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Typology of Traditional School Architecture with an Emphasis on the Effect of Educational Policies* (Case Study: Safavid Era)

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Abstract

Problem statement: one of the necessities of human life is to change and evolve to be excellent, and the only way to achieve it is education. The principled and regular change made to promote religious teachings using comprehensive and universal education by the government was one of the specific characteristics of the Safavid era. To this end, the rulers had established schools and other influential buildings. So, schools have become the most important educational centers at the service of the Shiite religion and one of the most important architectural buildings in this era.

Research objective: Given that the educational approach of each era requires educational system and appropriate spaces and it is not clear how the educational system policies affected the architecture elements of the schools constructed in the Safavid era, the present study aims to investigate the effect of educational policies applied in the Safavid era on the physical elements and their coordination with the spatial organization and the architecture of schools of theology and seeks to typify the architecture of the schools constructed in this era considering educational policies.

Research method: Given the rise of architecture and the development of educational policies in the Safavid era, which led to the development and expansion of Shiite Islamic schools of theology, in the present study, it is attempted to investigate the position and significance of education in the policies taken by the Safavid dynasty, and to typify the effect of it on the architecture of those schools built in this era using a historical-interpretative method, secondary (desk) study and field study. In this regard, four Safavid schools are selected as targeted samples and then, analyzed in terms of the general characteristics of the building, spatial hierarchy and organization according to the educational position and methodology of this era.

Conclusion: The results of present study indicate that in addition to the comprehensive development of architecture in the Safavid era, education and its position had changed and become different from previous eras. On the other hand, as the Shiite religion was recognized as the formal religion in Iran and the Safavid rulers promoted it adopting different policies, education of Shiite sciences in schools was made available for public use. These changes have resulted in changes in the education system and architecture of schools. Some of these changes are as follows: expansion of school dimensions, increase in the number and quality of chambers and madrasa, attention to the courtyard of schools as a vital element of schools, changes in the entrance system, connection between schools, city and public spaces and connection between school and prayer spaces.

Keywords: *Education, Safavid, School, Architecture.*

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Introduction

In Islam, education, thought and intellection are of great importance and they are repeatedly emphasized in the Qur'an and by the infallibles. The Prophet Muhammad (PBUH) has obligated Muslim to educate (Koleini, 2008, 54). Imam Ali (AS) also said: "The science is the root of all goodness" (Amadi, 2008, 48). In this regard, there is another saying of him: "O believer, in fact, science and politeness are the value of self. So, try to learn these two, those who best do this, deserves God's mercy. So accept this advice to avoid the torment" (Majlesi, 1986); therefore, from the beginning, education has been an important issue in Islam. This was realized in the mosques by the end of the third century AH. From the beginning of the fourth century, due to gradually increased attendance of students, who came from different countries, in cities such as Balkh, Bukhara, Neyshabur and Ghazni, and their need for a place for education and residence, it was necessary to establish a separate space for education. Thus, several schools, for example, Sa'adiya and Beyhaqiya schools in Neyshabur, were built in cities by some benefactors, celebrities and sultans. Under such conditions, the school was maintained and administered by a person who was probably both its founder and a teacher in it, and this was transmitted as a family tradition from generation to generation (Ghanimeh, 1985, 111). In the fifth century AH, when Nizamiyyah schools were founded, Nizam al-Mulk announced that education was free to all (Sabki, 1945, 2). In the period from the establishment of Nizamiyyah schools in the Seljuk era to the middle of the Safavid era, important schools were either affiliated to the king's court, or, had very low level of organizational coherence (Bakhshi Ostad, 2017, 21). Of course, coming to power of the Safavid dynasty in the early 10th century AH was a milestone in the history of Islamic Iran, because this led to the establishment of a regular and integrated government and the recognition of the Twelver Shia Islam in Iran. However, according to

most researchers, most of the Iranian people did not adhere to the Shia Islam (Turner, 2000, 50), and did not have adequate knowledge of the jurisprudential rules and religious issues raised in Shia Islam (Romelou, 1963, 16). In general, in the Safavid society, religion, politics and economics were three key and directional elements, and it is not easily possible to explain which of these elements played a major role in the organization and promotion of society while it is possible to investigate how these three elements have influenced educational centers, both in the appearance and the sense, according to historical evidence. In general, in different periods of Iranian history, the attitude to education and educational methods has changed; during the Safavid era, due to the advent of a new religious atmosphere and political developments, the attention to and need for education have increased from the rule of Shah Abbas I; and education was free to the public as previous periods. As a result, the construction of mosques and schools, as well as endowed properties and attention to monuments and graveyards have increased (Al-Isfahani, 1961, 59-60); hence, given that the Safavid period was of those era during which Iranian schools had developed and increased (Kassaei, 1995, 239), the present study aims to study and investigate the typology of architecture of 4 Sheikh Alikhan Zanganeh school in Tuyserkan City, Khair Abad school in Behbahan City, Chaharbagh and Nimavar schools in Isfahan City, considering the position and importance of education in the Safavid period, and to analyze the effects of educational policies on their architecture and structure.

Method

The present study is a historical-interpretative research, and the analyses of the schools were performed using logical reasoning. The data were collected using secondary (desk) study and field study. Four Safavid schools were selected as samples using targeted sampling method and typology of Safavid schools was explained by

emphasizing the impact of educational policies on school architecture. Therefore, in order to more precisely investigate the changes in the schools during the Safavid era, four schools built in periods before the Safavid period were also studied. In the present study, the sample schools were examined in terms of the placement of elements and spatial organization from a holistic architectural perspective to determine the appropriate educational environment.

To this end, in the present study, it was attempted to study the physical design pattern of the Safavid schools, which often have the same and similar subspaces in the plan, to typify subspaces and the entire structure of schools considering the effects of educational policies. Accordingly, the samples were compared and analyzed to realize the research goal, i.e. to explain the typology of the architecture of Safavid schools, with emphasis on the impact of educational policies.

Research background

After the advent of Islam, different schools and approaches in the field of Islamic education have begun to appear by propagating Islam beyond the boundaries of Saudi Arabia, especially Iran, and integrating into other cultures (Vasiq & Qadrdan Qaramaki, 2016, 41). Although Pre-Islamic Arabian society was familiar with some sciences and writing (Javad Ali, 1978, 91), it can be said that, the particular climate, cultural and political conditions in Saudi Arabia didn't allow a specific class of educated individuals and scholars to be formed in order to contemplate and theorize in the field of education and other sciences (ibid., 291-312). Henfer & Zaman believe that in Islam, the tradition of education was not dependent on custom, and only the Sharia and its changes distinguish Islam, which determines the type of education, curricula and the position of both professor and student (Henfer & Zaman, 2007). Some researchers such as Kodi and Bileh studied the phenomenology of education in Islam and knew education as a category for learning

or preventing the learning of new science (Kadi & Bileh, 2007). Some researchers have considered the Safavid era as the beginning of renaissance in Iran and one of the periods during which significant changes had been made in education and training in Iran (Nazari & Aqajanian, 2015).

About school architecture in Iran, in particular, several authors, including Pirnia, Memarian, Kiyani, Qobadian, and Hillenbrand, have performed some investigations and highlighted some characteristics. But they often have pointed to the historical process and architecture of different elements of school. Ahmed has studied the arrays of the religious schools in the Iranian territories and concluded that there is a significant difference between the Shiite and Sunni schools in the visual arrays (Ahmed, 2013). Vasiq and Qara Maleki, in their study, investigated the Seljuk schools, and mentioned their properties as follows: 1. The general form of the school has two types of indoor and outdoor; 2-Simple entrance through an Iwan opposite the main Iwan; 3. The presence of an indoor courtyard in schools (the low importance of schools in terms of proportionality and spatial quality); 4. They have usually a madrasa in the main axis; 5- The prayer space is embedded at the end of the Qiblah Iwan and in the form of an Iwan or Gonbadkhaneh (a domed hall); and 6. There are few chambers and they have low quality" (Vasiq & Qara Maleki, 2016). Motedayen and Ahangari have studied the Timurid schools and found that in this era, the schools had a private function according to the rulers' policies, and the realm of the students was completely separated from the realm of the public (Motedayen & Ahangari, 2016). Qolami and Hayati have pointed out to the publicness of Qajar schools (Qolami & Hayati, 2017); of course, it was not possible to change this issue considering the Safavid rulers' exact policies. Some studies have been carried out on just educational system, school decorations, the relationship between educational and prayer spaces in the school-mosque, etc. (Bemanian;Momeni&Soltanzadeh 2013; Hajebi

& Argomand, 2011; Hassani 2006; Houshyari; Pournaderi & Fereshtehnezahad, 2013). But none of them have investigated architectural typologies of traditional schools with an emphasis on the impact of educational policies. Some examples of schools built in the periods before the Safavid era are listed in Table 1 in order to provide more precise investigation, to create a mental image and to prove what stated in the research.

Findings

• Education

Education means to teach and the act of learning (Dehkhoda, 1962), and also means teaching, educating, and training. According to a definition, education is synonymous with purification and guidance (Qolami & Hayati, 2017). In fact, education is meant to teach and guide the learner's mind by a teacher so that he can learn those things which are difficult to him, therefore, education is to facilitate the way and make the destination closer, not to create them (Tabatabaai, 1984, 131). Idiomatically, education is the same as the transfer of concepts, from past to present, used for survival, progress and advancement in various ways, according to the needs of society by humans. Education is interpreted as direct involvement in the way of community thinking, and in the Safavid era, it was used to promote the Shia Islam. On the other hand, the need for education, from early humans to contemporary humans, is an undeniable fact, and it continues as far as humankind exists.

• Education in Islam

Imam Ali (AS) said: Knowledge is the destructor of ignorance (Amadi, 2008, 48).

