

The use of SIG in studying the effect of the characteristics of playing equipments on the children's playing methods: case of Ben Boulaid Square – Batna

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Abstract: Play is the dominant characteristic of children and the characteristic of them, so we decided in this study to research the design criteria for play equipment in Ben Boulaid Square in the city of Batna and its impact on the way children play, and access to the physical characteristics of these equipment that contribute positively to children's play.

In this study, we relied on the analytical approach of the behavioral maps that we drew using the geographic information systems method and monitoring the information from its source through the observation technique.

The study concluded that the physical characteristics of the playing equipment in the Ben Boulaid Corridor Square contribute positively rather than negatively to the way children play within the field value (9.83-24.45).

Keywords: SIG; play equipment; Ben Boulaid Square; children's play method.

Introduction:

Play enables the child to discover his environment and learn about its various elements. This was confirmed by both Schiller and Spencer that play is the child's way to knowledge of the outside world. (بیرس و جینیف، 1992ص: 52-12).

It also represents one of the methods of socialization par excellence, through which the child discovers the advantages of the world around him and acquires the language, vocabulary and terminology that enables him to form phrases and sentences and helps children learn the spirit of the group and get rid of aggressive behavior. Play is also closely related to development, as the things that interest the child in the second years old are not the same as those that arouse him in the sixth years old, and thus play can be viewed from a developmental perspective.

In view of the importance of play and its effective impact on the growth of the child and the development of his psychology, UNESCO recognized it as a right of the child in 1909: "The child must be given a full opportunity to play and have fun. Children with an outdoor space to engage in the activity they love without outside supervision is no less important than providing facilities for regular activities and making them accessible while taking the necessary safety measures."

problem

It is the responsibility of the municipality to furnish public spaces with various elements, including children's play equipment, since the child is affected by the various characteristics of the constituent elements of the environment in which he lives. Geographical information, and from it we ask the following question: Do the characteristics of play equipment affect the way children use it?

Objectives of the study:

In order to develop recommendations and guidelines for designing urban furniture elements based on the specifics of the case study site and based on the characteristics of the children's category, the

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study aims to observe how children behave toward the furnishing elements in the Streets of Ben Boulaid as a public space and how these elements, with their various characteristics, affect the behaviour of the child.

1. Research methodology

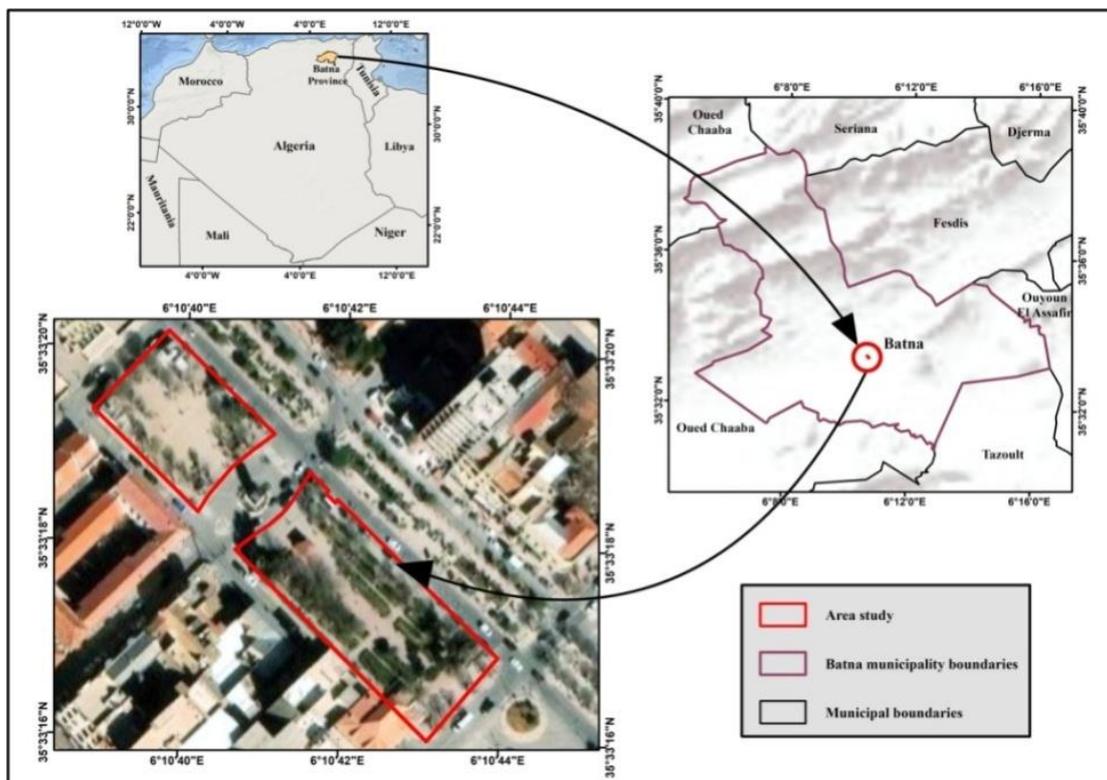
The researcher followed "the psychology of the environment" as a methodology for these two studies, which is a study of the interactions between a person's physical and social environment through its spatial and temporal dimensions and the behaviours that result. This strategy is based on the observation technique of gathering information from its sources and watching the child's behaviour to obtain precise information from which we can diagnose this behaviour.

