THE IMPORTANCE OF OCCUPATIONAL SAFETY EDUCATION FOR ARCHITECTURE STUDENTS

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Abstract: This article examines the professional, practical, and social significance of teaching occupational safety and health to students majoring in architecture. In modern architectural practice, ensuring a safe environment for human life and health is as important as the aesthetic and functional characteristics of buildings and structures. In this regard, it is essential to develop future architects' knowledge of occupational safety, hazardous and harmful factors in construction, fire safety, evacuation systems, sanitary and hygienic requirements, and the principles of safe design. The study employs analytical, comparative, and systematic approaches to examine the relationship between occupational safety education and architectural training. The findings highlight the importance of integrating occupational safety principles into architectural education and provide recommendations for improving the educational process. Particular attention is given to practical training, risk identification, safe architectural planning, and the application of modern digital technologies.

Keywords: architecture, occupational safety and health, construction safety, safe design, fire safety, ergonomics, evacuation, professional competence, architectural education

INTRODUCTION. Architecture is one of the most important fields of human activity, reflecting the economic, cultural, and technological development of society throughout history. Today, architecture is concerned not only with the external appearance of buildings and structures but also with their functionality, environmental sustainability, energy efficiency, and the safety of the people who use them. Creating a comfortable and safe environment for living, working, and recreation has therefore become one of the fundamental responsibilities of modern architects.

Certain design errors may create serious risks to human life and health during the construction or operation of buildings. For example, improperly designed evacuation routes, staircases that do not meet safety requirements, insufficient natural and artificial lighting, inadequate ventilation systems, and failure to comply with fire safety regulations can contribute to dangerous situations and severe consequences during emergencies.

For this reason, teaching occupational safety and health to architecture students is particularly important. Through this subject, students acquire knowledge and practical skills related to identifying hazardous factors in production and construction processes, assessing potential risks, developing preventive measures, and making architectural decisions that protect human health and safety.

Occupational safety should not be understood merely as compliance with workplace safety rules. In architectural practice, it covers a much broader range of issues, including the design of safe buildings and structures, consideration of working conditions during construction, and the creation of secure environments throughout the operational life of buildings.

The main objective of this study is to substantiate the professional importance of occupational safety education for architecture students, establish the relationship between occupational safety knowledge and architectural design activities, and develop scientific and practical recommendations for improving the educational process.

RESEARCH METHODOLOGY (METHODS). The study employs a systematic approach to investigate the relationship between architectural education and occupational safety and health.

Theoretical principles of occupational safety, hazardous factors in construction processes, and safety requirements applicable to architectural projects were examined and compared.

The research methodology consists of several interconnected areas.

First, the content of occupational safety education and the knowledge required for architecture students were analyzed. Particular attention was paid to mechanical, physical, chemical, and ergonomic hazards commonly encountered on construction sites.

Second, safety requirements related to human protection in architectural design were examined. These included functional building layouts, evacuation routes, fire protection systems, lighting, ventilation, and sanitary and hygienic conditions.

Third, opportunities for integrating occupational safety knowledge into practical architectural design courses were investigated. Emphasis was placed on strengthening students' theoretical knowledge through real design situations, construction-site examples, and practical assignments.

Fourth, international approaches to occupational safety were considered as methodological foundations, particularly the principles of the International Labour Organization (ILO) and the requirements of the ISO 45001 international standard.

The study is theoretical and analytical in nature. It does not present experimental results or statistical survey findings. The conclusions are based on an analysis of the conceptual and professional relationship between occupational safety education and architectural training.

RESULTS. The research findings indicate that teaching occupational safety to architecture students contributes to the development of several important professional competencies.

The first significant result is the development of safe design competencies. When preparing architectural projects, architects must consider not only the functionality and aesthetic appearance of buildings but also the safety requirements necessary to protect their occupants. For example, the proper arrangement of evacuation routes in public buildings, safe dimensions of staircases and corridors, emergency exits, and fire protection systems are essential components of architectural design.

The second result is the development of students' ability to identify and assess hazards during construction activities. Architecture students should understand the risks associated with working at heights, operating lifting equipment, using electrical installations, and exposure to dust and noise. Such knowledge enables future architects to consider occupational safety requirements when planning and organizing construction activities.

