

## Amalgamation of narrative discourse and maker-spaces as a tool for critical pedagogy

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**Abstract:** We run a contextual and cultural maker-spaces in two villages of Uttar Pradesh. The vision of the maker spaces is to have a discourse around critical pedagogy as envisioned by Paulo Freire : social justice, student empowerment, co-construction of knowledge, and critical thinking.

In the village, the 12-16 yr old learners study in affordable private schools after completing their elementary education from government school which wasn't the case earlier. Families are engaged in agriculture, young boys migrate at the age of 10-12 years to West India. Girls are generally married at the age of 13-14 years. This vicious cycle of marriage, birth and livelihood doesn't allow the mindset to change.

In this paper, we will explore how in the above context narrative discourse when integrated with the maker-spaces acted as a tool for critical pedagogy.

### Design and Implementation

Looking at the context of Ramdwari, the possibilities of change seemed very few and extremely far. There is monotony around with the same routine year after year which led us to question — What's to be done? We thought of narrative discourse pedagogy as students seemed to be excited by stories. Therefore, we thought of bringing powerful ideas which are similar in nature. With these stories, we felt that the students and community members would see some hope through the change that has happened in similar communities in different geographies. But, to get inspired is not the only thing. One has to think a little deeper into it. One has to identify the problem in their context, have the courage to challenge the status quo, discuss alternatives and find a solution.

To perform prototyping of ideas, we set up contextual and cultural maker spaces in which contextual objects could be repurposed, re-imagined, altered, added or modified so as to bring some ideas in action for social transformation and a positive cultural change.

In this particular project we started with the narrative discourse based on the story 'cycle par sawaar auratein' (translation — women riding bicycles). The story is about cycling as a women's movement in rural Tamil Nadu, an article published in People Archives of Rural India. The whole phenomenon was the brainchild of the popular former district collector, Sheela Rani Chunkath. Her idea in 1991 was to train female activists so that literacy would reach women in the interior. She also included mobility as a part of the literacy drive. This flowed from the fact that a lack of mobility among women played a big role in undermining their confidence.

The story was chosen because girls' freedom in the Ramdwari community was frowned upon. The girls' were not allowed to go and study outside their village after completing grade 8 from a government school. From the story, discussions erupted around gender inequalities as boys were allowed to go outside the village. From the discussion it moved to various problems or issues faced by the children everyday that are there in the community which gave us generative themes to work in the maker-space. Another point which got discussed was around the role of a bicycle as an emancipatory tool.

This led to a question that -- can bicycles act as a tool for social change other than providing access for mobility? To explore this question and deep-dive into generative themes we as facilitators designed sessions under three domains -- looking closely, exploring contextual objects, finding solutions. Even the simplest objects reflect the culture and more importantly the context (social and physical) in which they were created as well as the contexts in which they continue to be used. A close observation of these everyday objects not only sparks students' curiosity but leads to increasingly complex thinking.

In the first session, the students were asked to observe a bicycle and draw its systems and subsystems. In this exercise, the students analyzed the various parts, its purpose and the correlation between them. The students drew detailed sketches of the bicycle and started co-relating various sub-parts based on speed, safety, comfort, etc. They also figured English alphabets while observing the shapes of parts or sub-parts. The students observed the minutest details, one of them being the study of why the front sprocket is bigger and the sprocket in the rear wheel is small?

When the students were observing the parts and subparts, one question emerged whether any of the subsystems can be used as a system in itself or a part of a different system. Further exploration emerged and we moved to doing take-apart the bicycles. Students have to dismantle an old cycle in 1.5 hours and then assemble it back in the next 1.5 hours in teams of 4. Proper tools like hammer, screwdriver, wrench, and spanner were arranged. This activity has been done after previous sessions on cycle where we had a lot of discussions and observations around the cycle. But then learning can be enhanced when we use our hands rather than ears. Multiple science concepts are covered in a cycle like force, transmission of force, work energy, speed, momentum, circular motion, friction, energy, center of mass, moment of inertia, torque, stability, spring, mass distribution, etc. As a single cycle can be used to explain so much of science, why not open it and understand the details of it.

Initially we thought that since the cycles are old and have lots of rust on nuts and bolts, the dismantling part would be tougher and once it is done, the students will assemble it back in half of the time. But we were wrong. They learnt more about mechanisms and observed little details during the assembling part of the task.

This is because while dismantling they were in a hurry or chip off the parts which were not coming easily and hence those distorted parts caused a lot of troubles. Some parts require special tools and such jobs can be only done by them. Hence normal tools took a lot of time.

