of boys and girls given a specific construction task using junk, and also to observe a group of girls using big bricks outside the classroom. I also made notes about a girl who was set to work on her own with a group of boys. In Kestrel School the teacher was interested in specific children in a free choice afternoon where construction kits, water, cutting and pasting, drawing and other activities were available.

My method, as the observation notes show (reproduced in the appendix), is not to try and mark up ready-prepared charts, but to note as much as I can every few minutes. I aim to be detached and non-judgemental (and no prior knowledge of the children helps!) but acknowledge that another observer might not reproduce my perception of events. There is no such thing as a truly objective stance. I responded to children when they talked to me, but did not initiate anything with them. At Falcon School I abandoned the detached observer role when a fight broke out and no other adult was around!

In writing this paper I have tried to pull common threads from the three transcripts, but I have discussed each issue separately for each school. These are the issues which I have addressed:

- a. Do girls choose construction apparatus freely? What is their concentration span?
- b. What are interactions like between boys and girls in mixed groups?
- c. Relationships with adults

- d. How do girls play with construction apparatus?
- e. Encouraging positive interaction between boys and girls
- f. Empowering girls

☐ a. Do girls choose construction apparatus freely? What is their concentration span?

1. Falcon (Reception — 5-6 years old)

Initially three boys and three girls were chosen by the teacher to go and build with the big bricks which were on a large mat outside the classroom in the playground. They were asked to make a vehicle that floats on water. In the course of the session, two more girls arrived voluntarily, and started to build a house; this soon became the main model for all the girls, including the original ones. All the girls stayed to the end of the session (45 mins) despite considerable disincentives which are discussed later.

2. Eagle (Y3 First school, 8 years old)

Two girls and four boys were chosen to build a marble run from junk, and four girls were chosen to go and play with big bricks outside the classroom in an entrance area (the classroom is in a prefab hut). The two girls on junk stayed the course to the very end when the bell rang for break. They seemed to want to continue after break. The four girls on the bricks wandered inside after about 20 minutes; as the transcript shows, the nature of their work would hardly reassure that they were involved in construction. No other girls came to join or replace them. But this was a class with very few girls.

3. Kestrel (Reception — 5-6 years old)

This class gives us more information about this particular issue, since the children had a free choice and weren't allocated to activities by the teacher. Four girls freely chose the construction apparatus on the carpet during the session (compared with four boys). One of the girls, Kavita, did little and soon wandered away (though the interaction analysis (b) gives some insight about why). Another girl, Karleen, showed great persistence and concentration and Michelle and Julianne, who arrived half way through the session also stayed till they were told to clear away for playtime.

Though observations that I have made elsewhere confirm that construction is generally a boys' domain, and that girls neither choose construction nor stick at it, these three transcripts offer important counter stereotypes. They show that some girls may be more persistent and interested than we might have credited; they also alert us that where girls leave, it may be because they are forced out, or don't have the necessary skills of self assertion to hold their own in boys' more dominating presence.

□ b. What are interactions like between boys and girls in mixed groups?

i. Positive — collaborative, supportive, sharing

Falcon: There was no evidence in this group of girls and boys choosing to work on a joint project, making mutually supportive remarks about their models or collaborating in any way. Girls and boys could not even share the resources without snatching, hoarding and fighting. It was interesting that this competition and aggression was not between children of the same sex, only *intersex*. So one cannot conclude that this was a particularly belligerent group of children, unable to co-operate with anyone. It was the open aggression between boys and girls that was distinctive.

Eagle: Peter P, (to whom I will return later) was ready to work with Alison and Claire, but was deterred by Peter K, who wanted them to work as (male) partners. Initially PP kept in verbal contact with the girls, but when I returned after 20 minutes, I noted that there was no collaboration between boys and girls, who were working separately. Craig, Dipak and David all spoke to Alison and Claire, but it was to take masking tape off them, tell them what to do or offer uninvited and unwanted help; Dipak tripped over their model and broke it. Craig twice attempted to 'help' Alison and Claire, but it would seem that he was actually assuming superior knowledge which they resented and rejected. Alison and Claire only initiated conversation with boys to protest at the masking tape being taken, or against uninvited advice.

Kestrel: There was no evidence of collaboration or sharing — or even conversation — between boys and girls in the construction play. Yassar asked Michelle for approval once — and got no reply. Nadia's experience at the water tray was one of the few instances of positive collaborative play between boys and girls. Interestingly, on other occasions that I have witnessed for positive collaboration between the sexes the water (and sand) trays have also been the context in the first school and I return to this in the section on encouraging positive interaction.

It was striking that in all three classrooms the girls helped each other, and worked collaboratively, and that boys tended to work individually, typically not even talking much to each other.

ii. Negative — competitive, aggressive, fighting for resources, invasion of space, patronising, spoiling each other's work, ignoring friendly advances

If the category of collaboration and supportive behaviour between boys and girls seems sadly empty, the same cannot be said for more negative aspects of interaction.

