Need for Inclusion of Conservation and Rehabilitation Courses in Architectural Curriculum: Lessons from Pedagogical Experience

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Preserving architectural and urban heritage has become one of the global and important issues. It requires a lot of studies and documentation to preserve it and its continuity history. The architectural departments have to contribute to teaching their students interest in architectural heritage and urging them to study and document these buildings. This research aims to highlight the role of preservation and rehabilitation courses in the departments of architecture as a basic course that has a documentary and scientific output to expand the scope of participation in the study and documentation of heritage buildings. In addition, it is introducing the local heritage architecture in Yemen, Hadramout Governorate. The research presents multiple heritage buildings through part of the output of scientific activities in the Department of Architecture and Environmental Planning at the Faculty of Engineering and Petroleum - University of Hadramout (Yemen) from 2010 until 2015 AD. It is documenting works of value before their removal and extinction or correcting previous works and raising them to specialized agencies.

Keywords: urban heritage, architecture, Rehabilitation.

1. Introduction

Preserving heritage buildings and sites is essential and important for all countries because of the different sciences and experiences they contain (Tomas Nilson & Kristina Thorell (Eds), 2018). Given the exposure of many heritage sites and their buildings to distortion, abandonment and demolition in Yemen, in particular, the responsibility has become greater and requires a lot of studies and documentation to preserve the buildings and archaeological sites for their development and benefits from them. All of these tasks and responsibilities require a large and continuous number of enthusiastic and specialized competencies that are linked to the place and interact with the community.

Department students study, analyze and apply a large part of these works when they carry out their applied project for the course, which includes studies, surveys, registration and documentation of buildings, individually and collectively, different sites, inscriptions and drawings, and conveying the true picture of the monument complete with all its architectural and construction elements and others. Other groups of students may also make proposals and studies for rehabilitation and restoration.

2. The aim of the research:

The research aims to enhance the historical and archaeological value of local architecture. It clarifies the significant and important role that the faculties of engineering and architecture. which can play in the process of preserving buildings and urban heritage through several real applied examples of lifting and documentation works, as well as proposals and necessary studies and rehabilitation.

3. Study problem

Yemen have archaeological and architectural features of value heritage. Many of them are associated with numerous events and scenes. Many heritage buildings need to be restored or rehabilitated, especially the mud buildings. There are no completed or cleared studies for most of these ancient buildings. Many of them were damaged, demolished or destroyed. In addition, some studies were not correct or lacked sufficient specialists in this field.

The research focuses on studying selected heritage buildings. Documenting, analyzing, and raising the current situation for each building, while recording all data and observations, following up with students and drawing conclusions and comparisons for each project.

3.1 Hadhramout (Study Area)

Hadhramout is the governorate with the largest territory of around a third of the country's area (Consultation Work Project for the Development of Wadi Hadramaut, First Phase Report, 2004) in the southeast of the Republic of Yemen. It distinguished its heritage buildings, especially earth buildings. There are many valleys named "wadis. Wadi Hadhramout is one of the largest valleys on the Arabian Peninsula. The Wadi developed its distinctive style of fortified mud-brick tower (Aga Khan Award, 1982) (see Figure 1). There are several famous towns in the Wadi such as Seiun, Shibam, Tarim and Wadi Dawan (see Figure 1). Its building style owes little to the vernacular (Jolyon, 1991; Shariati et al., 2013).

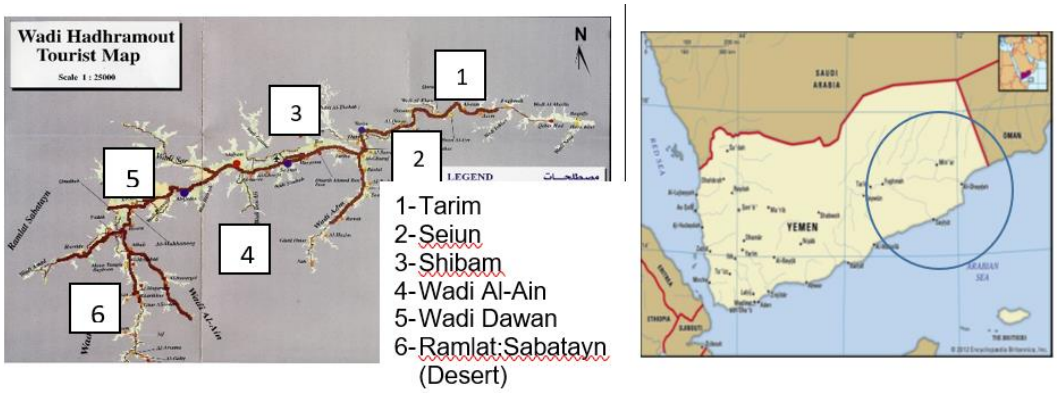

Figure 1: Map of Yemen, Hadhramout location and Hadramout Valley (Consultation Work Project for the Development of Wadi Hadramaut, First Phase Report, 2004) & Cities, the Wadi and its branches (Aidid, 2005)

