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DECONSTRUCTION AS A METHOD FOR SKETCHING THREE DIMENSIONAL OBJECTS

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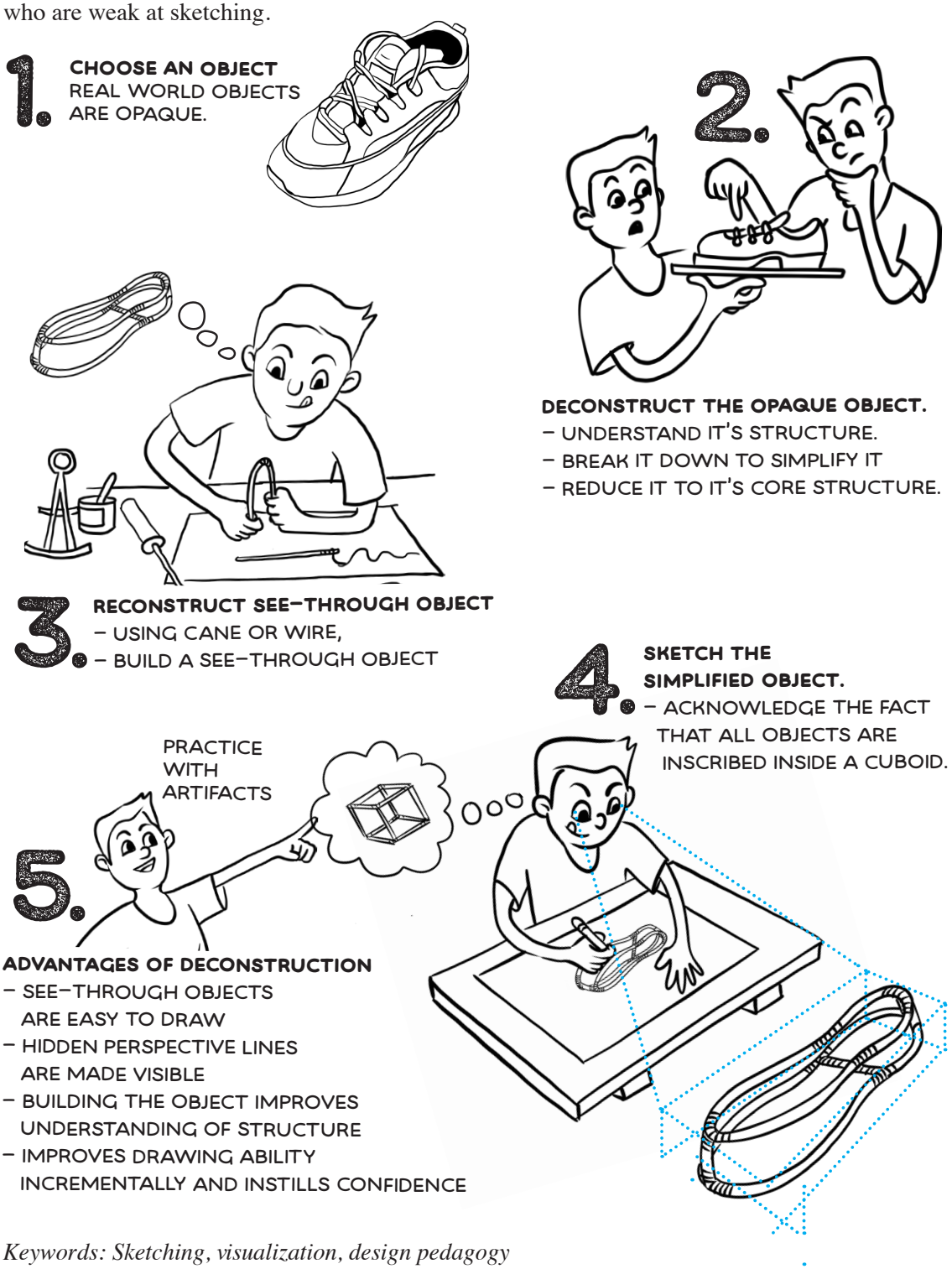
ABSTRACT
A method to improve understanding the drawing of three dimensional objects particularly for students who are weak at sketching.



Keywords: Sketching, visualization, design pedagogy

INTRODUCTION:

The paper shares the learnings from a classroom exercise conducted as a part of 'sketching of 3D objects' course for first semester undergraduate students of product design. In the course when a sketching assignment is given, students weak in sketching get dejected with their initial outcomes. This makes them feel that sketching is an innate ability and cannot be attained by practice. As a result, they are likely to lose interest in sketching.