Falcon: This was the most extreme example of interaction degenerating into physical abuse that I have come across, including other occasions not recorded here. I noted quite early on in the transcript that the girls were 'getting competitive to get the bricks before the boys get them', that a boy had snatched from a girl and she snatched back, and that he then broke her model and made to hit her. Interestingly, she responded by laughing at him and pushed at his model without harming it, though this earned further retribution. The group then took sides according to sex. A fight developed

between the boys and two girls, and finally a well-aimed brick hit a girl on the head and she started to cry. I removed the boy who had done this, but this did not cure the deteriorating situation. 'Stealing' of resources and physical harassment of girls continued. The girls complained to me and also tried to retaliate and get their bricks back, but on the whole, boys got their way 'gleefully'.

This is a distressing account and the teachers were naturally upset — as I was. However I think there is some important evidence here to counteract a common stereotype of Asian girls', passivity and deference to male dominance (in my view erroneous). The girls did their best to hold their own. They didn't give up or run indoors. Though they quite reasonably complained to me, they didn't hand over dealing with the boys to me. They stuck together and met aggression with some spirit. What one needs to consider is how to empower them in such situations, as well as how to deal with the boys' unacceptable behaviour.

Eagle: Here a much more subtle attempt to dominate resources and space occurred, tempered not just by different male personalities, but by the quiet resistance of Alison and Claire in partnership. Craig was noted taking the girls' masking tape without asking, and later assuming that his help and advice would be appreciated. It was not, and one might infer that he got his own back by collecting and hoarding nearly all the cardboard tubes which were the main resource for the group. He and Peter K, who had earlier snatched masking tape from Alison, now started fencing with the tubes right across Alison and Claire's working space. In contrast the girls regarded neither resources nor space as 'their's' to be used without consideration for the boys.

A girl without support — Louise: Louise was not chosen for either the bricks or junk modelling activities. In a class where boys outnumbered girls by 2:1 she was on her own in a group with three boys, asked to build multilink models. Outnumbered and without support from another girl and lacking the assertive or confident characteristics of some of her peers, Louise fared badly. Her cubes were snatched, she was jostled, stretched across and finally defeated in a tug of war against two, and then four boys who joined forces against her. Not surprisingly, I noted that Louise gave up and was soon to be found in a corner with a book.

Kestrel: I noted that Yassar and David had positioned themselves round the apparatus so that they controlled it and it was quite difficult for anyone to reach anything without the boys making space. They failed to do so for any of the girls who chose the construction activity. Almost immediately that Kavita had collected some apparatus. Yassar took it off her. She was left awkwardly straddled and balancing across bricks trying to reach the bag of cogs. David, apparently as oblivious to her presence as Yassar, later appeared, reached right between her legs for the bricks he wanted. Yassar went away for a while and Kavita started to play with his model, but on returning he took it off her without a word, pushed her out of the way and sat with his legs behind him so that his feet and legs were literally in her lap, and she was pushed against a bookshelf.

Soon he pushed his truck into Karleen's legs — as if she was invisible. Later Joel and David stretched four bolts across Michelle who had joined the group. The girls' strategy was to collect the apparatus they wanted little by little, and to remove it to a far corner of the carpet which fortunately was big enough for them to continue uninterrupted, though disadvantaged by distance from the apparatus itself.

In all three schools I noted that by the end of the sessions, girls and boys were working without reference to each other, often with their backs to each other, and that girls had to contend with interference of varying degrees from boys, which was not reciprocal.

□ c. Relationships with adults

The children at all three schools had little interaction with their teachers once they had been chosen, or themselves chosen their activity.

Falcon: The children were outside and there was no contact with the teacher herself during the session. The girls complained to me about the boys when their aggression became intolerable and I intervened since there were no other adults about. I noted that even while the aggression between boys and girls was at its height, boys made 'teacher pleasing' remarks to me. Privately I noted that a teacher who was unaware of what had been happening, and seeing only the results of the building, could well have reinforced the boys for their 'good models' and done nothing to undermine the methods they had employed to achieve them.

Eagle: After the teacher called across to Craig to leave Alison and Claire alone, Alison also told Craig to go away.

The four girls at the big bricks: One of the girls, Ranuka, told me a long story about the house they had made with detailed descriptions of the sleeping and eating arrangements. Interaction with me was an extension of the play that was going on between themselves. Since I was not in a 'teacher role' I made no attempt to guide them or make any suggestions. However, as I discuss in a later section, teacher intervention might have been effective in developing the girls' work in more stimulating directions.

Louise: The transcript shows that until her brief conversation with her teacher, Louise had been having a poor time. A few minutes later she tried again to get the teacher's attention, but failed. The teacher was well aware of the problem and concerned about how to give children like Louise a positive experience. We agreed that putting a girl like this on her own with boys was probably not productive, and that as far as possible she should be paired with another girl, or in a group of mainly girls. If she was to be with boys, then the dynamics should be carefully considered and monitored.

Kestrel: There was no particular instance of the teacher/adult intervening in the children's interactions.

□ d. How do girls play with construction apparatus?