2. Field research procedures

2.1. Introduction of the studied space:

The subject of the study is a public space, which is the "Ben Boulaid square public space," which is located in the plot of land occupation No. 08 with an area of 3100 square meters, and this square is considered the most attractive to citizens of different groups, including children. (the master plan for the development and reconstruction of the city of Batna + Real Estate Agency 2017)

Fig.1.case study Geographical location map .



Source : the researcher ; QGIS;2021.

The percentage of children in the field of study is estimated at about 30 percent of the total population, and this is what necessitates looking at this group and striving to provide the best for it.

Table 1: Percentage and number of age groups in the field of study

Age	Sex				total	percentage%
	girls	percentage%	boys	percentage%		
From 0 to 4 years old	534	4.93	571	5.19	1114	10.12
From 5 to 9 years old	476	4.32	495	4.50	971	8.82
From 10 to 10 years old	557	5.06	582	5.28	1139	10.34

Source: Report of the Directorate of Human Resources for the city of Batna 2017

2.2. The study sample:

A study procedure was applied to a general group of 120 randomly chosen kids, with 50 girls and 70 boys between the ages of 8 and 12.

Systematic timing of the study:

The study was conducted over three different time periods in the course of the year:

from September 02, 2021, to September 17, 2021; from March 20, 2022, to April 4, 2022; This period was dedicated to researching how particular play equipment's colour characteristic affect children's behaviour.

- and from September 02, 2022, to September 17, 2022, in the public square of the Corridors Bin Boulaid. Our presence during these times allows us to monitor the maximum amount of data, and a 45-minute period is set for conducting surveys in one monitoring area. We monitored the high usage peak times of the studied area, which were from 10 to 12 in the morning and from 15.00 to 16.30 in the afternoon.

We devoted this period to study the shape characteristics of the studied furnishing elements.

- Evaluation of the third period from 02/09/2022 to 17/09/2022

We devoted this period to study the effects of the location characteristics on play equipment

2.3. Observed children's play methods

Positive plays: represented in playing, cooperation, dialogue, participation, competition.

Negative plays: represented in bad talk, fights, isolation.

Table2: Observed play methods in Mamarat Bin Boulaid square and their explanation.

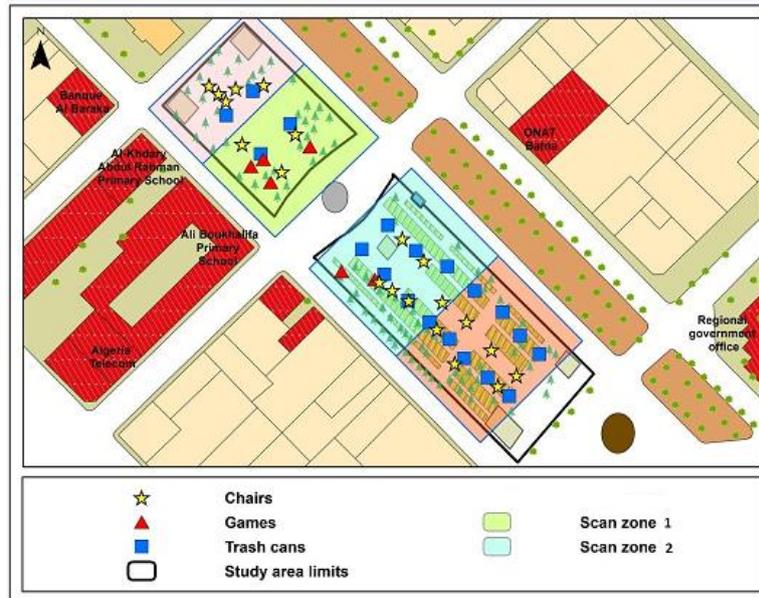
children's play metod	A summarized definition
Playing	It is the use of the game in the correct way and the function that it performs.
Cooperating	Children help each other play or clean the environment.
Conversation and communication	The children exchanged conversations with each other.
Sharing	The child accepts the other's use of the same element with him.
Competing	Strive to play better and win the most points.
Fighting	Monitor verbal or physical altercations between children.
Cursing	It is all bad and inappropriate words uttered by children.
Isolation	The child's use of furniture items individually and not sharing with others

