

Guidelines for Designing an Effective Learning Complex for Child Labors (Case Study: City of Isfahan)

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ABSTRACT: Child labor is an inseparable phenomenon in the structure of developing countries and third world nations. Numerous claims have been made about the benefits of the learning environment on child labor's life. Individuals do their activities in designed environments, which can influence them. There were few studies on designing an educational place for child labors, especially in Iran. The purpose of this study is using an architectural approach to absorb child labors into an educational place in Iran Isfahan. After running library studies about child labors and the effect of place on people, in a two years, many field studies have been done such as: observing child labors lifestyle, their work condition, and visiting their support centers. A total of 45 child labors between the ages of 12-18 have been interviewed, and then some results of this interview were examined on a child labors' help center building. It confirms and completes the results of interview. Initial evidence shows that there is a gap in educational system. Regular schools cannot be responsible for child labors' needs. So, first, the child labor's personal needs were discovered, then some of the architectural parameters that affect their educational achievements were introduced. The focus of architectural guidelines in this study is in three parameters: well-designed physical space, sense of ownership and social support. It uses architecture to give child labors' lost social identity back.

Keywords: Built Environment; Isfahan; Design for Children in Need; educational building; Child labor.

INTRODUCTION

One purpose of this study was to find out the gap of the educational system for child labors, another purpose was exploring some architectural guidelines in designing an effective educational environment, especially for child labors of Isfahan.

Child labor is a worldwide phenomenon in the global economy that must be eliminated since the number of these children are increasing all over the world (Meyer et al., 2015), (Radmard & beltekin, 2014). The problem of child labor is one of the most important social issues in recent decades in Iran (Vameghi et al., 2014). This study is about finding out some architectural approaches for child labors to design an effective educational complex supplementary to school for child labors in Iran, Isfahan.

Child labors are hired children in inferior jobs which deprive them of their childhood (Yıldırım et al., 2015). These children are highly traumatized and socially ignored ones (ÖzdenBademci & FigenKaraday, 2014). According to the International Labor Organization (ILO) in 2017, estimates 218 million children within 5-17 years of age have been employed worldwide. Among them, 152 million are victims of child labor; almost half of them, 73 million, work in hazardous environments. (International Labour Organization, 2017). According to NGO (non-governmental organization), Toloo-e Mehr va Doosty's (one of the Isfahan's NGO to help child labors) first census data, the population of child labors who works in the Isfahan streets, is about 242 boys and girls, among them, 150 are within 12-18 age range. Economic, political, and social problems such as emigration, poverty, etc. can be the

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causes of the child labor, especially in developing countries (Radmard & beltekin, 2014) and countries such as Iran. 80% of child labors in Isfahan are Afghan refugees and 20% are from Iranian poor families. Isfahan is one of the tourist centers of Iran which has many factories and job opportunities thus many people immigrate to this city to find jobs.

There are two categories of child labor: child labor of the street and child labor on the street. In Iran, child labors are child labor on the street (Fig. 1).

Physical, moral, and psychological trauma are the causes that make children work from an early age (Mukherjee, 2012). Many street children are involved in begging, drug trafficking, stealing, and prostitution or survival sex (Vameghi et al., 2014). These children cannot often survive and function in society (Fox, 2009). In 2015, as part of the Sustainable Development Goals, the international community adopted the ambitious policies of ending child labor by 2025. But millions of children around the world are still trapped in child labor web (Unicef, 2014).

Some of the international organizations like ILO, UNICEF, UNESCO, and World Bank have confirmed that education can reduce child labor. If they are Educated, they will learn how to be grateful for society (Osment, 2014). But without safe, accessible, affordable, equitable, and flexible education, child labors may leave schools and enter the labor market (Unicef, 2003). So their education and designing educational spaces require close attention. In Iran, despite numerous schools, there are some child labors who do not attend a school or would not like to go.

Most children will attend school if they find it a safe and welcoming place, and it can help students who experienced troubles. (Bryant et al., 2013). After becoming educated, they can get a job and increase their socio-economic status. (Githitho-Muriithi, 2010).