There are two aspects to this section which I want to explore: firstly, the nature of interactions between girls themselves; secondly, how they use the apparatus — namely issues of skill and capability.

i. Interactions between girls

Where interactions between boys and girls were at best neutral, and at worst competitive and non-supportive, all the interactions between the girls observed on these three occasions were positive. The girls helped each other, admired each other's work, and often worked together on joint projects.

Falcon: While the boys play degenerated into snatching girls' bricks, stealing from each other and finally running around, I noted how the girls started on a house together, and concentrated longer than the boys who had chosen to make a rocket. At the water tray the play was 'noisy and repetitive' when only boys were there, but when two girls came they helped each other by holding the pots as opposed to merely pouring into each others' containers. Shortly after I noted that a girl praised another girls' model at the nearby bricks, with 'That's very nice Julia.'

Eagle: Soon after they had started working Alison suggested that she attach her model to Claire's and from then on the transcript shows that though Alison did most of the fetching for Claire, both girls made suggestions and worked together on the combined model. At the end Alison said we wanted, and we didn't know, acknowledging the partnership in the session.

At the big bricks, though Ranuka was clearly the leader, there was no question but that this was a joint game. The girls shared the apparatus and the space, and Ranuka emphasised the co-operation on different occasions — 'We're making a house, a window to peep through and talk to each other...' 'let's have the same amount...'. On the other hand, I noted that Sukhvinder was marginalised in this play and the teacher confirmed that even with this group of gregarious girls Sukhvinder tended to be left out; she was concerned about her failure to integrate or have friends in the class. No one was actually nasty to her, she was just ignored; she did not seem to have the desire or perhaps the social skills to enter their play.

Kestrel: The section of the transcript describing Karleen, Michelle and Julianne's interactions after they moved to one side of the carpet, gives a sense of the non-competitive solidarity which I felt typified these girls, compared with their tense interaction with boys. They brought apparatus for each other from the common stock, and gave each other verbal and (equally important) non-verbal support — sharing, smiling, pushing each other's models around.

In my view, observing and analysing non-verbal communication, particularly with young children and bilingual children, is as important and revealing of the nuances of interaction as purely verbal transcripts. Video is probably the best way to catch the moment for later analysis, but even notes written at the time give invaluable

supplementary evidence about children's strategies and momentary, but often crucial experience.

ii. What skills and capabilities do girls show at construction?

All three transcripts suggest girls' relative lack of skill compared with boys. On the other hand, where girls had a definite task, and had had previous experience and support from their teacher, they were noticeably more confident and competent. Girls left alone without teaching or oversight turned construction play into house play or achieved much less than they might have with a little guidance. The thought struck me that girls were sometimes transferring their 2-D skills at pattern-making and decoration to 3-D work, and that without guidance this could be a limitation rather than a launching pad for experiment with the different properties of 3-D apparatus.

Falcon: I noted that the girls' models were less well made and less sophisticated than the boys', which had proper joints and articulation. The girls tended to make horizontal patterns with their bricks, or to pile bricks on one another to make the walls of their house, and not interlock them. The boys made a rocket which could be carried around without falling apart, and boats whose pieces locked together.

Eagle: Claire and Alison tackled the task of making a marble run with confidence. Their model was a success in that they achieved what they had hoped and it worked, albeit with some technical hitches. However the teacher and I noted (not in the transcript) that it was less complex than the boys — though complexity is not necessarily a virtue. The teacher commented that she had given the girls quite a lot of experience in modelling (including in girls' groups) and that this showed in the way they set about the task and the results.

The four girls on the big bricks did not really build at all, but constructed a simple set for 'house play'. Having set a few bricks in place as walls and beds, they cuddled down on cushions and coats to colour in or pretend to be mummies and babies. I noted 'its a very simple structure, no interlocking... only one bit balanced, otherwise just one layer of bricks.'

Kestrel: Kavita appeared not to know what to do with a bolt and nut or how to fix bricks together with them. She 'played aimlessly, twiddling the bolt without looking at it'. Karleen, who was far more purposeful, was not notably more competent. She picked bricks up and placed the wheels on top, failing to use bolts as axles. The way she screwed and unscrewed nuts suggested she needed to practise skills which the boys in the group had already mastered.

Interestingly, both Michelle and Kavita continued with or played with other people's half-finished models — a point I'll pick up in the section on empowering girls.

□ e. Encouraging positive interaction between boys and girls

i. Mixed or single sex groups?

Many teachers of Upper Primary and High School pupils are sceptical about the advantages for girls of mixed groups. However, many First School teachers express an ideological preference for mixed groups. The rationale is that at this young age it is false and unnatural to divide children by sex, and that to do so is against the spirit of equal opportunities; that mixed groups help the sexes to learn to work together; that girls and boys cannot learn mutual respect in single sex grouping; that single sex grouping encourages competition between girls and boys.

There are elements of truth in all these assertions, and yet it seems to me that what is being expressed is a *goal* rather than a realistic appraisal of what actually goes on in mixed groups, particularly in the curriculum area of construction.