Source: map designed by the researcher 2021.

2.4. Defining observation areas within the base map:

Before making observations in this field, we had to divide the base map of our study into observation areas that contain the play equipments desired to be studied, and then create observation areas to divide large sites into multiple smaller areas that facilitate observation by a single observer. Through this division, we were able to manage our time across the site and make sure all areas were evenly and thoroughly checked.

Fig.2. Observation areas in the studied square



Source: map designed by the researcher 2021 ;QSIG.

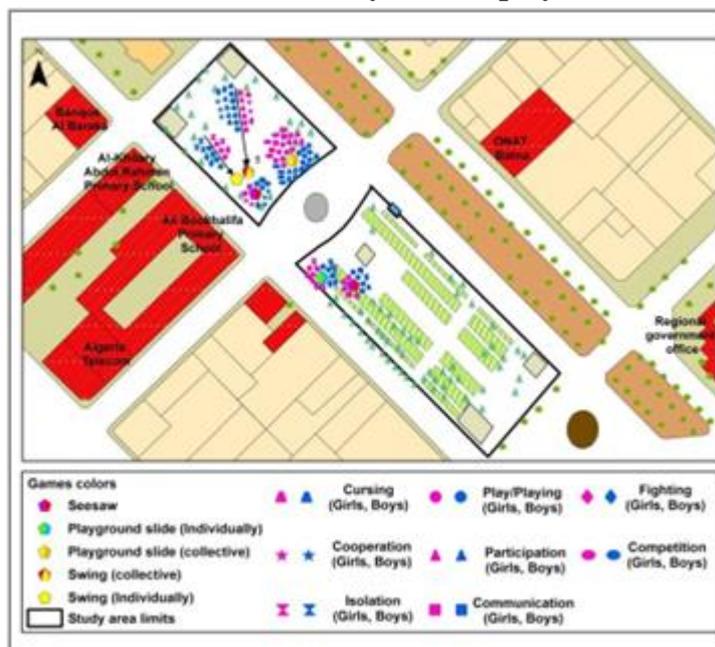
2.5.Data collection:

The actual location of the object being monitored in space, its dimensions, colour, as well as the shape and personal information of the child being observed by gender and age, among other data, are some of the characteristics of the object being monitored that must be recorded during field data collection for behavioural mapping in public spaces. Regarding the interaction between the resulting behaviour and environmental data that was observed (e.g. land surface, shade, or topography). We recorded the actual location of the urban furnishing item as a point on the map of the study area, we recorded the corresponding child's personal characteristics and behavioural or environmental data in database tables, and we linked each event location recorded on the sitemap to a row or record of data in the table for analysis and presentation, then entered this data into GIS.

3.Analysis of the behavioural maps obtained in the studyof Playing equipment:

3.1. terms of colour:

Fig.3. The effect of the colour of toys on the play method of the child,



Source: map designed by the researcher 2021.QSIG

Game No. 01:

It is a purple + red scale game. We recorded the following play methods:

12 positive behaviours 05 for girls and 07 for boys which are represented in playing, sharing and conversing.

01 Negative behaviour on the part of the boys causes the fight.

Game No. 02:

Green and Blue Single Skating. The observed behaviours were as follows:

05 positive behaviours on the part of girls and 03 on the part of boys, which are represented in playing.

07 negative behaviours out of 03 for girls and 04 for boys, which are isolation and fights.