People spend about 90% of their lives indoors (Tanner, 2009). One of the most important factors of the students' outcome is their school setting (Blackmore et al., 2011). Therefore, we cannot ignore the role of a suitable and well-designed environment on students learning (Mahdjoubi & Akplotsyi, 2012).

An educational complex should support people using that place and their activities in order to encourage and provide the ground of learning. So it involves both psychosocial and physical dimensions (Zandvliet, 2014). An ideal learning environment can reduce stress, mental fatigue and even improve health, and encourage better learning (Han, 2008).

According to Gary Evans's a psychologist at Cornell University," the environment, built space, colors, quality of life, are as important as the psychological factors in the development and educational process" (Povian et al., 2014).

Environmental factors may influence directly individual mood (Marchand et al., 2014). Effective educational spaces lead to the improvement of the students in their cognitive trend in a collaborative manner (Ghasemi Ariani & Mirdad, 2016).

In this context, the focus of this study is on teenagers because their personalities are formed in this period of their lives. The difficulties in child labors life make them unsociable. Isolating them from regular schools makes this issue more severe. So, the educational complex should be a space which is especially for these children to solve some of their problems and finally let them come back to society as a useful person and study with other children in regular schools.

Theoretical Framework

Basically, due to the different kinds of child labors in every region and the potential of every country, designing a useful educational place for them has to be different and suitable for it. In Iran, due to the lack of such spaces, it is necessary to find the appropriate space. Here in fig.2. the Vischer's Analytic framework was used to design for child labor. It shows three levels of environmental support as to how well the built environment would function (Fig. 2). (Vischer, 2008).

Psychological Comfort

Sense of Ownership

The life of child labor is stressful with lots of physical, psychological (Rea, 2008), and social problems. The sense of belonging can help them to achieve this need in a learning environment. A sense of belonging to a place provides more effective community actions and it helps people to escape from

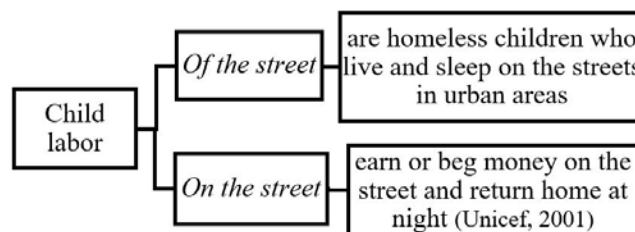


Fig. 1: Child labor categories

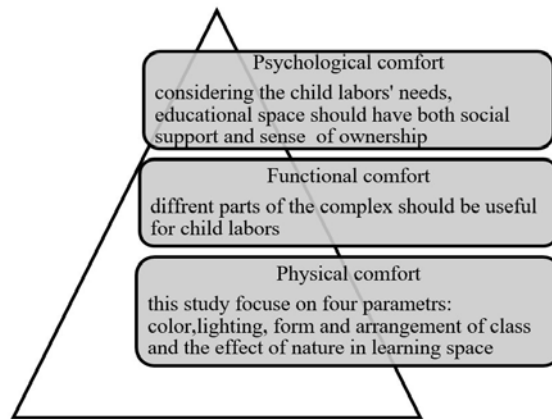


Fig. 2: Analytic framework for assessing the user's experience

daily stressors (Scannell & Gifford, 2017). A sense of ownership makes child labor return to an educational environment willingly. These three factors: control, personalization, and territoriality are the main factors that causing a sense of belonging. (Andrade & devlin, 2015), (Barrett et al., 2015A), (Killeen et al., 2003).

Children's participation in environmental change is a critical element in order to adjust them in their future participation in a social environment (Maxwell & Chmielewski, 2008).

Social Support

When an individual is supported by society, he/she feels people caring and helping in case of need. The physical environment can facilitate the possibility of establishing or implementing a network of social support (Andrade & Devlin, 2015). Designing features may influence on the positive correlation between social support and mental health (Evans, 2003). sense of self-esteem can be a result of social support.

The youth who are taken care of, need social skills to have successful lives and it also improves their ability and have a positive role in society (Mmusi & van Breda, 2017). Social and emotional learning (SEL) programs in the schools also can improve academic performance and reduce antisocial behaviors. (Chung & McBride, 2015).

