education, foster the development of students' creative abilities, and prepare them to meet contemporary challenges.

Thus, sustainable development is an integral foundation for organizing modern educational spaces, as it ensures a harmonious balance between society's social, environmental, and economic needs. Educational institutions must impart knowledge and foster responsible citizens capable of addressing global challenges and caring for the planet's resources. Integrating sustainable development principles into education contributes to forming environmental consciousness, developing sustainable living skills, and creating conditions for innovative societal development. Therefore, education becomes a vital tool for achieving a sustainable future, with educational institutions serving as examples of environmentally responsible behavior.

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TRANSFORMING LIBRARIES: A DIGITAL RENAISSANCE

This article presents the results of a study of foreign experience in integrating elements of innovative technologies into the interior space of libraries to expand their functions. Modern solutions such as interactive panels or screens and virtual reality technologies encourage people to visit libraries, and using modern eco-friendly materials in decoration contributes to sustainable development. Based on the study, the current trends in using innovative technologies in library interior design are identified.

Key words: interior design, modern technologies, multifunctional space, libraries, children's libraries.

У даній статті представлено результати дослідження зарубіжного досвіду інтеграції елементів інноваційних технологій в ітер'єрний простір бібліотек для розширення їх функцій. Сучасні рішення, як-от інтерактивні панелі або екрани, технології віртуальної реальності стимулюють людей до відвідування бібліотек. На основі проведеного дослідження визначено, які елементи є найбільш функціональними та потребують впровадження в бібліотеках України.

Ключові слова: дизайн інтер'єру, сучасні технології, багатофункціональний простір, бібліотеки, дитячі бібліотеки.

Modernizing libraries is vital due to their crucial role in people's development. The library has become a multifunctional space for interactive learning, socialization, and comprehensive development in today's educational and cultural environment.

Given that the demand for library services is decreasing every year, as most information or books can be read on electronic media, there is a need to draw people's attention to literature and learning. Therefore, focusing on the challenges of the modern era, one of the best solutions is to integrate elements of modern technology into the interior design of library spaces.

A modern library space should be open and accessible so all visitors can feel comfortable, accessible, and cozy. Therefore, the integration of modern technologies into the library space should be done in such a way as to ensure its functioning for all user groups. Interior solutions should reflect aspects of modern space organization with optimal use of modern technology elements [2].

As elements of modern technology are now integrated into all areas of our lives and everyone uses mobile gadgets, a modern library must be equipped with enough power outlets. Power sources can be integrated into walls, floors, or furniture. One must carefully plan placement to ensure comfortable conditions for people to study and work [11, 8].

It is essential to integrate elements of modern technology into children's and student libraries, as they are an important demographic group that will shape the future of our nation. Providing quality education for children of all ages is one of the leading tasks of the library [4].

For training and events, it is recommended to use innovative developments of recent years, such as interactive panels and whiteboards. Regardless of the subject matter, interactive panels help present the material more visually, contributing to better information absorption. Interactive panels are instrumental in children's spaces, as they help to develop communication skills, as several children can work at them simultaneously [10, 5].

An integral part of modern interior design is its environmental friendliness, one of the main aspects of sustainable development inherent in the twenty-first century. Therefore, materials and equipment used in interior design should be environmentally friendly and functional. Moreover, many modern materials allow designers to create more original and unusual shapes [1].

After analyzing the literature, we identified the main ideas for introducing digital technologies into the library interior space. It was decided to analyze foreign projects with positive experience in implementing interactive technologies, reflecting current experience and relevant information.

An excellent example of integrating modern technology into interior design is the library project in Calgary, Canada. Its interior is striking in its unusual shapes and futuristic design. This effect was achieved thanks to parametric 3D modelling, which made calculating and manufacturing architectural and interior elements possible.

The library is divided into four spaces, each corresponding to a specific type of activity. One includes various innovative elements integrated into the library, such as interactive screens and maps that help visitors find the information they need and navigate space. The coworking and individual work areas are equipped with enough sockets, which are also integrated into the furniture (pic. 1-2).