Much of the transcripts and the subsequent analysis is discouraging and pessimistic about the ways that boys and girls interact in mixed groups. It would appear from these observations that girls are largely the losers in mixed groupings for construction activities. Working with boys was a pretty negative experience for all the girls I observed. Apart from exceptional boys like Peter P. at Eagle School, and Jack at Kestrel, boys tried to patronise or control girls working with them or near them, and assumed that space and resources were their's by right. Often they physically or verbally abused girls, or put them down in more subtle ways. The combination of girls' relative lack of skill in construction, the necessity to assert themselves to get the shared apparatus and space, and the tendency for boys to feel construction was their natural area of skill and interest, regularly disadvantaged girls.

It does not seem to me to be right for girls to be at the mercy of machismo and condescension as part of the teacher's effort to encourage a collaborative classroom. The message of these transcripts must surely be that mixed groupings for construction, even with children in their first year of formal schooling, need to be carefully selected and equally carefully monitored. One cannot have a perfect set-up every time, but one does need to consider who is benefiting and in what ways from the groupings.

In some classrooms it may be that the goal of successful mixed groupings, at least in construction, has to be postponed while girls develop their skills and confidence in the security of girls' only groups, and learn to assert themselves more successfully. I discuss this in a later section.

ii. 'Bridging Boys'

I feel that socially mature girls should not be 'used' to try and encourage mixed sex collaboration, when boys exercise their power to abuse the girls. Nevertheless, I am not indifferent to the goal of good mixed interaction, or only concerned about the outcomes for girls. These particular observations, as well as others not recorded here, and reflection on my own classroom experience, have alerted me

to the possibilities of some boys, whom I call 'bridging boys' in promoting good relationships.

From nursery classes through to upper primary I have observed that some boys, sometimes only one in a class, sometimes more, have special qualities of kindness and maturity, and an ability to relate well with girls, without dominating or patronising. Peter P, at Eagle, and Jack at Kestrel had these characteristics. Sometimes boys like this prefer to work and play with girls, sometimes they are equally popular and at ease with both sexes. If one is watching closely, one starts to notice that even the most macho of boys from time to time behaves in a gentle and considerate way. We need to be alert to this, ready to give praise and show our appreciation. It is a sad reflection on the sexism that pervades society that boys who prefer to be with girls can be the butt of teasing and disparagement, rather than having their collaborative and gentle qualities valued and positively reinforced.

I do feel that teachers of young children may be able to establish good anti-sexist practice by encouraging and valuing such male behaviour. Naturally I know that teachers can't openly favour children, and that one can risk setting up a countervailing macho resistance if one is unsubtle; however in the Nursery and First School children are less set in conventional stereotypes and less bound by peer pressure. In looking for positive strategies to develop good collaboration between girls and boys, it may be that certain boys as much as girls have a pivotal role. One needs to identify them, praise and encourage them publicly, giving a positive message about the behaviour one values, rather than allowing responses to negative male behaviour to dominate the classroom climate.

iii. Which contexts support positive interaction between boys and girls?

It may be, too, that in setting up mixed groups we should look for activities in which girls are confident and reasonably proficient, so that they are not at a psychological disadvantage. I have already mentioned that sand and water both seem to have that potential, if the apparatus that is available is perceived by the children as gender neutral, or gives girls a sense of confidence and familiarity. The way that Nadia and Jack (at Kestrel) played at the water is suggestive of the power of certain apparatus to offer a neutral starting point. On the other hand, some apparatus is already gender-biased in that it allows girls or boys to assume superior rights and knowledge. For example, I have seen what appeared superficially to be positive collaborative play between boys and girls with the trains, but close scrutiny revealed that the boy was in fact directing and organising his female partner. Girls seem more able to resist control or patronisation in mixed groups where the common apparatus is 'gender neutral' or associated with females.

In my own classrooms, I have also found that collaborative collage, painting and drawing activities (where girls may be relatively strong and confident) can also be good contexts for girls and boys to learn to work together successfully. Construction, however, tends *not* to be one of those curriculum areas, unless girls have experienced quite a lot of positive action of the kind I describe below.

□ f. Empowering Girls

When I did these observations and analysed my transcripts a number of points seemed to jump out at me, some bolstering the stereotypes about girls and boys and construction, but others offering a fresh perspective on strategies to enable and empower girls.

i. Girls' only groupings

In each school, whether distanced from boys by the teacher or through their own strategies, the girls set up collaborative and supportive sub-groups. Claire and Alison not only achieved a successful product, but held their own against boys' encroachment of space, and self-assumed superior knowledge. The section on positive interaction also summarises how girls support each other.

