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IMPROVING AND COMPLETING THE STANDARDS FOR STUDENTS IN VIETNAM TO MEET THE URGENT REQUIREMENTS FROM EDUCATIONAL PRACTICE

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Abstract

During the period when children's physical condition is constantly changing, sitting at a suitable desk is an important factor to help children develop physically. However, according to the calculation data, the current student desks and chairs are showing many shortcomings such as small desks and chairs, lower than the physical condition of students. This study, through a survey of the current physical condition of Vietnamese students; compares the standards of student desks and chairs to see the shortcomings in the design of desks and chairs for students. In addition, the study also points out the requirements for changing student desks and chairs and proposes directions for adjusting desks and chairs to suit the physical condition of Vietnamese students today. The results show that the current size of desks and chairs still has many shortcomings; the design of desks and chairs is not flexible; there is a lack of size for large students; the technical standards are not suitable... this opens a new direction of research on the relationship between the physical condition of students and the current size of desks and chairs; the relationship between learning efficiency and comfort in students' sitting posture.

Keywords: modular, online learning, pandemic, skills, coping mechanism.

1. Introduction

In every classroom, student desks and chairs are not only learning aids but also play an important role in shaping sitting posture, health and knowledge absorption efficiency. A suitable set of desks and chairs will create a comfortable posture, ensure concentration, and help students develop comprehensively both physically and mentally. On the contrary, if desks and chairs do not meet the requirements, students are prone to problems such as scoliosis, myopia and other diseases (Milanese, S., & Grimmer-Somers, K., 2011).

School desks and chairs are basic tools, directly attached to students throughout the learning process. For students, the role of desks and chairs becomes even more important because this is the stage when they are at an important physical development age and at the same time have to endure the greatest learning pressure. If the desk and chair do not fit the body size, the sitting posture will be constrained and uncomfortable, making students quickly tired, affecting their learning results. On the contrary, when the desk and chair are suitable, students can easily concentrate, write quickly and accurately, and limit fatigue during long lessons.

Considering the role of desks and chairs in the learning process of students, some studies show that:

- The suitability of desks and chairs will ensure the sitting posture: Desks and chairs of suitable size help students sit up straight, with a reasonable distance between eyes and notebooks (25-30 cm), thereby reducing the risk of school myopia and scoliosis - two common health problems at this age (Milanese, S., & Grimmer-Somers, K., 2011).
- Suitable for anthropometric characteristics of puberty: In high school, students have a clear difference in height (males are usually 1.65–1.80 m, females 1.55–1.70 m) (Thuy Hang, Bich Thanh, Tue Nguyen, 2023). Arranging diverse sizes of tables and chairs (especially from size 5, 6 and recommended size 7) helps meet the needs of physical development, limit discomfort and affect body shape.
- Aesthetic education and scientific study habits: Tables and chairs with reasonable design and scientific arrangement will contribute to training students in the habit of sitting in the correct posture, neatness, and at the same time create an aesthetic, orderly and modern classroom environment (Tra My & Hai Dang, 2023).
- Contribute to forming a healthy human resource: Students are the future workforce. Taking care of the desk and chair today contributes to building a healthy young generation with enough physical strength to study and work for a long time (Thanh Xuan, 2023). In Vietnam, Joint Circular No. 26/2011/TTLT-BGDĐT-BKHCN-BYT was issued to regulate the standards of desks and chairs in schools. However, after more than a decade of application, many shortcomings have arisen, especially when the physical condition of students has changed significantly and the requirements of modern education are increasingly high. This requires timely adjustments to suit reality.

Research methods

The research is carried out through a number of methods as follows:

Theoretical research: the research synthesizes, compiles, compares and contrasts documents regulating current standards on desk and chair sizes for Vietnamese students today. In addition, the research also synthesizes secondary data sources to supplement the results of this research.

Practical research: the questionnaire is used to better understand the needs and desires of students regarding current desks and chairs in schools, and at the same time, survey the opinions of teachers and educational administrators on the size of desks and chairs for students today.

Anthropometric measurements: the sample will be selected according to the criteria of body shape, height, and weight of students, thereby finding the average indexes of students with the aim of having better recommendations on the size of desks and chairs for students.

Statistical analysis: this method is used to process the results obtained from practical surveys through questionnaires.

2. Research results

Students are characterized by rapid physical development and are very active. They are always ready to participate in all activities and their actions and gestures during this period are also very fast. Therefore, achieving the position of tables and chairs as well as the design of tables and chairs is important.