3.2 Earth Architecture in Hadramout Valley

The ancient cities were established of clay on the stations of the ancient trade route through the lands of Hadramout, which was called The Mud Valley or "Architectural Earth Valley" (Al-Damlouji et al., 1995; Ishenin et al., 2021). Mud buildings constitute about 95% of the buildings in the valley. Some of the buildings in the valley are several centuries old, and historical evidence of mud buildings is still standing (Al-Saqqaf & Muhammad Abd M, 2007; Asadipour et al., 2020).

The tower houses rise to remarkable heights. As much as ten stories, with the tallest structure in the valley being the 175-foot-high mud brick in minaret Al Mihdhar at the town of Tarim (Figure 2). In recognition of its unique architecture and environment. Wadi Hadhramout and the walled city of Shibam were declared a world heritage sites in 1982 (Lewcock, 1986).

Old city of Shibam has Mud-bricks walls. All palaces residential and public buildings were built traditionally from air-dried mud bricks (Al-Sabahi & Aref, 1997; Cao et al., 2005). The houses of Shibam city are looks like towers, (Figure 2).

Photo a: The walled city of Shibam (wikimapia, 2016).

Photo b: Minaret Al Mihdhar, at the town of Tarim.

Photo c: A tower house in Wadi Dawan (Bugshan Palace in Khailah).

Photo d: Sultan Kathiri palace. One of the biggest clay buildings in the world

Figure 2: (Photos 3: a, b, c & d). Examples of the Marvelous earth buildings in "Mud Valley"

4. Definition of heritage and heritage area

Architectural heritage is an architectural urban experience associated with originality and heritage (Adar & Yanar Hassan, 1993). It contains the historical values of the era and the requirements that were in it (Al-Saif & Ahmed Muhammad, 1996). World countries seek to preserve their material and cultural heritage (Mohammed A F Itma, 2007), International interest in tangible heritage, especially in architecture is growing rapidly (Abdelmonem, 2017). Architectural heritage is a clear symbol and witness to the development of man and the civilization of peoples (Mohammed A F Itma, 2007). Immutable tangible heritage includes all historical monuments, archaeological sites, and urban or rural communities, it is one of the important tourism sectors in the development of the national economy (Azouk, 2006). Urban heritage is defined as a group of buildings and facilities with homogeneous urban features that have proven their authenticity and value, they have become the living record and visual reference (Abdel Rahim & Ashraf Abu Al-Oyoun, 2009; Mahmoud Haitham Samir, 2008; Yahya Abdullah, 2006). The architectural effect can be defined as a

building that reflects a special religious, historical, or architectural importance, such as mosques, ancient towers, palaces, and fences.

5. The importance of cultural heritage

Architectural heritage is one of the most important aspects of human development throughout history. It represents the most important manifestations of culture, civilization, and the memory of successive generations. It is the enrichment of modern architecture and the preservation of the architectural diversity of the peoples of the world, and losing it means losing memory. It also means an important economic lack in the local development of the areas of this heritage (Hajjaj Reem Muhammad Younis, 2013). Benefiting from the urban heritage helps the survival and continuity of the city and urban civilizational development (Amal Abdel-Wareth, 2006). Architectural heritage is a rich material for study and research in various aspects at the level of spiritual and symbolic inspiration for this heritage (Arif, 2019). Our architectural heritage is being distorted and much of it is heading towards extinction (EMAD HANI ISMAEEL, n.d.). The countries of the world seek to preserve their material and cultural heritage (Mohammed A F Itma, 2007; Agusmidah, & Shalihah, 2023).

Preserving the heritage has become a historical and human responsibility to contribute to preserving the features of the past so that the children of the future can see them. International conventions and references considered that urban heritage in all its forms is a universal heritage for all humanity, and international interest in tangible heritage, especially architectural, is increasing (Abdelmonem, 2017). Many works of preserving the architectural heritage have attracted the interest and participation of all groups of society (EMAD HANI ISMAEEL, n.d.). It is our duty to preserve the nation's heritage and history (Bawazir, 2009).

