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Participatory Design and School Planning Through Collective Architecture Principles: A Case Study of Normobin Bastam School, Semnan, Iran

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ABSTRACT

Democracy has become a central theme in architectural discourse, particularly within the domain of participatory design. The growing recognition of user involvement in the design process reflects an increasing awareness that people's lived experiences and interactions with space are crucial for creating environments that are functional, meaningful, and socially engaging. In educational settings such as schools and kindergartens, participatory design can enhance learning outcomes, foster social cohesion, optimize spatial use, and reduce long-term maintenance costs.

This article investigates the participatory design process through a case study of Normobin Bastam School in Semnan, Iran—recognized as one of the country's leading examples of user-centered school design. Employing a qualitative methodology, data were gathered through structured and semi-structured interviews, surveys, group and individual observations, and document analysis. A total of 24 student questionnaires, 26 parent questionnaires, and an interview with the school's executive director were conducted.

The collected data were analyzed using SPSS software to assess the effectiveness of participatory methods in shaping child-friendly educational spaces and to compare the new school's outcomes with those of the previous building. Findings indicate a high level of user and parent satisfaction, validating the role of participatory processes in improving educational architecture.

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Introduction

In recent decades, participatory design - rooted in democratic values - has become a critical focus within architecture and urban planning. It emphasizes collaboration between designers and users, especially in public and community-oriented projects. Educational spaces, particularly schools, are among the most sensitive environments where the involvement of stakeholders, especially children, can lead to spaces that better support cognitive, emotional, and social development. While the notion of user participation is not new, its implementation in Iran remains limited, especially in the design of primary educational facilities. Often, school buildings are planned by authorities or external experts who have limited interaction with the students and teachers who inhabit them. This disconnect can result in uninspired or unsuitable environments that fail to engage learners or support well-being. This study explores the Normobin Bastam School, located in Semnan Province, as a national case study that exemplifies participatory architectural practice. The project adopted collective design principles, incorporating input from children, parents, and educators at multiple stages — from conceptual planning to post-occupancy evaluation. By analyzing this project, the research aims to uncover how user involvement influenced spatial outcomes and whether participatory processes contributed to greater satisfaction, functionality, and psychological comfort. The findings provide valuable insights into participatory school design in the Iranian context and highlight the broader implications for creating child-friendly, culturally responsive educational environments through collective architecture.

Research question and hypothesis:

1. What is the design pattern of Normobin school using the participatory method?
2. To what extent is the process of participatory Normobin school design efficient?

Literature Review

Participation

The subject of participation in its general sense has a historical background. According to the definitions, the act of participation has been associated with the concepts of solidarity, cooperation, help, unity and similar meanings. The term "participation in design" implies various perceptions and meanings that mainly include factors that exist as group interactions in design (Eslami and Kamel Nia, 2013).

The concept of participation in social psychology is considered as a mental and internal act that causes social conflict and influence (Norozi and Javan Forouzandeh, 2021). Accordingly, in new participatory approaches, architects and planners are known as "facilitators" and not experts who have controversial power (Valladares, 2017). "Habraken" believes that participation has two

different meanings: on the one hand, participation in design means giving an important and influential role to users in decision-making, as professionals are responsible for it, and on the other hand, participation means involving people for Getting to know their opinions and there is no change in the level of responsibility between users and experts (Moatasim, 2005). The process of participation, as a functional system at the macro, middle, and micro levels with the purposes of enhancing social stability, bolstering the spirit of solidarity, reducing group conflicts, eradicating the culture of marginalization, blossoming talents and emerging creativity, expanding democratic values, and sharing It relates to resources and fostering a sense of responsibility (Niazi, 2006). Participation is a process that involves the voluntary intervention of everyone in all matters that concern them and they have the desire and ability to express their opinion, choose and criticize in those matters (Malekzadeh, 2005). Participation is a process through which people achieve transformation and create transformation in themselves. Participation in such a concept emphasizes the growth of human personality and is considered as a strategy that creates good opportunities so that people can find new ways to overcome difficulties and open closed borders (Niazi, 2006). There are many definitions of participation in cultural and social dimensions. This definition identifies three crucial features of participation as aiding and accepting responsibility for the labor and the project's outcome, as well as fostering a sense of solidarity, belonging, and common effort among members of a society (Ghasemi Bormi, and Sadeghi Lavasani, 2017). A design process known as participatory design was developed from an approach that may be used in the domains of architecture and urban design, with the latter naturally finding a more advantageous use. Additionally, while the architectural setting of schools has not altered significantly since the past, the instructional content has made significant advancements. Despite historical and cultural shifts that have led to a departure from the traditional paradigm in school architecture, it is uncommon to find that careful consideration of the needs of creating an appropriate learning environment has been given. Today's schools frequently follow the same architectural process that was imported from Europe at the dawn of the modern era, and little has altered. Today many contemporary schools involve environmental problem as show no signs of adhering to the rules of architecture and environmental graphics. One of the elements of participatory design that is emphasized nowadays is collective intelligence. In this sense, the outcome of the clash of collective ideas is far more trustworthy than the outcome of the sum of individual ideas. The people who will utilize the schools, such as teachers, parents, and students, should plan them. This wide-ranging participation makes it possible to highlight diversity. When members of the community are given the chance to take part in deliberate planning, their sense of loyalty to the community is strengthened. People will be more cooperative in setting goals, resolving issues, and providing ongoing support and funding for successful schools when they see themselves as the creators, rulers, and processors of their society (Ashrafi, 2014). Additionally, if individuals believe that change will be created and

implemented, they are more likely to join (U.S. Department of Education, 2000). Additionally, if individuals believe that change will be created and implemented, they are more likely to join (Eslami and Kamel Nia, 2013). Additionally, if individuals believe that change will be created and implemented, they are more likely to join.