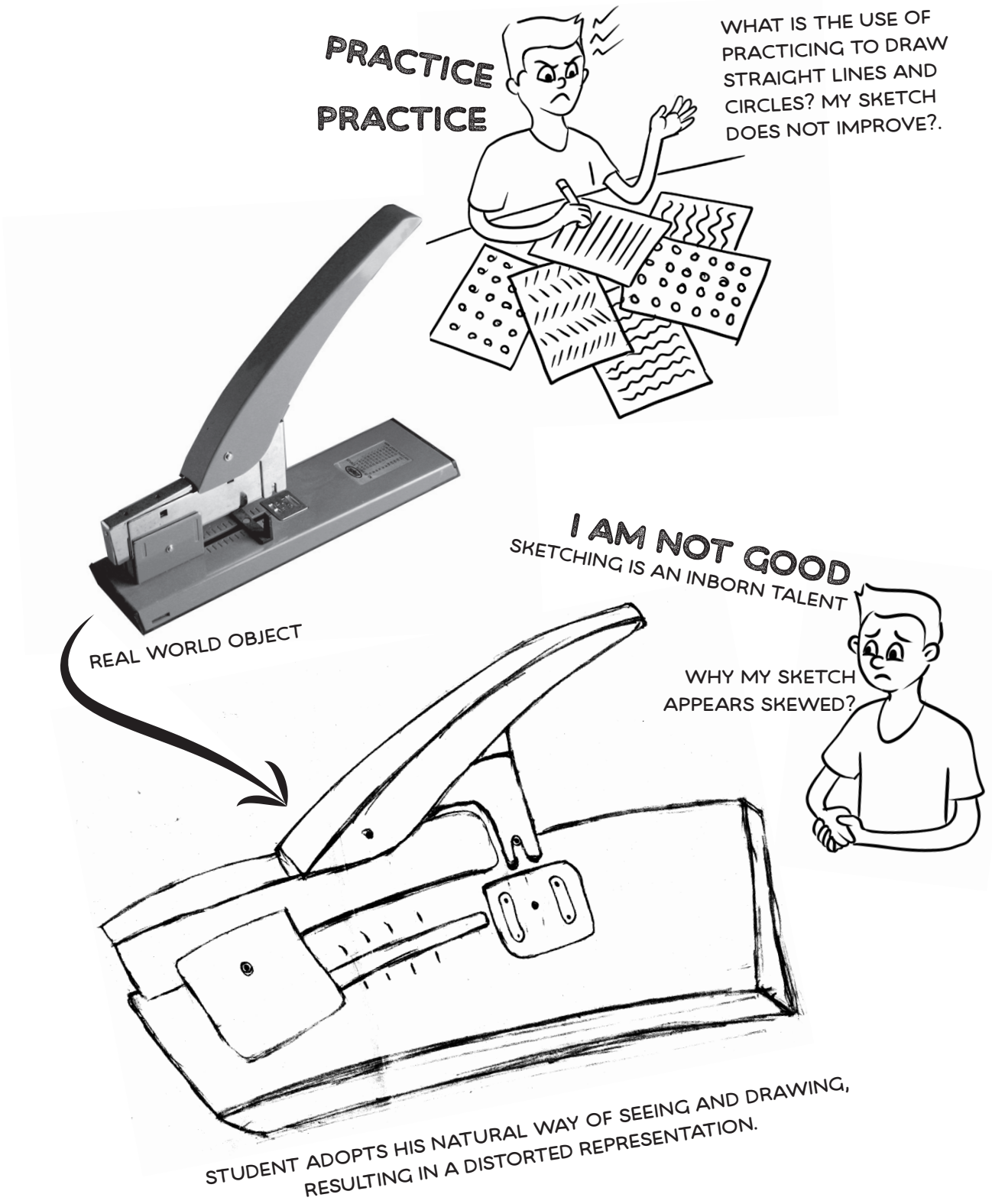


Figure 1. First attempt of the novice student to sketch a stapler

Hypothesis: Sketching with see-through objects can improve performance of novices.

The fundamental difference between a novice and an expert is, expert develops his ability to visualize the hidden perspective lines. Similar to sketching experts, artists use rough blocking or begin with structural outlines, followed by interior detail to achieve a sense of proportion with respect to drawing on paper [1]. Since novices lack this ability, practicing sketching with see-through objects can improve the performance and boost their confidence.