6. The importance of cultural heritage

Caring for modernity at the expense of human heritage is one of the great mistakes made by human societies, and many monuments have lost their heritage importance (Erder, 1986). Also, inappropriate preservation attempts may cause destruction or distortion of the architectural heritage (EMAD HANI ISMAEEL, n.d.). The process of preserving areas and buildings is a continuous process in which development agencies, whether governmental, investors or residents, must participate (Rashid, 2013). Many studies have shown that there are important problems in the studies and documentation of historians and archaeologists, as the structural side of architecture or the archaeological building is neglected. In addition, many architectural matters, measurements, proportions, and their requirements are not familiarized with, and on the other hand, the architects' lack of knowledge of history and archeology causes them to lose their sense of the importance of traditional and heritage architecture (Wikimedia, 2016), and to attract tourists and researchers (Rashid, 2013). The architect needs to play his important role and responsibility towards the urban heritage, and not leave this field to the archaeologists and restorers only (Bawazir, 2009).

Recently, the risks of mud buildings being exposed have increased in Wadi Hadhramout, especially due to climate changes. The increase in rain rates and the flow of torrential rains led to the destruction of some buildings. Figures 3&4 show part of the destruction that affected parts of Wadi Hadramout as a result of floods and torrential rains as well as political conflicts and bombings that occurred in the region.

Figure 3: Destruction that afflicted parts of Wadi Hadramout due to torrential rains and wars (Alyan Jamal, 2005).

Figure 4: The effect of climatic factors on the mud buildings and their facades in Wadi Hadramout (The researcher)

7. Architect in preserving the urban heritage role

The process of preserving historical buildings is primarily a design activity. The conservation project cannot be carried out without documenting the history of the building, construction techniques, and processes. Architectural documentation is concerned with all information and data related to heritage buildings to refer to when conducting the preservation process (Hajjaj Reem Muhammad Younis, 2013). Documenting historical buildings is one of the most important elements of preservation.

Certainly, the process of architectural studies and documentation of buildings must be carried out or thrown with the participation of a specialized architect, in addition to its necessity in drawing and showing the components of the existing situation, and accurately identifying the nature of the building (Gunewardene, 2016). Architects are the category best able to understand the vocabulary, details, construction, and functions of the building. In addition to a sense of scale and the ability to lift, measure, photograph, and its feeling, which represents an integration with the rest of the disciplines and the ability to understand the requirements for antiquities, restoration, and treatments (Bawazir, 2009).

8. Students' preservation projects

8.1 Works methodology

- The study relied on the theoretical aspect firstly, reviewing the history and heritage of Yemen and the region to clarify the architectural importance of reservation, and rehabilitation through studying and recording heritage buildings.
- Students suggested and determined the projects and sites to study based on their

knowledge of the history of their area and its historic buildings.

- A simple preliminary report is prepared firstly by the students to show the importance of their chosen building with some history and photos to get the instructor's approval.
- Form a homogeneous team of a suitable number of students for each project in proportion to the size and importance of the project.
- The instructor participates with students in all the details, starting with the initial definition of the project and requesting its approval after submitting preliminary studies and proving its historical value.
- Students are monitored and motivated continuously assisting and helping them with methods of research, measurement and presentation prepared and references.
- Finally, each project is reviewed independently, and each group is encouraged to highlight its project and search for the most important ideas for submission and presentation to obtain first place. This is done individually and specifically for each group.
- Encourage students to apply without any restrictions, whether by submitting posters or, electronic submissions and presentations, videos, models, recorded interviews and others. As well as making the final show sometimes in the college theater with a general invitation to all faculty students and faculty teaching staff.

8.2 Tools (Used tools and equipment)

In documentation and measurement, students rely on their own efforts and simple measuring tools, such as a measuring tape, a regular camera, and sometimes their cellphones. The drawing is based on measurement, hand drawing, and drawing sketches first. Final drawings by AutoCAD application. Students do not have surveying measuring devices and they don't have accreted cameras, their possibilities of travel, accommodation, and living expenses during their field visits were also very low.

8.3Examples from student's studies

The research reviews various examples of studies registration, documentation, treatments, drawings, reports, and results for numerous historical and valuable buildings during the years (2010-2016). The research shows different examples according to the cases of preservation and rehabilitation required for historical buildings. These studies are followed in detail.

8.3.1First project: A study of "Riyadh Palace in "Tarim Town"(A building that was removed after the documentation and registration process).