The third result concerns the development of human-centered design principles. Natural lighting, adequate ventilation, optimal indoor temperatures, acoustic comfort, and ergonomic conditions positively influence human health and working capacity. Therefore, compliance with sanitary and hygienic requirements is an essential aspect of architectural design.

The fourth result is the expansion of students' knowledge of human safety during emergencies. Students need to understand how buildings should be designed to facilitate safe evacuation during fires, earthquakes, and other emergency situations. In this context, evacuation routes, emergency exits, fire-resistant barriers, and engineering protection systems must function as an integrated safety arrangement.

The fifth result is the development of professional responsibility among future architects. Studying occupational safety helps students understand that architectural decisions can directly affect human life and health. Consequently, they are more likely to consider safety not as a secondary requirement but as an integral part of the design process.

DISCUSSION. The research findings demonstrate a close relationship between occupational safety education and architectural training. However, to make this relationship more effective in

higher education, occupational safety should not be limited to theoretical instruction. Instead, it should be integrated with practical architectural design activities.

For example, when designing a residential building, students can jointly examine the arrangement of rooms, staircases, corridors, emergency exits, and fire protection systems. They should be required to justify not only the functional and aesthetic characteristics of their projects but also their compliance with relevant safety requirements.

The importance of occupational safety becomes even more significant when designing industrial facilities, production buildings, and public structures. People working in or using such facilities may be exposed to technological processes, machinery, electrical equipment, and other potential sources of danger. Therefore, architects should develop planning solutions at the design stage that minimize the impact of these hazards on human health and safety.

The use of modern digital technologies in architectural education also provides important opportunities. In particular, Building Information Modeling (BIM) enables students to analyze different building components in a three-dimensional environment, examine evacuation routes, and identify certain design problems before construction begins. Virtual reality technologies can also introduce students to hazardous construction-site situations within a controlled and safe learning environment.

Practical training should receive particular attention in occupational safety education. The following activities may be incorporated into the curriculum:

- identifying hazardous and harmful factors at construction sites;
- analyzing evacuation routes in architectural building plans;
- assessing compliance with fire safety requirements;
- examining sanitary and hygienic conditions in industrial buildings;
- studying the requirements for using personal protective equipment on construction sites;
- analyzing design safety solutions using BIM software.

Such an approach strengthens the practical orientation of students' knowledge and helps prepare them for their future professional responsibilities.

At the same time, occupational safety education should take into account the specific characteristics of architectural practice. Although general occupational safety knowledge is essential for all students, future architects require particular competence in safe environmental design, functional building planning, and the assessment of risks that may arise during the operation of buildings.

Thus, integrating occupational safety into architectural education creates opportunities to prepare specialists who can consider safety requirements from the earliest stages of design and combine technical and aesthetic solutions with the protection of human interests.

CONCLUSION. Teaching occupational safety and health to architecture students is an important condition for preparing specialists capable of meeting modern construction and design safety requirements. The professional responsibilities of architects extend beyond creating the external appearance of buildings and structures. They also involve making important design decisions that influence the safety of environments in which people live, work, and carry out various activities.

The study leads to the following conclusions.

First, occupational safety education develops architecture students' knowledge and skills in identifying potential hazards during construction and building operation and determining appropriate measures to reduce them.

Second, understanding the principles of safe design helps ensure compliance with fire safety, evacuation, lighting, ventilation, and sanitary and hygienic requirements in buildings.

Third, integrating practical occupational safety activities into architectural design courses is an effective way to develop students' professional competencies.

Fourth, the application of modern technologies, such as BIM and virtual reality, provides additional opportunities to study and evaluate safety requirements during the architectural design process.

Fifth, future architects with occupational safety knowledge are better prepared to consider human life and health as fundamental criteria in their professional design decisions.

In general, occupational safety is not merely an additional component of architectural education. It represents an essential body of professional knowledge that contributes to the design of safe, comfortable, and sustainable buildings and structures. Therefore, occupational safety should be taught within architectural education programs in close connection with practical design activities.

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