Game No. 03:

The yellow and orange team skating game, in which the behaviours were recorded as follows:

35 positive behaviours, 18 for girls and 17 for boys, represented by playing, participation, competition, and dialogue.

04 Negative behaviours 01 for girls, which are represented in the fight, and 03 for boys which are fights and cursing.

Game No. 04:

The purple and red scale game is where:

11 Positive behaviour 04 on the part of girls and 07 on the part of boys, represented in play and cooperation.

01 Negative behaviour of boys represented in fights.

Game 05: Red, yellow and orange team swing

The behaviours recorded were as follows:

21 Positive behaviour 08 for girls and 13 for boys, which are play, sharing, and cooperation.

05 Negative behaviours 02 for girls and 03 for boys, which are fights and foul talk.

Game No. 06:

Yellow Solo Swing Where we noted:

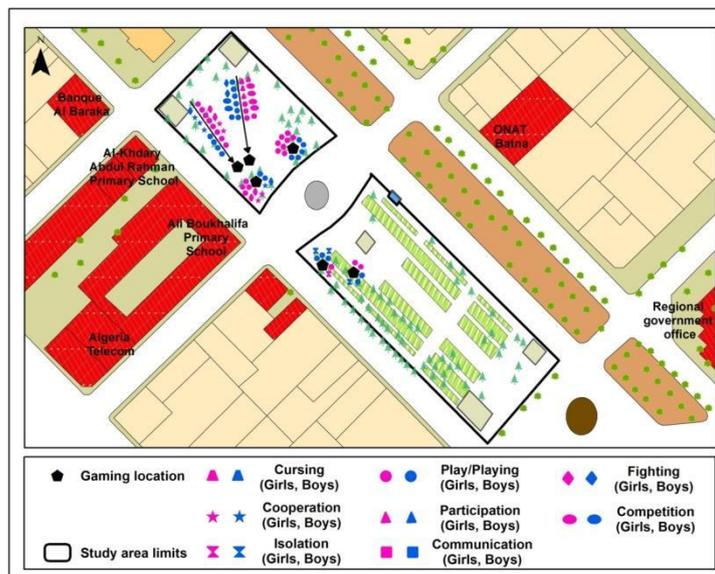
07 Positive behaviours 03 for girls and 04 for boys represented in playing.

08 Negative behaviours 03 for girls and 05 for boys, which are isolation and fights.

From all these observations that we have recorded, it can be said that children tend to play with colours.

3.2. in terms of location:

Fig.4. The Effect of the Location of Games on a Child's Behaviour



Source: map designed by the researcher 2022.QSIG.

Game No. 01: Control Zone 2:

04 Positive behaviours 02 for girls and 02 for boys represented in playing.
 01 Negative behaviour on the part of the boys, which is isolation.

Game No. 02: Control Zone 2:

04 Positive behaviours 01 on the part of girls and 03 on the part of boys represented in playing.
 03 negative behaviours out of 01 for girls and 02 for boys, which is isolation.

Game No. 03: Control Area 3,

the behaviours in it were recorded as follows:
 08 Positive behaviours 03 for girls and 05 for boys represented in playing.

Game No. 04: Control Zone 3, where:

15 Positive behaviour 07 on the part of girls and 08 on the part of boys represented in play and cooperation.

03 Negative behaviour 01 for girls and 02 for boys represented in fights.

Game No. 05: Control Area 3

The recorded behaviours were as follows:
 22 Positive behaviour, 13 for girls and 08 for boys, which are play, participation and competition.
 02 Negative behaviours of boys, a fight.