The building was one of the famous and distinguished palaces located in the east part of the city. It was built in 1935. This study was done in 2013 before Riyadh Palace was demolition and removed in 2014 (Figure 5).

Figure 5: Demolition and removal of Qaser Al-Riyadh "Tarim city, 2014.

The palace design was mixed between Local Hadhramy of raw mud and "European" style, which was spread in Asia. It had multiple details, ornaments, and functions. The palace contained a wide courtyard of about 2680m2, cars parking and a car workshop place. It was used as a governmental building for a long time.

Architectural reservation was done, and schemes were drawn for the building including plans, facades, sections, and details, with an appropriate study of the building and its historical steps. (Complete drawings reserved). Figures (6&7) show part of the study of the Riyadh palace (photos and documented plans).

Figure 6: One the luxurious and distinctive mud buildings, the students documented the building, details, and design (perspective and elevation photo).

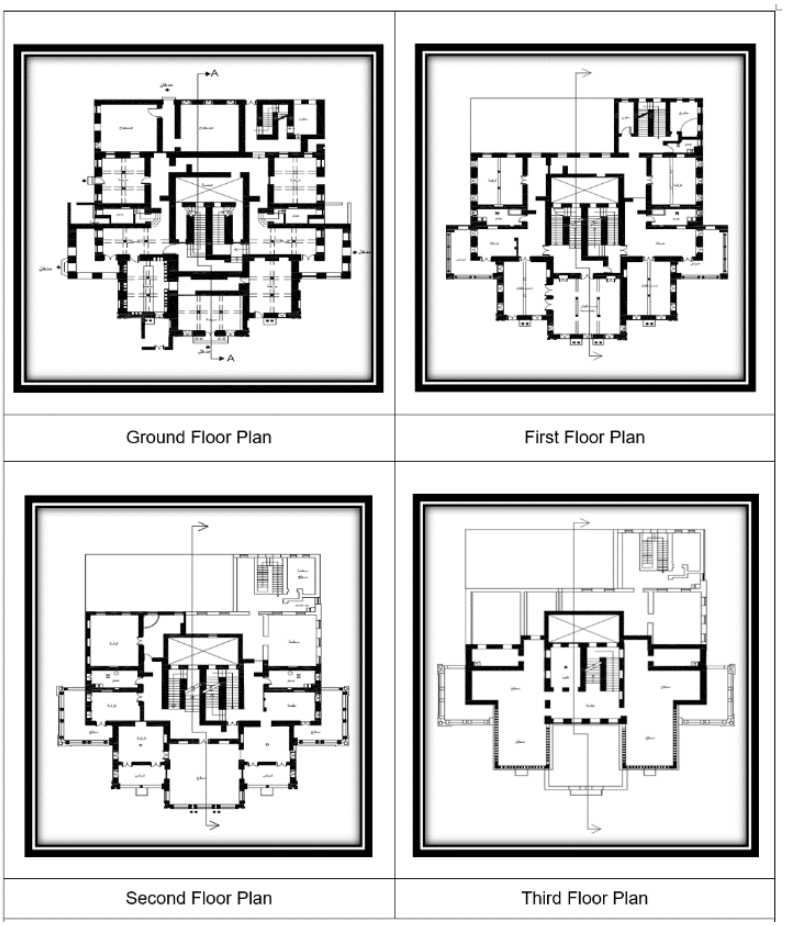

Figure 7: One of the luxurious and distinctive mud buildings, the students documented the building, details, and design (it was demolished latterly).

8.3.2Second project: A study and documentation of Masnaat Al-Amoudi old Governance Castel building in Sseif "Dawan."

This site contains a group of historical buildings, the study was done according to the owner's request. This seat of local government site, which called "Masnaat"(means a castle building) Al-Amoudi was very famous in the past. It was built 125 years ago. Its owners tried to preserve it for its important history. Thus, this site was restored and rehabilitated latterly depending on the student's study (Figure 8).

Figure 8: Masnaat Al-Amoudi after rehabilitation and restoration work latterly after students' studies and documented the site and submitted their final report.

This project was one of the biggest groups of 25 students, due to its large scale and its multiple parts, six of this group were females. The project's main group was divided to collect all their works in the end in one book. This building consists of four floors and a basement. There were many details, ornaments, plans, and sections for every part of each building, Figures 9&10 show some of the students' drawings and the documented details. Indeed, many problems were challenging the student groups shown in Figure 11.

