

PLANNING STUDY FOR THE REALITY OF SCHOOL GARDENS DESIGN IN DUHOK CITY (HIGH SCHOOLS AS A CASE STUDY)

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ABSTRACT

This study was performed in the Duhok city which is the center of Duhok governorate in 2012. The study aimed to the analysis of the reality of gardens and open spaces schools and the distribution of the different spaces (classroom, construction, concrete squares, paths and allocated green spaces) of 10 selected high schools in duhok city and comparing with the local and international standard to meet the desires of our students in future in the gardens and green spaces field around their schools by use architectural plan Analysis, observations and personal interviews. The study come to several results and conclusions can summarized as the following the lack of achievement of schools gardens in high schools of duhok to fundamental objective, not owning the schools the ideal garden model. Only 27.66% of the space represented for gardens of total area of the site of ten elected samples and the effectively utilized space of this area about 52.88%, while the remaining space 47.12% was unexploited without any activity and vitality, where 90% of these schools open space failed to achieve global or international standard and 60% of them subjected to local standard. Also these gardens were lacked to the gardening arts, as well as there were randomized in number, types and distribution of plants in that gardens.

KEY WORDS: landscape design, school gardens, green spaces, high schools in duhok city.

INTRODUCTION

The school garden term is understood as a green land around a school or area located in the near to the school, typically surrounded by a fence, which was planted with a variety of plants, equipped with various tools used for farming (Rasol, 1988; Chawla, 1994; Fleszar and Gwardys-Szczęśna, 2009). The school gardens have characteristics distinguish from other types of gardens and have other functions: the school garden has become one of the most important elements at scientists and researchers in the field of education, psychology, scientific, sports, health, environment and social and physical activities, to increase students' artistic taste and aesthetic sense and to help students absorb scientific lessons related to agriculture, life sciences, the environment and the economic (Pranis and Hale, 1999; Waliczek and Zajicek, 1999).[?]

As experiments proved that the use of school garden a standard curriculum was an effective way to increase and enhance the student information (Harvey, 1989). Recreation and psychology treatment where the psychology changes are made

when human has enjoyment from the beauty of the nature (Relf, 1992). Also had health and environmental functions which increase in carbon dioxide concentration leads to decreased student's performance on concentration test and increased their complaint of health problems as compared to classes with lower carbon dioxide levels. This occur because during photosynthesis process, in school gardens plants make use of carbon dioxide in the air to manufacture food while O₂ is given out as the by-product, this makes the air we breathe cleaner and more O₂ is taken to the brain (Inko-Tariah, 2010)

In the modern era the importance of gardens and external spaces of schools have been increased because of the theories and methods that embody the interaction of the student with the natural environment, which was the only place that student find comfort and conducting activities, it is as a grade in school for being one of the stimulating factors affecting the process of learning and teaching of the various sciences (Lohr and Relf, 2000). Blair (2009) showed that educators widely use school gardens for experiential education; researchers have not

systematically examined the evaluative literature on school-gardening outcomes. **Skinner and Chi (2012)** found a model of essential motivation in garden-based education. The model was used to create reliable and valid measures of key constructs, and to guide the practical discovery of motivational processes in garden-based learning. The school was characterized by possessing private gardens which used to be a place for teaching since the Pharaohs time (**Lownds, 2000**). **Inko - Tariah (2010)** conclusion that the benefits of the school garden, no excuse is enough not to have one in any school as those that don't have enough space can put them in pots. Integrate the garden to the classroom and give students the joy of experiencing nature first hand. Having potted plants in the classroom has been found to enhance positive attitude and increase academic achievement of the students.

The goals of this study is to survey and put the design indicators and the theoretical base to be followed for designing gardens and external open spaces of high school for students to satisfy a side of their desires for their study level. To reach the basic goal requires achieving a number of secondary goals as the following:

- 1- Definition of the school gardens concept, its functions, there different usages the main parts that make the garden, planning and design standards which are related to gardens, and external open spaces of schools.
- 2 - To be taken account the design and planning basics when designing or establishing the school gardens.
- 3 - Evaluating the reality of the selected high schools in the Duhok city.

Methodology

The study area and case study

This study was carried out in Duhok city which is the center of Duhok governorate. It is located in the north-western part of Iraq, at 585m above sea-level and 470 km north of Baghdad at the latitude (36°51'43.56"N) and longitude (42°59'51.47"E) in the city center. The territory area is about (107) km².