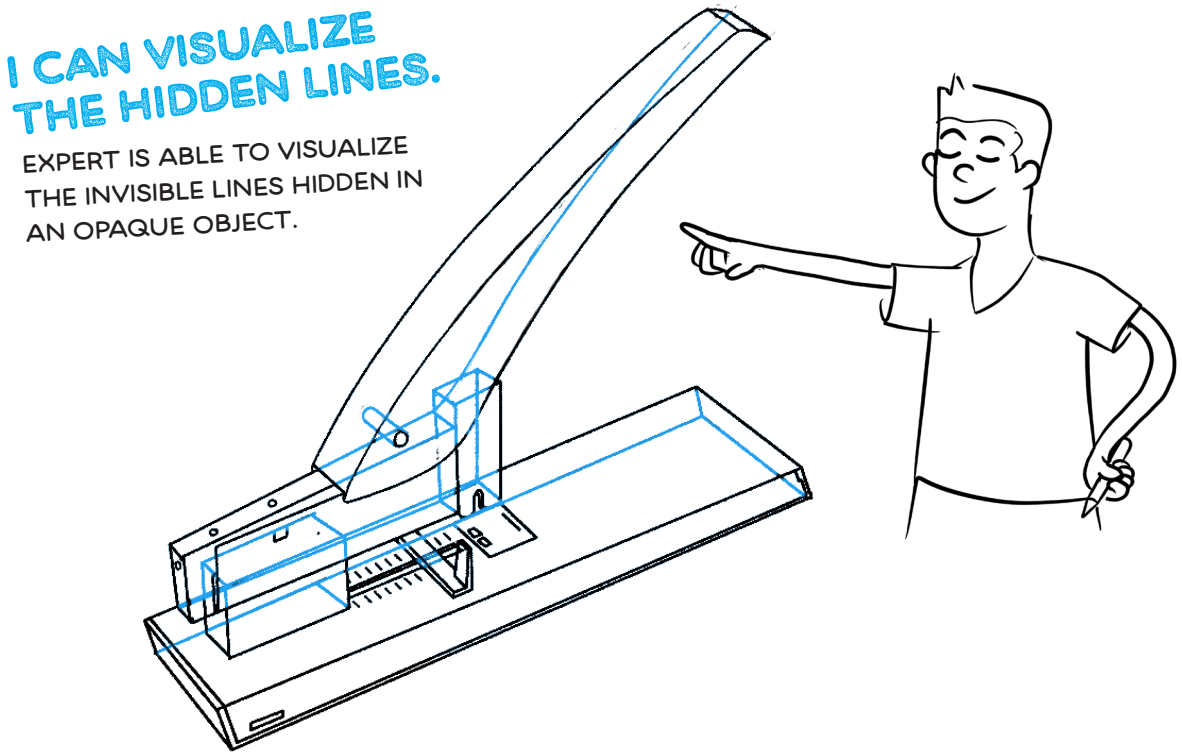
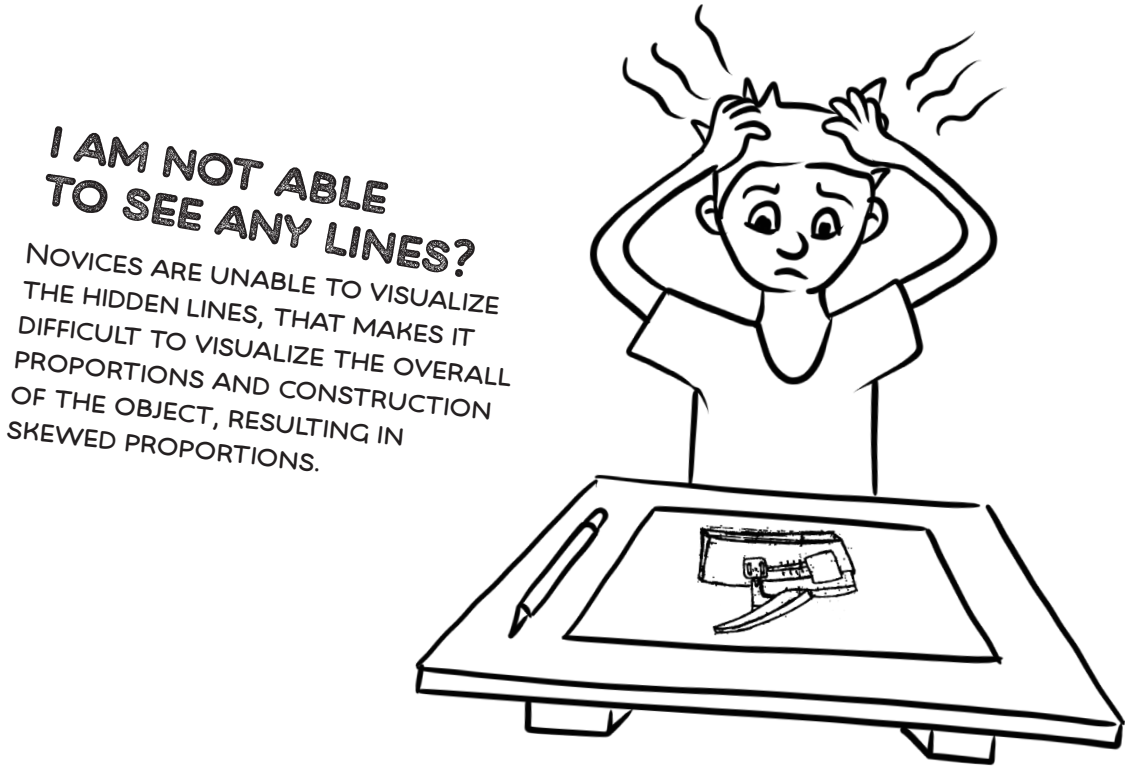


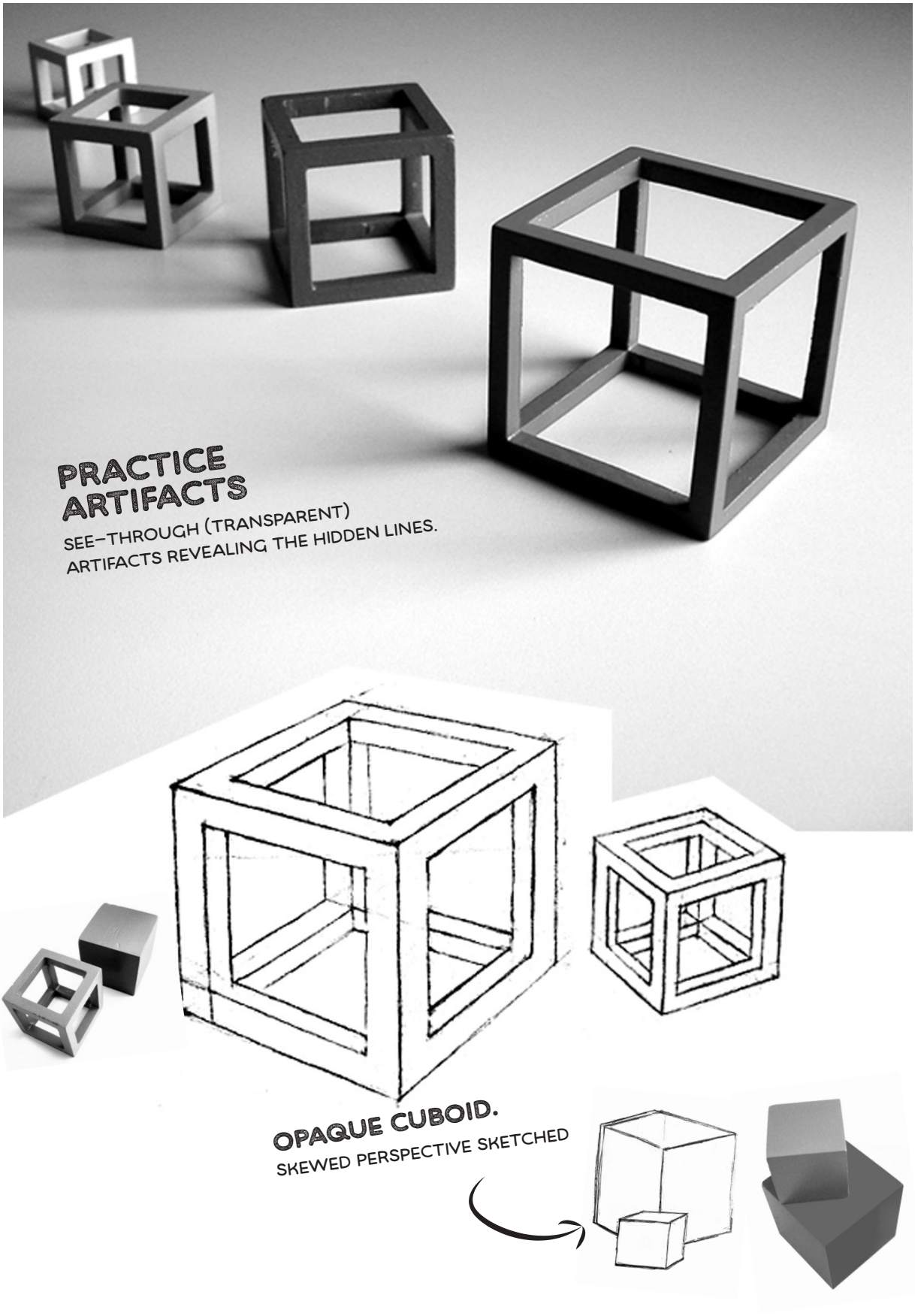
Figure 2. The hidden blue lines visualized by the expert enhances his ability to understand perspective and planes in which the object lies.