There are different ways for the designer to communicate with the users in order to use participation, receive information and their desires and needs in the design (Sanoff, 1999).

In another study, participatory design was used to examine the effects of the environment on users in determining their preferences for schools (Mokhtarmanesh and Ghomeishi, 2019). The architect or facilitator uses various tools for participatory projects to communicate and understand the opinions and ideas of users, which is one of the factors influencing the success of the participatory process is knowing tools and using them correctly. Questionnaires, interviews, presentations, photos (visual questionnaires), maquetes, drawing and painting, discussion meetings, poems and expressions of desire are part of participatory methods and techniques.

Participating in designing and understanding users' needs

Today, a major part of designing and planning public spaces is done by designers and planners without the participation of the community, or even in the case of participation, this process is mostly related to hearing the opinions of the public and not the practical interference of their opinions in the matter of design, which is due to the incompatibility of these spaces with the wishes and needs of the people of the society, and as a result, it has led to the lack, neglect, or deterioration of the quality of public spaces in the city (Norozi and Javan Forouzandeh, 2021). Participation and social engagement are critical to the formation and growth of our civilizations. According to Winston Churchill, "We shape our structures, then they shape us (Davis, 2013). From this statement, it may be inferred that buildings have an impact on the people who use them and that, if done well, can have a good influence on their conduct. The aim is to change the term "we figure it out and do it for you" (which most designers and planners use) into "we work together and learn together" to create innovative solutions and produce results that benefit both parties (Crofton, 2001).

Children's participatory design

According to the evidence, paying attention to the needs of children in childhood has a significant impact on their lives and, of course, the future of every city and country. Because the future of any country is determined based on their abilities, spirits and views. School is an environment were children and adolescents experience competence, failure, success, popularity, isolation, rejection, etc. (Rostami and Rad, 2013). They understand that they have to succeed to have value. According to most students, the consequence of being rejected is a dislike of school and its rules. Many thinkers and theoreticians in psychology and education believe that children's

creative thoughts and ideas decrease when they enter school and they are encouraged and encouraged to think in harmony with the group (Al Barzi, 2010). According to "Garcia and Jose" (1995), primary education, which is called compulsory education, general education and general education, is the first step taken in the direction of educating people for life, and the goal of that education should be knowledge and skills that are valuable. It is universal and is needed by everyone (Sabbaghi and Saadatmand, 2013).

In today's age, machine life has provided many facilities for ease and comfort to humans. But these facilities have also brought some shortcomings. The most important deficiency is related to children. Children and teenagers, as members of society with a set of special demands and needs, are users of artificial environment (Kiani et al., 2012). Fertilizing the spirit of exploration and strengthening the thinking process of each person is more possible and effective in childhood. Because in childhood, due to the lack of dependence of the mind on customary frameworks and surrounding limitations, the human mind sees problems more easily and as a result, solves them more easily (Dastan et al., 2015). As her age increases, with the overload of information that enters the mind from the environment, the range of answers becomes smaller and is limited to what is recorded in the memory (Agha Latifi, 2008).

Therefore, if this grounding and flourishing of creativity takes place in childhood, its effect can cover the whole life period (Dastan et al., 2015). One of the factors of child development is the promotion of cognitive development. Although most parents are aware of the changes in intelligence that accompany their children's physical development, they find it difficult to describe the nature of these changes (Atkinson et al.,2000). According to "Sif" 2000, Piaget believes that children see the universe differently from adults and understand things through direct experience with the surrounding environment. According to "Architects" 2004, the child first sees phenomena and objects in a general way and then defines them by making distinctions. Therefore, the child's relationship with the environment is topological. In spatial recognition, instead of distances and dimensions, angles and areas, relationships such as proximity, separation, symmetry, continuity, and being together are taken into consideration by the child. Therefore, the child first notices very basic orders based on symmetry, which are defined by continuity and closeness (Bagheri et al., 2011).

Participatory architecture of educational spaces (schools)

In a basic definition, participatory architecture is a general approach in architecture that aims to involve different people and expertise in the design process (Sanoff, 1999).

In participatory architecture, people are involved in different phases of the process. In examining the participatory methods used, methods such as questionnaires and participatory working groups are mostly used. At the North Carolina School of Design, Sanoff applied the

participatory architecture approach to education (Salama, 1995). Later, Dutton also developed this approach at the University of Miami. In the framework of the participatory approach in the architectural design process, Sanov makes reference to a number of variables (Sanoff, 1999): There is not always the best answer for a design problem;

- The decisions of experts are not necessarily better than others;
- The design process must be transparent;
- The design process is always ongoing and changing (Islami, Hanachi, and Kamel Nia, 2009).