As well as the lack of studies related to the planning of school gardens, its design, and in particular high school in the Kurdistan Region, and here is the basic problem of the research, which includes the lack of a clear vision, holistic, and objective of the local standards and design indicators which should be available in school gardens for students of high school.

In order to achieve the overall objectives of the research, it relies on two essential aspects to make the content of this work, which are including the analysis of the reality of the case for gardens and spaces of open spaces in high schools of the Duhok city, depending on the main indicators identified in the theoretical study, using several methods to gather informations, and survey them through personal observations as well as analysis and measurement schemes for different models for schools, in order to extract the output and conclusions which emerged from the study with recommendations which we find it appropriate and to be taken into account and adopted in the design and establishment of school gardens in the future.

General description of selected samples

1- Kawa high school for boys¹: The school is located in a Gri-Basi neighborhood next to Shoresh Street and Sefin restaurant located on the street (statue of the poet Ahmad Khani) where the numbers of students are (950), The building was established in 1948, the built with one floor, and interface building is to the north..

2- Amad high school for girls²: The school is located in Si-Girga, a leading point is (the Union of Kurdistan Scientists). The building was established in 1994, the numbers of students are about (320), and the front of the school is located in the West, where there are well open spaces.

3- Midia high school for girls³: The school is located in Zozan neighborhood; a known point is (Emergency Hospital). The building was established in 1998, the number of students are (1107) student, and the direction of the school towards the south, where there are very good open spaces.

4- Zirka high mixed school⁴: The building was established in (2007), which is located in Zirka area, the number of students are (569) males and females, and the direction of the school towards the south, next to Zirka oil station. There are good external spaces.

5- Sefin high school for girls⁵: The school is located in Reza neighborhood. The building was established in 1998, the number of students is (870) student and the direction of the school is towards the east, the nearest known point (Qazi Mohammad Mosque).

6- Zanisty high school for boys⁶: The school is located in Sarhildan neighborhood. The building was established in (1995), the number of students is (1721), and the direction of the school is

towards the south, the nearest famous point is (Al-Asri market), where there are outdoors spaces.

7- Nsebin high school for boys⁷: The building was established in (2006). It's located in (Nisebin) area, the numbers of students are (209), and the direction of the school is towards the south, there are well open spaces, the nearest known point is (Awaz Stadium).

8- Lavan high school for girls⁸: The school is located in Zari- Land neighborhood. The building was established in (2008), the numbers of students are (771). The school direction is towards the south, where there are well external spaces close to (Zari Land apartments).

9- Awaz high school for girls⁹: The school is located in Gri- Basi neighborhood. The building was established in (2003). The number of students is (948), and the direction of the school is towards the north. Where there are well open spaces, the nearest famous point (Mamozin square).

10- Simarkh high school for boys¹⁰: The school is located in Shakhki area. The building was established in (2008), the number of students is (517), and the direction of the school is towards the east. There are open spaces; the nearest famous point is (Judy mosque).