METHOD:

To practice sketching with see-through cubes:

The paper is based on the thought that the primary hurdle in sketching a three dimensional object is that the student is unable to visualize the structure of an opaque object. In response to this the author creates a set of see-through cubes for class room practice.



Deconstruction of the object:

After rigorous practice of sketching with see-through cubes, students chose an object of their choice. Instead of sketching it, they were told to deconstruct it. Deconstruction means to study the object and break it down into simplified form, ignoring the details and focus on revealing the core structure.

Reconstruction of the object: Making with lines

Reconstruction involves creation of the simplified form. Cane was chosen as a material to create forms since it was flexible enough to work with. Use of cane accentuated the new structure as it could provide cleaner lines with tighter curves. Restricting creation with lines resulted into a see-through object. Building the object created tacit knowledge of the structure and its proportions.

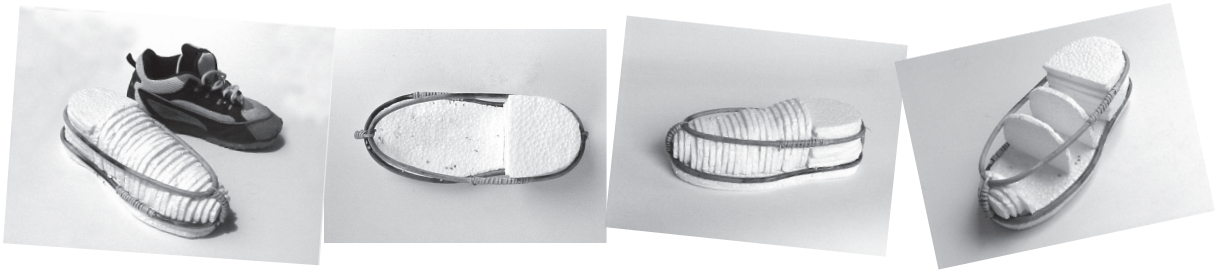


Figure 3. De-constructing to simplify the form and reconstructing to reveal the underlying structure of the shoe. Styrofoam inserts were used to add cross sectional details.

