### Analytical study of artificial elements in school gardens in Najaf province

Ameer Abdel Akhowh HassanZina Mohsin Abdullah

Ameer A.Alfaham@uokufa.edu.iq

zina.nabil.zn@gmail.com

#### Abstract

The research was conducted in Najaf province for the year 2021-2022 on a selected sample of schools, including (Al-Mutamaifat High School, Al-Mutafaqat High School, Oras Intermediate School, Ruqayyah Intermediate School, Sajidat High School). Seating seats, ceilings, corridors and entrances, sculptures), Develop indicators that meet the requirements of site users. The research methodology was represented by the theoretical framework that relied on dealing with the scientific knowledge that pertains to the spaces of green areas, school gardens and the basic (artificial) components of the school garden. As for the practical framework, it was represented by the field study, which relied on collecting information that included (the reality of the situation) for the schools of Najaf province and its lack of a set of elements and standards in providing artificial components for school gardens. This was done based on the indicators of the theoretical framework of the site, identifying the gardens that lack these components, conducting personal interviews with relevant specialists (educational staff and students), personal observation of the researcher, and conducting a questionnaire for the study site to know the opinions, desires and requirements of the beneficiaries of the site and determining the indicators for the study area and the results obtained from the questionnaire were converted into percentages and frequencies by using the computer and using the Statistical analysis system-SAS (2010) program in the statistical analysis of the recorded data using Chi-Square. The researcher reached a set of conclusions and recommendations, the most important of which is the site's lack of industrial elements, which are important to provide comfort and achieve the functional aspect of the site. Based on the results of the questionnaire, the views and desires of the site's users were identified and through the field study that was approved according to the indicators of the theoretical framework. Examples of synthetic components that can be used in school gardens (study area) of Najaf province were presented.

### Introduction

The school building is one of the most important urban environment projects and one of the mainstays for the success of any educational system. The landscape areas are an important and complementary aspect of the entire school environment. The school building is a closed part and the landscape of the green areas represents the integrative open landscape, and it was noted that there is a lack of attention to the design considerations and standards that must be available and approved in the design of gardens in the schools of Najaf province. Where integrated coordination must be established between the natural, artificial and complementary elements of the school building, and the aim of this design is to provide an external environment suitable

for use by students (Dawood, 2020). It works to raise its functional, environmental, aesthetic and architectural efficiency, and it reflects positively on the scientific and educational aims and is in harmony with the desires and requirements of its users. The human need for gardens to spend leisure time in them has increased, and the interest in establishing and frequenting gardens has increased as a result of urban development (Shamma et al., 2014). In addition to promoting social interaction between students and focusing on communication where they can feel themselves in nature and learn different concepts related to nature (Duymus et al., 2018) (Mahmoud and Amin, 1989) indicated that landscape or green spaces cannot be without complementary components, As it works to raise its aesthetic value and increase its functional efficiency, synthetic components and others are considered points of attraction and interest in green area .A successful detailed design of landscape must take into account the artificial components in terms of type, size, color, scale and the material it is made of, in addition to its durability, resistance to climatic conditions, use and ease of maintenance. Therefore, we know that the artificial elements are important in the formation of gardens, after the important natural elements in the landscape of green areas.

### Materials and methods

### 1- field study

Field survey and comprehensive analysis of all samples, the elected schools ((Al-Mutafa'at High School, Al-Mutafaqat Secondary School, Oras Intermediate School. Ruqayya Intermediate School, Sajidat Preparatory School), The artificial components within the school garden were studied by visiting those green spaces for several times to collect measurements, photography, information. interview and recording some observations.

### 2- Preparing the questionnaire form.

A questionnaire was prepared, which contains paragraphs related to the artificial components in the school garden. The questionnaire was presented in its initial form to a number of specialists and stakeholders in the field of study to ensure the apparent validity and content validity of the questionnaire's paragraphs.

### **Results and discussion**

The purpose of the questionnaire was determined by investigating the needs and desires of school garden users and the extent of their needs by knowing their preference for artificial components within landscape, These needs are considered design indicators that must be taken into consideration by the designer because the efficiency of the space determines the efficiency of its use and the number of its users. 1- Discussing the results of the first paragraph about paths and entrances

