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Faculty: *Mr. C. Selva Kumar*

## Problem Identification

### Voice of the Students

1. No space to place stationeries such as pen, pencil, compass, eraser, and books on the drafting table.
2. Inconvenient foot rest causing fatigue while drafting for more than an hour.
3. Rigid table height and inclination.
4. Dirt and scratch marks on table.
5. Difficult to clamp and maneuver the drafter.

### Voice of the College Management

1. Durable, light weight and cheap.
2. Drafting table must be used for writing theory exams also.

### Voice of the Faculty

1. Students drop their pencil and eraser often.
2. Drafting table has remained the same for the past 15 years.

## Photographic Illustration of the problems



Fig: Student in an uncomfortable pose while drafting.



Fig: Dirt marks on the drawing sheet.

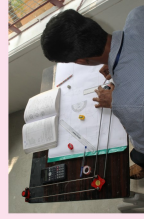


Fig: Drafting table congested with stationery items and book.



Fig: Student using adhesive tape to hold the drawing sheet.



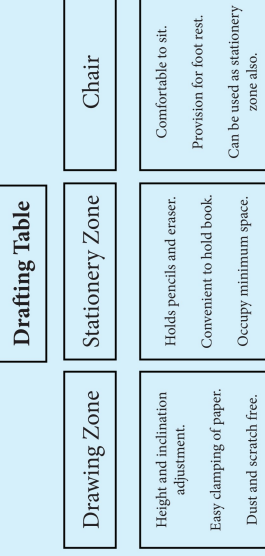
Fig: Student picks the pencil from the floor

1. Weight of the drafting table
2. Height adjustment (Range)
3. Inclination adjustment (Range)
4. Life of the table
5. Reduced fatigue for the student
6. Ease of manufacture and assembly
7. Scratch free drafting surface
8. Space for holding pencil, erasers and books
9. Quick and easy zero setting of paper
10. Aesthetics

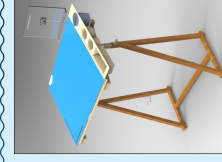
**MEASURABLE  
&  
TESTABLE  
REQUIREMENTS**

## Specification Development

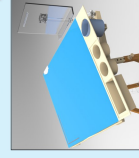
### *Functional Decomposition Diagram*



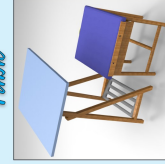
## Conceptual Design



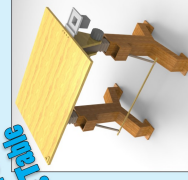
### Multi Speciality Drafting Table



### Ergonomic Drafting Table



### Ruff & Tuff Drafting Table



DECISION MATRIX					
Criteria	Weight	Multi Speciality Drafting Table	Ergonomic Drafting Table	Ruff and Tuff Drafting Table	
Provision for adjustment	0.4	0.7	0.2		0.8
Ease of handling	0.3	0.6	0.5		0.8
Ergonomic	0.15	0.9	0.8		0.3
Aesthetics	0.15	0.8	0.6		0.4
Weighted Sum	1	0.715	0.44		0.665

"Multi Speciality Drafting Table" is evaluated to be the best among the 3 designs.

FAILURE MODE AND EFFECT ANALYSIS					
Potential Failure	Effect of Failure	Cause of Failure	Severity 10 - Severe 1 - Not severe	Occurrence 10 - Very frequent 1 - Rare	Detection 10 - Easy 1 - Hard
Physical damage of table and requires repair	Rendered useless and requires repair	Student misbehaviour	8	2	5
Use by physically challenged students	Difficult to use the table	Lack of design focus	2	1	6
Table collapses	Ruins the drawing progress	Manufacturing / Assembly defect	3	4	2
					24

**Reflection:** The proposed design shall be improved to withstand physical abuse by the students

FEEDBACK FROM USER		
WHAT WORKED?	FURTHER IMPROVEMENTS	
Comfortable drafting table. Proper space for pencil, eraser and books	More focus on chair can be given to improve the comfort.	
INNOVATIVE IDEAS	QUESTIONS?	
Hinges for easily adjusting height and inclination. Provision for keeping pencil, eraser within the chair.	Will the management approve the design and implement the new design?	