The type of looking at public-biological spaces is a function of different factors and levels. Some of the attitudes have considered these spaces from individual and inductive categories such as perceptual and cognitive dimensions (Peng, Feng, and Timmermans, 2019), and some also emphasize the non-physical view of these spaces, with a view from top to bottom, they have seen the influence of social, political and economic factors (Mandeli, 2019). Now the designer's job is not to produce unchangeable solutions and the fact that the design process needs consultation with the end users has been discussed in several researches (Mokhtarmanesh and Ghomeishi, 2019). In this way, participatory design can be considered as an effective approach to the design process in public spaces such as educational spaces. But the previous studies show that in the field of participatory design, most of the attention was on the housing discussion (Jalali et al., 2018), and not much attention has been paid to the topic of participatory design process in public spaces and especially in educational spaces. Meanwhile, the design of schools has a special place as an institution that is very important in raising the future generation. What is currently visible in our schools is the lack of effective communication between the school and society and the lack of involvement of school users in school planning. The need for the participation of children, teachers, parents and all users in the design and construction process, in designing suitable spaces and discovering their favorite spaces, seems to be an essential need (Kamel Nia, 2009). The participation of the lower social classes in the field of architecture has been one of the general characteristics of participatory approaches (Islami, and Kamel Nia, 2014). Giving importance to educational spaces and complying with the principles and standards related to it in the design of these centers leads to the creation of an environment that suits the psychological needs of students and as a result of society. The root of each student's interest in learning in school and being in an educational environment is formed, and if the environment is inconsistent with the individual's expectations, a sense of repulsion and lack of interest in learning is formed in the learner (Panahi Nderkhanlou, 2014). Child-friendly schools are not architectural illusions arising from a strange approach, but schools that are the result of the common advantages of good schools in many countries; However, they have more elements that complement and reinforce the child-friendly principles and practices of education. In these centers, paying attention to the child, as the main user of these spaces and learning environments, along with understanding the

participation of families and the community, is a basic condition for achieving the best results. Children are now seeking adventure in their imaginations, legends, and imitation of television and video games rather than in their immediate environment, which causes them to experience an artificial childhood. This is a significant issue and topic in the field of children's cognitive development today. which is accurate and has been studied by grownups. That kids cannot be expected to be innovative and inquisitive adults is the main drawback of this method of child development. Children raised in circumstances that lack mobility, flexibility, and opportunities for free play will ultimately and truly turn into "consumers," not "producers," of ideas (Qara Biglo, 2012).

Table 1. Participatory design process (Source: Blackman, 2003).

Different steps of the design process with children's participation	
Identifying the project	This is generally based on "what are the needs of the community/users and who will they affect?" At this stage, there are various tools for participatory activities for children, such as: observation, child-to-child interviews, daily activity charts, and focus groups.
Project design	the next step of the project cycle is to identify how to meet the needs identified in the previous step; Therefore, it is necessary to collect more information about the problem identified by or with children and its context. The design stage of the project consists of several parts and it is necessary to determine in which part and how the children should be involved. At this stage of the process, it is best to carefully select specific groups of children. Data collection tools can include drawing and mapping, interviews and questionnaires, photos and videos. After collecting all the data, the next stage in which children are involved is the design stage.
Implementation and evaluation	Children should be involved in the implementation and evaluation phase of the project to ensure that their opinions are properly taken into account.
Documenting the lessons learned	It includes preparing documents of what has been learned, which can be done by encouraging children to record their experiences and learning.

Table 2 shows a summary of the obstacles and advantages of the participatory approach in school design.

Table 2. Practical barriers and benefits of children's participation (Source: Alderson, 2008).

Practical barriers to children's participation	**Lack of time**	Children's participation takes more time than adults because they resist questions and answers.
	Lack of self-confidence	Gaining insight into children's perspective may involve risks and possible mistakes and cause a lack of self-confidence. It is suggested that parents work with professionals who have honest methods and intentions, not just good communication skills.
	Communication	As shown in many studies one of the major problems when designing in any team is communication. To communicate with children of different ages, sufficient skill is required.
	Extensive confusion	This project may face complexity and extensive confusion due to the number and variety of choices in the process, which itself can create an obstacle in the positive process.
	Facilitator shortage	skill, training and unique personal characteristics are the main elements necessary to work with children and adolescents.

Benefits of participatory design	**Quality improvement**	The improvement of the physical quality of the environment depends on the point of view of the users of that environment. For example, the point of view of people who live in a nursing home is different from people who have mental illnesses, so user participation in an appropriate way is effective in the physical quality of the space (Evers, 2019).
	Empowerment	Empowerment is the core of participatory design as democratic participation for users (Correia, and Yusop, 2008). Promoting democracy by empowering users has many effects in their social life, which can lead to the preservation and creation of a healthy society. By allowing users to have an active role in their own decisions, a sense of ownership is induced (Gulliksen et al., 2003).

Participatory sample in contemporary Iranian schools

Although the participation of "users in design" is a topic that is of acceptable importance at the global level today, paying attention to the concept of participation in design does not have much history in Iran. This can be due to various reasons, including lack of knowledge about the benefits of this method, lack of time and money, or lack of trust of users to apply correct comments (Ashrafi, 2014). However, one of the case examples of participatory methods in contemporary schools in our country that has used higher levels of participation is the Child Friendly City Project (2004), which UNICEF implemented in collaboration with other institutions. Defined and set goals with the aim of collective participation of children. In this project, the use of new participatory methods is a very obvious issue (Kamel Nia, 2009). Other successful case examples with children's participatory design method include Jedgal school in Sidbar village and Normobin Semnan school. By paying more attention to the opinions of the users and users of the space and their correct participation in the design of schools or the renovation of existing schools, we can witness many improvements in the quality of educational buildings in our country. In recent years, there has been a wave of constructions with the aim of improvement or reconstruction, and due to the lack of success of the plans presented by the trustee organizations, the trend towards participatory solutions in this field has been raised and paid attention to. by managers and experts (Raheb, 2014). In this article, we will evaluate the participatory process of Normobin School as one of the successful examples of educational design with a participatory approach.