The desire of the educational staff and students was to provide walkways within the space designated for the school garden, where the paths are important when the school does not have enough space for gardens or when there is no landscape designated for roaming and reading, and between the questionnaire, with the desire of the respondents to specify the entrances of the educational staff on behalf of the students, where the percentage was 79.10%. The researcher believes that this high percentage came to provide privacy between staff and students. The questionnaire showed the desire to plant the corridors with ornamental shade plants so that they are beautifully coordinated, and the percentage of 91,47 %. The preferred construction materials for corridors were the desire for the walkway, stone 41.30%, muqarnas 32.78%, concrete 5.85%, and wood 20.07%. The researcher believes that the stone gives the garden a distinctive character commensurate with the plants and construction at the same time, and the use of stone walkways has an aesthetic value for the gardens. As it facilitates movement for school garden users, it was noted that 68.23% want straight walkways on the winding walkway, and the walkways are the first element that design begins with. The researcher believes that choosing straight walkways gives comfort and ease in walking and access is faster than the winding walkway. It gives a sense of directionality (Al-Fahham, 2005). The questionnaire showed that there is a desire to identify those walkways and paths with herbaceous plants by 17.37%, and the use of flowerbeds in determining them came at a rate of 36.96% and the use of industrial determinants by 2.17%, and 43.14% by using them all. The agriculture on both sides of the road increases the property of directing and limiting movement. This is consistent with what was found by Chalabi (1990) and Al-Aboudi (2017) and the statistical analysis using a square test showed significant differences at the probability level (0.01) as shown in (Table 1)

Table (1) Percentage of sample opinions about the first paragraph (identification of entrances - planting entrances - materials of which the walkway is made - the required design - determining the paths)

| significant | chi value | %  | No.      | Question                |  |  |  |  |
|-------------|-----------|--|----------|-------------------------|--|--|--|--|
|             |           | 1- Do you want to specify the entrances for students to exit |          |                         |  |  |  |  |
|             |           | ne entrances of the educational staff?                       |          |                         |  |  |  |  |
| <.0001      | 202.515   | 79.10  | 473      | yes                     |  |  |  |  |
|             |           | 20.90  | 125      | no                      |  |  |  |  |
|             |           | 2- Do you want to plant silhouette ornamental plants in      |          |                         |  |  |  |  |
|             |           |  | entran   | ces?                    |  |  |  |  |
| <.0001      | 411.398   | 91.47  | 547      | yes                     |  |  |  |  |
|             |           | 8.53   | 51       | no                      |  |  |  |  |
|             |           | <b>3-</b> Do you prefer the paths and walkways to be:        |          |                         |  |  |  |  |
|             |           | 41.30  | 247      | stone                   |  |  |  |  |
|             | 181 575   | 5.85   | 35       | concrete                |  |  |  |  |
| <.0001      | 1/1.505   | 32.78  | 196      | muqarnas                |  |  |  |  |
|             |           | 20.07  | 120      | Wood                    |  |  |  |  |
|             |           | 4- Do you prefer the design of the paths and walkways in a   |          |                         |  |  |  |  |
|             |           |  | way?     |                         |  |  |  |  |
| <.0001      | 31.77     | 190  | squiggly |                         |  |  |  |  |
|             |           | 68.23  | 408      | straight                |  |  |  |  |
|             |           | 5- Do you prefer to mark the paths and walkways with         |          |                         |  |  |  |  |
|             |           | 17.37  | 106      | herbal plants           |  |  |  |  |
| <.0001      | 250 227   | 36.96  | 221      | flowerbeds              |  |  |  |  |
|             | 230.227   | 2.17   | 13       | industrial determinants |  |  |  |  |
|             |           | 43.14  | 258      | all of them             |  |  |  |  |

# **2-** Discussing the results of the second paragraph of the project

The students showed a percentage of 81.10% of the existence of sheds in the outdoor spaces, as it was noticed through field visits that there are no sheds in most schools that protect them from the heat of the sun's rays in the summer and rain in the winter. The desire for sheds was natural by 46.99% and industrial by 13.71% and 39 30% would like to be both,The researcher believes that the reason for their desire for natural sheds is because it highlights the beauty of the place and that the natural sheds may be trees or wooden sheds made of tree trunks, in addition

to raising climbers on these climbers. These are all-natural sheds. This is consistent with the findings of Al-Aboudi (2017), and the respondents' choice of shades by means of plants is due to the fact that these plants possess various natural scenes that affect the users of outdoor spaces through their colors and leaves, so their opinions emerged based on these effects. In addition, these plants reduce the temperature and solar radiation by blocking or impeding the arrival of sunlight to the surface of the earth, as well as through the formation of shadows. Statistical analysis using a square test showed significant differences at the probability level (0.01) as shown in (Table 2)

|           |         | 1- Would you like to have sheds in your school garden? |     |            |  |  |  |
|-----------|---------|--|-----|------------|--|--|--|
| <.0001 23 | 221 /11 | 81.10  | 485 | yes        |  |  |  |
|           | 231.411 | 18.90  | 113 | no         |  |  |  |
|           |         | 2- What kind of sheds would you like to have?          |     |            |  |  |  |
|           |         | 13.71  | 82  | industrial |  |  |  |
| <.0001    | 110.066 | 46.99  | 281 | natural    |  |  |  |
|           |         | 39.30  | 235 | Both       |  |  |  |

| Table (2): Percentage | of sample or      | oinions about the | e second paragrap | h (ceilings - its type) |
|-----------------------|-------------------|-------------------|-------------------|-------------------------|
|                       | · · · · · · · · · |                   |                   |                         |