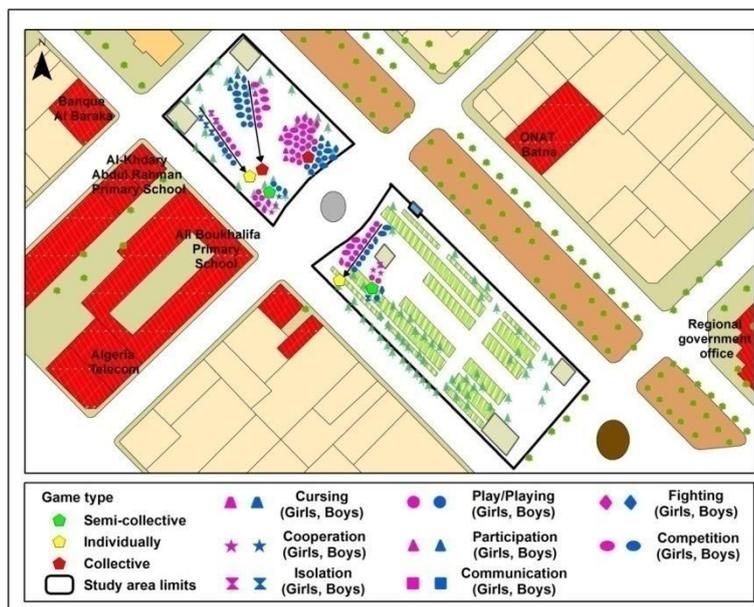
Game 06: Control Area 3

where we noticed:
 17 positive behaviours, 10 for girls and 07 for boys, represented by play and cooperation.
 03 negative behaviours 02 for girls and 01 for boys, which is the fight.

3.3 in terms of the nature of the game:

Games were divided according to the nature of play into individual, semi-team and team:

Fig.5. The effect of the nature of the game on the behaviour of the child



Source: map designed by the researcher 2022.QSIG.

Game 01: Half-team play

We recorded the following behaviours:
 06 Positive behaviour 04 for girls and 02 for boys represented in play and cooperation.
 02 Negative behaviour 01 on the part of girls and 01 on the part of boys, which is isolation and fights.

Game No. 02: Solo play.

The observed behaviours were as follows:
 13 Positive behaviours 08 on the part of girls and 05 on the part of boys represented in play and

competition.

07 Negative behaviours of 04 for girls and 03 for boys.

Game No. 03: Team play,

in which the behaviours were recorded as follows:

34 positive behaviours 21 for girls and 13 for boys represented in playing, sharing, competition and dialogue.

05 Negative behaviours 04 for girls represented in the fight and 01 for boys which is the fight.

Game No. 04: Half-team play:

09 Positive behaviours 06 on the part of girls and 03 on the part of boys represented in play and cooperation.

03 Negative behaviours, 02 for girls and 01 for boys, represented in fights.

Game No. 05: Team play.

The recorded behaviors were as follows:

23 Positive behaviours 09 for girls and 14 for boys, which is play, participation and competition.

02 Negative behaviours 03 for boys, which are fights.

Game No. 06: Single play

where we noticed:

10 positive behaviours 05 for girls and 05 for boys, represented by play.

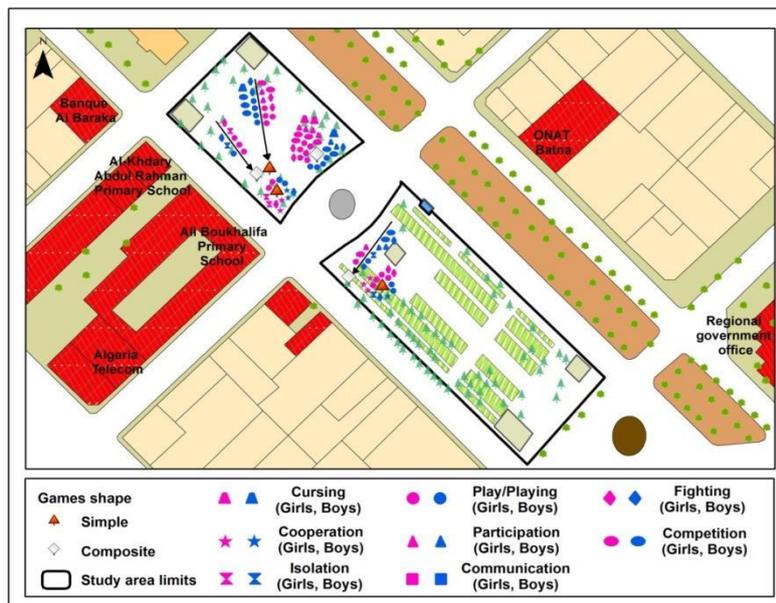
05 negative behaviours 02 for girls and 03 for boys, which is isolation.

The group play equipment has the most positive impact on the child's behaviour in a way that is 70% of the total effect, as it contributes to creating competition and dialogue and also allows them to participate with each other.

