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Ergonomic Evaluation of Student's Posture during Synchronous Class

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Abstract

Seated for long periods of time causes musculoskeletal discomfort due to poor ergonomics and posture. If these circumstances persist, students may develop a variety of medical problems that may impact their current and future lives. Previous research has proven that using ergonomic concepts has favorable impacts on student's health. In this study, a descriptive quantitative and testing method was used, including the profile of respondents, checklists, and the REBA (Rapid Entire Body Assessment) for postural analysis that assessed the risk level of MSD that students might acquire. Due to the worldwide pandemic, the students were obliged to stay at home and adapt to the online class modality. The study's findings revealed that students who are directly participating in synchronous class experience mild physical discomfort and show signs of MSD risk. Furthermore, there is a significant relationship between the students' posture regarding the type of environment (P>0.05). With these, having an intervention plan, which is the ergonomic chair, will help and limit MSDs in the workplace.

Keywords: student's posture; Musculoskeletal Disorder; postural analysis; ergonomics; synchronous class.

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1. Introduction

In preparation of the decision to cancel face-to-face interactions because of the covid – 19 pandemic, most universities in the Philippines have turned to online learning to cope up with this challenge. Various online teaching modes have been adopted by many educational institutions [1]. In the online educational environment, there are no physical meetings. Emails, online modules, virtual libraries, lecturers' online notes, online discussions, are some other synchronous and asynchronous learning tools, play an important role in humanizing online courses by replicating the not only between learners and instructors, but also among learners, classroom experience of information exchange and social construct [2]. With this set-up, questions about whether students are particularly vulnerable to postural risk and physical pain arose.

Posture is referred to as the total of all positions and movements that an individual assumes at work, at rest and at play throughout the day and night. It depicts how your head, shoulders, and hips are aligned with your spine. It is possible to categorize it as either static or dynamic posture. When we keep the same alignment for an extended period of time, we are said to be in a static posture. Standing, sitting, and kneeling are some examples. Body alignments that occur when the body and/or limbs are moving, such as walking, jumping, or sprinting, are referred to as dynamic postures.

On the other hand, Ergonomics is the study of how to match a task to a worker. Work-related musculoskeletal illnesses are caused by a mismatch between the physical demands of the job and the physical capabilities of the worker (WMSDs). Workers who have to make the same motion frequently throughout the day, work in an inconvenient position, use a lot of effort to accomplish, move heavy objects repeatedly, or suffer a combination of these risk factors are more likely to acquire WMSDs.

1.1 Prevalence of Gadgets

Using gadgets is a good thing, but the over use on gadgets will reduce the learning ability on outdoor activity. Hence, the greater world's case of frequent use of gadgets, many students are having back pain, neck pain, hand pain and even eye problem that can lead to serious illness. Thus, students were spending more time on gadgets. On the other hand, students nor teachers were aware of the problem associated with acquired incorrect postures, Repetitive Strain Injury, Cumulative Trauma Disorder and Musculoskeletal Disorder [3]

Neck pain is a typical complaint among those who spend a lot of time on computers and other gadgets [4]. Increased use of electronic devices has been linked to enhanced social and cognitive health in students [5]. In contrast, a lack of devices and connectivity for e-learning has been linked to increased stress among students [6]. According to a survey conducted by author in [7], about twenty – seven percent (27%) of students claimed they already had the gadgets before starting distance learning classes, twelve percent (12%) said they bought them, ten percent (10%) said they borrowed them, and nine percent (9%) said they were gifted them. The smartphone was the most popular item, with seventy – nine percent (79%) of respondents choosing it. Around thirteen percent (13%) said they bought a laptop, five percent (5%) said they bought a television, and three percent (3%) said they bought tablets. According to the author in [8], students in the fourth year were considerably more exposed to risk factors such as daily computer use, time spent at the computer without breaks, duration of mouse

use, and poor workstation ergonomics. Neck pain was the most often reported symptom with sixty – nine percent (69%), followed by hand/wrist with fifty – three percent (53%), shoulder with forty – nine percent (49%), and arm with eight percent (8%) discomfort. In this study, the types of gadgets used by the students in synchronous classes will help the researchers determine the most used gadget among students during online classes. This will help to assess the workstation in order for the researchers to construct an innovative one.