The word "teaching" means "show/express how to do something", and in Latin "Ducer" means guidance and leadership. Everyone needs a teacher to learn how to acquire knowledge and in Islamic societies, this was usually done by scientists. Traditional education in the Islamic era sought to provide the conditions by which human beings can understand monotheism and believe it by

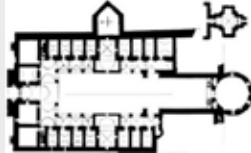

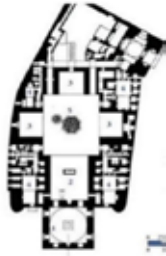

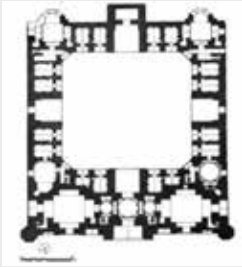

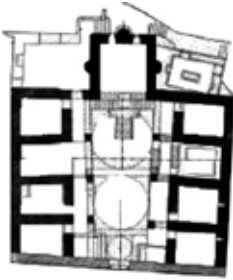

themselves. In Islam, the source of education, teaching and training is the Qur'an, the sayings of the Prophet Muhammad (PBUH) and the Imams. In many verses of the Qur'an, such as Sura al-Alaq, the importance of reading, science, knowledge and pen are explicitly stated (Montazem al-Qaem, 2004).

• Education in the Safavid era

The Safavid era is known as the period during which continuity and evolution of traditions and educational environment had taken place in Iran and for the first time in the history of Islam, some coherent theories about education and teaching were developed (Sami'i Azar, 1997, 243). The Safavid educational centers are divided into two general categories in terms of type of education: 1. First category includes those centers whose educational process was not particularly influenced by the government changes and in which students were traditionally taught; and 2. Second category includes those centers that were changed with any change in politics and sovereignty and in which students were theoretically taught.

In the Safavid era, due to the political, religious, social changes and rulers' attitudes towards the administration of national affairs, in order to increase people's interest in the Safavid dynasty, the need to expand knowledge and promote Shi'a Islamic sciences increased. In this regard, the Safavid rulers have paid special attention to the construction of various buildings such as schools and religious buildings. Hence, the establishment of schools and mosques increased; attention to writing was increased, and consequently, several books and treatises have been written in simple Persian language in this period. As a result, a wide range of middle- and lower-class people, who were literate, could use these books and treatises, and in addition to those who knew Arabic language, they also could understand the principles of religion and legal issues. Since the school was the most important educational institution in the Safavid era, it was supported by the Safavid government

Table 1. Examples of schools built in the periods before the Safavid era. Source: authors.

school's name	period	The ratio of the area of the Sahn to the whole building	plan	Image
Çifte Minareli School, Anatolia	Seljuk Period	Sahn: 20% of the entire building area		
Sultan Hassan School, Cairo	Coincidence with the Ilkhanate Period	Sahn: ۱۳% of the entire building area		
Ghiyasiyeh School, Khargerd	Timurid Period	Sahn: 30% of the entire building area		
Seyyed Ghazi School, Turkey	Seljuk Period	Sahn (a courtyard in Islamic architecture): 0% of the entire building area		

and other influential classes of society (Bakhshi Ostad & Rezaei, 2014, 216), it accelerated the progress of aforementioned issues. As the Safavid dynasty stabilized and developed, good works were

created in various fields of education, and since the acquisition of science was seen as a step to achieve God's mercy by the Iranians of the Safavid era, from the childhood, parents encouraged their children

to learn a career while studying in Maktabkhaneh (elementary school). Therefore, in this period, many graduates had non-court- related occupations, such as: grocer, draper, water carrier (also, water seller), honey seller (Safavid, n.d, 59, 67, 254), architect, fortuneteller, fletcher, cooker (Razi, n.d., 94, 164, 259). Some people taught in Maktabkhaneh, schools, or mosques. The spread of education among people had resulted in the establishment of schools in different regions and neighborhoods to help enhance the level of public knowledge. On the other hand, the people's, especially marketers, tendency to discuss various subjects and provision of religious responses to them, made this period efficient; this was one of the secrets resulting in the success of the Safavid educational program, which was more prominent in terms of coherence and applicability as compared to previous periods (Sami'i Azar, 1997). In general, during the Safavid era, the school was accompanied by changes in the body and its use, which are as follows: referral of the public to schools for praying, asking religious questions and participation in religious events, including celebrations and mourning, referral of children to schools for asking scholars about what educated in Maktabkhaneh, referral of marketers to schools for endowing their properties and financially helping students, establishment of schools for enhancing students and professors' ability to reside, establishment of schools for increasing spatial and use diversity for long-lasting use of students, the number of schools increased so that simultaneously, professors could teach and students could freely choose.

• Establishment of schools

In Islamic era, the word "school" has long been regarded as a center for higher education. In terms of function, the most important characteristic of Islamic schools is their residential aspect, which results in the proposal of this building in combination with two other patterns of Islamic architecture, namely, mosque and caravanserai, along with their same elements. Unlike the other

buildings constructed in the Islamic period, schools were not manifestation of the collision of emerging Islamic culture with alien cultures, and, in other words, these buildings had more Islamic nature as compared to other buildings, and were less influenced by non-Islamic architectural traditions (Hillenbrand, 1994).

The word "school" was used versus the word "maktabkhaneh". Maktabkhaneh is a place for educating, reading and writing while school is a place for teaching. In Islamic culture, civilization, and education, the word "school" also referred to Bayt al-adviyah (ittar), Dar al-shafa (hospital), observatories and teaching centers, such as large mosques, which were centers for education and training. In the history of education in Islam, mosque and school have been interchangeably used because religious and moral education typically began at the mosques and found its place and position in the course of evolution (Mousavi, 1994); On the other hand, the mosque was the most original center for education in Islam.

In short, the school can be defined as an institution for higher education, in which traditional Islamic sciences such as Hadith, Interpretation, Jurisprudence, etc. are taught (Alaqemand, Salehi & Mozaffar, 2017) and they were established in the 2nd and 3rd centuries AH in order to develop and spread Islamic studies (Mahdavi Nejad; qasempour Abdi & shabestari, 2012). The school was a response to certain needs of the Islamic community and was designed to serve a fully-innovative institution (Alaqemand et al., 2017).

• Schools in the Safavid era

In the Safavid era, the school is the most important public urban building after the mosque, which was established in order to meet the needs of the Islamic community (Behbahani Islami, 2015). This period is known as a period during which the continuation and expansion of traditions and educational environment, as well as the development of educational system and its relative progress have taken place. In this period, schools are considered

to be the classical schools of Iran and culmination of evolution and beauty are observed in them. A tremendous transformation has been occurred in them in terms of the number, area, and attention to the comfort of the students. In these schools, some elements were added to their bodies, some parts of their building were changed, access to them was made easy by creating a precise hierarchy, and appropriate connections were made between them and other urban elements, and in many cities, high-capacity schools were constructed. In fact, it can be said that in the Safavid era, the same pattern of construction used in the past periods has been applied in the construction of school, and this pattern has evolved and expanded in accordance with educational policies to encourage people to be interested in Shia Islam. Such an evolution and expansion took place in the dimensions of the school, in their number as well as the linkage between them and the city. On the other hand, it can be said that the schools constructed in the Safavid era tried to show their glory, power and grandeur. Unlike the schools built in former periods, such as Seyyed Ghazi School and Sultan Hasan School, which were also used as the cemeteries of their founders, they had more educational use and were not used for other matters. Of course, in this period, the schools were occasionally used as a place for praying in religious occasions by the public.

• Case studies

In order to carry out the present research, it was necessary to study several samples in order to ensure generalizability of the research hypotheses. The sample schools were selected for the following reasons:

There are various spaces in these samples and this makes it possible to study the Safavid schools in terms of a greater number of aspects and to better explain the differences between them and those schools built in the previous eras.

The samples are historical and have an adequate area and no changes in their bodies.

The samples have been previously studied, they are

organized and can be studied in terms of physical proportionality and there is relatively adequate architectural information on them using archived documents and field study.

- Sheikh Alikhan Zanganeh school, Tuyserkan City

This school was built in the Safavid era by Sheikh Alikhan Zanganeh and the order of Shah Soleyman in 1090 AH in Tuyserkan City. This building is located in Julqan St., adjacent to the Bazaar and it was registered with the registration No.1866 as one of the national heritages of Iran (Table 2) (Fig. 1).

- Khair Abad school, Behbahan City

The historical building of this castle-school is located 27 km east of Behbahan city, at coordinates (x: 447800.39, y: 3378319.18). According to the studies comparing the Khair Abad school with other Safavid schools and considering its similarity with those schools built in the late Safavid era, it is concluded that this school was founded in the late Safavid era, during the reign of Shah Soleyman (1052-1077 AH) (Hayati; Nasirpour & Rahmatnia, 2018, 15, 4) (Fig. 2) (Table 3).

- Chaharbagh school, Isfahan City

This school is also called the Soltani School and the Madar Shah School, and is the last magnificent building built in the Safavid era in Isfahan. It was built for teaching and training theistic science students during the reign of Shah Sultan Hussain (1116-1126 AH). It has an area of 8500 square meters on the eastern side of Chaharbagh Street (Table 4) (Fig. 3).



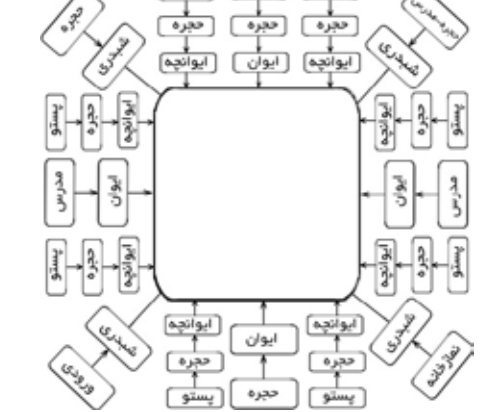
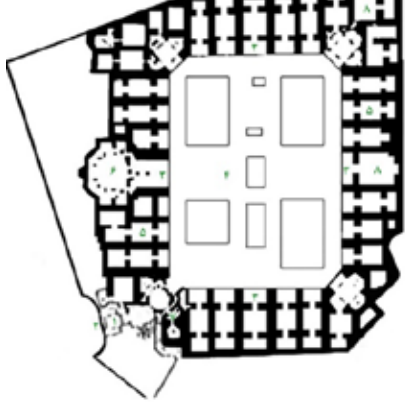
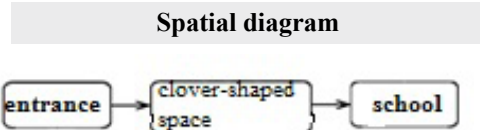
- Nimavar school, Isfahan city

It is one of the oldest schools in Isfahan City and located in the Nimavar Bazaar and in a neighborhood with the same name. This school was founded in 1117 AH by a woman, called Zeinab Beygum, during the reign of Shah Sultan Hussain (1116-1126 AH). She was the wife of Hakim al-Malek Ardestani, the founder of Kasegaran School (Fig. 4) (Table 5).