Circular 26/2011 of the Vietnamese Government regulating the current standards for student tables and chairs has revealed many shortcomings. Compared with international standards such as EN1729 (Europe) and GOST 11015-93 (Russia), Research on standards TCVN 3981:1985 - Universities - Design standards, TCVN 4602:2012 - Vocational Colleges - Design standards, Vietnam's table and chair standards clearly show many shortcomings, not suitable for the physical condition of today's learners.

To see more clearly the problems that need to be solved in the design of student desks and chairs in Vietnam today, let's look at the results below:

2.1 Analysis of current standards on the size and arrangement of student desks and chairs

- Vietnamese standards TCVN 7490: 2005 and TCVN 7491: 2005

In the face of the current situation of student desks and chairs still having inappropriate shortcomings, in 2006, the Ministry of Science and Technology signed Decision No. 150/QĐ-BKHCN dated February 7, 2006, promulgating TCVN 7490: 2005 and TCVN 7491: 2005 drafted by the Institute of Occupational Medicine and Environmental Hygiene, within the framework of the implementation of the state-level scientific research project under the KC10 program "Research on school diseases and disabilities related to Ergonomics and solutions for improvement", two Vietnamese standards were issued in 2005, which are "Ergonomics - Primary and Secondary School desks and chairs - basic size requirements according to student anthropometric index" and "Ergonomics - arrangement of student desks and chairs in the classroom". Regulations on desks and chairs are shown in the table below:

Table 1: Primary and secondary school desk and chair sizes according to Vietnamese standards 7490: 2005

Parameter (cm)	Size					
	I	II	III	IV	V	VI
Chair height H ₂	26	28	30	34	37	41
Seat depth B ₂	26	27	29	33	36	40
Seat width D ₂	23	25	27	31	34	36
Table height H ₁	45	48	51	57	63	69
Table and chair height difference	19	20	21	23	26	28
Table depth B ₁	45	45	45	50	50	50
1 seater table	60	60	60	60	60	60
2 seater table	120	120	120	120	120	120

Source. Circular No.26/2011/TTLT-BGDĐT-BKHCN-BYT

Table 2: Arrangement of desks and chairs in primary and secondary school classrooms according to Vietnamese standards 7491: 2005

Grade	Table and chair sizes	Rate (%)
1	Size I	25
	Size II	60
	Size III	15
2	Size II	60
	Size III	40
3	Size II	25
	Size III	62
	Size IV	15
4	Size II	8
	Size III	53
	Size IV	39
5	Size III	32
	Size IV	68
6	Size III	10
	Size IV	67
	Size V	23
7	Size IV	45
	Size V	55

8	Size IV	20
	Size V	70
	Size VI	10
9	Size IV	10
	Size V	65
	Size VI	25

Source. Joint Circular No. 26/2011/TTLT-BGDĐT-BKHCN-BYT guiding standards for desks and chairs for primary, secondary and high schools.

Table 3a. Regulations on table and chair sizes and codes according to student height groups

Size	Code	Student height (cm)
I	I/100 - 109	100 - 109
II	II/110 - 119	110 - 119
III	III/120 - 129	120 - 129
IV	IV/130 - 144	130 - 144
V	V/145 - 159	145 - 159
VI	VI/160 - 175	160 - 175

Source. Circular No.26/2011/TTLT-BGDĐT-BKHCN-BYT

Table 3b. Basic size regulations for tables and chairs

Parameter (cm)	Size					
	I	II	III	IV	V	VI
- Chair height	26	28	30	34	37	41
- Seat depth	26	27	29	33	36	40
- Seat width	23	25	27	31	34	36
- Table height	45	48	51	57	63	69
- Table and chair height difference	19	20	21	23	26	28
- Table depth	45	45	45	50	50	50

Parameter (cm)	Size					
	I	II	III	IV	V	VI
- Table width						
+ 1 seater table	60	60	60	60	60	60
+ 2 seater table	120	120	120	120	120	120