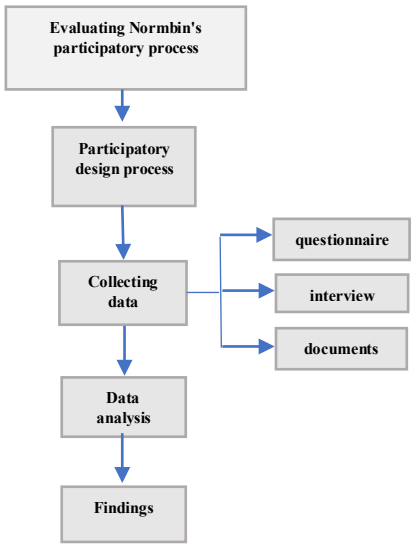

Figure 1. Conceptual model of the research

Methods

The necessary data for this study were gathered through structured and semi-structured interviews, questionnaires, group and individual observations, as well as key person interviews, and were used as primary data.

The case study in this qualitative study has a special quality and reflects the reality of the research community. Everyone who took part in the surveys and interview, as well as the responsible individuals who gave the writer their information, contributed to the creation of Normobin School. In order to understand more about how children and users participate in the participatory design process, the tools and methods used, the levels of participation and their satisfaction with the current school. In this research, 24 questionnaires by students, 26 questionnaires by parents, as well as a questionnaire and an interview with the executive director of the project were completed.

Case Example: Normobin Bastam School, Semnan, Iran

The Normobin Bastam School stands as a landmark example of participatory architecture in Iran. Situated in the city of Bastam, Semnan Province, the project represents a comprehensive approach to designing educational environments that directly involve users-particularly children-in the decision-making process. The school was designed not merely as a physical structure, but as a child-friendly landscape shaped by its users' voices, integrating architectural functionality with emotional, cognitive, and social needs.

Figure 2. Participatory design of Normobin School

1. Project Context and Vision

The Normobin School is part of a larger, multi-functional educational complex aimed at serving not only students but the wider local community. The campus is organized like a miniature city, including areas designated for classrooms, a mosque, amphitheater, gardens, health services, sports zones, and future expansion into social infrastructure like shops and a library.

This urban-like layout reflects the design team's ambition to embed the school in the daily life of its community while encouraging students to see themselves as active participants in a shared civic environment. The spatial vision was developed based on participatory consultations that gathered ideas from various user groups-children, teachers, parents, and community leaders.

2. Participatory Process and Tools

The design team adopted a multi-layered participatory strategy:

- Child-centered design workshops: Students engaged in drawing sessions to depict their dream school, highlighting preferences such as open courtyards, play spaces, and social interaction zones.
- Questionnaires and interviews: Distributed to students, parents, and teachers to understand functional and emotional needs. Insights covered safety, flexibility, aesthetic preferences, and psychosocial concerns.
- Observational studies: Conducted in the old school to identify behavioral patterns, use of space, and areas of discomfort.
- Collaborative design meetings: Held between the architectural team and school staff to align educational goals with spatial planning.

These approaches allowed the design process to evolve organically, ensuring the outcome reflected the authentic needs of users.

3. Built Results: Spaces Shaped by Participation

A defining feature resulting from this participatory process is the sunken courtyard, inspired directly by children's sketches. It serves multiple purposes: a place for gathering, storytelling, informal performances, and peer interaction. This space is also physically and symbolically central to the school, reflecting the project's child-centric philosophy.

Other features include:

- A parkour wall designed upon student's request for adventurous play areas.
- Flexible classroom configurations accommodating different teaching styles and student groupings.
- Strategic window placements to control natural light and reduce glare, based on teacher feedback.
- Zoned outdoor areas for quiet reflection, physical activity, and group projects.

These elements were not designed for users, but with them-an essential principle in participatory architecture.

4. Interpretation of Impact

Data analysis revealed that a significant majority of students and parents expressed high levels of satisfaction with the new school environment. Qualitative responses from interviews revealed a strong emotional connection to the space, with students reporting a sense of pride and belonging. Parents appreciated the project's responsiveness to local cultural and social needs, and teachers noted improved student engagement and well-being.

Moreover, feedback showed that the act of participation itself fostered agency and ownership. Students stated that seeing their ideas materialized in the final building increased their respect for the school and motivated them to care for it.

5. Broader Lessons

The Normobin Bastam School case underscores the value of participatory design, especially in developing contexts. It challenges the notion that participatory methods are too complex, time-consuming, or costly for real-world application. Instead, it shows that with thoughtful facilitation, even children can offer powerful insights that shape not only physical environments but also social and emotional outcomes.

This project offers a replicable model for architects, educators, and policymakers aiming to design inclusive and child-centered educational spaces. The Normobin School is not just a building-it is the result of a process that empowers its users and strengthens their connection to the learning environment.

Discussion

Analysis and review of the participatory approach in "Normobin School" project

Project identification:

Children and adolescents have worked as counselors for adults. Inspired by children's idea about "the best school in the world", this project was designed and implemented by a team. But children and teenagers understand this process and their opinions are taken seriously. The level of involvement in this stage of the project cycle, based on Hart's involvement ladder (1992), can be classified as "consultant and informed". The interviewee further discusses the techniques used to obtain children's opinions: “Likes, dislikes and would like, participation sessions, daily consultation, participation days, question and answer panels.

