



# A Study on Students' Ability in Computer Aided Design and Drafting (Cadd) in Kattankulathur District

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**ABSTRACT**

Ability test is an instrument used to determine the potentiality, capacity, skills and knowledge of individual in a targeted subject, area or course. In this study we discovered the level of engineering students' ability in CADD, we designated and validated the instrument used, and two CADD applications software were used AutoCAD and Autodesk Revit Architecture in testing the sample population of one hundred and twenty students from school of engineering in department of mechanical and Civil, and also some students from Architecture department. The level of their Ability toward CADD is at average level, as shown by the research (43.3%) are the average, then (37.5%) have low level of ability and only (19.2%) have higher level of ability. So the study suggested that there are needs for the students to have more practical time and also adequately uses of video tutorials in learning those software, group discussion and group practice should also be encourage.

**KEYWORDS**

CADD, computer aided design and drafting, CAD ability, level of ability.

**INTRODUCTION**

Computer-aided design (CAD) can be define as a computer technology that designs a product and stores the design's process. CAD may ease the manufacturing process by transferring detailed drawings of a product's dimensions, materials, tolerances and processes with specific conventions for the product in hand. It can be used to create either two-dimensional or three-dimensional drawings, which can then when rotated to be viewed from any angle, even from the inside looking out. A special printer or plotter is usually required for printing professional design renderings.

An **aptitude** is a component of a competency to do a certain kind of work at a certain level, which can also be considered "talent". Aptitudes may be physical or mental. Aptitude is not developed knowledge, understanding, learned or acquired abilities (skills) or attitude. The innate nature of ability is in contrast to achievement, which represents knowledge or ability that is gained through learning.

**NEED AND SIGNIFICANCE OF THE STUDY**

There is need to study the ability of the Engineering students toward using CADD software applications in order to:-

- help in discovering the capacity of the students in learning Computer Aided Design and Drafting (CADD) software
- suggest better ways and techniques to be use in learning Computer Aided Design and Drafting (CADD) software

**TOOLS USED IN THE STUDY:**

To measure the ability of the students, the tools used are:-

- **Basic Aptitude test for AutoCAD** from <http://www.indiabix.com/technical-drawing/computer-aided-design-basics/>
- **Basic Aptitude test for Autodesk Revit Architecture** from <http://www.indiabix.com/technical-drawing/computer-aided-design-basics/>

**OBJECTIVES OF THE STUDY: -**

H1. To find out the level of ability toward Computer Aided Design and Drafting software (CADD) of Engineering Students in SRM university.

H2. To find out the significant difference in ability toward Computer Aided Design and Drafting software (CADD) of Engineering Students in SRM University based on

- **Gender**
- **Residential area**
- **Having Personal Comp**

H3-To ascertain if there is any association exist in ability of students in Computer Aided Design and Drafting software (CADD) with;

**Monthly Income ANALYSIS AND INTERPRETATION OF DATA**

Variable	Sub- Variable	Frequency	Percentage
Branch	Architecture	37	30.8%
	Civil	20	52.5%
	Mechanical	63	16.7%
Total		120	100%

**H-1: The ability level of engineering students towards Computer Aided Design and Drafting (CADD) is high in nature**

**Table 1 showing the level of ability**

Level of attitude	Score	No. of students	Percentage
Low	12 to 39	45	37.5%
Average	40 to 59	52	43.3%
High	60 to 100	23	19.2%

From the above table (1) it is observed that 37.5% of the population have low level of Ability and 43.3% are average, lastly 19.2% having higher level of ability towards CADD. Hence forth the above hypothesis (H-1) is rejected.

**H-2(a): There is no significant difference in ability towards Computer Aided Design and Drafting (CADD) with respect to gender.**

**Table 2 showing the critical ratio for ability based on gender.**

variable	Gender	N	Mean	S.D	't' value	Remarks at 5% level of significance
Aptitude	Male	82	42.11	15.7	0.79	NS
	Female	38	44.74	15.2		

From table (2), the calculated value of 't' (0.79) is less than the table value (1.98) at 5% level of significance. Thus there is no significant difference in aptitude of engineering and architecture students toward CADD with respect to gender. Hence the hypothesis (H-2a) is accepted.

**H-2(b): There is no significant difference in ability towards Computer Aided Design and Drafting (CADD) with respect to residential area.**

**Table 3 showing the critical ratio for ability based on residential area.**

variable	Residential area	N	Mean	S.D	't' value	Remarks at 5% level of significance
Aptitude	Rural	30	40.67	13.12	0.93	NS
	Urban	90	43.70	16.25		

Table (3), shows the calculated value of 't' (0.93) is less than the table value (1.98) at 5% level of significance. Thus there is no significant difference in aptitude of engineering and architecture students toward CADD with respect to residential area. Hence the hypothesis (H-2b) is accepted.

**H-2(c): There is no significant difference in ability towards Computer Aided Design and Drafting (CADD) with respect to personal computer.**

**Table 4 showing the critical ratio for ability based on having personal computer.**

variable	Personal computer	N	Mean	S.D	't' value	Remarks at 5% level of significance
Ability	Yes	107	42.66	15.86	0.56	NS
	No	13	45.23	12.79		

From the above table (4), shows that the calculated value of 't' (0.56) is less than the table value (1.98) at 5% level of significance. Thus there is no significant difference in ability of engineering and architecture students toward CADD with respect to having personal computer. Hence the hypothesis (H-2c) is accepted.

**H-3: There is no significant association exists in ability towards Computer Aided Design and Drafting (CADD) with respect to family income.**

**Table no. 5 showing the Chi-square value for students' ability based on family income.**

Attitude	Monthly income of the family			Chi-Square value	Remarks at 5% level of significance
	Below 10,000	10,000 to 50,000	Above 50,000		
Low	0	12	22	7.815	NS
Average	5	24	26		
High	0	15	16		
Total	5	51	64		

From the above table (3), it can be observed that the calculated chi-square value (7.815) is less than the table value (9.488) for degree of freedom 4 at 5% level of significance. Therefore, there is no significant association exists in attitude

of students toward CADD with respect to their family monthly income. As a result of that, it is concluded that the attitude of students toward CADD is not depending on their family monthly income. Thus the above hypothesis (H-3) is accepted.

**DISCUSSION OF THE RESULTS**

It was hypothesized that the ability level of engineering students toward Computer Aided Design and Drafting is high in nature, and according to the analysis carried out in the research work, shown that, out of the sample population of the students, 52 students scored average mark in the administered ability test, while 23 of them scored high mark. So 19.2 percent of the students had high ability level toward Computer Aided Design and Drafting CADD, this implies that the ability level of those students is low in nature.

The investigators tried to discover the effect of some variables that may affect the students' ability, that are gender, residential area, having personal computer, monthly income of the family and no significant difference were found.

**RECOMMENDATIONS**

The investigators projected the following points with regards to students' ability toward computer aided design and drafting.

Extra time for students to practice CADD application software should be provided in school or at home, this will improve the level of their skill in using those application software.

Software vendors should create a means of motivating students to learn the application software tutorial through the use of gaming.

The students should also use the available video tutorials, this will help them to master those CADD application software within short period of time and enable them to learn the complex concept of making complicated design.

Students should developed the habit of learning in group so that they can help each other while training, this will help them in sharing ideas and easily cleared their doubt and make the learning so fun and more interesting.

**CONCLUSIONS**

At end of this study, it dealt with the introduction of study, then need and significance of the study, objectives of the study, data analysis and discussion of the results, then the researchers tried and brought out vital recommendations that would help in boosting the ability of students in CADD application software.

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