Physical Comfort

In the available studies regarding the effect of physical space on people, many parameters are assessed. Here, the emphasis is on the four parameters: color, illumination, the form, and arrangement of the class, and the nature surrounding the learning space (table.1).

MATERIALS AND METHODS

The field studies here have been run for two years. A combination of quantitative and qualitative studies is applied answers to the following research questions:

RQ1. Why child labors neither, go to school nor like to go and

what is the gap in general schools for child labors education?

RQ2. What do they need in a proper educational space?

RQ3. How can architecture get the child labors back to schools?

Participants

The participants in this study are 45 child labors between the age of 12 to 18 who work in Isfahan city streets. They clean windshields, sell chewing gum, flower, etc.

Instruments

Articles, books, documents, observations, and an interview.

Data Collection Procedure

Qualitative Methods

For the qualitative aspect of this study, the authors first observed Isfahan's child labors lifestyle and had walkthroughs interview with them. That is, they saw their ordinary activities in the streets, finding out how they communicate with society and vice versa, also their reaction to different physical environments. Afterward, authors went to the Institutes and NGOs helping Isfahan's child labor. They visited their activities and made contact with the supervisors. Among these institutes Toloo-e Mehr va Doosty, an NGO specializing in this field was ready to cooperate. After the observation authors took a four-day trip with this NGO's child labors to the holy pilgrimage city of Mashhad upon the children's desire, in order to have a better observation of their reactions on 24 hours a day.

Quantitative Methods

The qualitative methods helped authors to design questions for an interview with these child labors to find out some functional comforts and what makes their educational complex more effective. It consists of 17 questions in three categories. The categories are identified and tabulated (Table 2). Analysis of statistical data in this research was done with SPSS software. To value the outcome of the interview, based on the possibilities, some items like changing the wall color, adding greenery to

Table 1: Well-designed physical space

color	Color effects on students' mood and energy levels (Barrett et al., 2017) For example, red can increase anger, tension, and happiness; blue causes relaxation, comfort, and security (Stone, 2001). The mental effect of colors can help both the students and the teachers to have better performance (Engelbrecht, 2003)
illumination	Illumination includes all electric lights, direct or indirect natural light, and indirect artificial or reflected light (Ahmadpoor Samani & Ahmadpoor Samani, 2012). Daylight has a positive impact on students' learning performance and mood at school (Castilla et al., 2017) for appropriate levels of illumination at all times of a day, both natural and artificial light are required (Yang et al., 2013). Windows and natural light on two sides of the classroom facilitate eyes resting (Tanner, 2009).
The form and arrangement of the class	To optimize the function and concentration at school, larger rooms with simple shapes (squares) are better for older children, and multifunctional and open-classroom are more appropriate for the younger ones. Open-classroom is also beneficial for working on social problem-solving and self-esteem of the students (Barrett et al., 2015B) (Pawlowska et al., 2014). The arrangement of the class should be flexible for all students at any age.
The nature surrounding the learning space	The natural view is believed to be beneficial (Benfield et al., 2015). Nature has the potential ability to provide a relaxing atmosphere (Brooks et al., 2017). So, adding greenery to learning environments decreases students' negative emotions, stress and increases their attention and positive feeling (Han, 2008). Also, nature influences subjective energy, restoration, and crime reduction. (Zelenski et al., 2015). Thus it should be useful for all child laborers who have the problem mentioned above.

Table 2: Three categories of the interview questions and their sub items

No	Categories	Sub Items
1	General questions	Gender ,age, time of their work and why they do not attend school
2	Skills they want to learn	Determined art, sport or other skills they want to learn and earn money with
3	Their classroom physical set up	Effect of brightness(daylight and artificial), seating arrangement in class, view and color of the class

space, and handcraft training were practiced in this selected NGO.