Source. Circular No.26/2011/TTLT-BGDĐT-BKHCN-BYT

Regulations on desk and chair sizes and student height groups in Circular No. 26/2011/TTLT-BGDĐT-BKHCN-BYT are basically in accordance with TCVN 7490-2005 standards. In addition, the Circular also stipulates: design, color, material, and structure of desks and chairs. Circular 26 clearly states the standards for size, material, structure, design, color, and arrangement of desks and chairs in classrooms for each group of students at all three levels: primary, middle, and high school. Specifically, desks and chairs are designed separately and have no more than two seats. Desks must be arranged with space for school supplies in accordance with the design structure. Chairs may have backrests or not, depending on the age of the students. In particular, the safety and aesthetics of student desks and chairs have been paid attention to. To facilitate listening to lectures, viewing the board and to suit the height of students, the basic distances for arranging tables and chairs in the room are also specifically regulated. The Circular also provides specific parameters on student height and standard sizes, table and chair height, arrangement of tables and chairs in the classroom, etc. The standards that Circular 26 aims for a unified standard to contribute to protecting students' health and increasing learning efficiency. Because in educational activities, sitting posture takes up most of the time studying and living at school. Therefore, the use of "non-standard" desks and chairs for students for many years has not only affected the forms of teaching and learning activities, hindering the improvement of education quality, but also especially led to school diseases such as: flat chest, scoliosis, hunchback, myopia, in the long run will arise spinal pain, spinal degeneration, unbalanced body development, will cause unnecessary physical disabilities for students and bad consequences for future labor.

2.2 Some shortcomings in the current design of tables and chairs through a survey of the current situation

Circular No. 26/2011/TTLT-BGDĐT-BKHCN-BYT basically follows the TCVN 7490-2005 standard, which is the standard for tables and chairs for students at three levels: primary, middle and high school with different sizes for students with heights from 100cm to 175cm.

Some issues are raised as follows:

- The time of issuance of the circular was 20 years ago. This is too long a period of time because during this period, human physique has changed a lot.
- The trend towards modern society, people are increasingly developing, Vietnamese children are no exception. Statistics in 2024, the average height of Vietnamese men increased by 3.7 cm and women increased by 1.4 cm. However, the regulations on the size of desks and chairs have not changed in the past 20 years.
- Normally, desks and chairs in schools are unified according to a certain size. Students do not have the choice to sit at a desk that is suitable for their height and

weight. For students who are taller or shorter than average, this is a big disadvantage, directly affecting their health and indirectly affecting their learning efficiency.

Specific information about the shortcomings shown through the survey is as follows:

a) Inadequacies in the size of desks and chairs:

Circular 26/2011 stipulates the height of desks size 6 (69 cm) for students from grade 8 to grade 12. This standard is based on TCVN 7490:2005, only applicable to students with height from 160 cm to 175 cm. However, in reality, the average height of Vietnamese students, especially in high school, has increased significantly: 12th grade male students have a common height of 170 cm to 180 cm, some even exceed 180 cm. 12th grade female students usually reach from 160 cm to 170 cm; For students over 175 cm tall, a 69 cm desk height is too low, causing an uncomfortable sitting position, leading to fatigue, back pain and reduced concentration. In fact, many classes in some localities were surveyed such as Son La, Quang Ninh, Nghe An, Thanh Hoa, Ho Chi Minh City and Long An. A survey at Nguyen Thi Minh Khai High School, with 2099 students and 51 classes, showed that the number of students over 175 cm tall was 154, accounting for 7.3% of the school's students. This shows that 7.3% of students are not using the right size of desks and chairs for themselves.

b) Inflexible design

Regulations on fixed desk and chair sizes for each height group make it difficult for schools to serve classes with students of different heights. It is noted that the difference in student heights is large, leading to inconsistent desks and chairs or having to use inappropriate desk and chair sizes. Circular 26 does not have regulations on types of student desks and chairs designed to increase or decrease in height to suit the physical condition of students, making it convenient for purchasing and using.

c) Technical standards are not yet specified

The angle of the table top and the backrest of the chair – factors that directly affect the sitting posture – are not yet specified in detail. Regulations on materials, colors, and structures of tables and chairs are still general and lack specificity, making it difficult for manufacturers and educational institutions to choose standard products.

d) Lack of consistency with other standards

The regulations in Circular 26/2011 are not consistent with other school design standards, such as TCVN 8793:2011 (Primary schools) and TCVN 8794:2011 (Secondary schools). This leads to difficulties in arranging tables and chairs in classrooms with different sizes.

e) *Lack of sizes for tall students*

Currently, the standard for general tables and chairs does not have suitable sizes for students taller than 175 cm, forcing schools to use substandard tables and chairs or custom-made ones, which is costly and difficult to manage.