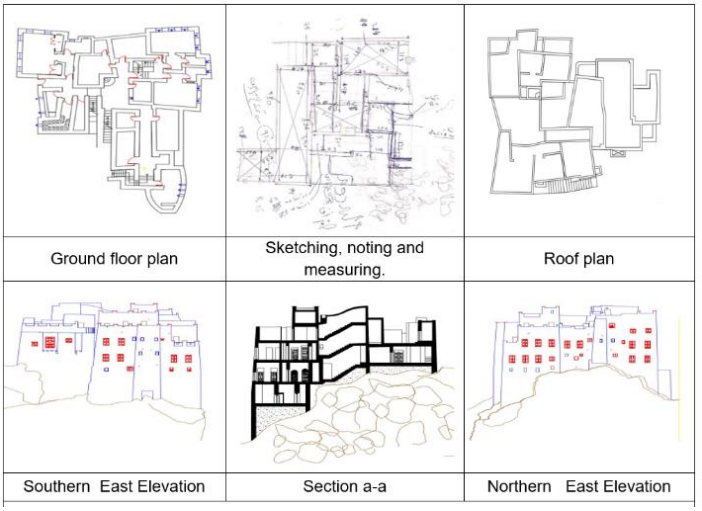

Figure 9: Samples of the building drawings

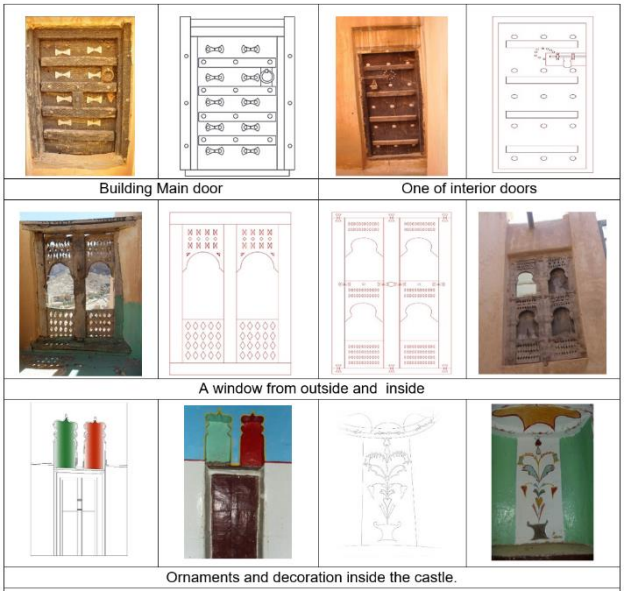

Figure 10: Samples of ornaments and building component details "Photo & student's drawings".

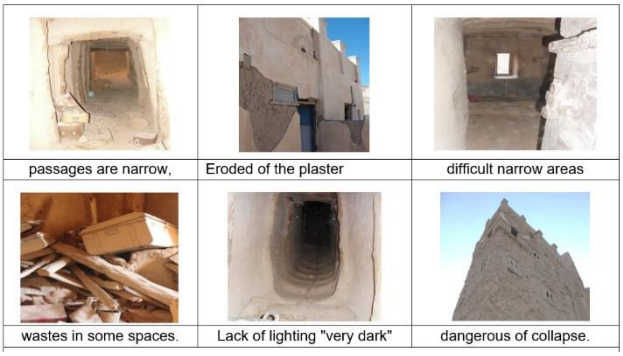

Figure 11: problems while studying and documenting the building.

8.3.3Third project: A study and documentation of a heritage fort building of Hesn Bin Ayyash “Fort", in Shehr City” Arabian Sea" coast.

Fort Bin Ayyash in the city of Al-Shehr. Its founding dates back to the era of the Qaiti state in 1886 AD, about 130 years ago. It is considered one of the heritage buildings in the city of Al-Shehr. Ibn Ayyash Fort is in the middle of the city of Al-Shehr, on the southern side, near the Arabian Sea. This site was carefully chosen to monitor and protect all neighborhoods and entrances to the city at that time. The building was designed to be the headquarters of the Qu'aiti military command and the protection of neighborhoods and entrances to the city. The foundations of the building were built of limestone, as were the walls of the first floor, while the rest of the building was built of clay bricks, which are called mud bricks. Bin Ayyash Fort is a solid building built in the style of Indian castles, Figure 12. This style spread in that period and appeared in many government buildings and other rich people's palaces (Abu Al-

Haija, 2015).