Project design:

In the design phase of Normobin School, after an initial meeting with the design team, to consider children's views and preferences, an expert spoke to the children, teachers and school staff, explaining the process to them and encouraging them to express their views. Therefore, the level of participation in this part of the project based on Hart's participation ladder (1992) can be called "consultant and informed". And another level of participation in this stage was "initiating action with children and joint decision-making with adults" in such a way that children and teenagers initiate projects and decision-making is shared between users and adults. For example, parkour wall design by children in the complex environment. Finally, two levels of participation have been done in the design phase of the project.

Figure 3. Project design

Implementation and evaluation:

At this stage, the participation of children and teenagers has been done through the children's association. They have talked with children and adolescents and received their feedback, and the

levels of participation were "consultative and informed", "authorized but informed" and "initiating action with adults and joint decision-making with children".

"The principal of the school gave us a sheet and we wrote our opinions and, in the summer, we helped a little in cleaning and marking the ground". (Interviewee 1)

"I drew the lines of the football field and helped clean the girls' schools and smoothed the cornices." (Interviewee 5)

"We built a wall for parkour around the complex". (Interviewee 6)

Benefits of user participation in the design process:

The benefits of collective participation in Normbin School have been collected and identified according to the analysis of the content of interviews and questionnaires as well as the review of existing documents, and the following can be mentioned:

• Seeing everything from a child's point of view

There is no point in adults thinking/deciding about children's needs/preferences.

• Connecting to the local community

This project provides opportunities for the design team and staff to engage and communicate with the wider community. They have a real view of the users (project users) (Interviewee 8)

• Participation in decision-making and a sense of ownership to empower participants

Empowering users is an important part of the collective design belief. So that people should not be excluded from the society. Users have most (if not all) control over various aspects of their entities (i.e. the environment). Empowering users is one of the main plans for user participation in this project (in this case, children and teenagers). The sense of belonging and the sense of ownership of the space in the existence of students has created a kind of empowerment and belonging in them.

• High quality services for families and children through effective interaction with users

Creating open educational spaces for children has provided a platform where students' freedom of action is part of the essential priorities. Placing on different levels and dividing the landscape. The view and scenery in this educational neighborhood is formed on three levels. In this set of three classes, the students have entered a level of interactions related to the sense of belonging and ownership to the space and the emergence of neighborhood and neighborhood feelings and interactions and getting involved in inter-spatial relationships to which they belong to each of them with different degrees.

***Problems in the participation process*:**

Children's participation in this project is related to three of the five types of participation depicted in the top five steps of the ladder. Despite all the successes of the project, there is still a

need to improve the design process based on information gathered from interviews, documents and questionnaires.

"Different groups of children and adolescents have been involved in the design process, but the lack of a control group involved in all stages of the process has been quite evident" (Interviewee 3)

"The absence of a children's representative to observe the special needs of children, as mentioned by several interviewees, and there was also the absence of a representative of the architectural team in the meetings of the children's board" (Interviewee 5)

***Strategies to prevent children's participation problems*:**

Regarding the communication issues, one of the most successful solutions considered by the interviewees is the use of different methods to establish creative communication. "All ages and inclusion of equality and diversity through drawing and writing techniques using disposable cameras and photos as well as other techniques such as 'like/dislike' and 'like' and participation sessions" (Interviewee 2) explained. Furthermore, (Interviewee 4) explained that: “Everything we do is about how creative we can be and hopefully we have a lot of drawing, a lot of storytelling, a lot of creative ideas, because they like it. they have".

Confidentiality is another potential major issue or obstacle in the project. As (Interviewee 7) explained, the solution adopted for this issue was a full explanation of the new school - using the image and consent for participation through the parents or the school. Consent must be obtained to use the participant's photo or name, but if it is an anonymous consultation, verbal consent is sufficient to proceed (Interviewee 1)

In order to maintain the participation of children and adolescents during the life cycle of the project, the association of children and adolescents is kept alive and maintained, even when the members are forced to leave the association due to age (Interviewee 4). In order to solve the problem of collective confusion, a limited number of children were involved for each project.

***Recommendations*:**

Recommendations on the key issues of children's collective participation in the design process, which were collected, described and suggested through participant questionnaires, interview sessions, and questions from the project design team, staff and members, are presented, and each interviewee shares their ideas and personal experiences during the participation process. has stated Important feedbacks from the results of this process have been identified. The results contribute to a set of recommendations that are based on real-world and empirical feedback. The recommendations were about the stage and level of participation and the concept of children's association.

In summary, the main recommendations assumed and suggested by the interviewees are as follows:

- It is easier to have a group involved and be seen from the beginning to the end of the project. When you are involved with others a lot, it is easier to have a control group. (Interviewee 6)
- Initiate and engage with them at the earliest possible stage to (Interviewees 2 and 7):

a) Get more views.

b) Have more time to process participation activities.