1.2 Study Environment

A positive learning environment may be a critical factor in an online course's success. It is not just about fostering a great classroom environment in which students can feel interested and motivated. According to the author in [9], as many students use their bedroom, kitchen, or living area for Zoom, taking control of the conditioning process may help many people focus on their assignments. According to the author in [10] in their study in 2020, as cited by the author in [11], students watch lectures from their bedroom if they wish to do so at any time. Reviewing them multiple times and taking notes is extremely helpful for students to understand the content better. According to the authors in [3] "Human evolution has a great impact on adaptability of human body to their environment and their lifestyle needs". The ancient human spent more time either moving or resting, where sitting was acquired afterwards. However, human anatomy does not support of sitting posture for it has higher affix of loading effect on spine. Demand of online classes and education behest to make shift work station at home were might not fitted to student stature and size may lead to MSD's.

1.3 Level of Discomfort

Sitting in front of the monitor for a long time, resulting in different forms of muscle discomfort due to adequate computer ergonomics and poor body posture. According to a study by the author in [12], the average levels of fatigue and pain reported by the participants are 4.7 and 3.7, respectively. The findings demonstrate that the amount of time people spend using devices every day affects their fatigue and pain levels. In this study, the researchers will assess the risk of Musculoskeletal Disorders through the level of discomfort. The author [13] noted that since undertaking online study, over eighty percent (80%) of students have reported problems in the head, neck, and eyes. MSD symptoms were reported by fifty – eight percent (58%) in the right shoulder and fifty – six percent (56%) in the right-hand fingers. Furthermore, due to online learning, more than forty percent (40%) of students developed MSD symptoms in practically all of the body areas investigated.

In comparison to working populations, there has been little research on MSDs among engineering students in the Philippines. This study will help evaluate the purpose of having a good sitting posture that will be based on the set of ergonomic standard postures to the students having synchronous class. Since the Cebu Technological University - Argao Campus is new to online class modality; thus, this study aims to investigate and assess if there will be an issue that could make the students prone to musculoskeletal disorders.

2. Materials and Methods

2.1 Materials

In this study, 30 students in Industrial Engineering of Cebu Technological University – Argao Campus were the respondents. Since Cebu Technological University – Argao Campus is new to online learning modality, this study sought to determine if there would be a problem that would put students at risk for musculoskeletal disorders. The purpose of this study was to characterize and analyze the posture of students during synchronous classes. The descriptive quantitative design is used by the researchers. Because the study determined an existing process and context, specifically the students' posture in a synchronous session, it was descriptive in nature. Quantitative analysis also included numerical data derived from the postural analysis. The evaluation, analysis, and validation of findings are the three main goals of this form of research. The researchers utilized a conservative sample strategy, with only 3 – 4 respondents per section. It enables researchers to achieve a sample population that will be the representative of the entire population under investigation. This study was appropriate for a descriptive quantitative research design because it had similar goals of evaluating, analyzing, and validating the phenomenon or situation. This study will carefully assess and describe the respondents' level of MSD.

To answer the sub-problems of this study, the research tool used was Rapid Entire Body Assessment (REBA) for the postural analysis. According to the author in [14], the Rapid Entire Body Assessment (REBA) is an ergonomics approach for assessing the posture of the neck, back, arms, wrists, and feet quickly. The REBA method is a postural analysis instrument that is extremely sensitive to work that requires quick changes in position, according to the author in [15], as cited by the author in [14] in their study in 2020. This method, according to the author in [16], can be effective for risk prevention and can be used to warn employees of unsafe working environments. Furthermore, one of the significant differences between REBA and other assessment systems such as RULA is that REBA considers the lower limits as well. Since REBA was demonstrated to be unreservedly accessible assessment scale, which allows assessment of the entire body including lower limbs and is less time expending; this study aims to use REBA as a result degree to assess the musculoskeletal risk components in industrial engineering students.

Using also a survey questionnaire adapted to the Cornell University Body Discomfort Worksheet, the researchers gathered the data. To determine the VD of the discomfort, the researchers followed a scale from 0 – 5 in which the SD ranges from 0 – 0.83 there is no discomfort felt. On the scale of 1 where the SD ranges from 0.84 – 1.67, mild discomfort is felt. On the scale of 2, SD ranges from 1.68 – 2.50, there is a minor discomfort is felt. On the scale of 3 where the SD ranges from 2.50 – 3.33, moderate discomfort is present. If the scale is 4, SD ranges from 3.34 – 4.17, there is a major discomfort that is felt and on the scale of 5, the SD ranges from 4.18 – 5.00, severe discomfort is felt. The results showed that majority of the body parts has "Mild Discomfort," and only one of the body parts has "Severe Discomfort."