RESULTS AND DISCUSSION

The results here are in three categories:

Daily Life and Family Relations' Observations in a Two-Year Period and Spending a Trip for Four Days with Subjects under the Selected NGO Supervision

These children are members of the poor and multi-child families. Most of the parents were illiterate and culturally poor. Most fathers were drug-addicted and unemployed, thus, earning money for child laborers were important in this setting. Most of these children were rejected by society and usually showed antisocial behaviors. They had a lack of self-esteem and self-confidence, thus, they had the potential to join gangs and anti-social activities, as well as getting to prostitution and corruption. Some of them attended school but found it boring and useless so they lost enthusiasm in education and also they did not have any sense of belonging to their schools so they quit school and got back to the street to earn money. All of these children have spent hours in the streets and passed time

by hanging around for days. Accordingly, how can they tolerate routine classroom disciplines at schools? Another essential factor here is the lack of family-school collaboration. Finally, due to the lack of health care, most of them have a contagious disease.

The observations made on the four-day trip revealed that the stress of being child labor prevents them to develop collective spirit. They cannot establish a proper social connection with others and also their own peers. Therefore, they are usually in conflict with the members of society. Due to the negative outcomes of being on the street, they are afraid of small closed spaces like elevators, etc.

Visiting Their Supporting Centers

After visiting the supportive centers, it is revealed that the child laborers are collected from the streets by the municipality and transferred to the Behzisti, a state organization operating and supervising vulnerable stratum. When they are orphans, they are sent to an orphanage, otherwise, they are returned to their homes and eventually back to the streets. The supportive centers in Isfahan declared that many of the subjects would like to learn moneymaking skills like making Isfahan handicrafts. It

seems that they find their future in this realm. These NGOs run tutorial classes for the children who attend school. Moreover, they run classes for children who have never attended school. Unlike regular schools, these classes have more freedom and playfulness. One of the main problems that these NGOs encounter is financial issues. In a sense, this problem prevents the NGO's from expanding their operations and improvement of child labor condition.

Direct Interview with the Subjects and then Let to Implement the Findings of the Interview in the Environment of this NGO.

After the observations, an interview with 45 child labors was done. The questions were designed according to the possible responses to the subjects' characteristics. Therefore, in some cases, a question continues to complete the previous question.

General Questions

Among the assessed child labors 77.8% are within 12-15 age range, 73.4% of which are peddlers and work from morning to night in the streets in order to earn money; 24.4% do not attend school (table 3).

Skills They Want to Learn

These questions are designed to determine which skills are more attractive for child labors to do in an educational complex.

Popular Sport

Four popular sports in Isfahan which child labors can choose among them are shown in following chart. According to (Fig. 3), the most favorable sports among

participants, are swimming and volleyball, so it is better to have a sports hall in the educational complex. Due to some contagious diseases among some of them, the choice of the swimming pool is discarded. Instead of having a swimming pool, the provision of a disease diagnosis room is suggested for this complex in order to treat their contagious diseases.

Favorable Art

Considering the previous observation, the four popular arts in the following chart are choosing among child labor's interests. These fields of art have the potential of moneymaking as well. They like painting and Isfahan handicrafts more than others (Fig. 4).

Which of the Following Items are Better for Earning Money?

Answering this question would determine whether there exist other skills in their mind. According to (Fig. 5), the second choice after Isfahan handicrafts is gardening, which is positive and beneficial in decreasing stress and mental disorders.

Favorable Skill

These skills are useful because of having job opportunities in the future (Fig. 6).

Popular Craft

In the category of Isfahan handicrafts, Enamel (Minakari) and Engraving (Qalam- zani) are the child labors' first and second preferences (Fig. 7).

Table 3: General questions of interview

Gender	Female: 57.8%	Male: 42.2%
Age	are within 12-15 years old 77.8%	
Type of work	73.4% peddler	
Work time	From morning to night: 31.1%	From noon to night: 55.6%
Attending school	Yes: 75.6%	No: 24.4%
?Why they don't go to school (From 24.4%)	wants to earn money	11.1%
	School fees are high	6.7%
	Its wasting time and not useful	6.7%