As for individual play equipment, it affects negatively more than positively by 52% of the total impact, as it creates fights between them because each child wants to use it alone, isolation and the child's lack of interaction with his peers.

3.4. in terms of form:

Fig.6. The effect of the shape of games on the behaviour of the child.



Source: map designed by the researcher 2022 ;QSIG.

Game No. 01:

It is a simple game, where we recorded the following behaviours:

10 positive behaviours 07 for girls and 03 for boys, represented by play and cooperation.

04 Negative behaviours 02 on the part of girls and 02 on the part of boys which are isolation and fights.

Game No. 02:

A complex game, the observed behaviours were as follows:

09 Positive behaviours 03 on the part of girls and 06 on the part of boys represented in the play, competition and participation.

02 Boys' behaviour is isolation and fight.

Game No. 03:

It is a complex game, in which the behaviours were recorded as follows:

24 positive behaviours 10 for girls and 14 for boys represented in playing, sharing and competition.

06 Negative behaviours 02 for girls are represented in the fight and 04 from boys which are fights and obscene talk.

Game No. 04:

A simple game where we noticed:

06 Positive behaviours 04 on the part of girls and 02 on the part of boys represented in play and cooperation.

06 Negative behaviours 03 for girls and 03 for boys represented in fights.

Game No. 05:

Complex Swing in which the behaviours recorded were as follows:

17 Positive Behaviours, 10 for girls and 07 for boys, which are play, sharing and cooperation.

05 Negative behaviours 02 for girls and 03 for boys which are fights and foul talk.

Game No. 06:

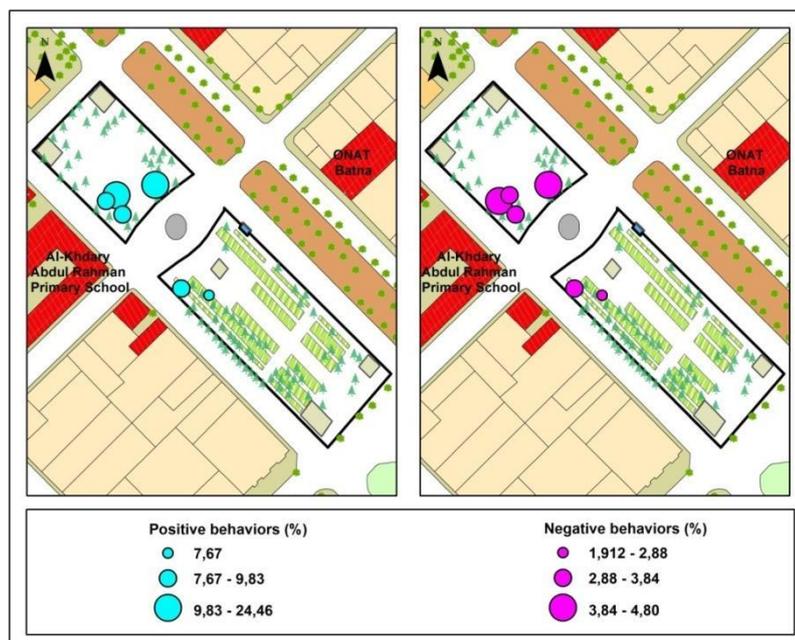
Solo swing of a simple shape where we noticed:

04 Positive behaviours 03 for girls and 01 for boys represented in playing.

04 Negative behaviours 02 for girls and 02 for boys which are isolation and fights.

4. As a result of the effect of the characteristics of play equipment on the ;ethod children play

Fig.7. Percentage of positive and negative play methods towards games.



Source: map designed by the researcher 2022 ;QSIG.

- Influence positively rather than negatively
- Positive effectiveness characteristics include games that are limited to the domain value (9.83-24.45), and they are represented in games No.: 3 and 4 with the following characteristics: team games, yellow, orange, red and purple.

Conclusion

The following findings, which would help shape the child's behaviour, were reached through our investigation of the child's behaviour toward the components of urban furnishing and using the behavioural mapping technique with geographic information systems.

It affects the child's behaviour positively rather than negatively.

The group games that are most attractive to children in the studied arena are important in forming the social aspect of the child and in the way he interacts with his peers within the urban environment in which he spends most of his time.

the hot colours for games is the most attractive for children using the Ben Boulaid corridors.

The importance of installing the play equipments and the necessity of linking them to each other to raise their positive impact of them.

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