The analysis will be computed using REBA Tool. The researchers will utilize a converted excel spreadsheet worksheet called REBA Analysis Worksheet from the Cornell University Ergonomics Web for postural analysis. The researchers will evaluate the data after acquiring and analyzing it to develop conclusions and provide recommendations.

SPSS 16.0 version software was used to import and analyze the data. We used algorithms for descriptive statistics (percentage, mean, median, standard deviation, and so forth) to describe the anthropometric data of the

respondents. The percentage of students who had MSD symptoms in at least one of the twelve body positions was used to calculate the prevalence of MSDs. We also used Pearson's R Correlation Coefficient to determine if there is a significant relationship between the student's posture to the level of discomfort and Pearson Chi-Square to determine the relationship between a student's posture to the type of gadget. It will also help identify the significant relationship between the student's posture and the type of environment. The researcher provided a score to each of the following body parts during postural assessment: wrists, forearms, elbows, shoulders, neck, trunk, back, legs, and knees. After data has been obtained and scored for each area, the form tables are then used to compile risk factor variables, producing a single score reflecting the MSD risk level. The level of significance was set at a p-value of 0.5.

3. Results

In order to evaluate the student's posture during synchronous class, the results of the questionnaire and the results of body posture measurements using the REBA method are discussed in this chapter.

3.1 Anthropometric Data

Table 1: Anthropometric Data

Anthropometric Data	Mean	SD
Neck	1.3333	.47946
Trunk	2.1333	.77608
Lower Back	1.8000	.84690
Upper Arm	1.7667	.72793
Lower Arm	1.4667	.50742
Wrist / Hand	1.9000	.75886

Table 1 showed that the lower back had the highest standard deviation (.84690), followed by the trunk (.77608), wrist/hand (.75886), upper arm (.72793), lower arm (.50742), and neck (.47946) with the lowest standard deviation where it indicates that the respondents were exposed to any risk related with MSD.

As indicated by the researchers of [17] in their study, the collection of anthropometric data is both necessary and worthwhile for designing tools and equipment as well as ergonomically assessing them. The data can be used to create area-specific furniture and equipment for the target group that is appropriate for them. This can help to reduce occupational health issues and injuries.

3.2 Online Schedule

Table 2: Online Schedule

Online Schedule	Frequency (N = 30)	Percentage
Once a Week	2	6.7
Twice a Week	3	10
Thrice a Week	9	30
Four Times a Week	5	16.7
Five Times a Week	13	43.3

The results of the online schedules showed that 6.7% of the thirty (30) respondents have synchronous classes once a week. 10.0% have a synchronous class twice a week, and 30.0% have a synchronous class once a week. 16.7% have a synchronous class four times a week, and 16.7% have a synchronous class three times a week, and 43.3% of students have five synchronous classes per week. This indicates that the majority of responders (43.3%) have synchronous classes five times each week. According to the author in [18], people who are doing activities such as working with the computer for long hours on a fixed and inappropriate posture and the issue has high prevalence rate in acquiring musculoskeletal disorder or MSD.

As stated by the authors in [3] in their study, children spent more time on school/college curriculum, online classes, and course training with forty – five percent (45%) than they did on games and online recreation with thirty – five percent (35%) or watching others with twenty percent (20 percent). Only six percent (6%) of parents were aware of proper sitting posture, one percent (1%) of parents were aware of eye-monitor ergonomics, three percent (3%) of parents were aware of laptop ergonomics, and thirty – eight percent (38%) of the parents were aware of the significance of taking regular rests while sitting for lengthy periods of time. Long periods of sitting combined with poor ergonomics result in poor posture, increasing the risk of neck and back pain [3].