- Characteristics of the Safavid schools

In the present study, the characteristics of selected

Table 2. Spatial diagram of and access hierarchy in the Chaharbagh school, Isfahan City. Source: authors.

Image	Access hierarchy	Plan
 		
	<p>Spatial diagram</p> 	<p>Pre-court 2. Entrance 3. Iwan 4. Courtyard 5. Chamber 6. Prayer space 7. Service space 8. madrasa</p>

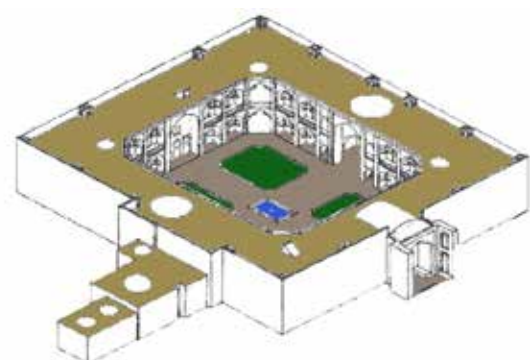


Fig. 1. 3D image of the Sheikh Alikhan Zanganeh school.
Source: authors.

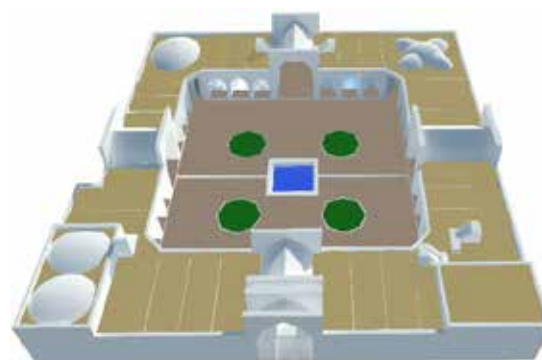


Fig. 2. Spatial diagram of and access hierarchy in the Khair Abad school, Behbahan City. Source: authors.

Safavid schools are listed in Table 6 in four sections: feature, function, perception, and similarities and differences.

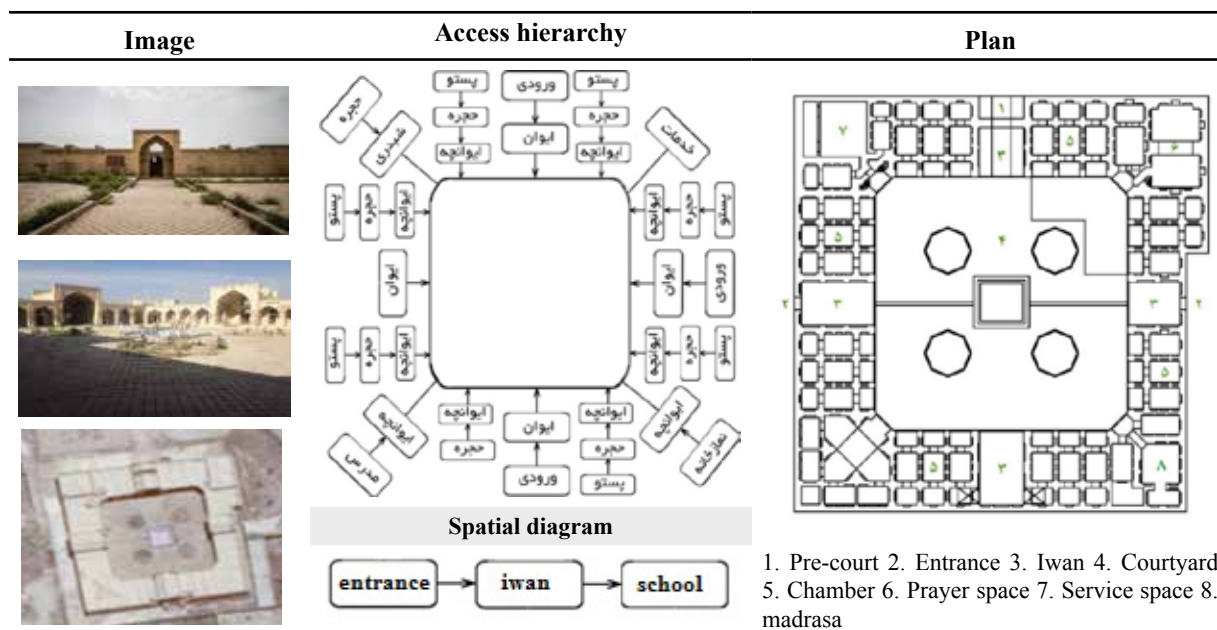
- **Schools architecture**

- Architectural characteristics of traditional schools

Each architectural space, especially the school architecture, must provide favorable conditions for satisfying human needs considering geographical and climatic characteristics. That is why most

architectural spaces built in the warm and arid regions in Iran are introverted, so, the lack of natural green spaces and landscapes was compensated by creating a limited green space built in the central courtyard, providing a spectacular landscape and favorable conditions for living. Climatic factors didn't always have a decisive and unilateral impact on the formation of the school's physical environment; for example, due to the maximum use of the land area and the need to create the largest

Table 3. Spatial diagram of and access hierarchy in the Khair Abad school, Behbahan City. Source: authors.



number of chambers in a school, in spite of the spatial distribution of elements in residential spaces, all four sides of the yard were used to construct chambers. In other words, sunlight had no effect on the location of chambers in a school. Hence, it can be said that one of the most important elements of a school is its chambers that play a major role in its architecture. In these schools, iwans were used for speech and important meetings due to the large number of students, and those small iwans in front of the chambers were also used for dialogue and discussion. On the first floor, those small iwans in front of the chambers were converted to a corridor, and a corridor is placed in front of chambers and a closet is placed behind them. In general, Islamic schools include entrance, public lavatory, yard, iwan, chamber, madrasa, library and space for servant (Fig. 5).

In the Safavid period, the placement and arrangement of school elements were different according to the rulers' educational, cultural and political approaches; as a result, the school architecture was changed. For example, education was free in the Seljuk Nizamiyyahs, but there was no public educational-political approach. This

means that it was not possible for the public to use them. For this reason, in addition to the less number of schools as compared to the Safavid period, the schools had less chambers, madrasa, and generally had less area (Table 1); and access to some schools such as Seyyed Ghazi was difficult due to their distance from residential texture. On the other hand, in this period (Seljuk) and other eras before the Safavid period, education had a less important position, and the reason for this can be attributed to the low attention paid to the students' lives. There was low attention to the use of natural elements in the yard, which contributes to the school to have a lively environment and even in some examples mentioned in Table 1, schools lack the courtyard. There was less attention to students' daily lives as compared to the Safavid period. Most of schools built in the periods before the Safavid era have no closet and there were limited area for students. Some of other characteristics which explain the position of students' peace and learning in particular and education in general in the periods before the Safavid era are including: placing the school in an inappropriate texture and far from community centers such as Ghiasieh School in Khargerd

Table 4. Spatial diagram of and access hierarchy in the Chaharbagh school, Isfahan City. Source: authors.

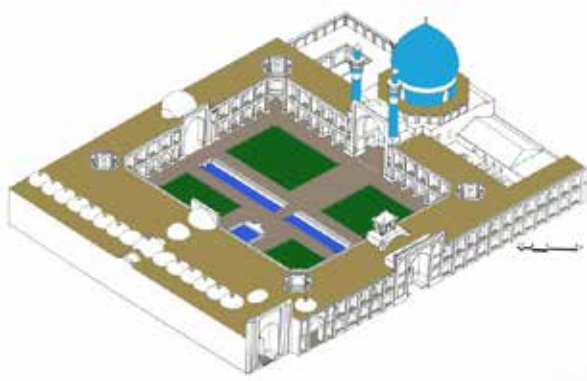
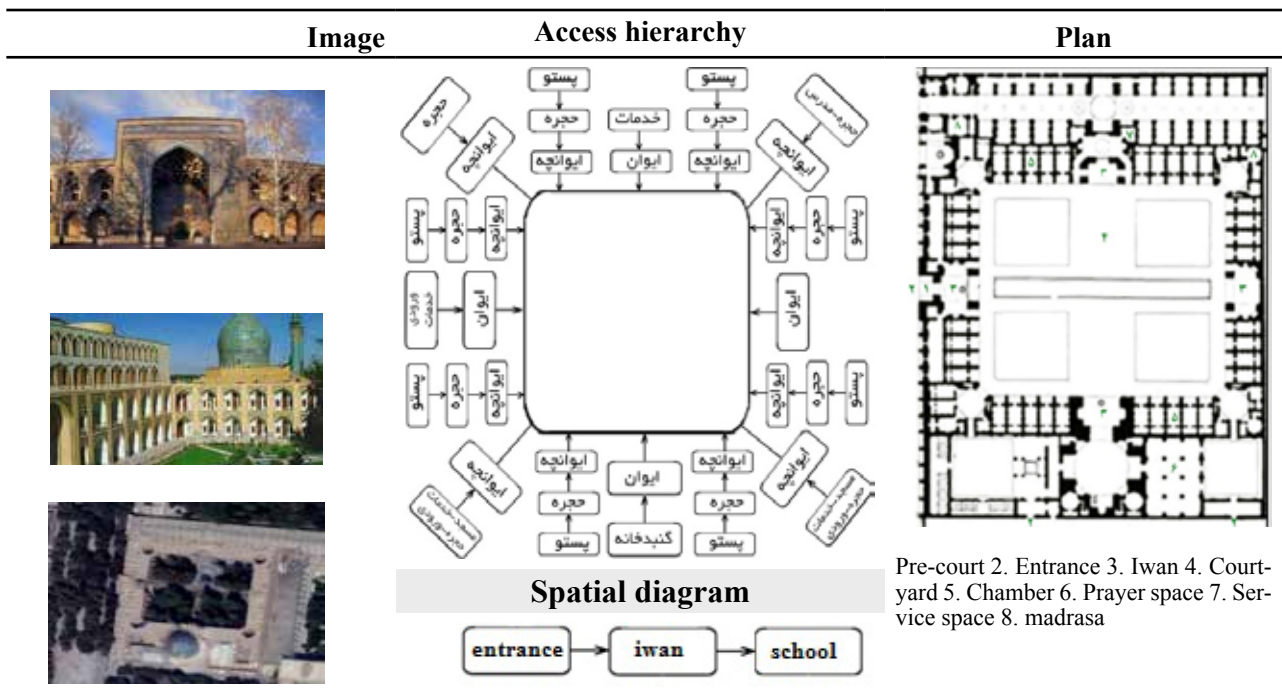


Fig. 3. 3D image of the Khair Abad school. Source: authors.