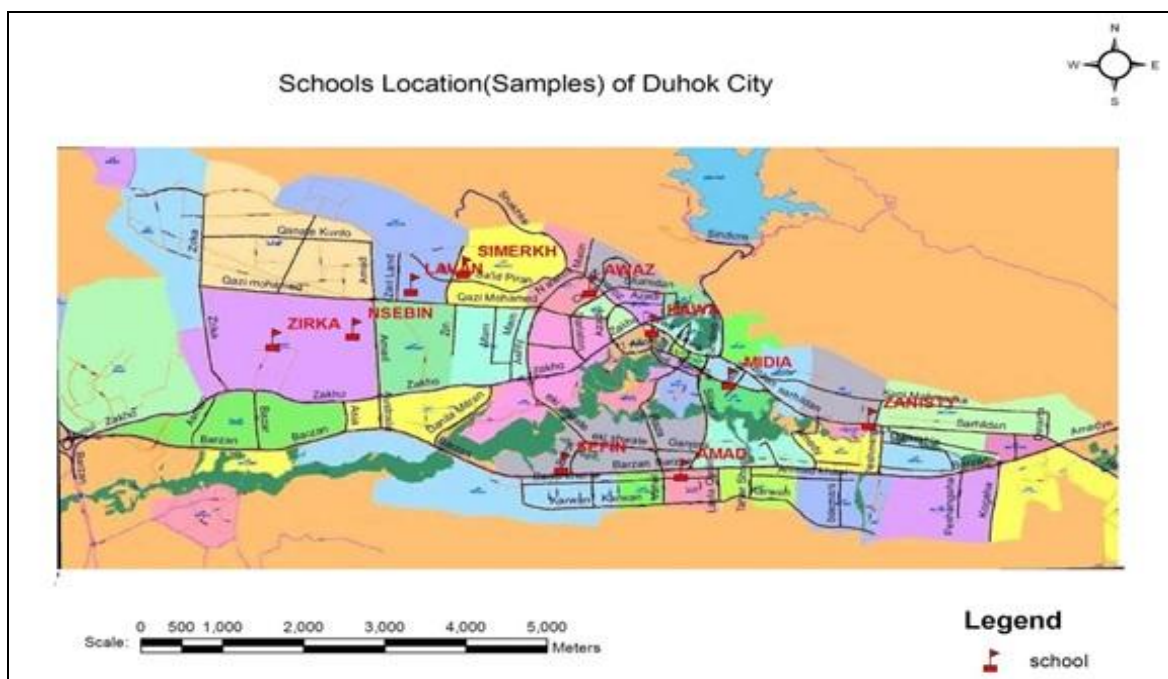


Figure (1): Schools locations chosen as samples in Duhok city

- ¹ A personal interview with the Director of School Mr. Kovan Hasan Hasan, 3/2/2012.
- ² A personal interview with the Director of School Ms. Shireen Abbas Muhammad, 6/2/2012.
- ³ A personal interview with the Director of School Ms. Jian Muhammed Ridha, 7/2/2012.
- ⁴ A personal interview with the Director of School Mr. Husain Ibrahim Muhammad, 3/2/2012.
- ⁵ A personal interview with the Director of School Mr. Zhiaa Muhammad Maasom, 4/2/2012.
- ⁶ A personal interview with the Director of School Mr. Omar Ahmed Qasim, 4/2/2012.
- ⁷ A personal interview with the Director of School Mr. Zeia Uhanna Gorgis, 7/2/2012.
- ⁸ A personal interview with the Director of School Ms. Agharid Mahmood Abdullah, 6/2/2012.
- ⁹ A personal interview with the Director of School Mr. Rizgar Sadiq Abdulrahman, 7/2/2012.
- ¹⁰ A personal interview with the Director of School Mr. Rizgar Sadiq Abdulrahman, 7/2/2012.

Gathering of informations and analysis approach

The information of the research samples are obtained according to two researchs tools for gathering information.

1. Architectural Plan Analysis.

Determines of the planning, design, site of the gardens and their distribution in school according to the basic design.

2. Individual interviews.

In personal interviews with professionals and related people was to inquire and to monitor

certain aspects of the research necessary to supplement the data obtained. The interview with some people is very important to express their opinion on the subject, such as director of school buildings in the Directorate of Education, and with school administrators and their collaborators.

3. Observation

The visiting to the school sites several times for each sample in an attempt to study the reality of the gardens of those schools, these observations may include the following aspects:

Composition of open spaces include (the most negative aspects of the garden, service operations, maintenance, natural components, the size of open spaces, their distribution in the school and its compliance with the standards).

RESULTS AND DISCUSSION

1. Architectural Plans Analysis

The data in table (1) indicated that there wasn't much interest of school gardens, particularly in "Kawa" high school, which is the oldest high school and many generations were graduated in Duhok and neighbors. This is due to its old design of green area of the school, about 13.5% and this is less comparing to the international standards to be allocated 50% of the total area of the space of green, as well as the local standards to be allocated 20% of green spaces (Sharbazhery:2002). While schools established after the nineties, the percentage of space green in the elected samples such as (Amad, Midia, Lavan, Sefin, Nsepin and Simerkh) (37.5%, 28.2%, 45.7%, 41%, 38.1%, 50%), Table(1) according to local Standards 20% of green spaces, while the

rest of the samples (Zirka, Zanisty and Awaz) were (4%, 6.6% and 12%), Table(1) do not fall under the local standard. Only one school within this sample which is "Simerkh" high school of boys, has green area of 50% of the site area which is within the international standards to be allocated 50% of the total area of green space as mentioned by (Sharbazhery:2002) Figure (2).