3.3 Type of Environment

Table 3: Type of Environment

Type of Environment	Frequency (N = 30)	Percentage
Bedroom	16	53.3
Dining Area	4	13.3
Kitchen	3	10
Living Area	10	33.3
Outside	10	33.3

The learning environment has a significant impact on students' learning outcomes [18]. The respondents were asked where they usually conducted their synchronous lesson, and it was discovered that 53.3% of the thirty (30) respondents hold a synchronous class in their bedrooms. 13.3% of respondents take their synchronous class in the dining room. Moreover, 10% of the respondents' online class is held in the kitchen. 33.3% of the population are in the living area and outside. The author in [19] noted that students' home settings are not yet ergonomically suitable, resulting in posture risk and body discomfort. However, according to the empirical research cited by the authors in [20], using a learning environment improves learning and teaching, resulting in higher satisfaction, retention, and achievement for a larger and more diverse student body. According to the findings of this study, tasks in an environment, as well as the ability to learn at a personally defined place, time, and pace, encourage students to take ownership of their learning, increasing their independence and motivation to learn. According to the literature, the learning environment's potential is also dependent on addressing the pedagogical issues associated with effective learning and, ultimately, on the overall quality of course design and learner support.

Furthermore, the study of authors in [3] revealed that parents were unaware of ergonomics and the effects of poor ergonomics on their children, such as RSI (Repetitive Strain Injury), MSDs (Musculoskeletal disorders), and CTD

(Cumulative Trauma Disorder).

3.4 Types of Gadgets

Table 4: Types of Gadgets

Type of Gadget	Frequency (N = 30)	Percentage
Smart Phone	26	86.7
Tablet	0	0
Laptop	12	40.0
Personal Computer	1	3.3

In the types of gadgets used by the respondents, the results shows that 86.7% of the thirty (30) respondents said they used smartphones, 40.0% said they used a laptop, and 3.3% said they used a desktop computer. This reveals that during synchronous class, each respondent utilized a different device. The bulk of the respondents utilized smartphones.

Even though modern gadgets are handy and easy to use, they are also addictive to students [3]. According to the study of the authors in [3], children working on smartphones had the worst ergonomics. Their study also

suggested that RSI & other MSDs are prevalent in children spending time on gadgets. As stated by the authors in [21], gadget use is a major source of concern because to the negative effects it has on one's health. Eye strain, finger pain, backache, neck discomfort, and sleep disorders have all been linked to prolonged usage of electronic devices. The average time spent on gadgets jumped from 4.75 hours per day before lockdown to 11.36 hours per day during lockdown, according to the findings of the study of the authors in [22].

3.5 Types of Position

Table 5: Types of Position

Types of Position	Frequency (N = 30)	Percentage
Sit with your back well supported on the back row	13	43.3
Sit with your body tilted forward	16	53.3
Sit with your upper body twisted (with torso torsion)	6	20.0
Sit with your buttocks slipping forward	5	16.7
Sit with your buttocks well supported without slipping forward	9	30.0
Sit with your both feet firmly on the floor	9	30.0
Sit with your feet unsupported	3	10.0
Sit cross-legged	9	30.0
Kyphosis position	1	3.3
Sway back	5	16.7
Forward head	16	53.3
Slouching	13	43.3

The researchers presented a checklist to determine the respondents' positions. 43.3% of respondents say they sit in the back row with their backs appropriately supported, while 53.3% say they sit with their bodies angled forward. Furthermore, 20.0% of respondents claimed they sit with their upper body twisted, and 16.7% reported their buttocks slump forward when they sit. 30.0% of respondents stated they sit with their buttocks fully supported without slipping forward. In comparison, 30.0% said they sat with both feet firmly planted on the floor, 10.0% percent of respondents stated they sit with their feet unsupported, 30.0% said they sit cross-legged, 3.3% of respondents had kyphosis, 16.7% of the respondent’s swayback, 53.5% of respondents have a

forwarded position, and 43.3 % of respondents have a slouching position. This demonstrates that in a synchronous class, everyone has a different type of position.

According to the authors in [3], long periods of sitting combined with poor ergonomics result in poor posture, increasing the risk of neck and back pain.

