



Fitness Evaluation of Classroom Benches

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ABSTRACT

Classroom furniture is an important facility that helps in providing a comfortable and functional environment for students in educational institution. The purpose of this study is to find out whether students were comfortable with the existing furniture designs, or to analyze the problems students face due to the existing workstation design. The study was conducted in I.C. College of Home Science, covering twelve students randomly selected as sample that use classroom. The opinion of the students with regard to classroom seating furniture revealed that some furniture parts and their dimensions were uncomfortable to sit. From the opinion and suggestions given by the students and the anthropometrical consideration; the guidelines for designing students seating furniture were framed.

Introduction

Furniture is one of the crucial physical amenities in a learning environment where students spend the majority of their time working on various learning activities. Students should be comfortable and have an effective learning environment when designing their workspace. The physical design of the student's classroom furniture in connection to the physical structure and biomechanics of the human body results in its functional usefulness.

The human body is designed for movement, and regular postural adjustments are essential for its proper operation. The furniture used for seating in a classroom must support the user's weight and permit circulation and postural mobility.

According to Chaffin and Anderson (1991), The work seat alone is insufficient for stabilization and for using the legs, feet, and back in touch with other surfaces.

Numerous investigations discovered that poor seating and mismatched furniture with students lead to the onset of musculoskeletal problems at a young age. Students are concerned about it. Children more than adults should utilize furniture that encourages good posture because this is the age when sitting habits are formed. Therefore, maintaining proper sitting posture requires the use of classroom furniture. The furniture in the classroom must be designed in such a way that it doesn't annoy the students and still offers them the essential comfort.

Methodology

The study was conducted in IC. College of Home Science, Chaudhary Charan Singh Haryana Agriculture University, Hisar. Twelve respondents were selected on random basis that use classroom benches. The purpose of this present study was to find out whether students were comfortable with the existing furniture designs. Or To analyze the problems students face due to the existing workstation design. Data for this study was collected through anthropometry measurements and questionnaires distributed to students who use the classroom benches. A total of twelve questionnaires were distributed among students. The collected data were tabulated and further improvements were recommended.

Result :-

Sr.No	Questions	Yes F (%)	No F (%)
1	Comfortable to use.	9(81.8)	2(18.2)
2	Furniture setup caused any injury to you.	1(9.1)	10(90.9)
3	Height of the bench & desk are proper.	11 (100.0)	-
4	Surface of the table uneven with sharp edges.	-	11(100.0)
5	Have you ever had pain or discomfort	3(27.3)	8(72.7)
6	Bench have arm-rest	-	11(100.0)
7	Do you sit comfortably on the bench for long duration?	4(36.4)	7(63.6)
8	Metal parts of bench corrosion resistant.	11(100.0)	-
9	Bench allows comfortable hand or body motions.	10(90.9)	1(9.1)
10	Foot rest provided	-	11(100.0)
11	Back support provided	11(100.0)	-

According to 81.8% students classroom benches were comfortable to use, they did not face any kind of problem. According to all students, the height of benches and desk are proper .Classroom benches did not provide arm rest and footrest. Among 12 students only 4 students sit comfortably on the benches for long duration. According to their opinions cushions should be providing to make it more comfortable for long duration. The metal parts of benches were corrosion resistant and allow comfortable hand or body motions.

Anthropometry measurements

Measurements	Average
Stature height	60.5
Elbow to elbow height	15.6
Hip Breadth	14.5
Popliteal height	17.4
Buttock Popliteal height	20.2
Shoulder breadth	13.9

Dimensions for the proposed designs were determined taking the anthropometrics into consideration. The stature height of students were 60.5 cm, Elbow to elbow height 15.6 cm, Hip Breadth 14.5, Popliteal height 17.4 Buttock Popliteal height 20.2 and Shoulder breadth 13.9.

Measurements of Benches

Length	68 cm
Width	16 cm
Height	29.5 cm

Design Criteria based on student's recommendation:

- Height of the chair and table should be adjustable to users' needs
- Cushions should be provided
- Seat should facilitate the foot to rest on the floor while sitting straight
- Thighs and Legs should have free moving space
- Footrest should be provided for table / desk
- Provision for keeping books and water bottles

Summary and Conclusion

College students who had one-year experience of using the furniture in classroom environment expressed their opinion on the choice of furniture. The information emerged out of the study revealed that the type of furniture provided in classroom were incompatible to users in many respects. .In desk and tablet adjustment of height to suit to tall and short persons should be provided. Footrest and provision for keeping books and water bottles should be provided. Cushions should be providing to make the benches more comfortable for long duration.

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