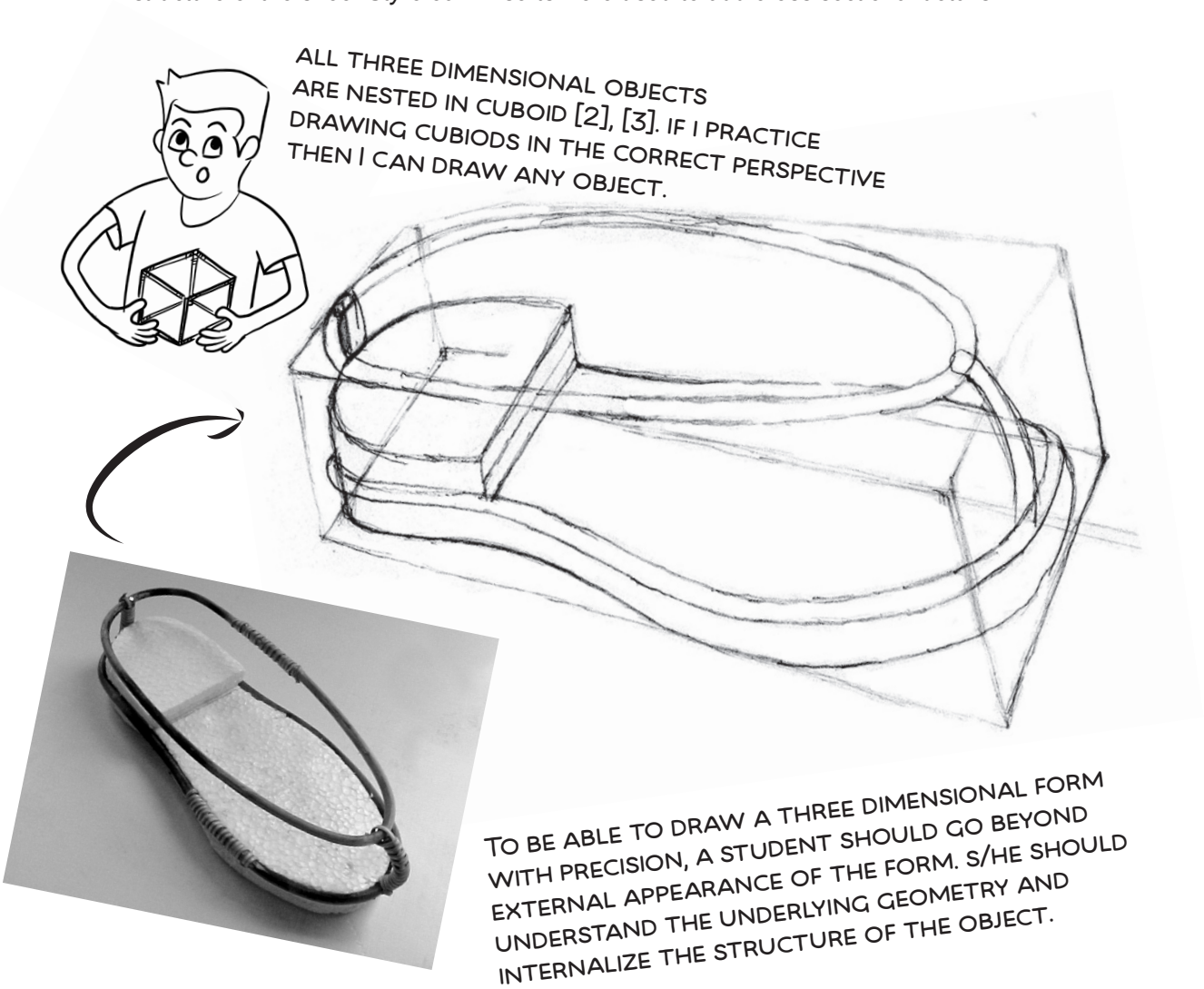


Figure 4. Visualizing an imaginary cuboid to sketch the object

Figure 5. Cane structure with removable Styrofoam inserts

RESULTS:

1. Students acknowledged the fact that all objects are circumscribed inside an invisible cuboid.
2. They realized the importance of practicing sketching with see-through cubes as it helps them visualize the hidden lines in opaque objects.
3. Instead of directly sketching a 3D object, deconstruction as a method offered simplification of the object and reduced its complexity.
4. Re-construction: Making the form with cane accentuated the importance of lines revealing the underlying hidden structure. Removable styrofoam inserts allowed transparency in the object when desired. Students found it easy to draw the reconstructed object in comparison to the original object.
5. Though the method does not offer instant improvement in sketching, it instills the necessary confidence and motivates students to continue sketching and attempt complex objects.

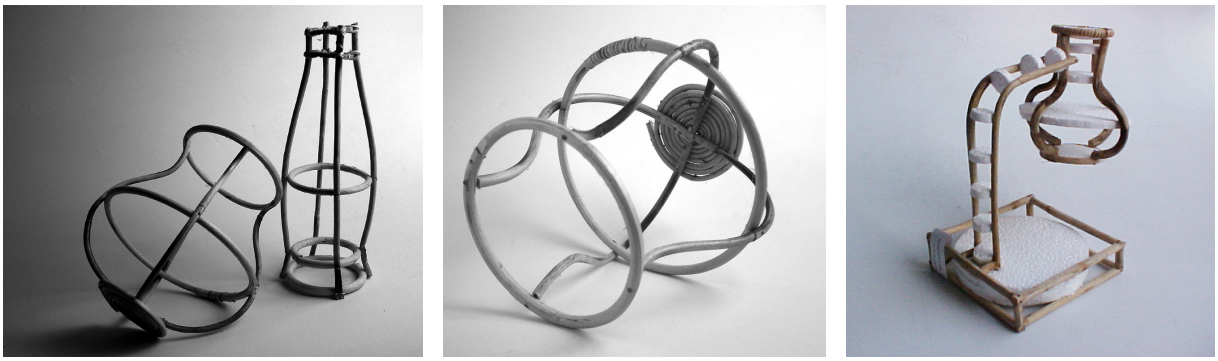


Figure 6. Reconstruction of various objects made by students in the course which were used for sketching by the whole class.