Through the interviews with specialists in this field they appointed that the area of the site school is determined by the land allocated of city planning (urban planning) and not the site plan, which is clarified by the Director of school Buildings in the Directorate of Education in Duhok that the implementation of the planned school project, which includes (classroom, laboratory ... etc.). The remaining space is allocated for gardens. They also pointed out that there is no standard for the allocation of green space for the project planning and construction of schools and this is how appeared during the surveying that the random green spaces in these samples as mentioned above, where they differ from school to school according to the area of the land. Also what mentioned by the specialists in the school buildings, the allocated area for garden is limited by supervisors on construction of school for it creating a problem for the school and for the Directorate of Education due to the lack of specialist's gardeners and do not paying to the management of these gardens*. As we know that the gardens need continuous management and service for student recreation, and create an atmosphere of fun from beautiful landscapes, or it'll turn out to barren sand land and place for gathering of student's garbage.

Table (1): Total area of buildings, concrete and green space of selected schools.

School	Total Area (m ²)	Building Area		Concrete Areas		Green Space	
		(m ²)	(%)	(m ²)	(%)	(m ²)	(%)
Amad	4455	1833	41.10	948	21.40	1674	37.50
Midia	6935	1823	26.30	3158	45.40	1954	28.20
Zirka	6771	1915	28.30	4582	67.70	274	4
Lavan	7822	1700	21.7	2550	32.6	3572	45.7
Zanisty	7302	2121	29	4701	64.40	480	6.60
Sefin	6054	1753	29	1825	30	2476	41
Nsebin	6454	1332	20.60	2663	41.30	2459	38.10
Awaz	3663	1616	44	1612	44	435	12
Kawa	9230	3165	34.30	4815	52.20	1250	13.50
Simerkh	7298	1687	23	1966	27	3645	50

Source: done by the researcher

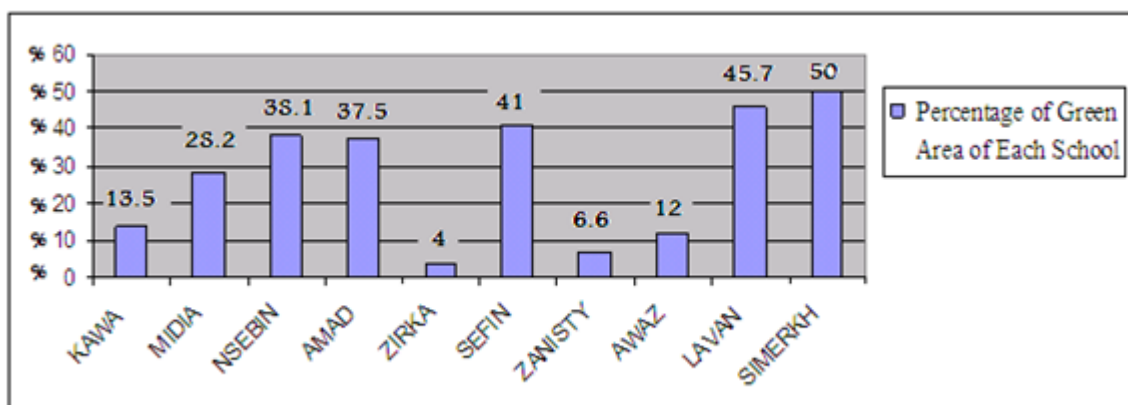


Fig. (2): Percentage of green area of each school (samples)

2. Observations

Some of the identified phenomena through the observation of the visiting to research the chosen schools found that the volume of open spaces in the samples of high schools (Amad, Midia, Lavan, Sefin, Nsebin and Simerkh) schools were identical to the local planning criteria. While internationally the size of one spaces of the sample research do not conform to standards except (Simerkh) high school, where the total percentage of the open spaces are (50%). The most important observe thing in all sample of schools (Kawa, Midia, Nsebin, Sefin and Lavan) the used area as green areas are follows (32.6%, 19.2%, 12.2%, 19.4%, 11.6%) they defined area as a green space for the above samples as in Table (2).

The second half of the samples, which included schools (Amad, Zirka, Zansty, Awaz and Simerkh), the utilized garden (55.6%, 100%, 100%, 85%, 93.2%). within the actual space of the green for these schools Table (2).

As for service and maintenance, it has been observed through the answers of principals (Amad, Sefin, Nsebin, Lavan and Awaz) that there is no service and maintenance for garden and there is no appointment of an official to manage this important aspect of the school .While the rest of the samples (Kawa, Midia, Zirka, Zansty and Simerkh) had formal official, but not as a practitioner or holder of certificate of agricultural for the management of these gardens.

Table (2): Areas and percentage of used green area from total green areas.

