

## Gendered Communication in Technology Tasks: Glimpses of Group Interactions

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### Significance and underlying theoretical framework

Communication, both oral and written is an essential component of the design and technology curriculum for school level being developed at HBCSE. Students record observations, describe investigations and communicate findings through oral presentations and written reports. Hence they need to be able to communicate effectively. Non-verbal communications (like gestures and expressions) are also important, especially for communication of feelings and attitudes.

Studies have shown that in a classroom setting, boys and girls have preferential ways of learning and expressing their knowledge and skills. Dale Spender (1980) highlights the gendering of language and how this has partitioned our world. Robin Lakoff (1973) observes that language use by children changes in different ways for boys and girls. 'Women's speech' which includes a large number of question tags, according to her, is the result of social interactions and reinforcements. The dynamics of group interactions and the social relations among boys and girls tend to be different (Thorne, 1993).

Like language, technology is gendered, and its know-how, design, fabrication and maintenance tend to be a male preserve (Cockburn and Ormrod, 1993; MacKenzie and Wajcman, 1999). The relative participation of women in technology and engineering courses is skewed; in India, women constitute only 17% of total enrollment in engineering and technology (Manpower Profile of India, 1999). Socio-cultural factors contribute to this situation (Kramarae, 1988). Kim Beat (1991) reports gender differentiated use of construction kits in nursery schools. Even five year old children have been seen to have definite views about what constitutes "men's work" and "women's work". Studies in secondary schools have shown that girls rarely engage in playing with tools and equipment, while boys not only have more experiences, but also a perceived expertise with equipment (Jones et al, 2000).

### Objectives of the study

The Design and Technology project at HBCSE aims at development of gender inclusive technology tasks for

middle school level. Three tasks were designed to engage students in measuring, planning, distributing work, designing, manipulating resources, making, communicating and evaluating.

Each task followed a pattern: students were set a real life problem, such as making a bag to carry their books in. They then explored the context, came up with alternative designs, communicated these and answered queries about the designs. The tasks were geared to develop students' oral and written communication skills through activities that required writing (poems, descriptions), drawing, technical drawings and procedural maps, listing materials and work distributions as well as presenting publicly, descriptions and evaluation of their own product and one made by others.

This paper focuses on qualitatively understanding social dimensions of resource and tool use in the task setting and the communication that occurred between and within group members during the technology trials.

### Research design and procedure

Around 20-25 students from 3 schools participated in the tasks in separate batches. The students studying in class 6 and 7 were from 2 urban schools and a rural school which was a tribal residential school where the medium of instruction was Marathi. In the urban schools there was one Marathi and one English medium school. The 3 tasks were (i) bag making, (ii) making a model of a windmill to lift weights, and (iii) making a puppet and staging a puppet show. Each task was planned for about 15 hours, over a period of 5 days. Students formed groups of 3-4 members each. There were about 6 groups per school for each task; 4 single sex groups (2 boys' groups, 2 girls' groups) and 2 mixed-sex groups. Video and audio data was collected which included conversations and aspects of group dynamics. Each group maintained a file of their writings and drawings for the task. Researchers also kept a daily log of their observations.

### Some findings

Students formed single sex groups spontaneously. They however, did not volunteer to form the mixed sex groups, and at times they had to be forced to be members of a mixed group. Many English and Marathi medium urban students were found to be confident and fluent oral communicators. Rural students took longer to complete written and oral activities, and their oral communication was more often inaudible. They also took time to open up even to the researchers. Special activities were planned with these students before embarking on the tasks to help build a rapport.

There were gender differences in the students' language use, often through explicit comments, such as, "Yeh ladies lok ka cheez hai"... ("This is ladies' stuff") "It's nice that you have *ladki lok* (girls) in your group" (an all-boys group member to another group). Interestingly such statements were made by boys and corresponding references were not made by girls. Non-verbal communication, such as ignoring or refusing to look at / listen to another, also showed gendering. Girls in mixed-sex groups often found it difficult to be heard; a boy from the urban Marathi medium continued to ignore a girl from his group, who persistently tried to contribute to a discourse, even calling out to the boy "Aye, aye.....".

Other non-verbal communications were seen in acts of grabbing and trying to gain control over limited resources within a group. Sometimes fights broke out over this issue. Some groups were not willing to share common resources (sand from the garden became a commodity of contention). Sharing has various aspects. In some groups, the members who completed their work helped other members and groups. Communication space too can be shared; some groups gave a role to each member in public speaking, whereas in other groups this space was not shared.

Interactions within mixed-sex groups were often different from those within single sex groups. Work distribution was often clearly gendered. Girls took on, or were allocated by their group, activities of writing and drawing. On the other hand, activities such as, cutting the paper/cloth, hammering rivets, drilling and sometimes even sewing was done by boys. Girls were reluctant to take on the drilling activity even when urged by the researchers. There seemed to be a tacit assumption that the spheres of work of the two sexes are different.

In all the settings, some students were clearly the accepted leaders: the reasons were varied to include superior academic performance, age or physical build. In the urban setting, an academically bright girl was the accepted leader of an all-girls group; others in-

cluding boys also evinced an interest in being part of her group. In a mixed group (tribal) two boys (big build, older) were the accepted leaders of the class.

The presentation, supplemented by video clippings will provide examples of gendered aspects of interactions and use of language and non-verbal cues while students performed a variety of activities in the three technology education tasks.

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