ABSTRACT

As one of the cities in West Java, Bandung has an allure for prospective students because every year there are thousands or even tens of thousands of new students in the city. Boarding rooms are needed to support the needs of temporary housing for new students. Based on a survey of 10 informants, a boarding room measuring 3 x 3 meters is a decent standard room at an affordable price and the most popular with students, but this size is classified as a boarding house with a small space theme so it cannot be filled with all the items needed by students. Students have various ways of utilizing limited space for study, for example studying on a bed due to limited boarding space or using folding study table facilities. Studying on a mattress has its drawbacks, namely making students unfocused and tired faster when studying due to an uncomfortable body position. Therefore, the average student uses a lesehan folding study table in a limited boarding room to overcome this problem. However, when students learn to use folding study tables, problems are found regarding the absence of supporting facilities for lesehan chairs due to delays in purchasing due to the limited space of boarding rooms. So that when the student is studying, it will cause aches and discomfort around the back to the feet. The existing study table has a flat surface and is not flexible for users with various body postures. This causes the user's upper body to experience Musculoskeletal Disorders (MSDs). Then, the storage facilities for equipment and lecture materials are less available because the narrow space is often a problem when it comes to storage areas.

The use of multifunctional furniture is a solution that can overcome these problems. The problems mentioned earlier are related to upper body posture, so they can be analyzed using RULA (Rapid Upper Limb Assessment). The right method for realizing good quality furniture is the Quality Function Deployment (QFD) method which focuses on customer needs and demands. Collecting data through observations, interviews, and distributing questionnaires needs to be done before implementing the QFD method. In addition, literature studies and field studies are also needed to obtain supporting information in this research. All data is processed after data collection and product design and development are carried out in the form of a proposed design concept.

The proposed product designed is a Multifunctional Folding Study Table. The final specification of the proposed table is to have dimensions of 70×52×25 cm with a table height of up to 75 cm. The proposed table has a cable clip on the right side of the table so that cables are more organized, a study lamp with several levels of brightness, wheeled legs and foldable handles that make it easier to mobilize and store products, an adjustable and foldable desk that minimizes the use of space, an outlet that is attached to a vertical table, and Lesehan folding chair equipped with five levels of inclination on the back of the chair. These features are obtained from interviews and observations of existing product users. The proposed product design concept was designed using CAD software, namely Autodesk Inventor 2022.

After getting a design that fits the needs, the study succeeded in reducing the RULA value which showed an improvement in the ergonomics aspect. Thus, it is hoped that the proposed study table can be a solution to these problems and be realized as a support for industrial engineering student learning activities available in a 3×3 meter boarding room.

Keywords — **Product Development, Multifunction Furniture, RULA, Quality Function Deployment, Musculoskeletal Disorders**