- Having a children's association representative to help them feel stronger and more encouraged (Interviewee 5)
- A much more structured consultation process and perhaps a longer planning process for communication with schools, families and people who use the school. (Interviewee 8)
- Having a process with much more common dimensions; A clear link approach between children and participating users by creating workshops or a consultation process (Interviewee 9)
- Everyone should know that the consultation process is underway and that the information gathered should be informed and promoted by the designers and management as well as by the development team of the built environment. (Interviewee 1)
- Prepare; To get as much information as possible, spend enough time talking to the children, getting to know the school users' view of the future and what they want. It must be ensured that this model is the correct service provider and is maintained for the future. (Interviewee 1)

Participation step:

- Much more structured consultation process (Interviewee 8)
- Having a process with much more shared dimensions (interviewee 9)
- Start and engage with participants at the earliest possible stage to (Interviewee 2, 1):

a) Receive more views

b) more opportunity to process participatory activities

Participation level:

- Awareness that the consultation process is ongoing and the collected information needs to be communicated (Interviewee 9)
- Consider younger children and pay attention to their views and preferences (Interviewee 5)
- Getting ready to get as much information as possible. Sufficient time should be spent talking to children, relationships and other users and saved for the future. (Interviewee 1)

Participants (children and teenagers):

- It is much easier to have only one team involved (Interviewee 22)
- Having a control group (Interviewee 6)

• Having a representative of the Association of Children and Adolescents (Interviewee 5)

The information from the questionnaires was finally analyzed using SPSS social science software, and the survey findings are displayed as tables and graphs.

As shown in the results, in the satisfaction section of the school, most of the students, which include approximately 69%, have expressed their satisfaction.

Also, most of the students are satisfied with the current state of the school compared to the previous school and have claimed that the design of the current school is bigger, more pleasant and generally more suitable than the previous school.

In the survey of parents, they had positive comments about the impact of the project and the sustainability of the project, as well as the participation of users. In addition, the cohesion and coordination of the project show the positive opinions of the parents, and they also considered the project's compliance with the needs of children and teenagers as well as the cultural, social and economic conditions to be positive. People have been seen optimally. Except for one case, the physical condition also resulted in parental satisfaction. The level of parents' satisfaction with the whole project is also favorable, and finally, parents have found the school's design to reduce negative effects, a favorable and satisfactory environment. In general, what is clear and deduced from the answers is that the design of such schools in these areas has brought both the satisfaction of the students and the satisfaction of the parents, and it indicates that these schools are governed by different conditions. They will improve the students and parents of the school.

Table 3. User satisfaction

N	**Valid**	29	
	Missing	0	
		Frequency	**Percent**
Valid	**Y**	20	69.0
	N	8	27.6
	Missing	1	3.4

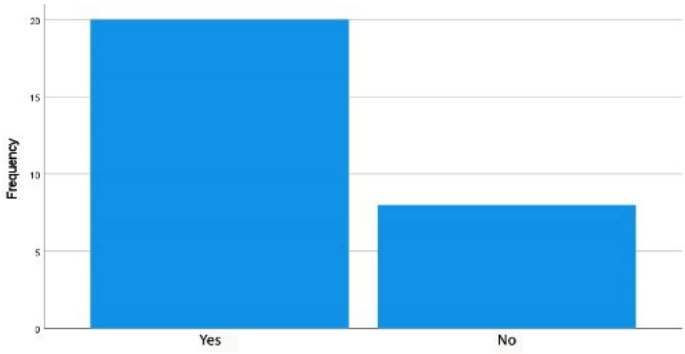

Figure 4. User satisfaction

Statistics

Table 4. Finest method for comprehending school design

N	**Valid**	29	
Missing		2	
		Frequency	**Percent**
Valid	**Video PowerPoint**	5	17.2
	Mauette and design	15	51.7
	Both	17	24.1
	Missing	2	6.9

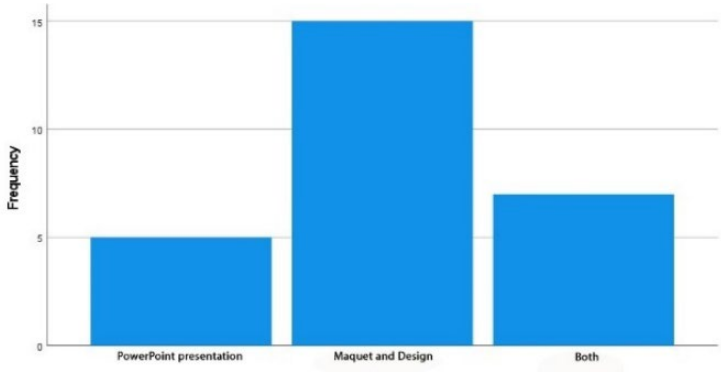

Figure 5. Finest method for comprehending school design

Statistics

Table 5. The project's effect on users

N	**Valid**	**30**	
	Missing	**0**	
		Frequency	**Percent**
Valid	**Low**	1	3.3
	Medium	2	6.7
	Many	5	16.7
	A lot	22	73.3
	Total	30	100.0

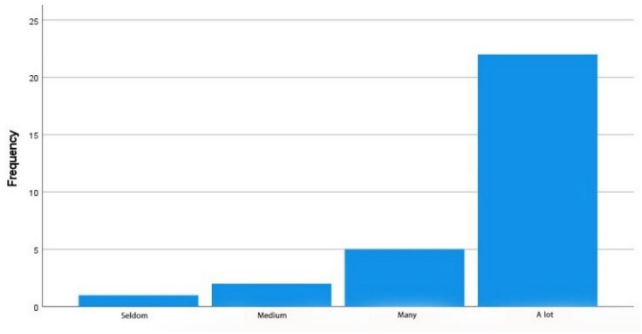

Figure 6. The project's effect on users

Statistics

Table 6. Project sustainability

N	**Valid**	13	
	Missing	0	
		Frequency	**Percent**
Valid	**Low**	1	3.3
	Medium	1	3.3
	Many	9	30.0
	A lot	19	63.3
	Total	30	100.0

