# Building collaborative ideation

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As 21st century learners, students worldwide are being encouraged to be creative and critical thinkers, work collaboratively and gain experiences to innovate as future problem solvers. An important part of design and technology education is to develop these skills in students. This is achieved through engaging them in learner-centred activities, which provide opportunities to think and co-create.

Design thinking and training aims to empower individuals to think of ideas that are both novel and useful. Generating many possible solutions is at the core of design thinking. Idea generation strategies aim to motivate problem solvers to think divergently and come up with a variety of ideas for a given problem. However, this can be particularly challenging for novice learners. For example, a common problem observed among young students is the lack of motivation to generate more ideas once a solution is reached. One reason for this could be that students are typically trained to follow a set of instructions to reach a specific "correct" answer to a given problem. This may be true irrespective of the nature of the problem, be it a science or an art class.

Brainstorming is one of the most commonly used methods to produce a broad range of ideas for a given problem. During a brainstorming session, one needs to be non-judgmental and encourage generation of ideas which could later be refined or combined to come up with novel solutions. There are many strategies suggested for idea generation and one such strategy is 'combination of ideas' (Cross, 1997). Chan and Schunn (2015) suggest that combining dissimilar ideas is a useful approach to produce creative ideas. A practical approach to generating multiple ideas is through collaboration. This enables communication, exchange of ideas, acceptance of multiple perspectives and working towards a common goal.

In an attempt to encourage creative thinking and collaborative ideation, I designed two co-creation exercises, which will familiarize students and teachers with the benefit of combining disconnected elements and discovering novel ideas. One activity focussed on combining unrelated words (it was tried out at an open day event) while the second was a collective thinking exercise where teammates had to build on each other's ideas (this was tried out at a teacher's workshop). Teachers can try these exercises described below in their own classrooms to help ignite creative thinking in their students.

### Mystery boxes

'Mystery boxes' is designed to incite out-of-the-box ideas by placing two unrelated words side by side for developing a design brief by using a combination of those words. In this activity, two boxes are placed next to each other and some paper cards with words written on them are placed inside the boxes. The first box has cards with different professions: Teacher, Barber, Electrician, Farmer, Dentist, Cook, Sweeper, Gardener, Tailor. The second box has cards with object names: Toolbox, Gloves, Shoes, Headgear, Glasses, etc. Students have to pick one card each from the two boxes and combine the two words to write a design brief which is a meaningful and an actionable problem statement. For instance, if card 1 says "Electrician" and card 2 says "Headgear", the students may write, *"Design a new headgear for an electrician which is useful in an electrician's everyday tasks."* Students then are required to invent something new from the combination of these cards.

The drawings shown in Image 1 are drawn by two different groups of students; one group combined the words electrician and headgear and the other combined gardener and headgear. In the first drawing, the choice of material (wood) has been mentioned specifically keeping in mind the nature of an electrician's job and the risks involved. Frequently required tools have been neatly organized
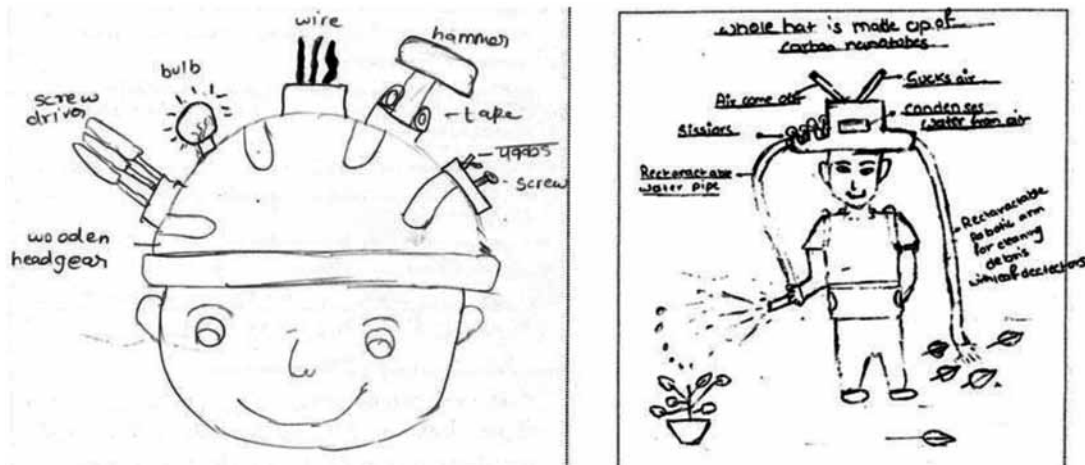
Image 1: A cap with tools for an electrician (L) and A multifunctional hat for a gardener (R).

and placed together for easy access. In the second drawing, students have tried to understand the tasks performed by a gardener and have made the headgear multi-functional and portable. Two hoses are powered by the headgear for performing two different tasks: a pipe to water the plants and a vacuum suction to collect dry leaves.