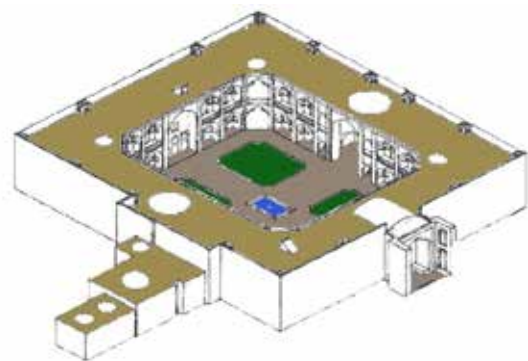


Fig.4. 3D image of the Nimavar school. Source: authors.

and Seyed Qhazi School, lack of utilization of regular urban communication, the use of irregular composition in the physical form, lack of attention to the harmony and inertia in some schools such as Sultan Hasan school and the inadequate spatial arrangement in some schools such as Seyyed Ghazi School and the overuse of ornaments in some schools, such as Sultan Hassan School.

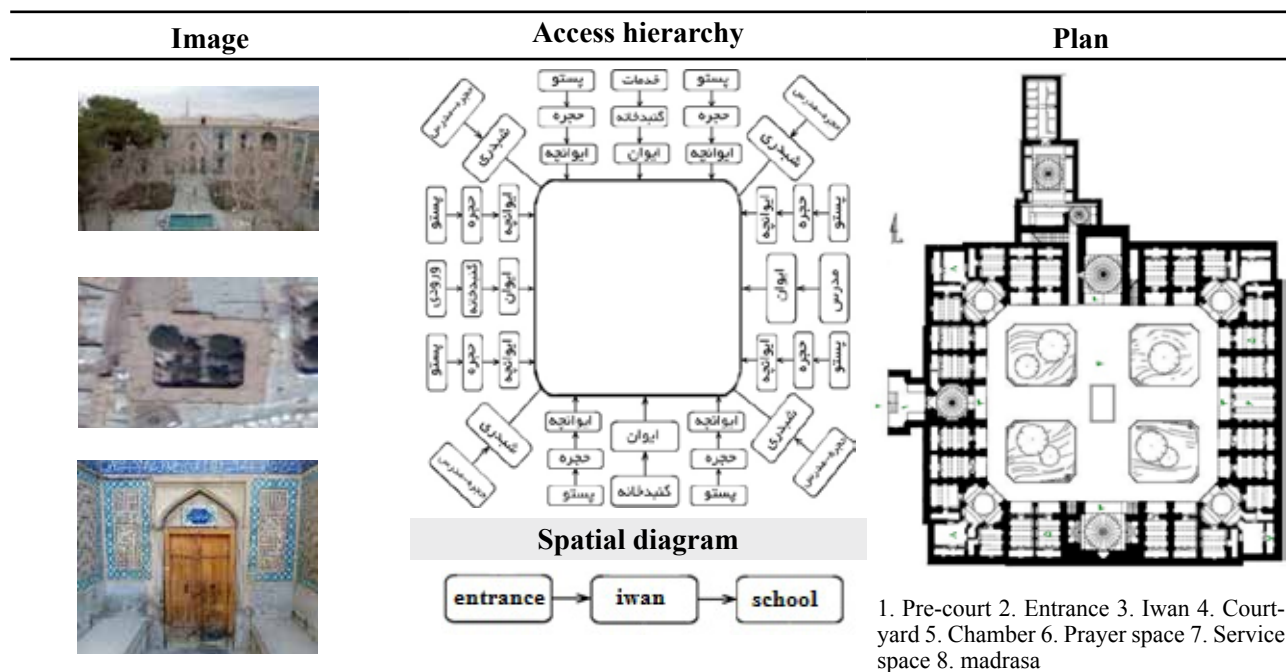
In architecture, the physical form of spaces, in addition to the foundational and functional aspects, has a perceptual aspect. The foundational aspects are shaped by the influence of climatic and geographical

factors, materials and building techniques, and special functions, but the perceptual and artistic aspects cannot be investigated regardless of cultural features, traditions and social values. For example, the four-iwan design of schools is associated with four cardinal directions or direction of the qibla.

- Entrance and iwan

Entrance: The Safavid schools had an educational function; however, such an education was carried out within the framework of Shi'a issues. This can be seen in the dedication of endowed properties to the construction of schools, education of Shi'a

Table 5. Spatial diagram of and access hierarchy in the Nimavar school, Isfahan City. Source: authors.



issues, as well as official declaration of Shi'a Islam by the Safavid government. Therefore, a player space was determined in schools. In some schools, it could not be used by the public and was used solely by students. Hence, in order to create peace and in some cases, according to deed of endowment, the public and social functions would be excluded from educational spaces (schools). The architecture of the Safavid schools was fully responsive to the needs of students and professors. For example, in Chaharbagh school, the peace in the school was not disrupted by its multi-functionality while in Kheir Abad School, due to the lack of separation and far distance of madrasa from the entrances, those who came in the building, interrupted the calm life of the students at rest time. Moreover, the space and activity of the Safavid schools, even in schools such as Sheikh Alikhan Zanganeh and Nimavar schools with private function, were not separated from the social and religious lives and on the special religious days, they were open to the public for performing public ceremony. This function, along with worship and education issues, highlights the core importance of schools as a multipurpose

building, and considering public functions for these schools in line with the governing, results in a continuous connection between them and society and thereby their stability. The entrance system of selected Safavid schools includes fore-court, pre-court, doorway, vestibule, and hall, which creates an access hierarchy to preserve the school's privacy (Table 7a). Such a hierarchy was of great importance in the Sheikh Alikhan and Nimavar schools because of their private function and their placement in the texture, so that the Nimavar school was separated from the ground by a staircase and in the Sheikh Alikhan Zanganeh school, more elements were used for this purpose. On the other hand, in the Khair Abad School, due to its out-of-town location, this hierarchy was of lesser importance. One of very important elements in the schools built in this era, is pishtaq; pishtaqs usually have platforms on the sides, which are also seen in the selected schools.

Iwan: In some Safavid schools, such as the Sheikh Alikhan and Nimavar schools, which had only a private approach, and there is no mosque in them, a Mihrab was constructed in the iwans and used as a prayer space (Houshyari et al. 2013, 49). On the

Table6. The characteristics of the selected Safavid schools. Source: authors.

School	Sheikh Alikhan Zanganeh school, Tuyserkan	Khair Abad school, Behbahan	Chaharbagh school, Isfahan	Nimavar school, Isfahan
Period	Safavid	Safavid	Safavid	Safavid
Feature	Elements of school	Entrance, Iwan, courtyard, small Iwan (stoop), chamber, closet, madrasa, services, prayer space, gonbadkhaned, clover-shaped space	Entrance, Iwan, courtyard, small Iwan (stoop), chamber, closet, madrasa, services, prayer space, gonbadkhaned, clover-shaped space	Entrance, Iwan, courtyard, small Iwan (stoop), chamber, closet, madrasa, services, prayer space, gonbadkhaned, clover-shaped space
	Plan	Symmetric	Symmetric	Symmetric
	Plan geometry	Rectangle	Square	Square
	Number of courtyards	1	1	7
Function	Arrangement of spatial-functional elements	Around 4 sides of the courtyard	Around 4 sides of the courtyard	Around 4 sides of the courtyard
	Connection and accesses	Often through the courtyard	Often through the courtyard	Often through the courtyard
	Sahn (courtyard)-yard	Connection core of the school	Connection core of the school	Connection core of the school
Perception	Extraversion-Introversion	Introverted	Introverted	Introverted
Similarities and differences	<ul style="list-style-type: none"> All selected Safavid schools are of the four-iwan type. All studied samples consist of four gardens and all gardens in each school, except for the Nimavar school, have the same dimensions. In all studied schools, pool is the main element. In the Nimavar and Khair Abad schools, it is in the form of small rectangle. In the Chaharbagh school, it is in a long form and in the sheik Alikhan Zanganeh school, it is composed of some separate parts. All studied samples, except for the Khair Abad School, have Gonbadkhaneh. All studied samples, except for the Chaharbagh school, have clover-shaped space. In general, in these schools, the proportions are well observed. The Nimavar and Charbagh schools are two-floor buildings while the Khair Abad and Sheikh Alikhan schools have one floor and one of the main reasons is that they were founded in the center of a small residential settlement (during the Safavid period) and away from the Capital. All studied schools have a courtyard and its favorable atmosphere. The use of natural elements is clearly observed in all studied samples. All studied samples are composed of chambers with closet. 			