On the other hand, 'all girls' groups are not the automatic panacea to every girl's social problems and one still has to consider the dynamics and composition. Sukhvinder at Eagle is a case in point, though it is possible that she could have been paired with just one girl — perhaps Louise. Secondly, the tendency for some girls to slip into cosy femininity and mutually reinforcing stereotypical behaviour is also worth considering, as the brick play at Eagle indicated. In the next paragraph I will discuss how teachers might support, challenge or stimulate girls for whom a female environment is a necessary, but not a sufficient condition to develop their skills and competencies.

ii. Positive action

There are encouraging pointers in the persistence and concentration of many of the girls, despite the odds. But even if single sex groups start to meet some of the psychological problems which mixed groups seem to generate for girls, they will be disadvantaged because previous experience has denied them the confidence and capability which boys typically enjoy. However psychologically supportive the group, the outcome of their efforts will not compare favourably with boys' without direct teaching and support. In the end it's the *outcomes* of education which will be the true test of equality of opportunity.

In my view girls need a lot more teacher support in construction and design technology than they conventionally get — the kind of teaching and practice which one would not hesitate to offer in maths, written work or reading for example. It seems strange that though most of us know girls are relatively disadvantaged in the skills of construction and design technology, we take such a *laissez faire* approach to improving their chances. Perhaps the advent of design technology on the formal national curriculum will galvanise us into action!

Here then are some suggestions for improving outcomes for girls in construction and design technology work:

- i. Girls need the chance to experiment and practise in the safety of non-judgemental, supportive girls' groups.
- ii. Girls need direct teaching and lots of supervised (and unsupervised) practice of the sort Karleen was giving herself without the benefit of teacher encouragement.

- iii. They need more instruction and direction about tasks (witness Claire and Alison compared with the girls 'sent to play' with the big bricks)
- iv. They need regular checks throughout a session to see if they need help or a nudge back on task
- v. They need positive feedback and public praise when they achieve success.
- vi. To counter the condescending attitude which many boys have about girls in construction and design, they need high expectations from the teachers, and genuine successes which the boys as well as themselves can recognise.
- vii. Girls can often be motivated to continue with a model started by a teacher or another child, or work collaboratively, rather than start and finish totally on their own.
- viii. Perhaps most important of all, there is also an argument about the *curriculum context* for girls' involvement and learning in design and construction.

I have not tried to deal with this issue in this report, which has a somewhat different focus. However, Anne Waldon, Advisory Teacher in Primary Design Technology in Ealing, Jo Melhuish — an Ealing teacher — and I have written about this elsewhere. Our booklet, *Dragons and Milkcrates*, may be helpful in planning practical settings to encourage girls.

Finally then, I hope that my comments and speculations will stimulate others to look at the minutiae of children's interactions in their classes. The objective must always be to understand better in order to undermine stereotypes and improve the quality of each child's educational opportunity. Most people who work in equal opportunities realise that *equal provision* is only half the story. *Equal access* to material or teacher time is less than satisfactory if left to children's own choice and control — or to chance. The only way to know what individual children are experiencing is to monitor and to compare process and outcomes. Then equal opportunities become not idealism but practical planning for extra teaching, different groupings, supplementary or tangential experience.

Dragons & Milkcrates: Design and Construction in the First School: strategies for encouraging girls: Hilary Claire, Jo Melhuish and Anne Waldon, Ealing Education Authority, Gender Equality Team, 1989 available from Anne Waldon, Elthorne Teachers Centre, Boston Manor, Westlea Road, London W7.

□ *Transcript of the Observation Notes*

□ **Eagle First School: Class and group observation 27.1.89 (7-8 year olds)**

The children:

junk modelling

Claire & Alison — white female
 Peter K. — Asian male (fluent English)
 Peter P. — white male
 Craig & Lee — white male
 Dipak — Asian male (fluent English)

Bricks in the foyer outside the classroom — all girls

Ranuka — Asian (fluent English)
 Michelle — mixed race (Chinese/white) (fluent English)
 Sukhvinder — Asian (E2L)
 Kelly — white

Multilink

Louise — white female
 Peter F. — white male
 Alex — white male
 Cory — Afro-Caribbean male
 Dipak — Asian male (fluent English)
 Teacher — T

9.55 am Children on carpet — boys have all the cushions, 4 girls up near T, 2 on their own. Five mins in, only boys addressed by name or called on so far. 4 Girls sent to work with bricks Boy remarks 'all girls'. T sends groups to work.

9.58 am Group to work on making marble run, Claire and Alison, Peter K. and Peter P. Claire and Alison hold hands when told will work together. Boys go off, Peter P. prepared to work in whole group. Peter K. says 2's. PP: I may join in with them (girls). PP wants to join his tube with Claire's. PK follows this.

10.00 am Claire joining tubes. C2 to A2 'we can turn this'. (cutting) Al and Cl now working on their own. PK collecting lots of tubes. PP starts cutting tubes. Competitive talk between two boys — 'we've already started to cut', 'we're not cutting *all* of them'. Girls working quietly, physically separate from boys. Not talking. Al to Cl sometimes I don't think cardboard is good. PK to PP — you're the professor, you tell me what to do.

10.02 am Al asks Lee how to cut tube. Lee to Al: 'This is hard too'. Lee gives Al big scissors. Says 'Be careful'.

