

# Importance of Transformable Space Saving Furniture

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**ABSTRACT:** We have taken this topic for study because now days it's necessary to make such design of furniture whose understand the lifestyle, comfort and multiple use of the furniture. In India majority of middle class populations are living in small flats and homes this is mostly because of their economy scale as well as the lack of space availability for living. But in the present scenario furniture occupies a majority of the space in the home. Moreover, high population density leads many other problems such as high gap between high energy cost and house price. Now a day's these are some common problem. Space saving furniture is one of the options to solve these problems. In this paper, we will introduce the innovative designs; the hardware's its applications and the future development of costing and the important market of transformable space saving furniture. Prepare model & compare both designs which is with space saving furniture & using normal un-foldable furniture. We are using the software such as AutoCAD & Sketch-Up. In this comparison we are calculating circulation area, furniture area, materials, costing & accessibility for per room as per requirement. Also comparing the advantages & disadvantages of both the furniture accessibility to increase the more circulation space in rooms. In our design we introduce the functions of the furniture, we provide the complete combine package for the requirement of today's lifestyle. This paper will help people to understand the importance and the potential value of transformable multipurpose space saving seating or saving arrangements in different places.

**KEYWORDS:** Space, Foldable, Furniture, AutoCAD & Sketch-Up, Transformable.

## I. INTRODUCTION

In our design we introduce the functions of the furniture. We provide the complete combine package for the any type of room. It means we provide in design storage, Shelve, Dining or study table & the bed. We are using materials such as, Particle Board, Mirror and Mild steel. Transformable space saving furniture which uses less space and provides dual functions is also called dual- for the development of transformable space saving furniture. Transformable space saving function furniture. It has a large potential market in large cities, such as Beijing (China) and New York (the US). These large cities have a lot of features in common. These features provide a good opportunity furniture is designed based on the concept that the furniture's design must involve at least two forms of appearance and function. It should have both an ordinary appearance and transformed appearance.

A simple example of function would be that you can transform your sofa into a queen sized bed for a guest to sleep on when staying overnight. This saves the owner time, space and money

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## II. OBJECTIVES

1. To study the advanced techniques for increasing circulation area.
2. To analyse the case study of transformable space saving Furniture.
3. To design & develop transformable space saving Furniture based on selected case study.

## III. LITERATURE REVIEW

The first literature review is "Development in various multipurpose furniture's by using space approach" by Dhiraj v. Astonkar , Dr. Sanjay M. Kherde, In this Literature review they Introduce the Space saving Chairs & Tables Designs, to increase the Living space in room. [1]. The second literature review is "Development in various multipurpose Furniture's by using space saving", by Dhiraj v. Astonkar , Dr. Sanjay M. Kherde, In this literature review they introduce how to use small properties furniture with using large space & various functions.[2] The third literature review is "New concept of furniture design by using space saving", by Tan Boon Chai, in this literature review they are introduce the space saving sofa, bed, table & cupboard designs by using graphics representation.[3]

## IV. DESIGN METHODOLOGY

- i. In Methodology we find out the solutions for small living spaces.
- ii. Market Study and User requirement
- iii. Design a different concept.

## DESIGN DETAILED

Detailed AutoCAD drawings and Sketch Up drawings are done for making the prototype. This prototype model is made as per considering convenient scale. This model is made for comparing cost effect with separate Furniture and our Space saving or combined Furniture.

## FEATURES OF DESIGN

- Easy to transport
- Collapsible
- Flexible storage
- Affordable
- Enough leg space
- Simple to set up
- Made of particle board and steel frames
- Strong and light weight

## MATERIAL USED IN DESIGN

For manufacturing furniture commonly used materials are particle board, Mirror, aluminum frame and mild steel pipe. This all material easily available in market.

### V. STUDY AREA

The Design is made by considering the assumptions of increasing population and values of properties in each sector. Therefore this idea comes in mind to create the space saving Furniture for multiple use such as Bed, Storage, Study Table, and regular use Shelve with attached one mirror by using the Particle board, mild steel, mirror and aluminum frame (Fig. 1).