3.6 Level of Discomfort

Table 6: Level of Discomfort

Types of Discomfort	Mean	SD	VD
Head/Eye	1.9333	1.43679	Mild Discomfort
Upper Back	2.3667	1.37674	Mild Discomfort
Left Shoulder	2.5333	5.51320	Severe Discomfort
Right Shoulder	1.6333	1.27261	Mild Discomfort
Left Elbow	1.2000	1.29721	Mild Discomfort
Right Elbow	1.1333	1.13664	Mild Discomfort
Left Forearm	1.2333	1.22287	Mild Discomfort
Right Forearm	1.2333	1.19434	Mild Discomfort
Left Wrist	1.1000	1.18467	Mild Discomfort
Right Wrist	1.1667	1.14721	Mild Discomfort
Left Hand/Finger	1.1333	1.27937	Mild Discomfort
Right Hand/Finger	1.3000	1.29055	Mild Discomfort
Low Back	2.1667	1.46413	Mild Discomfort
Left Hip/Thigh	1.4333	1.35655	Mild Discomfort
Right Hip/Thigh	1.3333	1.24106	Mild Discomfort
Left Knee	1.1000	1.26899	Mild Discomfort
Right Knee	1.1000	1.26899	Mild Discomfort
Left Ankle/Foot	1.0667	1.17248	Mild Discomfort
Right Ankle/Foot	1.0667	1.17248	Mild Discomfort
Average	1.4333	1.11448	Mild Discomfort

Table 6 shows the results of the level of discomfort. Using a survey questionnaire adapted to the Cornell University Body Discomfort Worksheet, the researchers gathered the data. To determine the VD of the discomfort, the researchers followed a scale from 0 – 5 in which the SD ranges from 0 – 0.83 there is no discomfort felt. On the scale of 1 where the SD ranges from 0.84 – 1.67, mild discomfort is felt. On the scale of 2, SD ranges from 1.68 – 2.50, there is a minor discomfort is felt. On the scale of 3 where the SD ranges from 2.50 – 3.33, moderate discomfort is present. If the scale is 4, SD ranges from 3.34 – 4.17, there is a major discomfort that is felt and on the scale of 5, the SD ranges from 4.18 – 5.00, severe discomfort is felt.

The results showed that majority of the respondents have a "Mild Discomfort," and only one out of 30 respondents have a "Severe Discomfort. These results indicated that, working at the above-mentioned causes musculoskeletal disorders in the shoulder.

3.7 Level of Risk Associated in Student's Posture During Synchronous Class

Table 7: Level of Risk Associated in Student's Posture during Synchronous Class

Subjects	REBA Score	Level of Risk
1	6	Medium Risk
2	7	Medium Risk
3	7	Medium Risk
4	7	Medium Risk
5	6	Medium Risk
6	7	Medium Risk
7	6	Medium Risk
8	6	Medium Risk
9	5	Medium Risk
10	6	Medium Risk
11	6	Medium Risk
12	6	Medium Risk
13	6	Medium Risk
14	8	High Risk
15	8	High Risk
16	7	Medium Risk
17	9	High Risk
18	8	High Risk
19	6	Medium Risk
20	9	High Risk
21	8	High Risk
22	11	Very High Risk
23	9	High Risk
24	10	High Risk
25	9	High Risk
26	12	Very High Risk
27	8	High Risk
28	11	Very High Risk
29	6	Medium Risk
30	10	High Risk

Table 7 presents the level of risk associated in student's posture during synchronous classes. The researchers followed the REBA scoring interpretation where 1 represents negligible risk, 2 – 3 REBA scores represent low risk, 4 – 7 REBA scores represent medium risk, 8 – 10 REBA score is considered as high risk and 11 and higher is considered as very high risk. The researchers used the converted excel spreadsheet worksheet called REBA Analysis Worksheet for postural analysis. The result showed that the average p-value 0.827 is greater than the alpha level which is 0.05 that lead the researchers to accept the null hypothesis. Three (3) of the thirty (30) respondents were found to have a "Very High" risk level, while the remaining sixteen (16) respondents had a "Medium" risk level. On the other hand, eleven (11) were assigned a "High" risk level. It implies that the result of discomfort can affect the students as a disease risk.

3.8 Significant Effect as to Level of Discomfort, Type of Environment, and Type of Gadgets

Table 8: Significant Effect as to the Level of Discomfort

	Anthropometric Data	
Types of Discomfort	R – Value	P – Value
Head/Eye	.059	.759
Upper Back	.108	.571
Left Shoulder	.212	.260
Right Shoulder	-.270	.149
Left Elbow	-.128	.501
Right Elbow	-.103	.588
Left Forearm	-.168	.374
Right Forearm	-.275	.141
Left Wrist	-.254	.176
Right Wrist	-.153	.419
Left Hand/Finger	-.145	.446
Right Hand/Finger	-.144	.449
Low Back	.083	.665
Left Hip/Thigh	-.016	.934
Right Hip/Thigh	-.015	.938
Left Knee	-.072	.704
Right Knee	-.072	.704
Left Ankle/Foot	-.073	.703
Right Ankle/Foot	-.073	.703
Average	-.042	.827

Table 8 presents the results which showed no significant relationship between the student's posture and the level of discomfort. The researchers used the Pearson's R Correlation Coefficient in the software SPSS16 in treating the data. According to the author in [23], the correlation method is used in this study since the goal is to investigate the relationship between the variables. The results showed that the average p-value 0.827 is greater than the alpha level which is 0.05 that lead the researchers to accept the null hypothesis. There is no significant relationship between the student's posture and the level of discomfort.