2.3 Requirements for changing desks and chairs for students

From the survey of the current situation, the results of some negative effects from sitting with desks and chairs of the wrong size are drawn as follows:

Impact on physical health: Many scientific studies have shown that desks and chairs that are not suitable for students' body shape are one of the main causes of problems with the spine and joints; Desks and chairs that are too high or too low compared to the body height can cause students to bend over, have scoliosis, or hunchback. According to a study by the Vietnam Institute of Health and Environment, the rate of students with scoliosis in schools using substandard desks and chairs is up to 50%. This condition, if prolonged, will cause back pain, neck pain, and chronic bone and joint diseases when they grow up. Students' desks and chairs that are not suitable or sitting in the wrong position for too long will affect the structure of the spine, leading to deviation or curvature to one side.

Impact on vision: When desks and chairs are not the right size, the distance from the eyes to the books is not guaranteed, often too close. This makes the eyes have to constantly adjust, causing eye fatigue, dry eyes and increasing the risk of myopia. The World Health Organization (WHO) recommends that the ideal distance from the eyes to books is about 30-40 cm, this can only be achieved when desks and chairs are of standard size.

Impact on concentration and learning efficiency: When having to sit in an uncomfortable position, students will easily be distracted and have difficulty concentrating on the lecture. The pain caused by sitting in the wrong position also makes students feel uncomfortable and tired, thereby reducing the quality of knowledge acquisition and learning efficiency.

Changing student desks and chairs is not just a simple replacement of furniture, but an important investment in the health and future of the younger generation. Circular 26 stipulates the size of desks and chairs according to 6 sizes (students from 100 - 175cm tall), but has not yet specified the size of desks and chairs for students with a height of over 175cm while the current physical condition of students has changed a lot.

2.4 Proposed directions for adjusting desks and chairs for Vietnamese students today

Based on the above results, the research team proposes the following directions for adjusting desks and chairs for students:

- Update student anthropometric data. This helps improve the design of desk and chair sizes to suit the current physical condition of students.
- Data in TCVN 7490:2005 does not reflect the current height of Vietnamese students, when many students are from 1.70 - 1.85m.
- Propose to conduct a new anthropometric survey to serve as a basis for supplementing appropriate desk and chair sizes. Add more desk and chair sizes for students over

1.75m tall, currently the new desk and chair standards stop at size VI to meet students $\leq 1.70\text{m}$.

- Need to design size VII (or equivalent), in which: Chair height: from 48–52 cm; Desk height: from 75–80 cm. Desk-chair distance (vertical distance): ensure 2–4 cm according to ergonomic recommendations.
- Flexible, adjustable design: Encourage the production of desks and chairs with adjustable height so that one set of desks and chairs can be used for many different height groups, to suit the current physical condition of students, which has changed a lot since the circular was issued.
- Requirements for ergonomics and school health: The desk surface needs to have a suitable tilt (5–10° when reading/writing, 15–20° when drawing technically); The chair has a curved backrest that hugs the spine, reducing the risk of hunchback and scoliosis. The distance between the table and the board is suitable for vision, limiting myopia.
- International standard reference: Additional reference from BS EN 1729-1:2006 (Europe) and GOST 11015-93 (Russia) to ensure that high school desks and chairs in Vietnam are close to international standards. Prioritize factors of durability, safety, and environmental friendliness.
- Update TCVN 7490:2005 and TCVN 7491:2005 in the direction of adding new sizes, while encouraging adjustable desk and chair models.

3. Conclusion and recommendations

Vietnamese students today are undergoing major physical changes. The prescribed standards for desks and chairs for students are no longer suitable. From the reality of the inadequacy in the size of desks and chairs as well as the requirements for changing the current desks and chairs for students, management levels also need to take certain actions to help students have better sitting and studying conditions.

Adjusting Circular 26/2011 to change the size of desks and chairs to suit the physical condition of today's students is a necessary step to ensure school health and improve the quality of education. Ensuring standard desks and chairs is not only a matter of interior design but also a core factor in preventing school diseases and protecting the long-term health of students. These changes not only help students sit comfortably and study effectively, but also reflect progress in the management and design of educational facilities to create a more modern, friendly and synchronous school environment. Therefore, from the results of this research, the research team proposes: The Ministry of Education and Training of Vietnam in coordination with other relevant ministries and branches, issues a new legal document (replacing Circular 26) regulating desks and chairs for general students to suit the current physical condition of Vietnamese students.

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