### VI. SOFTWARE ANALYSIS AND ESTIMATION

To show the detailed design of the model by using software this can be easily understand the drawing and the concept of the model. We can use the AutoCAD and Google Sketch-Up software for designing (Table 1).

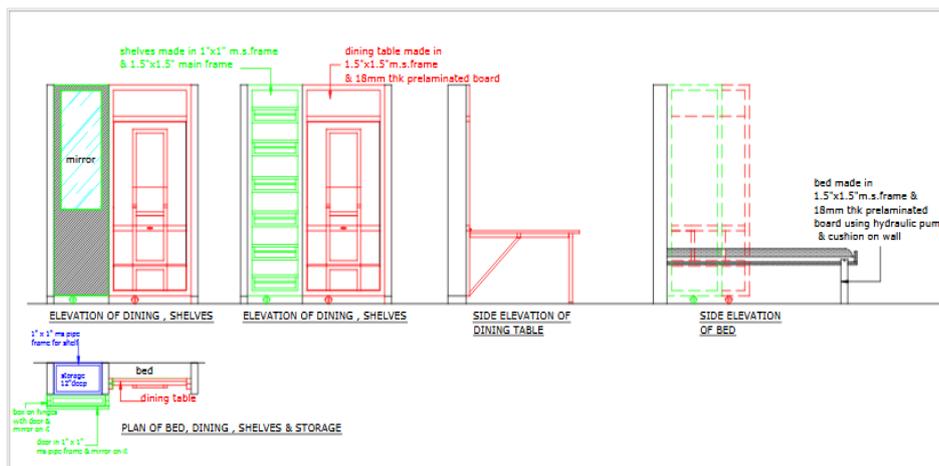


Fig.1: Combined Models of Shelves, Study Table & Bed (Final)

### MATERIAL QUANTITY

Sr no.	DESCRIPTION	QUANTITY	RATE	AMOUNT
1.	1 1/2"x0.75 MS powder coating pipe	60 rft	800/20"pipe	2,400.00
2.	0.75"x0.75"MS powder coating pipe	140 rft	440/20"pipe	3,080.00
3.	1/2"x1/2" MS powder coating pipe	80 rft	220/20" pipe	880.00
4.	Hardware fittings	lumsum	-	15,000.00
5.	18mm prelaminated particle board (7' x3')	4 sheet	1250/sheet	5000.00
6.	MIRROR			650.00
7.	<b>Total material</b>			<b>27010.00</b>
8.	WASTAGE		15%	4052.00
				<b>31062.00</b>
7.	Labour charges		30%	10,871.00
	<b>TOTAL COST(material &amp;labour)</b>			<b>41,934.00</b>
	10% proffit			4,193.00
	<b>Grand total</b>			<b>46,127.00</b>

Table 1: Estimation of material used in model

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## VII. HARDWARE ASSEMBLY

Special hardware required to assemble transformable space saving furniture are not usually used on regular furniture because they have different functions.

The main functions of the special hardware are to ensure the transformable parts can be moved smoothly and safely (Fig. 2 & Fig. 3).



Fig. 2: Special hardware no. 1 used in model



Fig. 3: Special hardware no. 2 used in model

## VIII. APPLICATIONS AND FUTURE DEVELOPMENT

Building designers can cooperate with transformable space saving furniture designers, so that the furniture will sufficiently fit the layout of the apartment and save even more space.

The building, which can be, “Assembled and disassembled several times”, is an energy saving house with a combination of moveable, structural and transformable furniture.

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### IX. RESULT

Now as day's area of flat or any room sizes goes decreasing because population goes increasing day by day and Flat Size Decreasing.

Transformable space saving furniture provides small properties with greater space and multiple functions.

### X. CONCLUSION

Our Conclusion is very simple and effective which is now a day's increase the population in each sector therefore we try to increase the space by using the model which is multiple use but the decrease the area which required for model.

We have compare un-foldable furniture with foldable space saving furniture to increase the circulation area in living space also compare the durability and cost.

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