Based on the long-held belief that 'bad' posture and 'poor' postural control are key factors to pain problems, notably back and neck pain, in patients with persistent musculoskeletal pain, a large number of therapies are aimed at improving posture and postural control. [24]. Previous study has found links between spinal pain and posture, particularly in the case of chronic low back pain. Patients with persistent low back pain have abnormal trunk muscular activation patterns, resulting in decreased trunk mobility, trunk stiffening, and postural instability, all of which are symptomatic of faulty postural control mechanisms [25].

Table 9: Significant Effect as to the Type of Environment

Type of Environment	**Value**	**df**	**Asymp. Sig.**
Bedroom	4.027	7	.777
Dining Area	10.529	7	.161
Kitchen	12.143	7	.096
Living Area	5.196	7	.636
Outside	8.143	7	.320
Average	39.711	21	.008

Anthropometric Data

The nature of the interaction between the workplace and the individuals who work there has become a major concern [26]. Reflected on table 9 are the results and it showed that there is a significant relationship between the student's posture and the type of environment. The data was calculated and analyzed using the SPSS software. The researchers used Pearson Chi – Square in treating the data since the type of working environment are nominal data. The p-value is compared to the alpha level (5%) in which p-value of 0.008 is lesser than the alpha value of 0.05 indicating that there is significance and rejected the null hypothesis of no significant difference on student's posture to the type of environment.

A researcher [27] investigated the relationships between university students' evaluations of their learning environment and their levels of motivation and self-regulation in learning English in Jordan, which came the closest to the goal of the current study. They found high relationships between students' assessments of their learning environment and their motivation and self-regulation-related improvements using an instrument that focused on general classroom characteristics.

Table 10: Significant Effect as to the Type of Gadget

	Anthropometric Data		
Type of Gadget	**Value**	**df**	**Asymp. Sig.**
Smart Phone	8.880	7	.261
Tablet	0	0	0
Laptop	8.075	7	.326
Personal Computer	6.724	7	.458
Average	8.458	7	.294

Table 10 shows the significant effect of students posture as to the type of gadget. It was calculated and analyzed using SPSS software. The researchers also used the statistical tool called Pearson Chi – Square in the SPSS16 since type of gadgets are also nominal data. In the average portion it states that the p-value 0.294 is greater than alpha value of 0.05 indicating that there is no significance thus, accepts the null hypothesis of no significant difference on student's posture to the type of gadget.

According to a study conducted by [28], More than eighty – seven percent (87%) of individuals said they used some kind of electronic device. Smartphones were found to be the most popular, with 67.11 percent of participants using them on a daily basis for a variety of functions.

Around thirty – nine percent (39%) of participants used gadgets to view cartoons or movies, with social media twenty – seven percent (27%) and video games following closely behind seventeen percent (17 %). Due to the current COVID-19 epidemic, however, 24.48 percent of the participants also used these devices to participate in online classes. Only 8.74 percent of those who took part in the study used these devices for routine conversation**.**

4. Conclusion

The paper argues that there is a medium risk of musculoskeletal disorder (MSD) among the students of Cebu Technological University – Argao Campus and it is significantly associated with bad posture as they are directly participating in synchronous classes. It was discovered that the type of environment in which students perform their synchronous class has a substantial impact on their posture.

The students and as well as their parents might be unaware of Ergonomics and how poor Ergonomics could affect the posture of the students when they have a bad position for a long period. Therefore, it is not just about fostering a great classroom environment in which students can feel interested and motivated.

A positive learning environment with good workstation ergonomics is also a critical factor in an online course's success.

It is also imperative for the institution to consider the implication of an ergonomic chair to help not just the students but also the teaching staffs to avoid the risk of acquiring musculoskeletal disorders and to train the teachers, parents and students in fundamentals of workstation ergonomics.

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