10.03 am PK to PP we can put marbles in egg boxes. Cl to Al general chat — I'm never going to get this in etc. Lee to Al Come on Alison (wants scissors back) Al asks me if I think model is good. Its a very simple model at this stage.

Craig and Lee together making quite elaborate model, collaborating, testing. Al suggests Cl attach her model to Al's — it will balance better. Al to Cl Lets see if it works. Al to Cl You'll need something to make it upright. Finds boxes for Cl. Holds them for her.

10.08 Girls join their 2 models. Craig takes their masking tape without asking. Al to Craig We're using that Craig. No response.

Dipak comes up, shows me cards, asks Al and Cl what they're making. Cl to Dipak its good ain't it?

Craig asks for masking tape. (Al has it in her mouth!) PP to Al We're not going to do it like this. Al: You'll have to if thats how you've made it. PP: We can take it apart.

Al and Cl now collaborating well. Dipak trips on their model and breaks it. Cl: Oh Dipak! Al stamps. 'Oh Dipak! Look what he's done. He's snapped it all'. David comes up. 'Why don't you push

that inside this? (tubes into each other.) CI: I don't want to. AI: I'm getting you some tape Claire. (She then gives roll to boys)

10.10 am AI: What shall I do with this tape Claire? (She waits)

10.10 am Outside in foyer to classroom with big bricks — 4 girls.

R: (to me) We're making a house, a window to peep through and talk to each other. We have the food.

R tells me long story about house and sleeping and eating arrangements. The house is all organised. It's a very simple structure, no interlocking structures, only one bit balanced, otherwise just one layer of bricks. Michelle's 'bed' — several bricks placed flat — area work? Boy runs through to toilet, jumps over their wall. Sukhvinder marginalised, physically separate, not talking or joining in. R doing the organising. 'There's two extra doors, no garden' etc. etc. Michelle putting coats and cushions on her bricks for her 'bed'. Kelly is in the box (where bricks normally stored). She has not built anything. She is colouring in her road safety card from assembly. The girls share crayons out. R: Lets have the same amount. S still out of it. Sits by door, well away. Gives M her pencil. No one is using the bricks at all. It is just a simple 'set' for house play and colouring. S goes into classroom. M snuggles under coats.

I go in.

10.20 am Inside classroom. Observing Louise, allocated to a group with boys, no other girls, to work with multilink cubes.

Louise is physically separate near the central tray unit, the boys are round the table where the box of multilink cubes is. She is aimlessly staring around not talking to anyone. She is pushing some cubes together, but not watching what she is doing. Dipak comes up to her. She elbows him away. Peter F snatches her cubes. She tries to resist but gives up. Cory comes to put his links on the unit. He stretches right across her.

10.23 am Peter F is back. He snatches and takes the cubes she has just fitted together. She tries again. Peter F returns and stretches right across her to take cubes off central unit. Alex comes up and pushes her. He says 'Sorry Louise'. This is the first person who has actually said anything to her while I've been observing. Louise leans on central unit and watches me. Cory pushes past her twice, without apologising. Louise goes to T. Mi- iss. T: Yes Louise?: I think Louise asks T about me.

The table is now free and Louise goes up to the box of cubes. The boys are arranging their cube construction on the central unit. Louise brings a card with a notice on it. She sits and watches the boys. There is a very sad expression of her face. No one is near her. Other than T some minutes ago, no one has responded positively to her.

10.25 am Tries to get T's attention, and fails. She pulls the multilink box towards her. A boy pulls on the other end, and is joined by another. This becomes a tug of war between Louise and the 2 boys, and then 4 boys. Louise gives up.

10.25 am Back to Claire, Alison, Peter P and Peter K. Craig and Lee nearby Claire and Alison are still working together and have made quite an elaborate structure. Craig is watching. PK tries to snatch masking tape from AI.

AI: Well I've got it so don't try and take it.

Craig holds up end of tubing for them. Their marble is stuck somewhere along the tube.

AI: Don't Craig, you're not helping.

CI: I need the masking tape again (she fetches it)

AI to Craig: Craig anyway, you're meant to be doing something else.

PK: Whats wrong with him watching. He's allowed to watch.

CI collects lots of tubes: We've got lots of tubes.

There is *no* collaboration between the boys and girls.

Craig now collects all the remaining tubes and takes them all away.

PL and Craig start 'fencing' with the tubes right across CI and AI.

CI and AI continue working on their model.

10.33 am The girls have now finished. Both sets of boys' models are incomplete. PK and PP are not collaborating. PK is watching PP working. Craig and Lee are working quietly together and collaborating.

I leave this group and look for Louise. She has gone to join Cory in a corner of the classroom. She shows him her book. Cory reads Peter's name in it, and she takes book to show Peter.

10.36 am Craig seems to be part of AI and CI's group. He is holding up the centre of their tube and giving advice. AI tells Craig to go away after T tells him to leave them alone. I ask AI if their model is how they planned it or whether they were just going to see how it turned out.

