

Analytical study of educational buildings to applied interactive technology: A case study of the primary stages in Jordan

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Abstract:

Educational institutions seek to provide distinct tools and methods to raise the educational levels of their students, and in order to achieve this, these institutions use all methods, educational tools and different methods to advance the educational process to the best level.

The classroom in schools is considered one of the most important components of the educational process. The interior design from the school building design to the classroom components gives students a better chance for academic achievement, through their use of interactive tools. *Whenever* the school building is appropriate and equipped with all tools and amenities, this will have a positive impact on the educational process, *whether* at the educational level or at the recreational level.

Modern interactive technology is one of the most important factors that contribute significantly to displaying and teaching educational content in a way that meets the educational needs of students, including interactive whiteboards, interactive walls, and interactive furniture, which saves effort and time, and achieves direct communication with assimilation of the contents of scientific materials.

The interactive curriculum is based on designing educational programs to serve the educational curricula, relying on the latest strategies and technologies currently used.

The research aims to demonstrate the development of interactive technology within the school classroom to raise the level of students' scientific achievement through describing and analyzing educational buildings in primary schools in Jordan and comparing them with an applied model from a developed country, in order to benefit from the experiences of developed countries and try to apply it to educational buildings and classrooms in Jordan.

The researcher followed the Descriptive Approach in its theoretical Framework to introduce The Interior Design, its Foundations and Standards, as well as advanced Interactive Methods in Interior Design, and its Components such as Walls, Floors and Furniture. Also the researcher relied on the Analytical Method in analyzing Models of school buildings in Developed Countries, as well as for a Jordanian School.

Keywords:

Interactive Design - E-learning - Interior Design - Educational Process - Educational Buildings.

Research introduction:

Interactivity is an effective part in all design disciplines, including: interior design, interactive furniture, and interactive technologies emerged as a result of the great development of information technology and its incorporation into various design fields, products were able to respond to the user's expectations, to achieve his desires in a fast and easy way to achieve the satisfaction of his needs.

Technology of transforming the internal environment components into interactive components came as an evolutionary movement to employ interactivity in interior design, and then the interior design of the interactive environment can be defined as: "The orientation towards designing internal environments that lead us to create dynamic spaces and materials capable of performing wide-ranging interactive human functions, where interactions becoming complex materialism is possible with its true physical counterpart.

The American Society of Interior Designers (ASID) defines interior architecture or interior design as: "A multifaceted discipline based on an architecture that combines creativity and technical solutions with the aim of achieving an environment for an interior space. These solutions are functional, and aim to improve the quality. The life and culture of the occupants of this vacuum, as well as these solutions have aesthetics and they are attractive. "

In light of interactive design strategies, the facility in general and the educational facility in particular, during the operating period of the educational facility, take into account the functional quality and future developmental values of educational activities, so they arise through the studied integration between architecture, interior design research, environmental research and digital technology, and thus the consideration of achieving internal environments that interact positively with the student comes through the digital and technological development of the interactive educational internal systems.

The requirements for achieving an interactive internal learning environment differ according to the type of daily activities that are practiced within these educational spaces and the relationships between them, and it requires studying the dimensions and characteristics of the student while practicing activities within these spaces as well as studying and calculating the different spaces of the vacuum and reconciling the relationships between them and how to functionally distribute them.

Research problem:

The research problem is summarized in two main points, namely:

1. The lack of advanced technological means in the classrooms in Jordanian schools for the basic stages, which leads to the lack of a good environment and a suitable place for the educational process, which negatively affects the student's educational attainment.
2. Neglecting the role of interactive design as one of the trends affecting the quality of the educational process and the preservation of the surrounding environment.

The research importance:

The importance of the research lies in the following:

- Developing the buildings for basic education schools in Jordan by integrating interactive technology in interior design, with the aim of improving the educational environment for students of the basic education stage, to increase their educational attainment capacity.

The research aims:

The research aims to shed light on interactive interior design and the mechanism of its application in the classroom in basic education schools in Jordan.

Research Methodology:

The researcher relies on two approaches:

- 1- Descriptive approach.
- 2- Analytical approach.

Research hypotheses:

The research assumes that the use of interactive technology in the interior design of educational buildings works to raise the level of student achievement.

The search limits:

- 1- Time limits: Modern basic school projects during the period 2012-2020.
- 2- Spatial boundaries: Schools, primary stages, from the age of 6-12, in Irbid Governorate / The Hashemite Kingdom of Jordan.