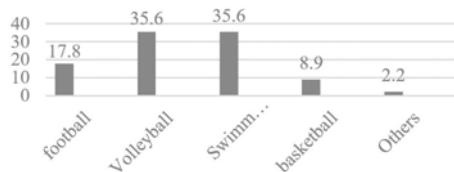


Fig. 3: popular sport

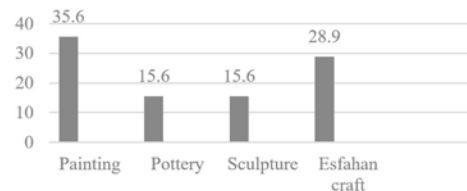


Fig. 4: popular art

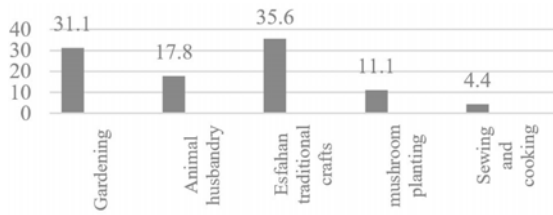


Fig. 5: earning money

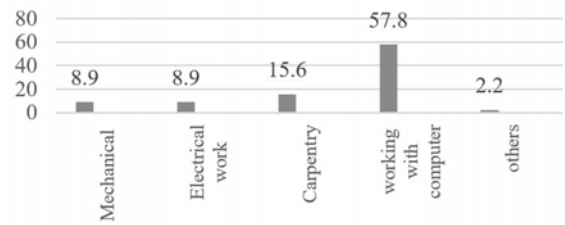


Fig. 6: Popular skill

Physical Environment

This part of the questions is directed to the children who have schooling experiences and the questions are about the physical environment of the educational area.

The Most Important Part of School

The most important area of the school in the child labors' view is the classroom (Fig. 8). The proper atmosphere of the class attracts them to go to school.

Dissatisfaction with the Current Classroom

The existing dissatisfaction caused by the current classroom is shown in the bar chart in (Fig.9). The main dissatisfaction defines in the interview is regular seating in schools.

What is More Important in a Class?

According to (Fig. 10), the class decoration is very important for child labors. By decorating their classroom, they again a sense of ownership and usefulness, it also increases their self-confidence. To achieve these goals, it is better to use the opposing wall of the board for class decoration.

The Color of the Class Wall

Unlike what was anticipated, the children selected color white, as the class color the next chosen color was green and blue (Fig. 11). If four walls of a classroom are colorful, it will make the board, they said.

Class Lighting

Lighting is an important factor to design a classroom. According to (Fig. 12), they prefer to have both the natural and artificial lights. Natural light is more important for them.

Class Windows

Window with the outside view is selected by 82.2% of the applicants (Fig. 13).

According to the observations made in NGOs, the children prefer classes with big windows and high natural lighting with a view facing the yard. Rooms with small windows and little or no outside view gave them a sense of being immured and increased their stress. The external view in a sitting position gives them a sense of freedom and as it is mention before, it is excellent for eye resting as well.