other hand, in all selected schools, the iwan was designed according to the 4 cordinal directions and qibla, and in all selected Safavid schools, a 4-iwan style was used (Table 7b); one of these iwans was in the direction of the qibla in each school. In the Nimavar, Chaharbagh and Sheikh Alikhan schools, that iwan in the direction of the qibla had a Gonbadkhaneh, but in the Khair Abad school, this

iwan has a larger area than other iwans because of the limited prayer space (Hayati et al., 2017, 11). The iwans, under the heat of the summer and during the rain in the winter, have been a good place for discussion and talks, as well as holding classes. On the other hand, during the Safavid period, referral of the public to the school for education, asking legal questions and holding various classes resulted

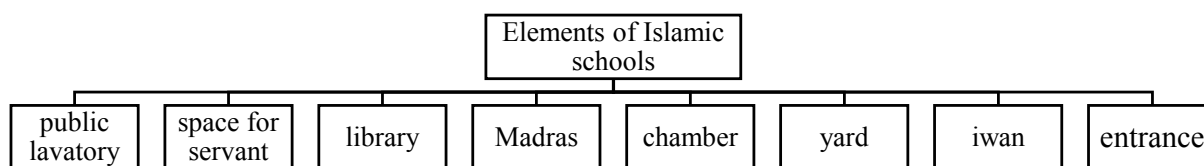

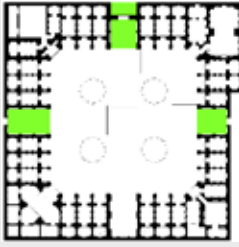

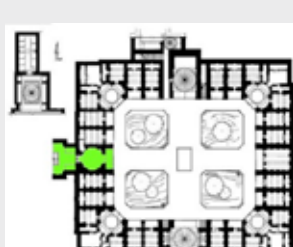

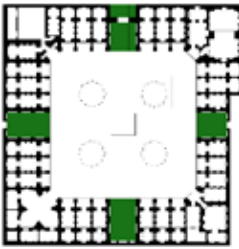
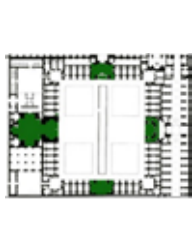
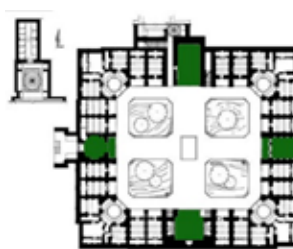


Fig.5. Elements of an Islamic school. Source: authors.

Table 7. Organization of entrance and iwans in the selected Safavid schools. Source: authors.

School name	Sheikh Alikhan Zanganeh school, Tuyserkan City	Khair Abad school, Behbahan City	Chaharbagh school, Isfahan City	Nimavar school, Isfahan City
Location of the entrances in the selected Safavid schools				
Location of the iwans in the selected Safavid schools				

in the need for more educational space. Therefore, iwans were used as an education space. It can be said that this feature has been effective in the use of 4-iwan style and expansion of iwan in most Safavid schools.

- Courtyard

The central yard plan of selected schools is square or rectangular. The reasons for this are the construction of chambers in the corners, the creation of harmony in the facade and the body, the maximum use of spaces and confrontation of hard climatic conditions. In traditional schools, the yard has at least two important roles: it provides the requirements for prayer and water for ablution and other needs of the students. In addition, the yard separated the building from noise and public

life by focusing on the interior space (Golombek & Wilber, 1992, 9,117). On the other hand, in Islam, there is a special emphasis on the worship in open space (courtyard) so that part of the most important worship and obligatory acts is performed in open space (Rahmatnia & Hayati, 2018, 12); Since the Safavid schools were mainly devoted to Shi'a students, architects have paid more attention to Islamic rules and hadiths. In Islamic teachings, the relationship between man and nature has been emphasized. According to these teachings, there is a special propinquity between man and nature (Pishin, 2018, 3), because the original substance used for the creation of human is taken from nature (Hajar: verse 26). The nature is the origin of mankind, the land is introduced as his mother and the water

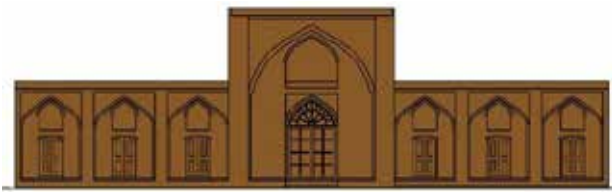


Fig. 6. The façade of the Khair Abad School, Behbahan City. Source: authors.



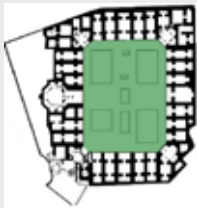
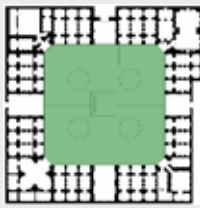
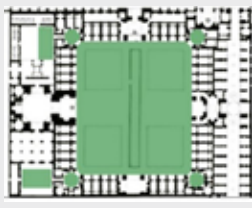
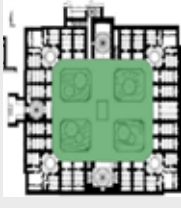
Fig.7. The façade of the Chaharbagh School, Isfahan City. Source: authors.

as his living source (Sura al-Anbiya, verse 30). Therefore, in the central courtyard of the Safavid schools, a pool and a garden were used, and the yard in the sample Safavid schools had more area as compared to those schools built in previous eras (Table 5 & 6). Pools are more diverse than gardens. Gardens are also seen in most of the schools built in this period, and the common scheme on them, as seen in the selected Safavid schools in this study, is a four-part garden (Table 1,2,3,4). In the Safavid schools, the placement of chambers opening to the gardens full of trees in the large courtyards and combination of the green color of the trees and the blue color of the pool, along with the flow of water from the canal, passing through the middle of the courtyard, created an appropriate space for education. This combination and the use of natural elements and colors in the schools built in the previous eras did not have such an importance; in some cases, such as Ghiasieh and Sultan Hassan schools, they were used to a very limited extent, and even some examples, such as Seyyed Ghazi, lacked the courtyard. On the other hand, the Safavid schools, small iwans and courtyard were also used

for education, asking question, and discussion, regarding method of discussion, great number of students, referral of people and marketers for religious questions, and referral of children for education. During the Safavid period, debate and study in theology had a more special position as compared to the preceding period, and there were certain rules on this issue in deeds of endowments. In part of the deed of endowment of the Maryam Beygom school, it was stated: "The students should spend all their time for discussing, studying and worshipping, and after a year, if he doesn't progress in science and practice, or the instructor ensures that he cannot progress, he should be fired from school ..." (Hassani, 2006, 160). Such rules, along with the desirable educational environment in the Safavid era, would have prompted students to properly use their time and perform scientific discussions with friends, writing books, or teaching children during their leisure time (Ibid).

In the Safavid era, considering its educational policies and their importance, the school courtyard was very important because the public was present there to participate in various national and religious events. Therefore, the area of the courtyard in the Sheikh Alikhan school was 37 percent of the total school area, 40% in the Kheir Abad school, 43% in the Chaharbagh school, and 36% in the Nimavard school (Table 8). On the other hand, in some Safavid schools, there is an innovation in the central courtyard and there is more spatial opening in the courtyards. For example, the Chaharbagh school in Isfahan is an example of such schools, in which there are four small courtyards at corners, which are connected with the main courtyard. In this way, the lightness of the courtyard space is increased and the iwans find themselves freer in the courtyard (Mirmiran, 2000, 56). On the other hand, in the Safavid schools, the courtyard plays the role of connection core for a school and this function was only found in some schools built in previous eras, and in samples such as Seyyed Ghazi school, it was generally eliminated. In some schools, such

Table 8. The organization of courtyard and Yard-to-total area ratio in the selected Safavid schools. Source: authors.

School name	Sheikh Alikhan Zanganeh school, Tuyserkan City	Khair Abad school, Behbahan City	Chaharbagh school, Isfahan City	Nimavar school, Isfahan City
Plan				
Area of the yard compared to the total area of the school	Yard-to-total area ratio: 37%	Yard-to-total area ratio: 40%	Yard-to-total area ratio: 43%	Yard-to-total area ratio: 36%









as the Gök Sivas School (Seljuk period), Turkey, the functional position of the courtyard as the connection core has been lowered by creating an interface (portico).

- Chamber

Chamber is one of the most prominent elements of a school, which plays the most important role in the development of the final form of its physical space (Soltanzadeh, 2007, 137); their form is dependent on the importance of schools at the political level as well as religious position in the structure of power (Kadi & Billeh, 2007). In the Safavid era, the idea of public education was pursued vigorously and it can be said that one of the important measures of the Safavid rule was the public education policy (Jazayeri, 1988, 138). During this period, as in some previous periods, such as the Seljuk period, education was free at the schools (Bakhshi Ostad, 2013, 38). Additionally, the Safavid rulers paid special attention to education and endowment, so that Shah Abbas I endowed all of his property, even his ring, to the fourteen infallibles (Eskandarbeig, 2003, 760). This was taken into consideration by all classes of the community, especially marketers adjacent to the school. One of the most important uses of the endowment was the provision of scholarship and cost of those schools founded by Shah (Bakhshi & Rezaei, 2014, 220). Kampfer, a

German traveler who visited Iran during the reign of Shah Soleyman, estimated the incomes of fourteen infallibles endowment spent to help the schools and students in only Isfahan city 1,400 tomans per year (Kampfer, 1981, 143). During this period, due to the significant increase in endowments, along with the attention of the Safavid rulers and following of them by loyal families and court elders, the massive school fees were provided, and all classes of society could benefit from educational services; Kampfer knew significant endowment as the main reason for the survival of schools (Ibid). Therefore, given financing and public education policy, the number of students who were attending schools increased in this period, resulting in increased number of chambers in this period. The Safavid schools selected in the present study, like other Safavid theological schools, have several chambers around the central courtyard. These chambers had a certain geometric shape and usually, all chambers in each school had the same dimensions; this is also seen in the pre-Safavid schools, but in some schools, such as the Seyyed Ghazi and Sultan Hassan schools, there was no such arrangement. In the Safavid schools, sometimes, a closet was designed behind chambers and rooms. These closets may have been spaces for placing objects in them and it is seen in all the selected Safavid schools. Sometimes, these closets

Table 9. Organization of chamber and space of access to it in the selected Safavid schools. Source: authors.