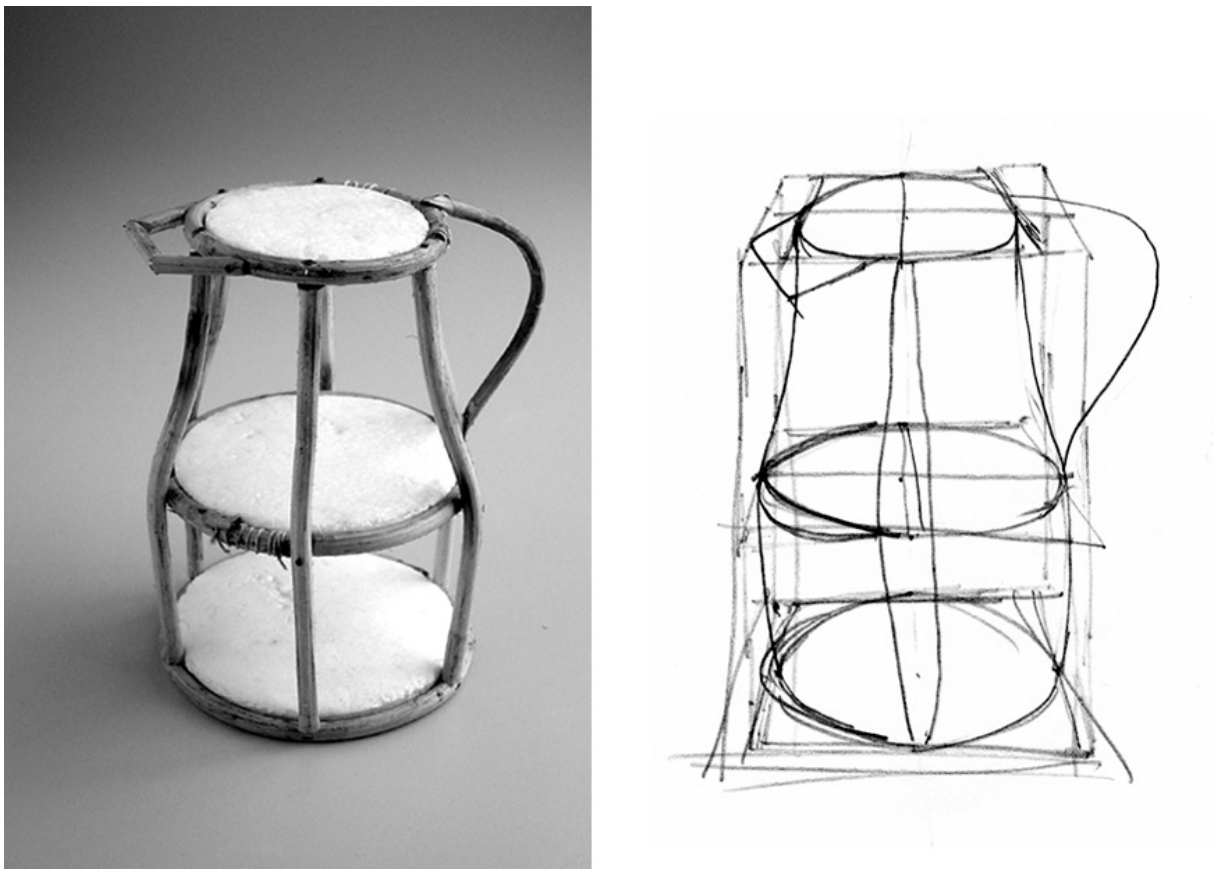


Figure 7. Student using a reconstructed see-through object (Jar) to attempt his first sketch.

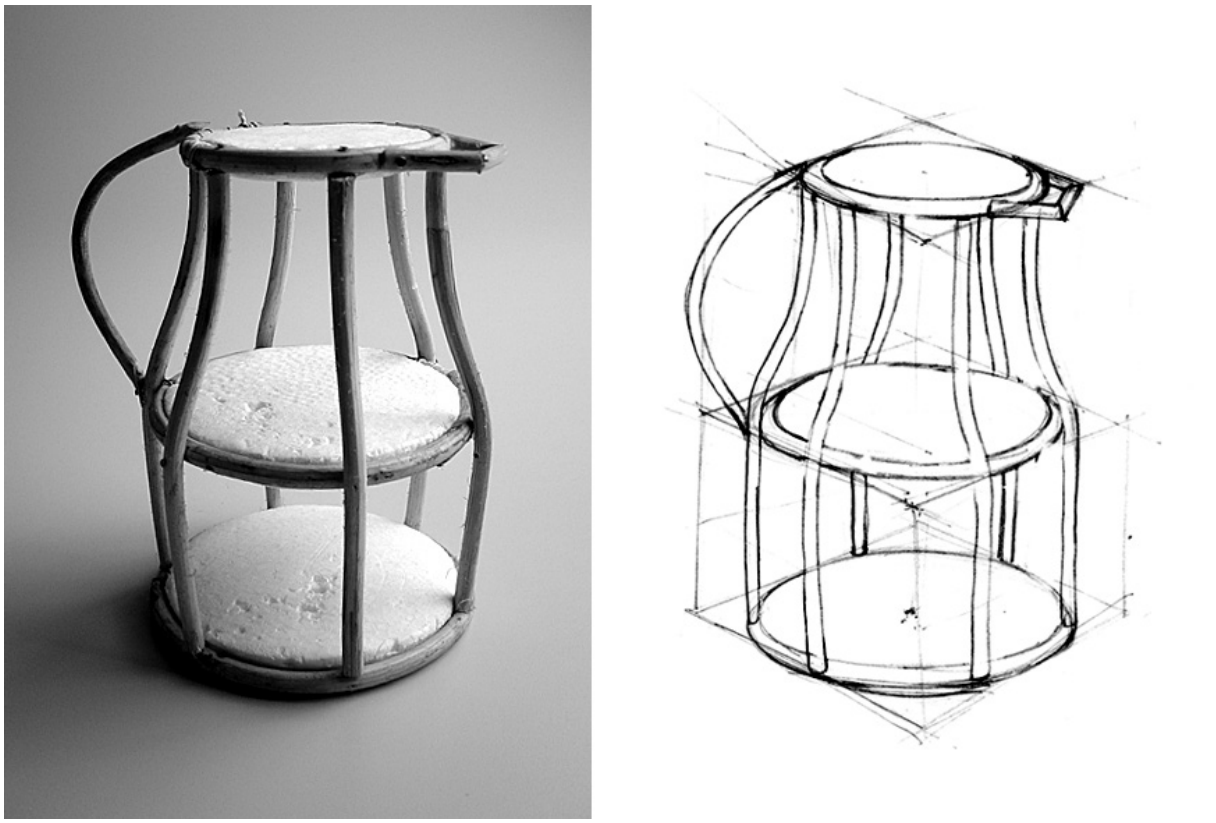


Figure 8. Incremental improvement in the sketch on repeated attempts by the same student.