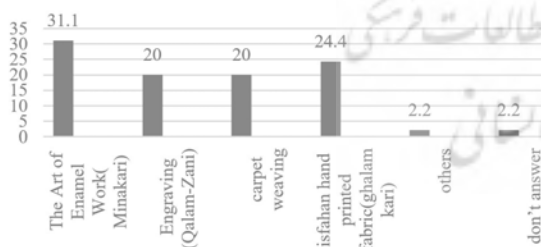


Fig. 7: Isfahan traditional craft

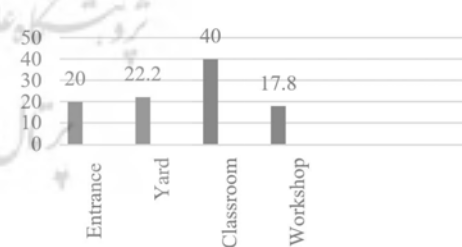


Fig. 8: The most important areas of school

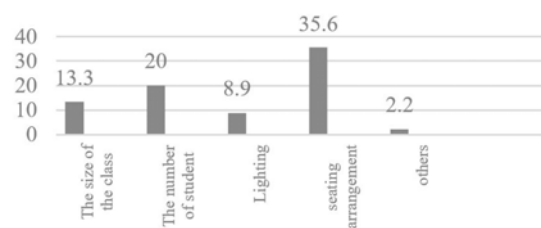


Fig. 9: Dissatisfaction with the current classroom

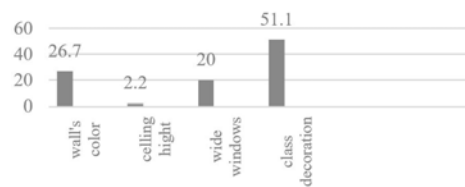


Fig. 10: Important part of the classroom

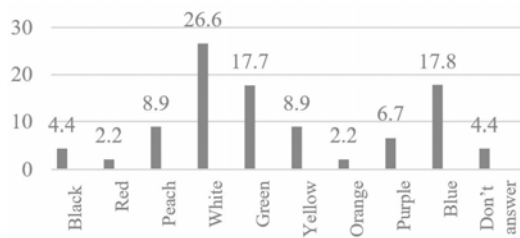


Fig. 11: The color of the class wall

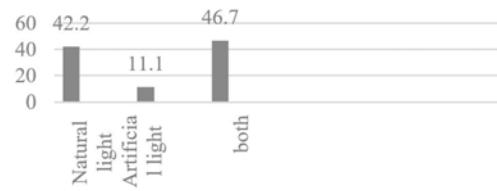


Fig. 12: Class lighting

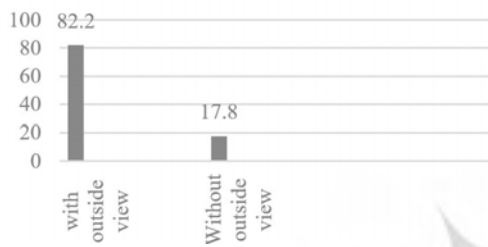


Fig. 13: Class window

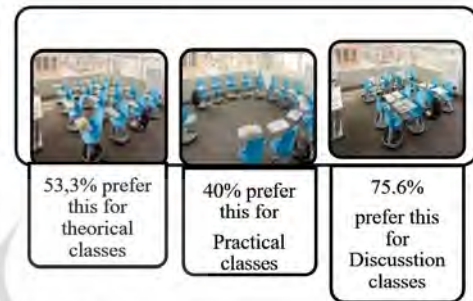


Fig. 14: seating arrangement

Seating Arrangement

These three sitting arrangement are chosen by child labors for their various classes (Fig. 14).

After running the interviews, some of the results are implemented, (according to existing conditions allowed) in the selected NGO. The experiments are run according to the above findings, that is, the color, lighting, chair-desk set up, adding greenery in the environment (the care and maintenance of the latter are upon the child labors), and the class hallway, etc. decoration is done by the child labors. The last measure increases their sense of ownership.

In every class, some frames are determined to oppose the class board which holds the children's handcraft (Fig. 15). After all these, their interest in being present in the classroom increased, likewise their sense of belonging.

For the three subject classes, the three colors: blue, green, and peach all with white are applied, two walls were colored in blue-green or peach, and two walls were colored white (Fig. 16). Among these classes, the green and white class were most favorable for learning (Fig. 17), the blue and white room was better for consulting and psychotherapy (Fig. 18). The entrance hall was painted yellow which generated a pleasant view and attractive sense (Fig. 19).