Type of cell	Details			
	Rectangular division space entrance	Clover-shaped space entrance	Chamber entrance	Closet entrance in chamber
Plan				
Access description	chamber and it is seen only in the Chaharbagh School, Isfahan City	and it is seen in all studied samples, except for the Chaharbagh School, Isfahan City	an access through small iwan. This type of chamber is seen in all studied samples, except for the Chaharbagh School, Isfahan City	an access through small iwan. This type of chamber is seen in all studied samples
Input image				
Input description	Rectangular division space entrance	Clover-shaped space entrance	Chamber entrance	Closet entrance in chamber
Tables pictures guide	<ul style="list-style-type: none"> • Green: closet • Orange: the main space of chamber. This space was used for everyday doings, resting and sleeping by students • Yellow: the space of access to the chamber. Considering the importance of education in the Safavid era, it was used for discussion by students 			

had two floors; the lower floor for the additional objects and clothes, and the upper one was a good place for relaxing, studying and being used as light well. The ground of the chambers was designed higher than the ground of the central courtyard, and the chambers mostly had niches for putting books and appliances. Another feature of the chambers

is the presence of a small iwan or porch in front of the chamber, which is seen in all the chambers facing the courtyard. Another point which is seen in the selected Safavid schools is the observance of the principle of symmetry. The repetition of elements along a line is the simplest type of rhythm in architecture that has been used extensively in

traditional courtyards (Rahmatnia & Hayati, 2018, 9), schools, mosques, caravansaries and other historical buildings. This rhythm, symmetry and chamber hierarchy, as indicated in Table 9, led to the creation of harmony, legibility and transparency; this provided a suitable space for education and worship. Therefore, the Safavid architects paid great attention to the chambers according to the position of education in the educational and political system. This particular attention is not observed in the pre-Safavid schools, especially in the Sultan Hasan school. In this case, the light needed for the chambers was also provided through the light well designed in the upper part of the entrances, and the students could use this light to read and write, and other matters.

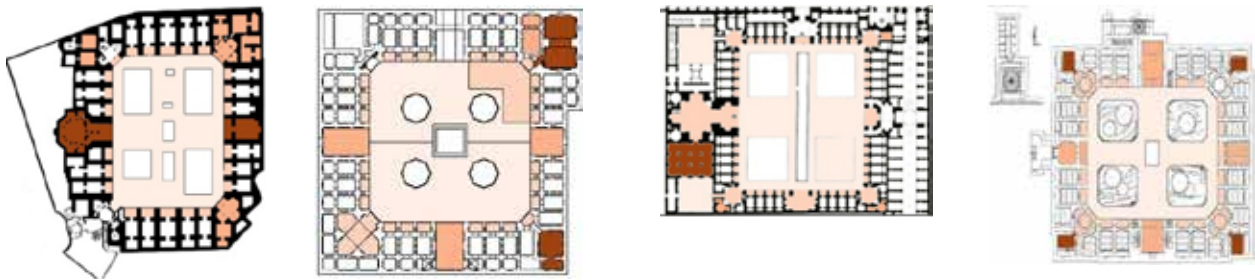
- Madrasa

In the Safavid schools, given educational policies, the number of students and professors, as well as the free choice of lessons and professors, according to the students' interest, the number and extent of schools increased. As a result, each school has one or more madrasa in the gonbadkhaneh, iwans, and sometimes in the spaces designed in the corners (Sultanzadeh, 1985, 438). Therefore, the madrasa or the main educational space is located in the corners in the Khair Abad and Nimavard schools, in the Shabestan in the Chaharbagh School and in iwan and Gonbadkhaneh in the Sheikh Alikhan Zanganeh School. In Fig. 8, educational spaces are listed according to the importance of education in each school so that as the color becomes darker, the importance of educational space increases.

- Mosque (prayer space)

The first Islamic educational center was mosque in which religious teachings were promoted, and it was always used for prayer, education, mourning and religious Eids, asking religious questions and endowment. Gradually, with the emergence of other issues, including scientific and technical issues, the need to create educational centers independent of mosque was raised. The first independent educational centers were

schools that were established in the second and third centuries AH in order to develop theology (Mahdavi Nejad et al., 2012, 7). The Safavid schools, given educational approaches, had more various educational and prayer spaces [mosque] and there were different types of schools having a connection with the mosque during this period. In some cases, such as the Chaharbagh School, the school has a separate gonbadkhaneh with a Mihrab for prayer and worship. The Kheir Abad school has a limited religious space due to its location in rural texture. The Safdarkhan Musalla school, as its name implies, has been attached to musalla¹ that already existed. Some schools lack a certain prayer space, but are located next to the mosque, such as Soleymaniyah and Nasiriyah schools, Isfahan, which are adjacent to the Imam mosque (Abbasi Jame'e mosque). The Abbasi Jame'e mosque was designed as a public building and for confirmation of the Safavid Dynasty's commitment to Shi'ism. Indeed, it was a main place for public speeches to promote Shi'ism (Nawaie & Ghaffari Fard, 2007, 339). In this regard, it is believed that these two schools were used as chambers and the mosque was used as a place for education. In some cases, such as the Nimavar and Sheikh Alikhan Zanganeh schools, schools have had no prayer space and they had just an educational function. Therefore, in the Safavid period, given educational approach applied in the school by its founder, a prayer space was considered in the form of mosque or next to the mosque, for the public or it has a limited or no prayer space. Of course, this varied connection between the school and the mosque was also observed in the next periods, including Qajar dynasty. On the other hand, one of the elements used during worship was the yard or sahn, which had a large area to include many people. Of course, in the Chaharbagh school, due to its educational approach, the prayer and education spaces were relatively separated, a separate courtyard was considered for worship (mosque), resulting in less use of the main school courtyard for prayer and



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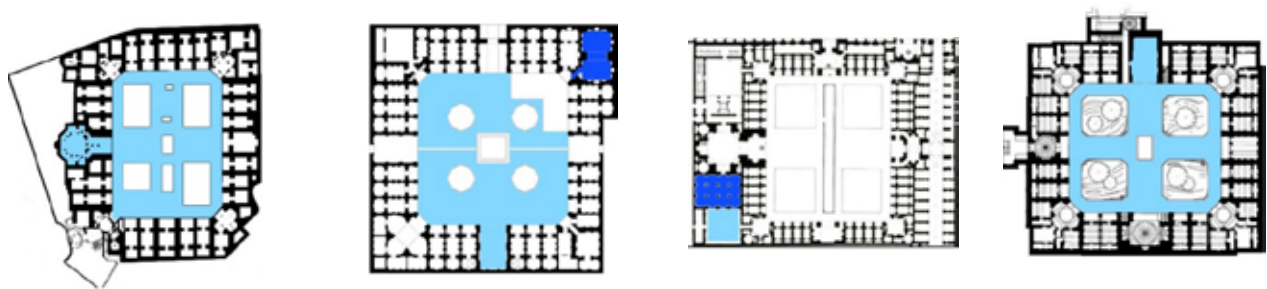
B. Khair Abad school, Behbahan City

C. Chaharbagh school, Isfahan City

D. Nimavar school, Isfahan City

Fig. 8. Organization of educational spaces in the selected Safavid schools. Source: authors.

Legend: Dark brown: the main places for education. Light brown: iwans, professors' chamber and courtyard as secondary spaces for education.



A. Sheikh Alikhan Zanganeh school, Tuyserkan City

B. Khair Abad school, Behbahan City

C. Chaharbagh school, Isfahan City

D. Nimavar school, Isfahan City

Fig. 9. Organization of prayer spaces in the selected Safavid schools. Source: authors.

Legend: Dark blue: main prayer space. Light blue: Secondary prayer space

worship. Therefore, in Fig. 9, the prayer spaces are listed according to the importance and use of each school.

• The connection between the Safavid schools and urban spaces

In the Safavid era, the rulers intended to form an independent national, Shi'a government. Therefore, a policy of propagation and promotion of Shi'a Islam was taken in order to strengthen the power of the state by preserving national unity (Nawaie & Ghaffari, 2007). Thus, the speed of construction was greatly increased during the Safavid period, which almost completely prevented the changes in the structure; however, the more transformation of the connection between spaces, especially in the schools, can be seen during this period, as compared to previous periods. Clearly, architecture and urbanism have evolved during the Safavid period. These

developments are largely rooted in the religious-political components of that era.

Hence, given the Safavid rulers' policies, national and religious ceremonies were held, and this required a proper platform for itself. As a result, the government has taken measures in relation to urban design, including the construction of urban complexes (Motedayen & Ahangari, 2016, 79). These complexes consisted of schools, markets, mosques, government buildings such as palaces, squares, residential textures, and etc. Some schools built in this period are located in urban and rural complexes, and in this way, the communication between the public and students was supported, for example the Chaharbagh School, which is located next to Bazaar and Chaharbagh Street. It should be noted that this street was one of the most important routes in Isfahan city during the Safavid period, and hosted a large crowd in order to hold national and

religious ceremonies. In the east Chaharbagh School, there is also the Madar Shah caravanserai. Pirnia describes the north side of the building as follows: "Within the bazaar, there is a magnificent Chahar Souq with a large dome that the school opens to it" (Pirnia, 2006, 330 & 331). Therefore, it can be said that part of the population referred to school were marketers. This class socially and religiously had a close relationship with the students, and in fact, was the main organizer of religious ceremonies in the Safavid period (Nawaie & Ghaffari Fard, 2007, 297). Observance of these issues can be seen even in smaller populated centers (such as the village) in the Safavid era, so that, in the Naseri Farsnameh book, it was mentioned that there were small bazaar and bath near the Kheir Abad School. Therefore, inviting marketers to school was useful because they became aware of those activities done in the school and eventually, they financially helped students and professors and this economic connection strengthened both groups' attachment. So, it can be concluded that the religious-political objectives of the Safavid rule have been fulfilled here. Coherence between the Chaharbagh School and the city is such that the Qajar crises and inappropriate policies have also failed to change it (Motedayen & Ahangari, 2016, 79). In the Safavid period, there were some schools, like Soleymaniyah and Nasiriyah schools in Isfahan, which had only a living room for students, but their location next to the mosque allows for the connection between school and city. According to studies, in this period, there were different types of school-city connections:

Type I: Integrating the public space (mosque) with the school while they are independent: in this type, mosque and school are two independent buildings which are in the same alignment and constitute a unit complex through a connection between them and each one has a separate entrance. In these schools, the public space accesses the school through an interface; in this type, it is possible to access school through the private sahn of mosque. In these schools, students use the masque as a

prayer space and people can attend classes in the mosque. For example, the Chaharbagh school near the Chaharbagh Bazaar.