Name of School	Total Green Area	Used Green Area	
		(m ²)	(%)
Kawa	1250	408	32.6
Midia	1954	376	19.2
Nsebin	2459	300	12.2
Amad	1674	931	55.6
Zirka	274	274	100
Sefin	2476	480	19.4
Zanisty	480	480	100
Awaz	435	370	85
Lavan	3572	415	11.6
Simerkh	3645	3398	93.2

Source: done by the researcher

* A personal interview with engineer (Yarewan Nisam) –Director of the school building in the general directorate of education (2/1/2012)

All samples even the Simerkh high school contained 460 plants as the highest number than other high school schools and then Zanisty 120, Lavan 83, Midia 80, Amad 58, Awaz 51, Kawa 37, Nsebin 26, and in Safin high school ranked last in terms of the number of plants in it which was only 9, and the total numbers of plants in all high schools (samples) amounted to (976) Table (3).

It is clear from above that there is a difference in the size of the allocated area for the establishment of parks, as it was observed that 60% of the total samples and this is high (Amad, Midia, Lavan, Sefin, Nsebin and Simerkh) had spaces parks and within the local standards and that 40% of high schools (Zirka, Zanisty, Awaz and Kawa) do not apply to local standards.

Table (3) Total of the plants in studied school gardens:

No.	plants	Number of Plants per school										Total in all Schools
		Amad	Midia	Zirka	Lavan	Zanisty	Sefin	Nsebin	Awaz	Kawa	Simerkh	
1	Trees	53	24	41	34	65	8	17	13	25	88	368
2	Shrubs	3	48	4	49	52	1	9	11	12	169	358
3	Flowering bulbs	0	4	0	0	0	0	0	20	0	188	212
4	Herbaceous plants	2	4	7	0	3	0	0	6	0	14	36
5	Succulent and Cactus plants	0	0	0	0	0	0	0	1	0	1	2
Total of Plants in each School		58	80	52	83	120	9	26	51	37	460	976

Source: done by the researcher

It was also found that the actual unexploited of the allocated area for gardens due to the lack of attention to this aspect by the Ministry of Education and the General Directorate for Education, despite of the existence of a special unit as the Unit for school gardens in the Directorate of Education in Duhok. While for samples in which the real exploitation as a green space of the school Figure (3), is not in good condition and have many problems including lack of the element and diversity plant in agriculture, lack of availability of shadows, the lack of quiet places to take rest and sit down, do not selecting resistant and appropriate plants for the area and randomly plantation without following the basics of planning, design and follow scientific methods in agriculture, as well as the lack of service and maintenance and the absence of scientific supervision and agricultural specialist.

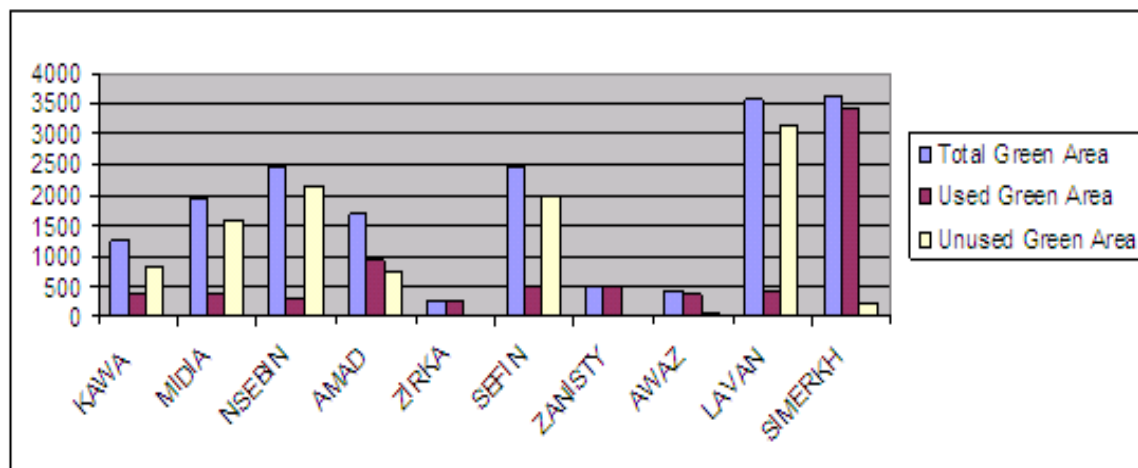


Fig. (3): Total, used and unused green areas

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فهكولینهكا پلاندانانی ژبو واقعی باغچین قوتابخانا ل باژیری دهوکی (خواندنگههین نامادهیی وهك نموونی جیبهجیكرنی)