Design standards for the school building:

- Classrooms are spacious and designed.
- The seats and tables are compatible with the requirements of modern learning processes and according to each academic stage separately.
- Availability of other physical elements, such as lighting, ventilation and school air conditioning methods.
- Providing enough stadiums to perform the sporting activity.
- Availability of special places for extracurricular educational activities practiced by students as an integral and complementary part of the educational process.
- Availability of complete and integrated libraries equipped with various means of display such as books, magazines, internet and exhibition halls.
- The presence of adequate green spaces for the comfort of students, teachers and administrators.
- Designing the school canteen in a contemporary way that meets students' needs in a lively and appropriate manner.
- Availability of medical clinics.

The difference between e-learning and traditional education**Traditional education:**

- It builds on the traditional culture, which is based on producing knowledge, as the teacher is the basis of the learning process.
- It does not require a high cost such as e-learning, as this education depends on infrastructure and training of teachers and students to acquire technical competencies, and it does not need assistants; As the teacher is the focus of the educational process, he transfers knowledge to the minds of students in a traditional learning environment without the use of modern electronic media or teacher's assistants.
- Traditional education works to receive all students at the same time and place.

- Student is passive; Where he receives information from the teacher without any effort in research and investigation, depending on the style of the lecture and presentation by the teacher.
- It is necessary for the learner to attend school throughout the week. Traditional education sets a specific age during which it is not permissible to combine study and work.
- The educational content shall be in the form of a printed book with written texts presented to the student, even if there are more than that, some pictures are not used in the technical precision.
- It limits the process of communicating with the teacher; Where the student does this during the study times in the classroom by asking questions to the teacher, and class time of course does not accommodate everyone.
- The teacher's role is limited to transmitting and teaching information.
- The classmates of the class, school, or dormitory in which the student lives are only his colleagues.
- Uses the language of the country in which the student lives (the language of his country).
- Students are registered, their administrative affairs are followed up, and certificates are issued through confrontation, that is, in a human way.
- Accepting limited numbers every academic year according to the available places.
- It does not take into account the individual differences between the learners and the lesson is presented to the whole class in one explanation.
- It is based on memorization as it focuses on the cognitive side of the learner at the expense of other aspects. Students focus on preserving information at the expense of the growth of their skills, values and attitudes, neglecting the cognitive aspect, problem identification and problem solving skills, critical and creative thinking, and methods of obtaining knowledge constitutes an obstacle in the labor market.
- There is no role for feedback.
- It is characterized by the stability of educational materials without any change for long years that may extend to tens of years.
- The teacher is the main source of learning, and there is no other source.

E-Learning:

- It introduces a new type of culture, which is digital culture; Where it is based on the treatment of knowledge and helps the student to be the focus of the educational process and not the teacher.
- It needs a high cost, especially at the beginning of its operation and application of preparing the infrastructure, which consists of computers, making software, training teachers and students on how to deal with this technology and designing scientific materials and contents electronically, as it needs assistants to provide an interactive environment between teachers and assistants on the one hand and the learners on the other hand, as well as between the educated among themselves.
- E-learning does not need to provide education in the same place or time, and the learner is not committed to a specific place or time to receive the learning process.
- It needs activity and movement from the learner, and his interaction while receiving the scientific material; Where e-learning is based on self-learning and on the concept of uniqueness of learning.

- It gives the opportunity to education for all age groups in society, starting with housewives and workers in factories. Here, it is permissible to combine work and education (the complementary concept).
- The scientific content is more exciting and more motivating for students to learn; It is presented to the student in the form of written texts, static and moving pictures, video clips, drawings, diagrams, and simulations, as it is in the form of an electronic course (visual e-book).
- It is based on the freedom to communicate with the teacher at any time, and the process of asking questions is the basis for dealing through various electronic means such as: e-mail and chat rooms.
- The teacher has a major role in guiding, advising, helping and providing advice to students.
- The student gets acquainted with colleagues from different places from around the world and different cultures. The place is not considered the standard for acquaintance and fellowship, no matter how far or near a place.
- It is imperative for students to learn foreign languages in order to communicate in order to be able to receive scientific material and listen to lectures from international professors. It is possible for Arab students to join universities electronically in developed countries such as France and Germany.
- Register students, follow up on their administrative affairs and issue certificates electronically remotely.
- It is allowed to accept unlimited numbers of students from all over the world.
- It takes into account the individual differences between the learners, as it is based on providing education according to the needs of the individual and their differences from one individual to another.
- It depends on the method of problem-solving and develops the learner's creative and critical ability, which makes him able to apply what he has learned.
- Interested in immediate feedback of educational information and contents.
- It depends on updating the educational materials submitted electronically on a regular basis and adding everything that is modern and advanced.
- The teacher is considered the one in charge of directing and guiding in order to access education resources.