Type II: Integrating the public space with the school: In these schools, the public space is drawn into the school and the public can enter into it through passing the school yard and students' residential space.

Type III: Integrating the neighboring public space with the school in one building: Coming to this complex is through the common entrance. In this way, the public space is located next to the school and in harmony with it while madrasa is considered as one of the spaces of mosque and the public can enjoy education, the boundary between these two spaces is sometimes determined by the vaulted courtyard. For example, Soleymaniyah school near the Abbasi Jame'e mosque.

Type IV: Those schools with a private function. According to their founders' approach, except at the time of national-religious ceremonies and prayers, these schools are used for just education and residence. For example, Sheikh Alikhan Zanganeh school.

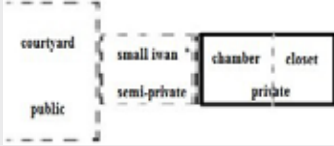
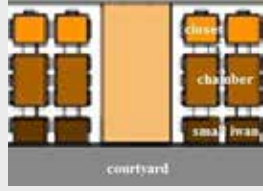
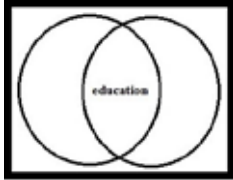
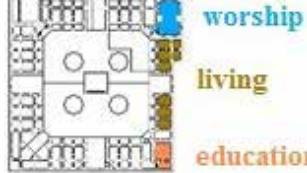

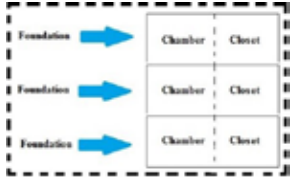
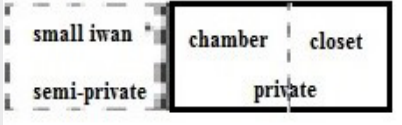

Discussion and analysis

The spatial and functional elements of the studied schools are located on four sides around the central courtyard. The shape of the courtyards is rectangular or nearly a square with chamfered corners. On the other hand, the spatial elements of the schools were transformed into a four-form form at the same time as the changes made in the mosque architecture during the Seljuk period. In four-ivan schools, such as the Safavid schools studied in this study, there is an ivan at the entrance and the other opposite it on the other side of the courtyard and two other iwans are placed on two sides of an axis perpendicular to the former axis, passing through the center of the central courtyard. In general, it can be said that in the Safavid period, four-ivan schools had developed and became more popular regarding educational policies and required spaces. The



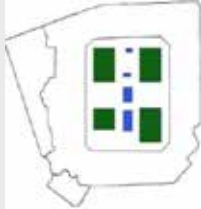

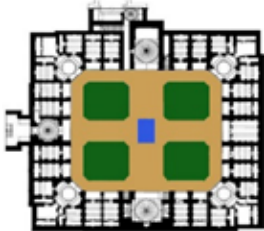
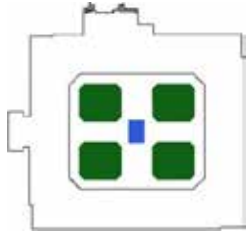
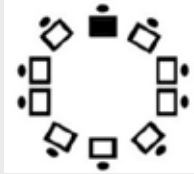
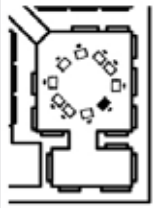
courtyards of selected Safavid schools were of great importance, considering the educational policies made according to the hadiths, the improvement of the students' learning status and other various functions (education, worship and students' daily affairs), and had greater area as compared to those schools built in previous eras. The courtyards played a role of making traditional schools lively, and due to the presence of water, plant, soil and sky, they provided a good view from the small iwans in front of the chambers. Therefore, Safavid architects used natural elements in the courtyard widely (see Figs. 1, 2, 3, 4). Small iwans were semi-private spaces in schools and considered as an interface between private and public areas for the students. In them, students talked to each other, and the conditions needed for their concentration and calmness must be provided. Therefore, in addition to favorable view, harmony and symmetry on the internal sides, which were mostly composed of small iwans, were carefully observed in all selected Safavid schools, and all opposite sides were the same in terms of length, height, volume, number of small iwans and iwans. However, this issue has not been of importance in most pre-Safavid schools, and most schools had only two sides which were in harmony and identical in terms of length, height, small iwans and sometimes volume. On the other hand, chamber is the most important element that determines the physical form of the Safavid schools. But in most of the pre-Safavid sample schools, this is not seen. For example, iwans and gonbadkhaneh in the Sultan Hassan School, iwans, chambers and gonbadkhaneh in the Ghiasieh School, and gonbadkhaneh in the Seyyed Ghazi school are the factors determining the physical form of school. In the present study, chambers are referred to as the residential sector and the private area in which students lived. Therefore, due to a great deal of time spent in them, they should provide favorable conditions for the students. Therefore, in the chambers of the Safavid schools, closets and niches were designed for putting books and objects but no closet is observed

in the pre-Safavid schools studied in the present study. On the other hand, entry into the chamber was made possible through small doors located at the center of the wall, which could prevent bothering of other people. Of course, in order to properly ventilate and bring natural light to the chamber, a light well was placed above the entrance door (see table 9); these light wells were also seen in some schools. Moreover, in this period, the number and capacity of madrasa increased due to the public education policy, the large number of students and professors and the freedom of students in the choice of lessons and professors. On the other hand, in order to meet the need for education, sometimes, the courtyards, iwans, division spaces and prayer space (or mosques) were also used as madrasa; so, it can be said that, education became more flexible in schools. In general, in this period, due to the importance and position of education in politics and among people, the connection between schools and prayer spaces became more diverse, which, of course, it was often dependent on the school approach or its founder's approach. It was found that most Safavid schools, such as the Chaharbagh School in Isfahan, have a public use, unlike the preceding periods, such as the Timurid era, as mentioned in the research background section. In the Chaharbagh School, although the courtyard of the mosque was separated from the school yard, it was used by both students and people. Another interesting point in the Safavid schools, whose importance is determined in the political system, is the physical order and the replacement of school in the texture (see Tables 2, 3, 4, 5), which determines to what extent different elements, contributing to the development of education, affected the school architecture. Therefore, in this period, schools were formed by a certain geometry and with straight lines, such that even the Shaikh Alikhan Zanganeh School, surrounded by a dense and irregular environment (see table 2), was integrated into the surrounding area with regular lines. On the other hand, those lines changing the school form from the

Table 12. The effects of education on the architecture and organization of the selected Safavid Schools. Source: authors.

Subject		Architecture	Organization
Hierarchy and attention to the element connecting the school to the nature	Type of perspective		
	Effects	<p>Observance of discipline and order and students' privacy</p> <p>Observance of religious rules about open space</p> <p>Connection between various elements of school by nature (courtyard)</p> <p>Proper for all samples</p>	<p>Proper for all samples</p>
Education alongside other routine work	Type of perspective		 <p>Kheir Abad school plan as an example</p>
	Effects	<p>Simultaneous development of education and training</p> <p>Focusing on education</p> <p>Provision of students' need for housing</p> <p>being responsible for the educational environment</p> <p>comprehensive growth in all aspects</p> <p>Proper for all samples</p>	 
Semi-private space of Small Iwans (social interactions and discussions)	Type of perspective		
	Effects	<p>Growth and promotion of education</p> <p>Growth and promotion of students' social relations</p> <p>Proper for all samples</p>	<p>Proper for all samples</p>

Rest of table 10 The effects of education on the architecture and organization of the selected Safavid Schools.

Coordination between school components (Order and Relationship of Components)	Type of perspective	Harmony and coordination between different elements		
	Effects	Rhythm, equilibrium, hierarchy, continuity Equilibrium, legibility, spatial transparency	Chaharbagh school façade as an example	Chaharbagh school perspective as an example
Focus on education (separating from affairs and unrelated factors)	Type of perspective	Environmental introversion (emphasis on education)		
	Effects	Central courtyard with a certain geometry Separation of out-of-school hobbies	Sheikh Alikhan school plan as an example	Sheikh Alikhan school perspective as an example
Considering the role of the school yard	Type of perspective	Strong geometry of natural spaces in courtyard considering hadiths and verses. And we have made of water everything living (Anbia: 30)		
	Effects	Considering the use of water and plant in courtyard A factor for relaxing and concentration of mind for thought and educational growth	Nimavar school plan as an example	Nimavar school plan as an example
The type of relationship between the teacher and the student	Type of perspective	Communication-based (use of circular arrangement)		
	Effects	Proper communication between professor and students Proper view to each other Communal participation in debates	Proper for all samples	Proper for all samples

rectangle to another form did not result in change in the yard shape and make the general form of the school irregular. However, according to studies, it was found that in most of the selected pre-Safavid schools, this is not seen and irregularity is quite evident in some schools, and even in some schools such as the Seyyed Ghazi and Incheh Minar School, which have free space, these factors did not matter and were not considered.