AI: No we wanted to make a really long one with slopes and supports. We didn't know how to make it turn so we kept it long and straight.

End of lesson. Children asked to clear up and go out.

□ Falcon First School: Report of observation 11.5.1989

1.30 pm start

6 children initially sent by their teacher to play on the big bricks outside in the yard — 3 girls, 3 boys. Requested to make a vehicle that floats on water.

2 boys together, 2 girls together and 2 other children separate. All are Asian. I do not know their names and since they wear uniform can't easily and quickly distinguish between them for this write up. These notes are exactly as I wrote them at the time.

Boys decide to make a big rocket together. Girls decide to make a house together. 2 more girls arrive and decide to make a big house together. Boy tries to snatch brick from girl. She hangs on. Boys collecting all red bricks, they have made a pattern of red, yellow, blue. 3 girls now together. 3rd boy has left for water tray. Single girl has made a 'counter', shouts 'shopkeeper'. Lots of excitement now. Only 3 boys left. Girls getting competitive to get bricks before boys get them. Too many children for amount of bricks available. Boys on half of mat, girls on other — total segregation of activity and space. Boys tumbling about. Boy snatches brick from girls, she snatches back. He breaks her model and makes to hit her. She laughs and pushes his model (doesn't harm it). He breaks up her model more.

2 boys have finished 'rocket' and carry it around. 3 girls still working on their house and collecting bricks they need. 2 boys rebuilding broken model. 'Shopkeeper' extending her model. Single boy extending his speedboat. Girls complain to me about boys. Girls steal bricks back from boys while they're not looking. 'Shopkeeper' has converted her model to 'house'. Fight developing one boy and 2 girls. He is throwing bricks at their heads. Girls on 'house' have joined bricks properly, but other girls haven't. Notice that girls' models less well made and less sophisticated than boys'.

Boys finished. Girls on house still concentrating and working. Longer concentration span noticed.

1.55 pm

Boys now running round yard.

Boy throws brick at a girl's head. She starts to cry. I take boy in.

2.00 pm

Now 9 children outside, 7 girls, 2 boys. Boys quite separate from girls.

Boy tells girl to get him a piece. She does. Competition again for bricks, between boys and girls (tho' so few boys). Boys and girls not communicating at all. When not fighting, ignore each other. Boy steals bricks off girls' house when they're not looking. Gleeefully shows to other boy. Notice that boys' building properly articulated. Girls making a long line, a sort of pattern. Now real problems with too few bricks. Boys win struggle for more bricks, tho only 2 of them. Girls complain and moan but allow boys to walk round clasp all the bricks they have taken. Girl tries to get brick back when boy steals it off her building. He frogmarches her by her jersey and shoulder, up against yard wall. Saved by the other boys stealing his bricks. He leaves girl and runs back.

All conversation to me by boys very positive and teacher pleasing — i.e. look miss I've made 3 boats.

4 boys have been at water. Very noisy, rather repetitive play — shouting 'water, water', and pouring it so that it splashes over each other. One boy leaves and a girl comes. Play calms down. Girl talks about mum and baby. This girl joined by another girl who immediately holds pot for her to pour. Note that boys on own have poured into each other's pots, but not helped each other. Boys comment that there are now 2 boys and 2 girls.

Girl at bricks shows her model to girl at water who has just come. Water girl comments 'that's very nice Julie'.

2.15 pm

Brick play has degenerated into running round yard

Glancing round — there is *no* evidence of interaction between boys and girls; playing alongside, not with each other.

☐ Kestrel Combined First and Middle School Individual children in the reception class, (5-6 yr olds) 9.6.1989

Children observed at request of teacher;

Kavita — female, Asian, E2L

Karleen — female, Afro-Caribbean

Nadia — female, Asian E2L, (very young)

Yassar — male, Asian, (fluent English)

also present but not monitored in detail

David — male, white

Julianne & Michelle — female, white

Gary — white, male

Jack — white, male

Joel — male, white

It is a free choice afternoon. When the register has been taken the teacher tells the children what is available. Children put their hands up for some initial activities and are allowed to go. The rest of the class then go to their chosen activity. This transcript is as I wrote it at the time.

Kavita & Yassar

1.25 pm children given free choice, K wanders over to where 3 girls sticking cut outs. Watches then wanders to door

then into next door class. Goes over to construction toy — makes 'glasses' and shows Jack. No talk.

1.27pm Wanders away — watches some girls drawing

1.28pm Wanders to another table, watches; wanders out to corridor and back to her own class, watches chrn doing sticking task. Has said nothing to anyone as yet

1.30pm Teacher talks to K

K goes to carpet and stands watching 2 boys with construction toy — Yassar and David.

Gets bolt and nut, takes 2 bricks. Yassar takes them off her. Y: They're mine. K gets a couple of bricks and puts them well away from Yassar. Has to climb over boys and apparatus to reach anything. David reaches between her straddled legs for a bolt. She balances carefully between bricks, gets bolt and chain. Gets 1 wheel. Decides to replace it. Again stretching across the apparatus. Boys don't make space or help. Both are working individually and concentrating. David pulls the bag with bolts and nuts away from her. No talk. She plays aimlessly with bolt in hole of brick; has no cog so can't proceed.