پوخته

نهف فهكولینه هاته نهجامدان ل باژیری دهوکی كودبینه سهنتهری پاریزگهها دهوك ل سالا 2012، وئارمانج ژفهكولینی نهو بو خاندنهك ژبو شلوقهكرنا سهروبهری نهقرو یی باغچین خواندنگههین نامادهیی وجهین قالا (فهكری) دناف خاندنگههاندنا ودياركرنا چهوانیا دابهشكرنا رووبهرین جورا وجور بگره ژ (پولین خاندنی و ئاقاهی وگورهپانین كونكریتی و ریگ وپيادهر وجهین دهستتیشانكری بو شینتكاتی) بین 10 قوتابخانیت نامادهیی نهوین هاتین ههلبژارتن ل باژیری دهوکی وپهراووردكرنا وان ب بیقهرین نافخویی وجهیانی ژبو جیبهجیكرنا حهزین قوتابیین مه ل پاشهروژی ژلایبی باغچا وچاندنا كهسكاتی ل دهووبهری قوتابخانیت وان ویکارئینانا شیوازی فهكولینا مهیدانی بو شلوقهكرنا پلاندانین تاییهت ب قوتابخاناقه وپیقهرین وان و ههروهسا بریگا چافیپیکهفتنین تاكانه و ب تییبینی كرنی. وئهف فهكولینه گههشتیه هندهك دهئهجمان نهوژی لاوازیهكا دیار وپهچاف یا ههی دلایهنی جیبهجیكرنا وجیكرنا باغچین قوتابخانین نامادهیی دا ل باژیری دهوکی بو ئارمانجین سهرهکی، وههروهها نهبونا باغچین نمونهیی دقوتابخانادا، و 27.66% هاتیته تهرخانكرن بو باغچهیان دناف رووبهری گشتی یی ههرو 10 قوتابخانین مه ههلبژارتین، وتهنها 56.88% هاتیته بكارئینان ژفی رووبهری و 57.12% ژفی رووبهری گشتی نه هاتیته بكارئینان بو باغچهیان بهلكو جههكه چ رهنگی ژیانی تیدانینه. وههروها 90% ژ جهین قالا وفهكری ل قان قوتابخانا نه شاینه بكاربیین لدویف بیقهرین جیهانی و 60% بیقهرین نافخویی لسه هاتیته جیبهجیكرن. و باغچین قوتابخانین هاتیته ههلبژارتن لاوازی تیدا ههیه بواری هونهری نهنازیاریا باغچا دا كو بشیوهکی

دراسة تخطيطية لواقع تصميم الحدائق المدرسية في مدينة دهوك (المدارس الاعدادية كنموذج تطبيقي)

الخلاصة

نفذت هذه الدراسة في مدينة دهوك مركز محافظة دهوك في 2012 واستهدف الدراسة تحليل واقع حال الحدائق المدرسية والفضاءات المفتوحة وبيان توزيع المساحات المختلفة (الصفوف والبناء والمساحات الكونكریتیة والممرات والمساحات المخصصة للفضاء الاخضر) لعشرة مدارس اعدادية منتخبة في مدينة دهوك ومقارنتها بالمعايير المحلية والعالمية لتلبية رغبات الطلاب مستقبلا في جانب الحدائق والفضاءات الخضراء حول مدارسهم باستخدام اسلوب الدراسة الميدانية لتحليل المخططات المعمارية الخاصة للمدارس المنتخبة وقياسها ومن خلال الملاحظة والمقابلات الشخصية. توصلت الدراسة الى عدة نتائج او استنتاجات تلخصت فيمايلي وچودود قصور واضح في درجة تحقيق الحدائق المدرسية في المدارس الاعدادية لمدينة دهوك لاهدافها الاساسية ، مع عدم امتلاك المدارس للحدائق النموذجية ، وان 27.66% تمثل المساحة المخصصة للحدائق من ضمن المساحة الكلية للموقع العينات العشرة المنتخبة وان المساحة المستغلة فعليا من هذه المساحة بلغت 52.88% اما المساحة المتبقية 47.12% فكانت غير مستغلة بل عبارة عن اراضي جرداء خالية من اي نشاط حيوي. وان 90% من الفضاءات المفتوحة عجزت عن تحقيق المعايير العالمية وان 60% منها تطبق عليها المعايير المحلية ، وكما ان هذه المدارس افتقرت الى فنون هندسة الحدائق لابرار معالم الجمال وكذلك هناك توزيع عشوائي في عدد وانواع النباتات في تلك الحدائق.