# **3-** Discussing the results of the third paragraph, sitting seats

The percentage was 64.38% who wanted seating benches made of wood, 16.86% of plastic, 9.87% of concrete, and 8,86% of galvanized iron, due to the lack of seating benches or non-existence in most schools or not suitable for sitting. Which led to the students feeling bored of seeing it or being in it, so they preferred to sit during the breaks between lessons in their classes. The researcher believes that the desire to choose seating seats made of wood is resistant to environmental conditions, in addition to that it loses heat quickly, especially in hot weather. Fathi (2005) and Al-Faham (2014) indicated characterized by that wood is being compatible with the natural environment in terms of plasticity, which includes texture and color, in addition to being light in weight, as the desire was to be group seats by 62.88%. The researcher believes that this percentage came due to the relationships and social ties between the students who prefer to sit collectively. The statistical analysis using the square test showed significant differences at the probability level (0.01) as shown in Table (3)

| Table (3) P | ercentage of | sample opi        | nions about ( | the third par | agraph (sitting | z seats)   |
|-------------|--------------|-------------------|---------------|---------------|-----------------|------------|
|             |              | · · · · · · · · · |               |               |                 | <b>_</b> , |

|         |        | 1-          | 1- What kind of seating do you prefer? |                 |  |  |  |  |
|---------|--------|-------------|--|-----------------|--|--|--|--|
|         |        | 16.86       | 101                                    | plastic         |  |  |  |  |
| 503.779 |        | 8.86        | 53                                     | galvanized iron |  |  |  |  |
| <.0001  |        | 64.38       | 385                                    | Wood            |  |  |  |  |
|         |        | <b>9.87</b> | 59                                     | concrete        |  |  |  |  |
|         |        | 2-          | 2- Do you want the seats to be:        |                 |  |  |  |  |
| <.0001  | 39.658 | 37.12       | 222                                    | single          |  |  |  |  |
|         |        | 62.88       | 376                                    | collective      |  |  |  |  |

# **4-** Discussing the results of the fourth paragraph, sculptures and statues

To highlight the features of the school garden, there was a desire through the questionnaire for the presence of sculptures at an average of 70.40%. The statistical analysis using a square test showed significant differences at the probability level (0.01) as shown in the table

|         |        | 1-    | Would  | you like to have sculptures (statues in your sch | hool |
|---------|--------|-------|--------|--|------|
| garden? |        |       | garden | 1?   |      |
| <.0001  | 99.558 | 70.40 | 421    | yes  |      |
|         |        | 29.60 | 177    | no   |      |

#### Table (4): Percentage of sample opinions about the fourth paragraph (sculptures)

# 5- Discussing the results of the fifth paragraph, the lighting element

The selection of the lighting element works on the aesthetics of the garden elements. The percentage of the questionnaire who wish to have it was 90,30%, and the researcher finds that lighting is necessary for the garden. It highlights the features of the garden and gives it an aesthetic, and the lighting placement around the fountains is attractive because the lighting reflects on the water of the fountains. This is consistent with what Al-Aboudi (2017) reached. Lighting can be placed over flowerbeds or a group of flowering plants in order to give the beauty and clarity of the bright colors of flowers and highlight their features and give pleasure to site users or around fountains and seating benches. These results are similar to what Chalabi (1990) found. and Yassin (2015). , Statistical analysis using chi-square test showed significant differences at the probability level (0.01) as shown in the table

| Table (5 | ): Percentag                             | e of sample | opinions       | s about the | fifth 1 | paragrap | h (the | luminous | element)    |
|----------|--|-------------|----------------|-------------|---------|----------|--------|----------|-------------|
|          | )• I • · · • • • • • • • • • • • • • • • | o or sampro | <b>Opinion</b> | and the the |         | paragrap |        |          | cicilicity) |

| <.0001 | 388.501 | 1- Would you like to have a lighting element to add aesthetics to the garden elements? |     |     |  |  |
|--------|---------|--|-----|-----|--|--|
|        |         | 90.30  | 540 | yes |  |  |
|        |         | 9.70   | 58  | no  |  |  |

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