Now able to reach apparatus. Watches Yassar who is working fast and competently. K twiddles bolt without looking at it. Now trying to fix bricks together. Holds it upside down, takes bolt out again. Yassar and David talk and show each other what they're doing. K sits cross legged and watches them, hands in lap.

Karleen comes to carpet area

1.37pm Approaches behind Yassar and gets bricks and wheel. Takes Kavita's bricks. Joins up three and puts on wheel. Kavita sitting watching David. Karleen is as assertive as boys in getting apparatus she needs. Yassar has moved away. Kavita looks at his model, stands up and moves into empty space created by Yassar going. Puts a couple of bricks onto Yassar's truck. Karleen making something — quite purposeful, tongue protruding between teeth, singing to herself. Kavita watches David and David watches Kavita watching him. Teacher asks whole class for someone, Karleen replies — shouting out.

Yassar returns to carpet and takes his truck away from Kavita and takes her bricks off her. Says nothing. Pushes her out of the way and sits so that his feet and legs are literally in her lap (she is behind him now) and she is pushed into bookshelf. She seems invisible to him.

1.40pm **Kavita gets up and wanders off**

1.40pm Karleen still working on her model — well away from Yassar. David and Yassar talking about home things and going somewhere. Karleen gets up to fetch bolts. Yassar pushes his truck into her leg — doesn't look like a deliberate hurt, just seems indifferent to her presence.

Karleen fetching things one by one — she is far from the bricks and the bag of bolts/nuts and can't reach as the boys can without moving. The boys have the 'best positions' for getting apparatus. She doesn't talk to the boys or ask for anything. She takes a handful of bolts this time. Michelle comes up. Yassar as if she likes his car. She doesn't answer. She gets some bricks and joins Karleen. Karleen talks to Michelle — you need little

ones. They are working separately. Michelle has brought a bag of bolts to within easy reach of them both.

1.45pm Boys have been joined by Joel. Joel and David stretch across Michelle for bolts. She leans back to avoid them. Joel has now taken over Yassar's space. Karleen trying bricks on top of each other and putting wheels in place (not fixing them), talking to herself. Shows Michelle the spanner (says nothing) screws nuts on bolt now. Karleen now takes apart what she has made. Julianne joins girls on carpet. Now 3 girls and 2 boys. Boys are nearest to and have easiest access to equipment. Girls have to climb across them to reach bricks. Boys can stretch for bag of bolts quite easily and do so regardless of whether girls are in the way.

1.48pm Karleen still tightening same bolt. David making tractor with caterpillar tyres — quite complicated. Noticeable how different boys' and girls' models are in complexity.

Michelle finishing off model started by someone else and making good progress. Karleen persevering with bolt and nut. Now 3 boys and 3 girls on construction, physically separate and not interacting.

1.53pm Kavita returns and stands with girls. Pushes Michelle's 'truck'.

Nadia

1.55pm Had been sticking the cut outs. Comes to carpet and talks to Julianne. Asks her opinion about sticking. Wanders to water and watches, but says nothing. Wanders to castle on table and plays on her own with drawbridge and ladder. Gets little person to climb ladder.

1.58pm Wanders away. Goes to dolls house on table. Arranges little people and furniture in the house. Teacher asks something from a distance. Nadia picks up on this (I couldn't hear what was asked) and goes over to Teacher with hand up. Gets permission to play in water. Puts on apron and starts playing. Doesn't talk to anyone. Jack holds can for her — she pumps water into it with bulb and tube attachment.

N to J Look at it, its going up. Gives pump to Jack, takes funnel and boat and pours with boat. Lets it go. Takes can back says: Can I have that please? She holds can, Jack pumps.

J to N I'll fill it up for you. N reaches for rose for can — doesn't ask. Nadia chats to me about having a shower at her granny's and tells me about a little boy who fell in the shower at the swimming baths. Then tells me about bath time at home. Holds watering can with rose on up high.

N to everyone Look at this — its raining

NB there are three girls and one boy (Jack) at the water and they are all talking to each other.

2.07pm **Karleen** still at construction bricks on carpet. Other chrn there are Gary and David. She is quite confidently fetching bricks, which are still in 'boys area' of carpet. She dances across the carpet. She has made a pile of bricks, there is only 1 join, and no wheels. She has got bolts and nuts bag.

David and Gary are working together, but very little talk. Karleen very determined and motivated. The rather unimpressive product of her afternoon's work belies the concentration she has put in.

2.10pm She watches what the boys do all the time but this is not mutual. They ignore her and talk to each other.

2.12pm **Kavita** has been sitting with an older boy, Keith, who comes into the First School to hear children read. She puts her reading book away and watches Keith and another girl, Sarah, reading. Some non verbal communication, grinning, giggling and playing with Sarah's head.

2.15pm Teachers ask for tidying up and K starts putting pencils away.

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