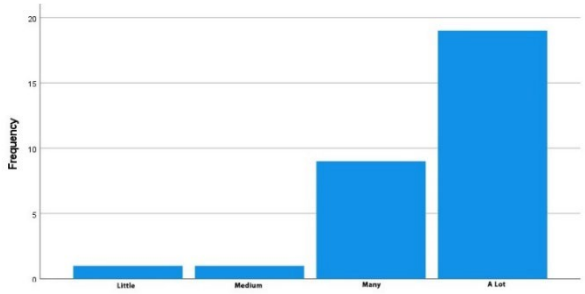

Figure 7. Project sustainability

Statistics

Table 7. The level of adaptation of the project to the needs of children and adolescents

N	**Valid**	13	
	Missing	0	
		Frequency	**Percent**
Valid	**Low**	1	3.3
	Medium	6	20.0
	Many	4	13.3
	A lot	19	63.3
	Total	30	100.0

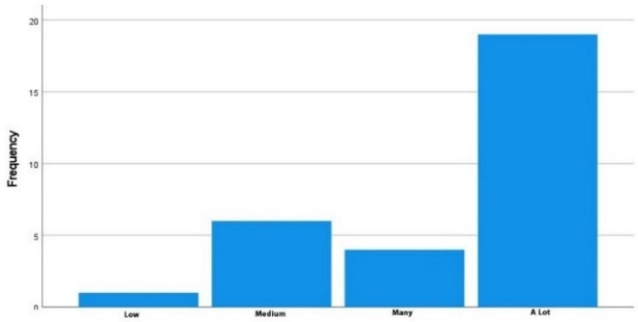

Figure 8. The level of adaptation of the project to the needs of children and adolescents.

Statistics

Table 8. The extent of the project's compliance with cultural-social-economic conditions

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Low**	0	0.0
	Medium	3	10.0
	Many	4	13.3
	A lot	23	76.7
	Total	30	100.0

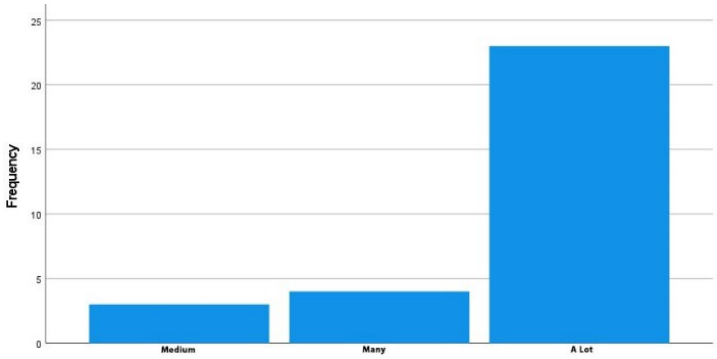

Figure 9. The extent of the project's compliance with cultural-social-economic conditions.

Statistics

Table 9. Project success.

N	**Valid**	13	
	Missing	0	
		Frequency	**Percent**
Valid	**Low**	1	3.3
	Medium	1	3.3
	Many	7	23.3
	A lot	21	70.0
	Total	30	100.0

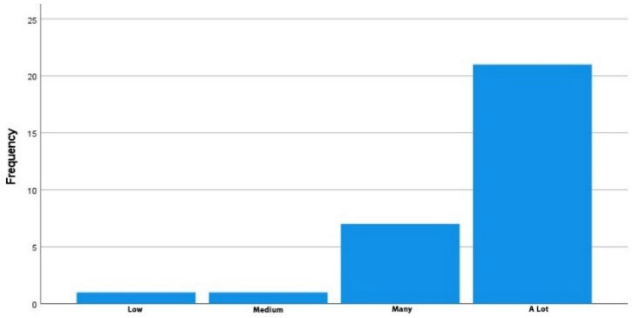

Figure 10. Project success

Statistics

Table 10. Physical condition of the school.

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Weak**	0	0.0
	Good	1	3.3
	Very good	6	20.0
	Excellent	23	76.7
	Total	30	100.0

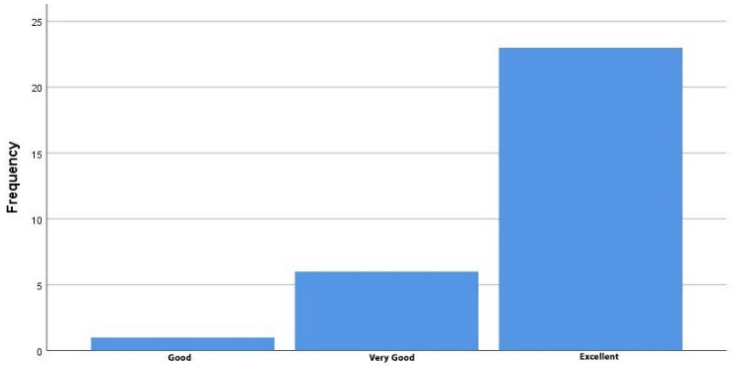

Figure 11. Physical condition of the school.

Statistics

Table 11. The level of satisfaction of users' wishes and needs.