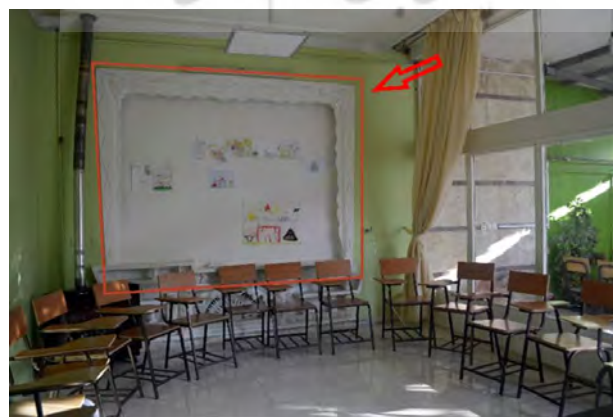


Fig. 15: Classroom decoration



Fig. 16: The classrooms wall color

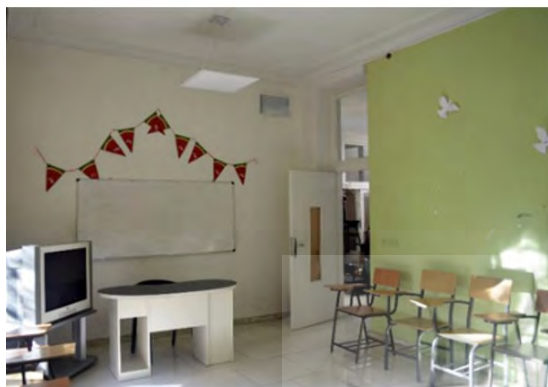


Fig. 17: The green room

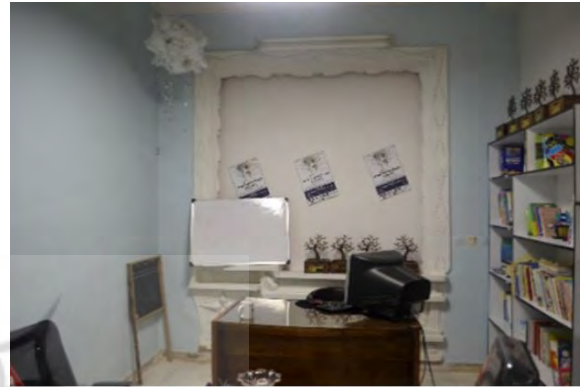


Fig. 18: The consulting and psychotherapy room



Fig. 19: The entrance with yellow

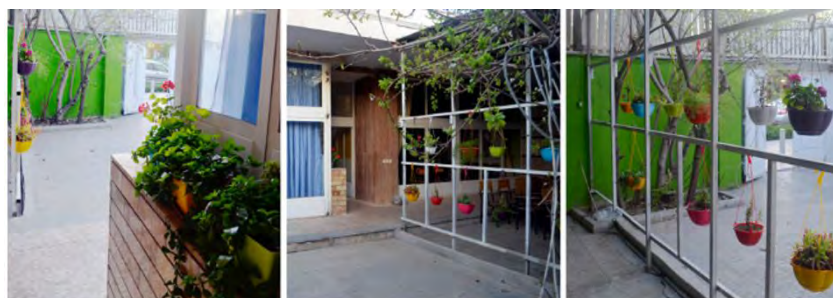


Fig. 20: Adding greenery to space

Adding greenery changes the institution’s atmosphere into a pleasant place for the staff and the child labors (Fig. 20). The children welcome greenery warmly, and because they are responsible for the greenery, the sense of destroying public assets faded in them and replaced them with a sense of ownership.

Discussion

Child labors are the inseparable part of the societies, unfortunately, they live in unpleasant conditions. Earning money and not having a clear future prevented them from attending school. As to their earning money, the best measure is to teach them money-making skills. These skills help them to have a job in the future. According to the interview among all skills, Isfahan handicrafts are the most favorable item. Moreover, because Isfahan is a tourist destination, they even though how to sell their products to tourists directly. This fact enhances their desire in learning the English language. Upon

adding the English class in Toloo-e mehr va doosty NGO, a sudden increase in participants was observed.

There were some child labors who did not attend school, this made the learning center to be equipped with the educational department for the drop-outs.

The main function of this complex is enhancing the abilities of child labors and give them a sense of positive social contribution concerning their needs as to their connection with the school. All these factors would lead to improving their living conditions in a futuristic sense. If the subjects have a sense of ownership of the educational complex, they will show enthusiasm to the place. This place can evoke their sense of responsibility and convert them into contributive members of society in order to restore their lost self-confidence and esteem and promote group work. Due to having high emotional stress, these children have to be a calm and friendly educational space. They should not feel confined; therefore, it is better for them to have a sense of freedom in this designated place.

Table 4: Three category of Space usage

Applications	Main space	Sub space	
Educational spaces	Classrooms	tutorial classes	
		classes for the children who have never attended school	
		Classes on the theory of the skills	
	Workshops	Isfahan Handicraft	(Enamel works (<i>Minakari</i>) (Engraving (<i>Qalam-zani</i>) (Fabric printing(<i>Qalam-kari</i>) Rug and carpet weaving
		Other skills	Electric workshop Auto mechanic workshop Computer workshop
		studios	painting and design, the bases of handcraft industry
		Green house	Gardening skills
Service spaces	Administrative	Registration, funds collecting, children identification, keep in touch with the charities, research and development, dealing with drug addicted parents, job finding for parents, informing the public about child labor’s issue	
	Consulting and Psychotherapy	(private consulting room (with the child/parents) Group consulting room Play Therapy room Art Therapy room	
		Library	Encouraging children to read books and using this space for studying
		The Mess hall	
	Income generating spaces	Restaurant	
Amphitheater			
Sport hall			
A small exhibition of the salable handi-craft of child labors and their families			
Galleries			