The other factor is that the assembling process demands more focus from the students. For example - both the wheels of the cycle are very different from each other. But the general image is that a wheel is a wheel. 2 out of 4 groups put the front wheel to the rear side and when they had to put the chain on it, they realised their mistake and dismantled it once again. Then the students explored the mechanism of chain sprocket, brake by paper and locally available materials. This exploration led to a discussion around tools and objects in the community which use similar mechanisms or in certain cases the parts of the bicycle.

To converge both the things — generative themes and the explorations done on the bicycle as a contextual tool, the students were divided into different groups according to their interest, issue that they wanted to work on. In each group, the students researched on their problem at hand and ideated solutions around them using the various mechanisms of the bicycle. Thereafter they did prototyping on one idea selected by them. Some of the ideas are:

- Group One thought that cutting grass/weeds on the agricultural field is always a problem. Therefore the group thought that if she attached a sharp blade from the front hub of the bicycle then she and others could easily cut the small and medium size grass/weeds by manoeuvring the handlebars of the bicycle. This will take less time and less effort and would cut the grass from the roots easily.
- Group Two has made a model to cut the grass/fodder with an attached bicycle. The same structure is available which runs on electricity but since there is an erratic supply of electricity in the village, the student thought of making a design which can work with bicycles. The grass/fodder which after cutting can be given to livestock as food for their nutrition.
- Group three attached a wiper through the front part of the wheel. During rains when the drains overflow, it becomes very difficult to ride the bicycle on swampy roads. Through this innovation when you are riding the bicycle, the sludge and the mud on the road could be moved to the sides of the road allowing movement on the bicycle. This could also prevent accidents due to balancing issues.
- Group four made a bicycle-enabled handpump in which instead of a handle the pump rod is attached with the crank of the bicycle. When one pedals, the crank moves which in-turn helps in moving the piston rod. When the piston rod moves up and down it helps in taking water out from the outlet thereby reducing the time and effort.

- Group five thought of attaching an umbrella on the top of a bicycle and a plastic sheet at the back so that the girls of Ramdwari could attend school during rainy days. The umbrella covered their body and the plastic sheet covered their bags.



After multiple rounds of talks and testing in the community, two of the projects were finally made and put to use for the community. The two projects were bicycle-enabled fodder cutting machine and an umbrella on a bicycle. Cycle as an object offered a tactile experience for students, which challenged them to observe and conceptualise their thinking. While the teacher facilitates the session, the students construct meaning for themselves through their interactions with each other centred around the object (Hannan et al. 2013).

The problems students came across after the narrative discourse pedagogy did not only restrict to problems of their individual lives but also the problems faced in their communities for an extremely long period of time. This exercise enabled them to challenge the status quo, put some ideas together and test them for its workability in the maker-space. Therefore, maker-spaces and narrative pedagogy act as an outstanding tool for critical pedagogy.

## Reflections

What we have experienced in these years working with the community and children is that narrative discourse pedagogy is deep rooted in critical pedagogy which critiques the dominant knowledge within curriculum. It critically examines inequalities in society and focuses on tools to develop critical consciousness, agency and empowerment through a problem posing approach in a learning context.

Bruner had mentioned that narratives are fundamental to human learning and act as a meaning-making tool with great pedagogical potential. The narrative discourse supports the identification of a contextual object through which students started to deep-dive as well as nurture the abilities around questioning and challenging the status quo among the community. The explorations in the maker-space supported the meaning-making process. As the narrative pedagogy built the reasoning skills among the students, the maker-spaces hold the power of perspective taking while devising solutions for the problems. This amalgamated approach led to high-level thinking that is central to making which is geared towards social transformation.

The narrative discourse as the starting point also changes the trajectory from the focus on finished product to the process of making. The process of design follows a linear structure, starting with ideas and ending in a re-presented material form; this is why the students in two groups initially struggled to align their approaches with creative collaboration. This changed through a playful, exploratory approach to the materials, take apart and mechanism exploration. Thus this amalgamation also emphasises the social, multi-sensory and affective aspects of exploring materials.

The process in the maker-space led to interactions among students which generated a lot of stories emphasising the rhetorical power of storytelling. In this case, 'cycle par sawaar aurtein' story illustrated how narrative could be used to make sense of questioning the status quo and connecting solutions for real world problems. Purposefully eliciting narratives from students that are related to problems closer to their worlds would likely resonate more powerfully, fostering a sense of ownership and identities among children as problem solvers.

In this sense, although situated at a micro level of interaction, this study also look sup-stream to connect to maker-spaces and stories based on notions of empowerment and participation in cultural change.

## **References**

Freire, P. (2000). *Pedagogy of the oppressed (30th anniversary ed.)*. Continuum