

# ADJUSTABLE TABLETOP

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## ABSTRACT

The aim of the project is to redesign an adjustable tabletop in which it develops and produces a high-quality tabletop for children and student's environments. The idea comes from the problems observed in children and students while using electronic devices or study in current tables. Many people unknowns the different kinds of injuries that the misuse of current tables for many different kinds of activities can cause in their bodies. The biggest problem is remaining in the same position for a long period of time. In case of school children and students in higher learning institutions, they spend an average of 6 - 7 hours every day. If the workstation is not designed properly, the students can have the most inappropriate posture, their blood circulation can be reduced leading to pain in some parts of their body. The most common injuries are neck pain, headaches and shoulder and arm pain. Therefore, the purpose of the project consists of looking for a new design that fits in its market, catches the children and students interest and meets their needs.

**Keywords:** flexible tabletop, school children, students, injuries

## 1. INTRODUCTION

Education is the most effective means in order to ensure the economic growth and national development in countries. University is one of the educational settings in training of students. Effective training can be achieved in a safe and stress-free space in classrooms. A good physical environment of educational facilities can help teaching, learning and academic performance, while inadequate facilities can cause stress and disturbed behaviors in students.

Few studies showed a mismatch between a student's 'anthropometric' characteristics and dimension of classroom furniture. For example, [1] reported study arrangements of tables and chairs are too high and too deep. In India also found that desk and seat height were larger than accepted limits for students. Furthermore, in Iran, studies also showed a gap between student's body dimensions and classroom chairs and desks.

## 2. PROBLEM STATEMENTS

Improper design of table/chairs is one of the reasons for inappropriate sitting positions which can lead to bad posture, fatigue, severe psychological stress and effects on student's performance [1].

The relationship between awkward body posture and cognitive issues such as discomfort and reaction time has also been investigated by some studies. Many complications can arise from using inappropriate tables/chairs such as lower back pain, pain in the backbone, neck, shoulders, arms and paralysis muscles [1].

## **2.1. Hand or arm**

It is called overuse injury. It is caused by doing the same movement all the time with the same muscle position for long periods. This produces localized pressure on tendons that damage the joints. In order to avoid this problem, it is important to choose the correct surface finish. Hard or sharp surfaces can damage wrists and elbows. Take some breaks while an adjustable tabletop is the best solution [1].

## **2.2. Shoulders and Back Pain**

The use of laptops, makes the shoulders be forced to work too high, and keep this position for a long period. The joints of tendons and muscles become damaged because of this. To prevent injuries, it is important to select the best setting arrangement for the task that is going to be performed. Ergonomic furniture can help the student to keep the best position while sitting correctly. It is important to take into account that a desk that is too high can cause shoulder injuries. Moreover, having a bad position while using devices causes back pain [2].

## **3. BENEFITS**

Adjustable tabletop is made up of pine wood board, adjustable leg table (metal), metal rod, Velcro tape, pillow with soft finished fabric and 30 mm screw. Adjustable tabletop consists of several benefits such as; it is adjustable and multipurpose; the table legs can be adjusted in height according to the convenience of the users. Besides, the size of the table is large compared to the current table in the market (80 cm x 50 cm). In addition, students can fold the pillow back to the usual place and it can be used as a 'pillow' and it 'saves space'. The pillow that is attached to the table can be removed and washed since it uses Velcro tape.

## **4. CONCLUSION**

As a conclusion, tables and chairs should be designed based on ergonomics principles in order to reduce bad symptoms and accidents.

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