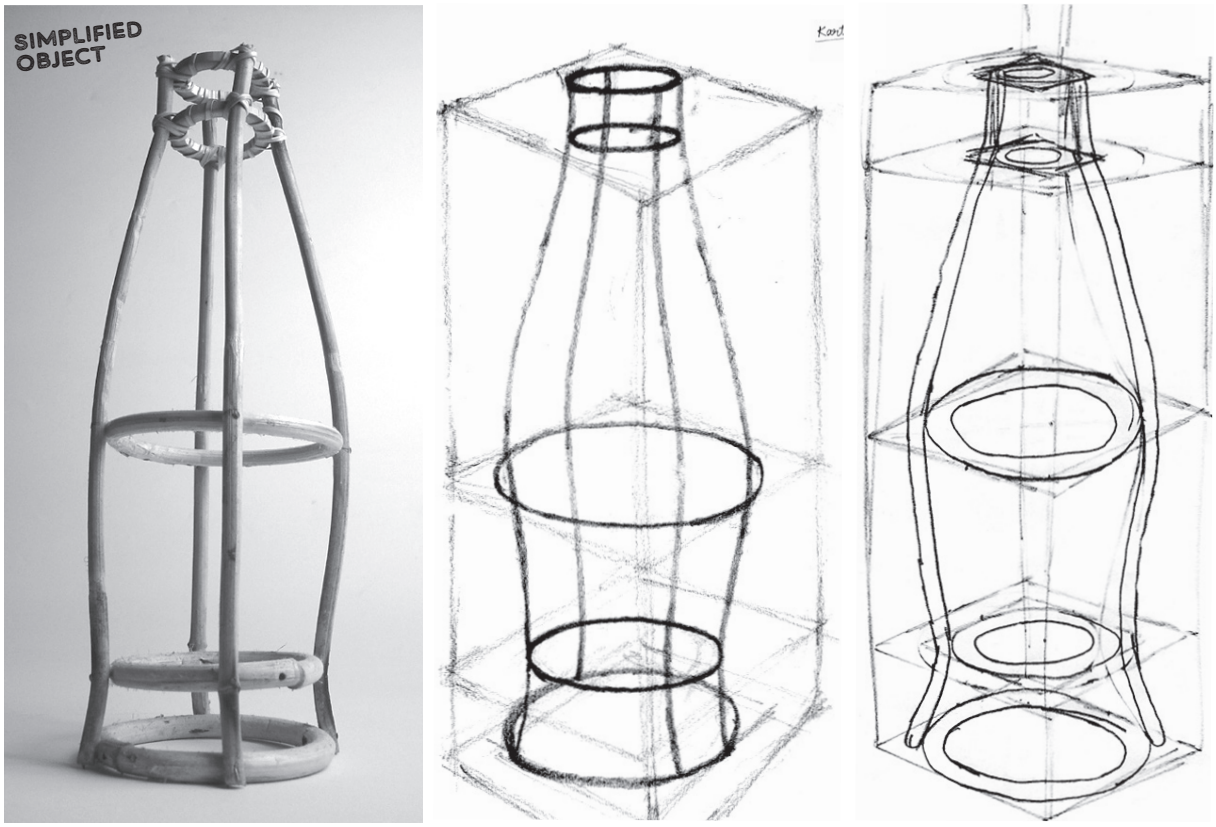


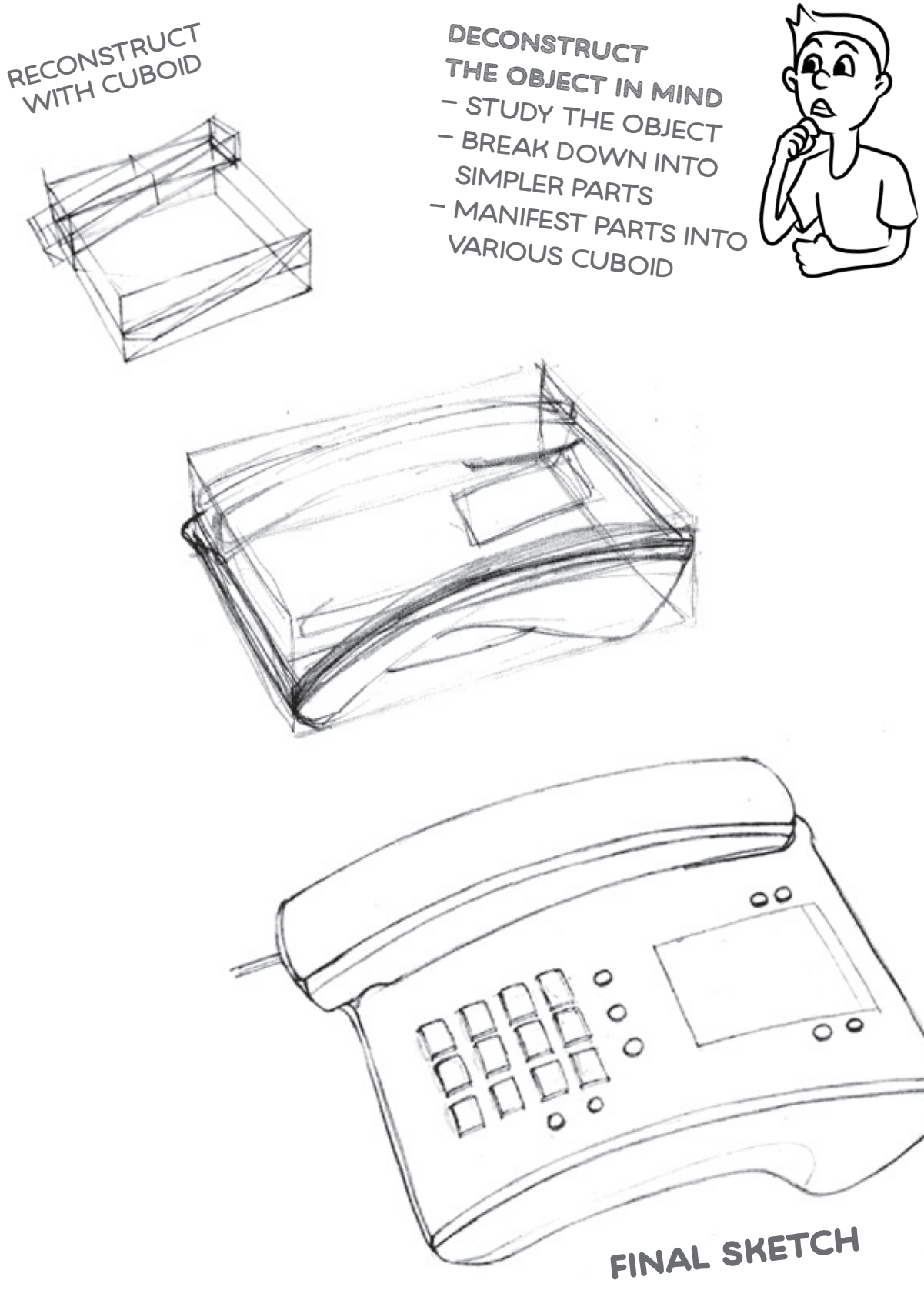
Figure 9. Achieving minimum correctness to boost confidence of students weak in sketching