Here, the design of school buildings must take into account modern interactive technology:

Internal architecture components in interactive design:

With the current technological development and the use of modern technology in the internal spaces for the sake of well-being and facilitating human life such as smart homes, smart furniture and interactive means, the interior designer had to understand the types of materials and technology and keep up with their developments and study their impact on the user based on the intended goal and the category used for these technologies within the space. The procedure, is based on this, the following components of the interactive space must be followed:

1- The physical structure of the space: it includes the walls and floors, and the furnishing units that are included in each activity.

- 2- The electronic structure of the vacuum: It is a physical vocabulary such as wires and equipment and also the communication links responsible for the transfer of information.
- 3- Electronic vocabulary: It is the set of laws and programs that complete the process of interaction and the process of movement and receiving orders.

The stages of interactive design in educational activities:

- 1- Study and analysis phase: It consists of a set of the following tasks and activities.
 - A- Defining the area of interest.
 - B- Defining the characteristics of the learner or recipient.
 - C- Determine the educational content.
 - D- Determining the requirements for the function of the place or the environment and the internal space.
- 2- Instructional design stage: it is accomplished by following several tasks:
 - A- Defining educational goals.
 - B- Determining the educational experiences and choosing the appropriate means.
 - C- Defining educational activities.
 - D- Determine the tests.
 - E- Interaction design.
- 3- Production phase: It includes the following steps:
 - A- Obtaining the available media.
 - B- Production of unavailable media.
 - C - Selection of systems, foundational programs and auxiliary programs.
 - D- Production of the initial program.

Factors that affect interior design in the environment of interactive educational activities:

The most important factors that affect education are the interior design of the surrounding environment in the school and the occasion for the educational interaction to suit the educational process of the required activities in line with the school activities in the study environment.

- 1- Adherence to design considerations.
- 2- Economic factors.
- 3- Environmental factors.
- 4- Transition towards the school of quality.
- 5- Design according to the principle of sustainability.

Commitment to design considerations in designing an environment for interactive educational activities:

Societies and their various systems face great challenges imposed by technology and the huge flow of knowledge, and this is what contributed to the development of technology related to information technology and means of communication, and this is what affected the educational process down to e-learning, where e-learning represents the achievement of effective communication and the provision of learning opportunities and there is also a confrontation in rejecting e-learning in the face of challenges.

- 1- Study the psychological and spatial needs of students, which requires attention to interior finishing work and the provision of all interactive equipment and furniture, in line with the

characteristics of students who benefit from the same space and modern interactive educational aids.

2- Paying attention to arranging student seating places within the environment of interactive educational activities, to ensure that there are appropriate spaces between them and the teacher or the source of information, which requires attention to study the form of the vacuum environment for interactive educational activities in terms of space and internal dimensions.

3- Not to find any element that causes students to turn away or distract students from their teacher, such as annoying sounds emanating from outside, which requires attention to study the functional relationships of all elements of the interactive educational activities environment of the school building.

4- Studying environmental standards that help create an integrated healthy environmental atmosphere that helps students and teachers within the environment of interactive educational activities to focus on the performance of educational activities, which requires attention to good orientation, lighting, ventilation and acoustics.

A philosophy of integrating interactivity in educational settings:

Educational institutions seek in a modern way to advance the educational process to its highest levels and employ for all strategies, methods, educational means and various methods to advance the educational process to the best state, and this is done by keeping pace with development and obtaining the local and global arena, especially in technological education that shortens distances and makes the abstract a tangible thing, but it has become an easy tool to interact with the parties of the entire educational process.

School building is the primary expression tool for the components of the goals and symbolism of the interactive design philosophy.

Therefore, the designs of schools and classrooms must be architecturally and internally expressive of the educational philosophy and practical and educational goals that the society seeks.

Hence the role of interior and architectural design in creating typical buildings and classrooms with an interactive and appropriate design that helps in integrating technology, programs and equipment with the general surroundings of the internal space to create an atmosphere that increases the activity, acceptance and interaction of students with the information presented to them.

The use of interactive technologies in interior design within the school educational environment is one of the topics that have gained attention from the competent authorities, as researches and studies have emphasized the importance of stimulating the motivation of the learner and improving the results of educational attainment, as most interactive education systems depend on interaction between teacher and student, or between the computer and the student, as learning is the combination of theoretical knowledge, scientific application and self-knowledge.

The study showed that the traditional method does not lead to the integration of knowledge of learners in the desired way, and from here appears interactive education that is based on the merging of knowledge formulas completed at one time, because it is based on learning to solve problems in an interactive, participatory manner.

The use of technology in education is considered a relatively recent matter, although the concept of interactive theory is very old, due to the need of educational institutions to raise the level of

efficiency of the educational process, and the influence of means of communication in the educational process, teaching methods and methods of transmitting information to students are more clear. Online education is of great importance to what experts have indicated in creating roles for learners and teachers in creating a new computerized learning environment, making the educational process wider on the scope of distance learning and gaining information from various corners of the world.

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