According to the second question of this study, the required main places in a proper educational place for functional comfort are Educational, service, and income-generating areas (Table 4). Due to their low-educated parents, this complex has to have a tutorial class for the ones who attend school and classes for the ones who have never been to school. Other classes are set for theoretical classes of skill training according to the outcomes of the interview. Running a child psychotherapy clinic is a must in this complex. Malnutrition is another major issue among them, thus, the complex should have a mess hall.

Considering proper business places facilitates the self-generating for this complex and also makes a money-making opportunity for child labors and their parents.

The third question is answered here with respect to the studies made and the results of the interview.

In general, according to (fig.2) the two parameters, physical and psychological comfort, make child labors come back to the educational complex with desire and later return to society as an effective person. Here is a sense of ownership and social support for psychological comfort and well-designed physical

Table 5: Sense of ownership

Solution	Architectural approach
	accessible flower vases in the classroom's balcony (the up-keep is upon child labors)
	Proper arrangement of chair desk set up (Fig. 21).
Child labor involvement in space	using moveable frames of stained glass set next to windows to have colorful light in the building
	Being allowed to create graffiti on the assigned walls
provision of the complex	Assessing the wall opposing the board wall for them to exhibit their handcraft. Provide the possibility of changes made by the children
	Having interior and exterior design which can be altered by the students, like changing of louvers' colors when they are turned backwards.
School-family interaction	The location of this complex would be in the approximate neighborhood of such children
	Designing spaces for consulting and allowing parent-child interactions and addicted parents treatment center



Practical classes

theoretical classes

Discussion classes

Fig. 21: The proper class set up according to the results

Table 6: Social support

Solution	Architectural approach
Introducing child labor to society through this learning complex	Giving public perspective view on efficiency of child labors in the complex
	determining Commercial and service space for the public
	Designing gallery for art exhibition and child labors art work
	Designing amphitheater to conduct conferences and daily rent for the outsiders
Proper relation with the society and being socialized	Developing skills workshop classes for child labors in order to live in the society as a positive character
	Presenting the child labor's artifacts for sale to public
This place should be opened in extra hours to have more contact with public	Providing business spaces

Table 7: Well-designed physical space

Solution	Architectural approach
Reducing emotional stress and create peaceful environment	Exposure to nature through direct contact, that is, green space, having access to gardens and yards
	Applying appropriate wall colors (for example Green color in the vicinity of white color used in two walls of the classroom,
	Blue and white color are suitable for walls of psychological consulting room's wall. Yellow for entrance hall to attract the children. Applying vivid and live colors on the building facade to reflect joy)
	Taking advantage of natural light through proper window design
Sense of security and freedom	Designing windows to have free view to the outside while children seated, to avoid the sense of confinement.
	Providing both Privacy and sense of freedom
	Instead of using rigid wall it would be proper to locate the yard in the center surrounded by building Applying greenery to separate the educational complex space from public passages

space for physical comfort in (Table 5 to 7).

CONCLUSIONS

This study is providing Guidelines to design a learning complex for child labors within the age of (12-18) in the city of Isfahan. Due to the importance of the effect of the physical environment on people, proper design of this complex will be able to attract child labors to these places and as a result, let them return to the community with a useful personality. It can stop laboring in Isfahan. This complex is supplementary to school and makes child labors ready for ordinary schools. The architectural guidelines of this study depend on child labors' needs, vischer three levels of environmental supports (fig.2), and also Isfahan city potential. To have functional comfort, three different applications: Services, Income generating, and Educational, would justify its requirement and absorbs child labors to this complex (table 4). The other two levels, physical and psychological comforts include three parts: well design physical space, sense of ownership, and social support (table 5 to 7). These three levels make child labors back to the educational environment willingly with a sense of belonging.

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