VALIDATION

In order to validate whether sketching was improved by the method, a sketch of the complex object, (land-line phone) was rendered in the beginning of the course and another at the end of the course. This was done for each student. Given below are the sketches of the phone, before and after.

How deconstruction method was applied for other objects:

Once student has practiced with see-through objects, the method can be extended to sketch other objects. Student uses deconstruction method to break down the object into simple parts in his mind. Once the object is analysed, student begins to visualize the reconstruction by sketching cuboid in which the parts of the object are circumscribed.



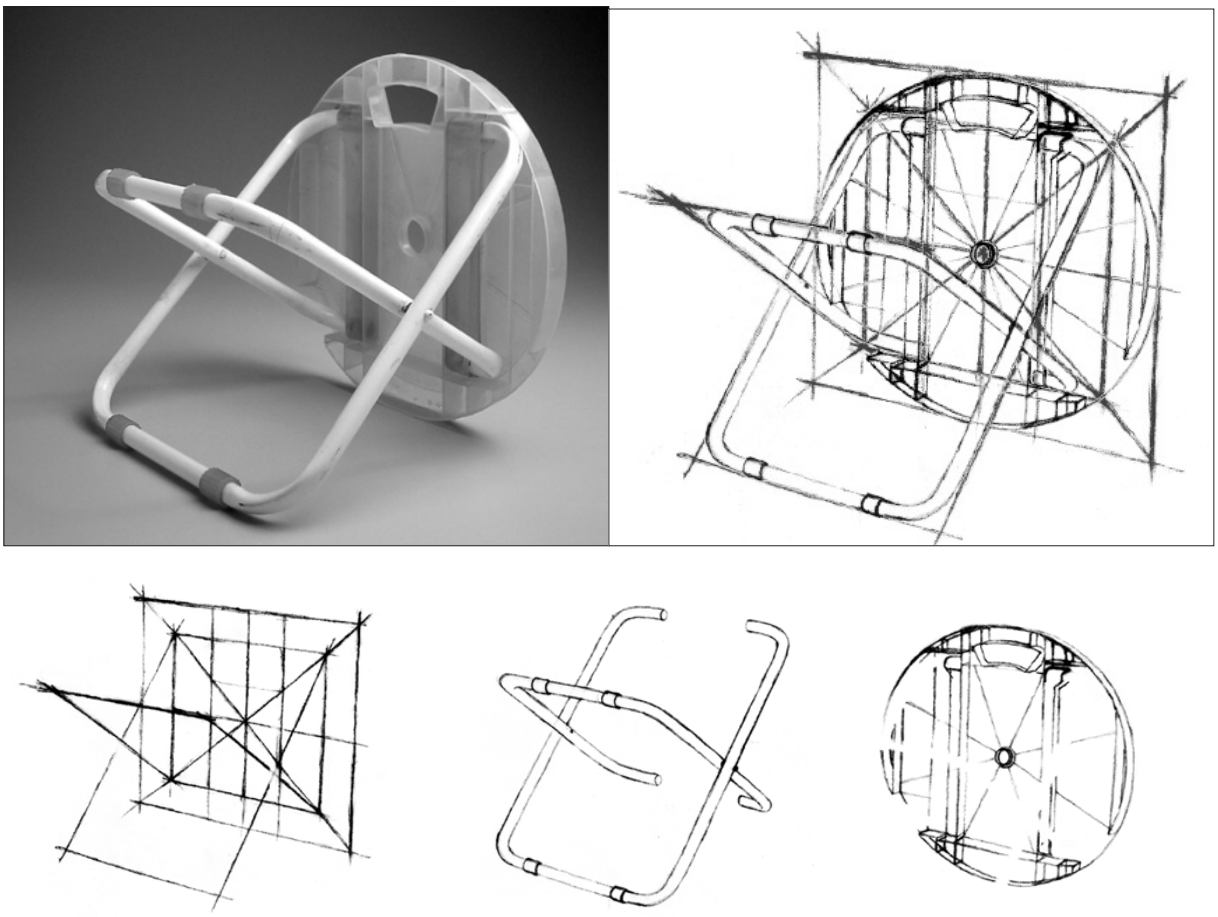


Figure 10. Illustrating students approach towards drawing complex object instead of directly attempting to sketch the contours.

CONCLUSION

Students poor in sketching need encouragement in their early attempts of drawing three dimensional objects, else they are likely to lose interest. The method does not offer instant gratification for a weaker student but definitely promises minimum correctness in outcome through a structured approach. This instills the necessary confidence in the student towards his/her ability to draw.

REFERENCES

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