Pic. 1-2 [7]

The library has also integrated augmented reality technology, where visitors can watch videos and films in 360-degree format [7].

The Vennesla Library project in Norway is noted for its eco-friendly and energy-efficient approach to interior design and original forms. This library is built entirely of local wood, namely 27 prefabricated glue-laminated timber ribs, which perform practical and aesthetic functions. The ribs visually divide the library space. At the top, they are interposed with lighting elements that can be controlled to create different atmospheres for different activities in the library. At the bottom, they divide the space into personal study areas bounded by shelving (Pic. 3-4).

Pic. 3-4 [12]

Thanks to the environmental friendliness of the materials used and their characteristics, the library is a low-energy building in line with sustainable development.

The library has many places for individual work and reading, which are integrated into the bookshelves and provided with sufficient sockets for the comfort of visitors [12].

Analyzing analogues of foreign children's library projects is vital, as they have their own peculiarities. Learning space for children, especially younger ones, is different because they better perceive and absorb information through play. Therefore, exciting gaming solutions that encourage them to learn and develop should be introduced into its interior space.

A children's library project in Ipswich, Australia, features a variety of innovative technologies, including two life-size interactive dinosaurs suspended from the ceiling. Children can interact with these dinosaurs by feeding them through an interactive pneumatic tube and watching the "food" they give them go through the tube. Also, the library space is integrated with augmented reality technology, which helps to bring pictures to life with the help of hand movements. This technology allows children to colour in different fish or prehistoric creatures and then scan and watch them appear and move on large interactive screens (Pic. 5-6) [6].

Pic. 5-6 [13]

Many innovative technologies were used to create this library. In addition to interactive dinosaurs, the play area has a "magic mirror" for fun and relaxation: when a child stands in front of it, he or she sees butterflies fluttering around, with which he or she can also interact [6].

Another interesting and innovative project is the Port Washington Children's Library in the United States, where a large interactive touchscreen hangs on the wall among the shelves with

books, allowing children to create various exciting shapes on it. Due to its wide range of activities, this screen is suitable for children of different ages.

For the development of teenagers, the Port Washington library has created an area equipped with unique "listening stations" where they can listen to music from different genres, audiobooks, or poetry from the media library. This area is located near the panoramic windows, where each visitor has a separate place equipped with sockets for connecting various devices (Pic. 7-8) [9].
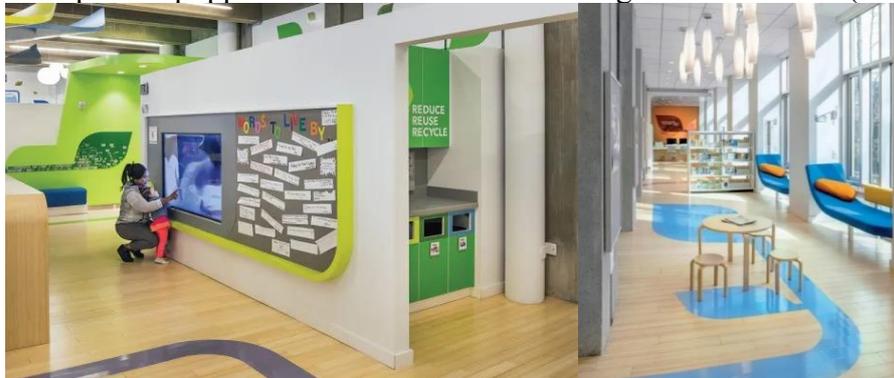

Pic. 7-8 [9]

An analysis of foreign experience in designing libraries with the integration of innovative technologies into their space helped to identify the leading current trends that should be relied upon when developing the design of libraries in Ukraine. In a modern interior space, there should be sufficient sockets for charging smartphones, laptops, and other devices. Interactive screens or panels should be placed in the library for learning, development, or orientation in the room. The interior should be decorated with modern eco-friendly materials to promote sustainable development. Game elements can be integrated into the library space with the help of innovative technologies to attract children's attention.

In conclusion, the integrated use of innovative technologies in the library's interior design will contribute to its development and attract people to visit it.

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