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Medium**	3	10.0
	Many	4	13.3
	A lot	23	76.7
	Total	30	100.0

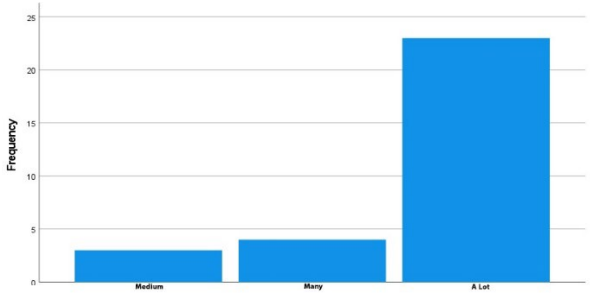

Figure 12. The level of satisfaction of users' wishes and needs.

Statistics

Table 12. The level of parents' satisfaction with the school.

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Medium**	1	3.3
	Many	8	26.7
	A lot	21	70.0
	Total	30	100.0

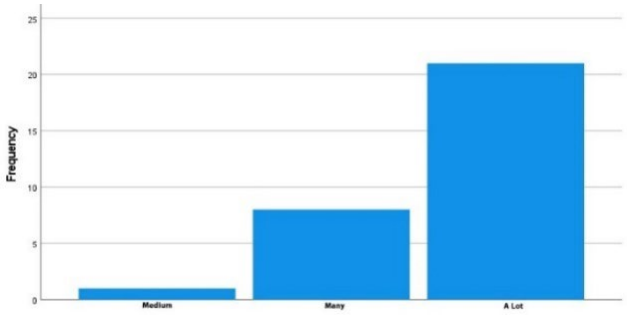

Figure 13. The level of parents' satisfaction with the school.

Statistics

Table 13. The impact of school design on reducing negative environmental effects.

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Medium**	2	6.7
	Many	5	16.7
	A lot	23	76.7
	Total	30	100.0

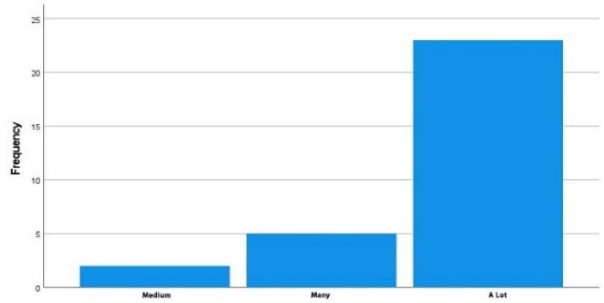

Figure 14. The impact of school design on reducing negative environmental effects

Table 14. Coherence and harmony of the project.

N	**Valid**	30	
	Missing	0	
		Frequency	**Percent**
Valid	**Medium**	1	3.3
	Many	7	23.3
	A lot	21	70.0
	54.00	1	3.3
	Total	30	100.0

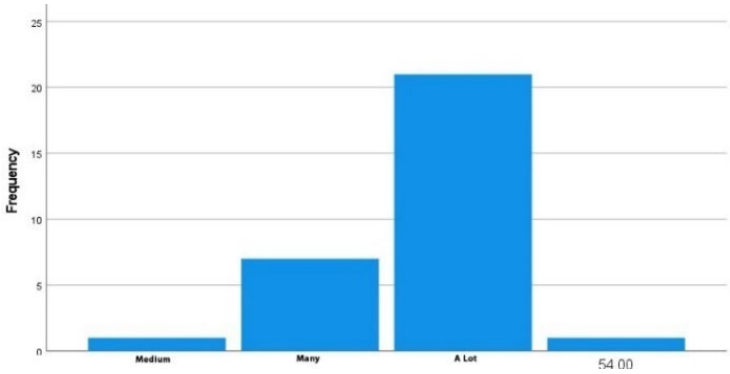

Figure 15. Coherence and harmony of the project.

Conclusion

The information related to the design process in this article has been collected and analyzed by the author according to the opinions of the interviewees and questionnaire respondents, and the final results of the analysis and reviews are presented in Table 15 to understand the participatory design process of Normbin School.

The table below describes a summary of the participation process in Norbin School. An example of a school design with a distinctive educational structure created by the winning design for a new school development. In this project, it has been tried to increase mental health and educational efficiency by experiencing the invisibility of the building and also by turning the school building into a landscape like a neighborhood or a city, and provide a more positive experience by creating a child-friendly environment. Based on the feedback and opinions obtained from the interviewees and questionnaires, the results of the participation process have been mostly successful. According to Hart's participation ladder, the participation in this plan was based on three levels of the participation ladder and mostly based on "consultation and awareness". Some of the suggestions and ideas of the children are very recognizable in the final project. They've tried to address things that some kids may or may not like, but the problem is that it's hard to please everyone. Some design suggestions may be difficult or impossible to

implement because school design is very sensitive, especially when the users are children. In this example, the main participation was in the identification phase of the project, and the children's ideas were included in the results of the architectural team, and then they were directly involved in the design of some specific areas.

Table 15. Participatory design process of Normbin School based on Hart's participatory ladder (Source: author)

	**Participation level**	**Methods**	**Participating people**
Project identification	Consultant and informant	Interview Questionnaire	Students School staff and teachers School principal (project executive director)
Project design	Consultant and informant Child-initiated and shared decision-making with adults (decisions initiated by children and shared with adults)	Design workshop	Association of children and teenagers Teachers Staff Design team
Implementation and evaluation	Consultant and informant Initiative with adults and joint decision-making with children Agent but informed	Land line Cleaning Building a parkour wall Walking around the school, talking to children and teenagers and getting their opinions	Children and teenagers Staff Design team

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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