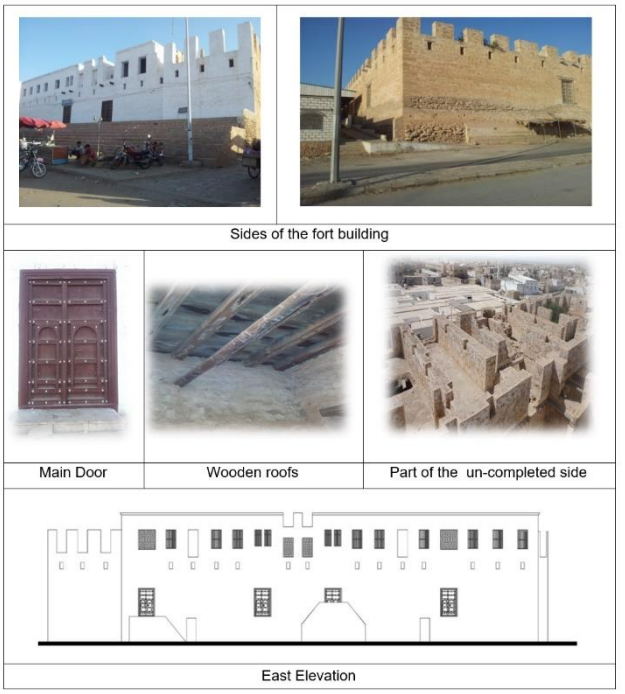

Figure 12: Some of the building details and student, drawings of the fort.

This building had shown differences in documentation between student's work (plans drawings and measurements compared with a formal study for an international organization. There were many mistakes and wrong differences in drawings and measuring. These differences are shown in the ground plan drawing of the fort building in Figure 13.

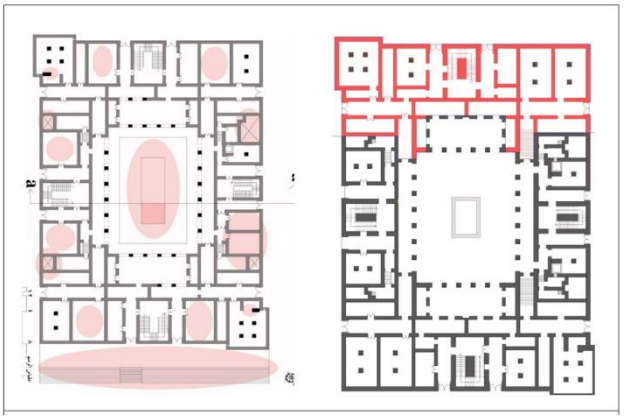

Figure 13: Differences and mistakes detail in UNICCO document Colored areas, a discrepancy was found in the drawing, and the official documentation is incorrect.

Finally, the capabilities no longer allow students to go to the field continuously and go to far or different sites, and the scarcity of capabilities of many of them has led to a lack of materials, photography, and printing. Interest in preserving historical buildings, as well as university students' projects and studies in general, has declined due to the political and economic conditions in the country. Many historical buildings and archaeological sites have been neglected and damaged, despite the existence of some projects interested in preserving heritage and historical buildings, which are supported by several organizations and interested parties.

9. Result and recommendations

-Universities architecture programs students and local architecture courses show great dedication and teamwork in the work of uploading, surveying, and documentation. Indeed, they are an effective energy in community development.

-The work of the students of the Preservation and Rehabilitation course in the Department of Architecture and Environmental Planning contributed to the work of documenting and preserving important architectural landmarks. It also revealed errors, shortcomings, and inaccuracies in some of the lifting and restoration work, which is supposed to be carried out by specialized and reliable bodies.

-The students' ongoing work documented buildings that had a distinctive heritage character or were valuable, some of which were subsequently removed.

-The students' works contributed to introducing the importance of heritage, introducing many historical and valuable areas and buildings, community participation, and the student's interest in the surrounding environment and its preservation.

-The students' works provided suggestions, solutions, and ideas for restoration or reuse, and they participated in important restoration works, such as the restoration of the Al-Amoudi factory in the city of Saif-Doan.

-Most of the works that were previously documented need to be re-studied according to recent climate and political changes, and they also need to be documented and photographed with modern documentation equipment and devices instead of inaccurate manual capabilities.

Allocate part of the engineering and architectural departments and colleges to curricula and activities to the aspect of heritage and its preservation.

-Introducing the local community to the importance of the historical and heritage buildings of the region and its people.

-Increasing interest in heritage while continuing to record and monitor all remaining heritage buildings and existing monuments to study, classify them, and determine conservation priorities.

-Benefiting from the experience under study and disseminating it to maximize its benefit on a broader scale.

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