It was observed that without any training on how to integrate unrelated persons and objects, students were able to come up with unique and relevant solutions. The combinations were made keeping in mind both the user's needs and the object's physical affordances. Similarly, other groups combined words like barber and glasses, where the barber can zoom in and out whenever required and cut hair; sweeper and shoes (Image 2). Some students worked on designing gloves for a cook and a gardener (Image 3). More such student designs and details can be viewed here: https://dnte.hbcse.tifr.res.in/students-works/



Image 2: Glasses for a barber (L) and shoes for a sweeper (R).
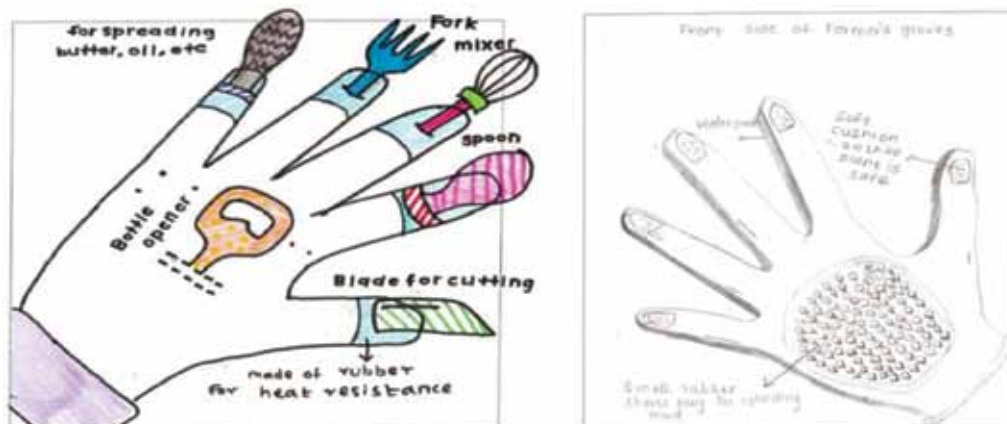


Image 3: Gloves for a cook (L) and gloves for a gardener (R).

This activity gave students an opportunity to create novel products for a particular profession. The designed products were unique and opened up possibilities for students to empathize and create contextual designs. This activity can also be used as a supporting activity by the teachers to generate interest about different professions, community helpers and chapters such as "Who will do this work?", which feature in NCERT EVS class 5 textbook.
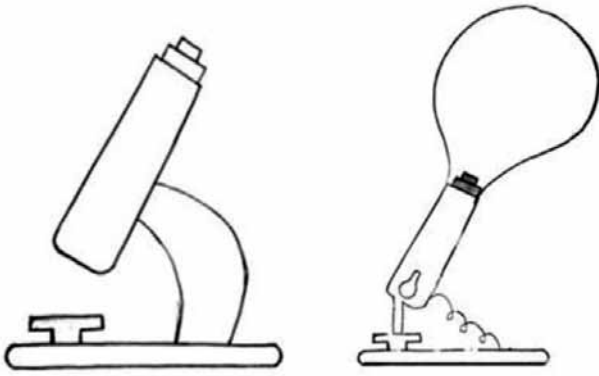
## Eliminate and create



Image 4: Example of the initial (L) and final (R) hand-drawn drawing.

Collaborative drawing as a visual mode of ideation can help individuals build on each other's ideas and co-create both quantitatively and qualitatively. The "eliminate and create" activity has been designed to enable co-creation and generate an element of curiosity, surprise and invention. This is a group activity where a team of four to five members sit together with a sheet of paper which has a hand drawn object on it (Image 4, left). This activity can also be done on a whiteboard, blackboard or an editable digital platform. The first person has to erase, i.e., eliminate a part of the drawing and the second person, then has to add (creates) something to the remaining part of the drawing. The second person further erases another part in the drawing. Now, the third person will first add something and then erase something, thereby improvising the drawing. The activity is continued until everyone gets at least
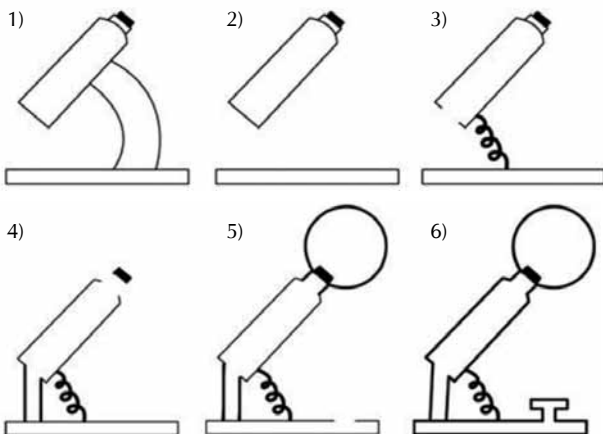


Image 5: Steps to show how the drawing evolves in one cycle of 'eliminate and create'.

one chance to add to the drawing. The last person only adds without erasing further (Image 4, right), completing the activity. The final drawing of the group has to be collectively justified by the team as something that is useful and this can be done by listing one or two functions of this newly created object.

This activity was tried out with a group of teachers and Image 5 depicts a recreated example of the progression of ideas. Since this activity is designed to strengthen visual thinking abilities, team members are not allowed to talk to each other during the activity. This activity can instil awareness about iterative design thinking, challenge assumptions and be an engaging tool to include multiple perspectives and reimagine design outcomes.

## Reflections

These simple exercises that encourage idea generation and building teamwork can be useful in classrooms to aid creative thinking, build empathy and communicate visually. At the core of these exercises lies a useful skill that fuels most innovations across the world-collaboration, which involves individuals working together towards a shared goal and building on each other's ideas.

**References**
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