Conclusion

The Safavid period was known as an era during which fundamental changes had been made in the political and social structures, and as mentioned in the research background, this period was one of the most influential periods in the field of education. The Safavid rulers were aware of national affairs and monitored them to be correctly implemented. Therefore, they used educational centers and famous celebrity theologians to achieve their goals and expanded their sphere of influence by supporting the establishment of schools and creating endowed properties. Therefore, in this period, the schools had been changed in order to emphasize the importance of education based on factors such as public education policy, public attention and Safavid educational system. Therefore, construction of schools was increased in this period and such an increase was observed both in number and area. In addition, greater number educational and residential spaces with higher quality were formed in the Safavid schools. So, given the research goal and lack of sufficient information on the research background, in the findings, discussion and analysis sections (Table 10), the typology of the Safavid school architecture was explained with an emphasis on the impact of educational policies. It is hoped that in the future studies, the strategies for improving the quality of education in the current era will be investigated according to Shi'a Islamic sciences. Taking the public education policy in order to teach Shia Islamic sciences in the Safavid schools has resulted key role of schools in social activities. In this regard,

there are several entrances in the Kheir Abad School in Behbahan and the Chaharbagh School in Isfahan for provision of easy access for the public. In the Safavid era, due to this public education approach, performing religious ceremonies and congregational prayer has been of great importance. Of course, in this period, some schools had a private function (purely educational function) and for this reason, the entrance system separated the school from the outer space. On the other hand, in the Safavid period, due to the governing policies that resulted in increased number of professors and the promotion of educational system, the students had more freedom in choosing a professor and, since education had a great deal of resiliency, the school architecture was also made more flexible and the courtyard, iwans, ground floor chambers were also used as educational spaces and for debate. For this reason, there were lively and vast courtyards, large iwans and chambers with various shapes and accesses, which mostly have closets, and also there were some small iwans in front of the chambers. On the other hand, due to the importance and special position of education in the views of the rulers, the relationship between the prayer space and the educational space was made more diverse and schools had a mosque or a limited prayer space or been built beside a mosque. In some schools, there was no prayer space and the school had just an educational function (Table 11). This diversity in the connection between a school and a prayer space has continued in next periods, such as Qajar. There was also a change in the relationship between the city or the village and the school, and the school was usually built as a member of a collection. In this regard, the connection between schools and the urban public space merged in three forms: 1. The public space was integrated into a school as a building besides it and each of them was independent; 2. The public space entered a school space and 3. The public space was integrated into a school in a building; in some schools, according to its founder's approach, the connection between that school and public spaces was limited.

Table 11. Characteristics of Safavid Schools According to Research Components. Source: authors.

Component	Safavid school
School approach	1. Social role and influence 2. More public approach to education compared to the previous periods 3. Paying attention to the well-being and comfort of students 4. Making it possible to reside for students and professors 5. Increasing spatial and use diversity for long-lasting residence of students.
School pattern	The use of a two-iwan and four-iwan styles (all samples have a four-iwan style)
Organization	1. Observing the access hierarchy 2. Paying attention to the principle of symmetry 3. Considering the dimensions of the iwans and chambers
Entrance	1. Multi-sectional entrance 2. Use of multiple entrances with various functions (Nimavard and Sheikh Alikhan schools have an entrance and Kheir Abad and Chaharbagh schools have three entrances)
Courtyard	1. Attention to and expansion of the courtyard space (yard to total school area: 40% in Kheir Abad school, 43% in Chaharbagh school, 36% in Nimavard school and 37% in Sheikh Alikhan Zanganeh school). 2. Use of the yard to hold ceremonies. 3. High position of courtyard from the point of view of Sharia 4. Increasing spatial quality by utilizing vital elements and resiliency in the use.
Chamber	1. Increasing the number of chambers in order to provide adequate space for the residence of students and teachers. 2. Greater dimensions. 3. Improving the quality of space for students. 5. Separating the private space from the public by using small iwan. 5. Using the closet.
Madrasa	1. Increasing the number of madrasa so that simultaneously, professors could teach and students could freely choose. 2. Use of iwan, Shabestan and courtyard as a madrasa.
Small iwan	1. Addressing discussion between students 2. Establishing social interactions 3. Using few ornaments
Prayer space	A) Using it for prayer, teaching, mourning and religious festivals, asking religious questions and endowment (B) Safavid schools have had a greater diversity in the educational and religious environment due to their approach to education. 1- Schools with separate Gonbadkhaned and Mihrab for prayer and worship such as the ChaharBagh school in Isfahan 2- Schools with no prayer space, which built beside a mosque and uses it 3- Schools with limited prayer space such as the Kheir Abad school 4- Schools with no prayer spaces and with a purely educational approach like the Nimavar School, Isfahan and Sheikh Alikhan Zanganeh school, Tuyserkan.

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Reference List

- *The Holy Quran*.
- Aghajanian, N. & Nazari, H. (2015). *Education in the Safavid era and its necessities and consequences*. The third national conference on Future School. Chalus. Sama Technical and Vocational University, Chalus Branch. Retrieved from https://www.civilica.com/Paper-CHALO USSAMA03-CHALO USSAMA03_043.html
- Alaghemand, S., Salehi, S. & Mozaffar, F. (2017). A

Comparative Study of Architecture and Content of Iran's Schools from the Traditional Era to the Modern Era. *Bagh-e Nazar* 14(49), 5-20.

- Ahmed, M. (2013). *Education around the World: Education in West Central Asia*. Contributed by Colin Brock. Publisher A& C Black.
- Al-Isfahani, M. (1961). *Nesf-e Jahan fi Tarif ul-Esfahan*. Correc ted by Manuchehr Sotoudeh. Tehran: Amir Kabir Publication.
- Amadi, A. (2008). *Ghurur al-hekam va Durar al-hekam* [Ghurur al-Hikam wa Durar al-Kalim]. by Seyyed Mahdi Rajaei. Qom: Dar Ketab Islami Publication.
- Bakhshi Ostad, M. R. & Rezaei, R. (2014). *Naghsh-e madares-e asr-e safaviy-e dar gostareh-e shieey-e davazdah emami* [The Role of Safavid Schools in the Development of

Twelver Shi'a Islam]. *Journal of Religions and Maticism*, 47(2), 215-234.

- Bakhshi Ostad, M. R. (2013). Tasir-e elmi-ye madares dar asr-e safaviye [Scientific Effect of Schools in the Safavid era]. *Journal of History of Islam*, 3(11), 7-27.
- Bakhshi Ostad, M. R. (2017). Education in the Safavid Schools. *Journal of Growth of teaching history*, (3), 17-23.
- Behbahani-Islami, M. (2015). *Physical development of the Iranian mosque-schools: Review of the Safavid and Qajar eras*. First Annual Conference on Architectural Research, Urban Planning and Management. Retrieved from https://www.civilica.com/Paper-AUUM01-AUUM01_053.html
- Bemanian, M. R., Momeni, K. & Soltanzadeh, H. (2013). A Comparative Study of the Architectural Features' Designs: Masjid-Madreseh of Qajar and Safavid School. *Journal of Armanshahr*, (11), 15-34.
- Dehkhoda, A. A. (1962). *Dehkhoda Dictionary*. Tehran: Iran' Management and Budget Organization. Razi, A.A. (No date). Haft Iqlim. Vol. 2 & 3. Corrected by Javad Fazel. Tehran: Shams Library Publication.
- Eskandarbeig, T. (2003). *History of Alam Aray Abbasi*. Vol.2. Corrected by Iraj Afshar. Tehran: Amir Kabir Publication.
- Ghanimeh, A. R. (1985). *Tarihk-e daneshgah-ha-ye bozorg-e Islami* [History of major Islamic universities]. (N. Kassaei, Trans.). Tehran: Yazdan Publication.
- Golombek, L. & Wilber, D. (1992). *The Timurid Architecture of Iran and Turan*. London: Princeton University Press.
- Hajebi, B. & Arjmand, M. (2011). Tasirat-e vaghf bar paydari-ye madares-e safavi [Effects of endowment on the Sustainability of the Safavid Schools]. *Journal of Architectural and Urban Planning*, (6), 89-102.
- Hassani, A. (2006). Theoretical Teaching in the Safavid Age. *Journal of Human Sciences*, (52), 153-168.
- Hayati, H.; Nasirpour, M. & Rahmatnia, A. R. (2018). *Kheira Abad School: A building from the Safavid era*. First Conference on Iranian Islamic city. Tehran, Institute of Culture and Art of Academic Jihad. Retrived from <https://www.civilica.com/Paper->
- Henfer, R. & Zaman, M. (2007). *Schooling Islam: Culture and Politics of Modern Muslim Education*. Princeton Studies in Muslim Politics. American : Princeton University Press.
- Hillenbrand, R. (1994). *Islamic Architecture. Form, Functions and Meaning*. Edinburgh: Edinburgh University Press.
- Hillenbrand, R. (2010). *Islamic architecture: form, function, and meaning* (I. Etesam, Trans.). Londen: Thames and Hudson.
- Houshyari, M. M., Pournaderi, H. & Fereshtehnezhad, M. (2013). Typology of Mosque-School in Islamic Architecture of Iran. A Study of the Connection Between Educational and

Prayer Spaces. *Journal of Iranian Architecture Studies*, (23), 54-37.

- Jazayeri, A. (1988). *Ejzat al-Kabirah*. Qom: Ayatollah Al-Marashi Al-Najfi.
- Kadi, W. & Billeh, V. (2007). *Islam and Education: Myths and Truths*. Chicago: University of Chicago.
- Kassaei, N. (1995). *Madares-e nezamiye va tasirat-e elmi va ejtemaei-ye an-ha* [Nizamiyyah schools and their scientific and social influences]. Tehran: Amir Kabir Publication.
- Kolehini, M. Y. (2008). *Osol-e kafi* [Kitab al-Kafi]. Vol.1. Tehran: Jahan Ara Publication.
- Mahdavi Nejad, M. J., Qasempour Abadi, M. H. & Shabestari, A. (2012). Gouneshenasi-ye masjid-madrese-ha-ye dore-ye ghajar [The typology of Qajar mosque- schools]. *Journal of Iranian Islamic city*, (11), 5-15.
- Majlesi, Mo. B. (1986). *Baharol anvar* [Bihar Al-Anwar]. Vol. 1. (A. naghi Qabiz al-Islam, Trans). Tehran: Islamiyah Publization.
- Mirmiran, H. (2000). Madrese-ye shahid motahari (sepahsalar): Negahi be Memari-ye Dorey-e Qajar- Shokofaei-ye Sakht va Ofoul-e Pardakhti [Sepahsalar School: A Look at the Qajar Architecture]. *Memar*, (8), 54-57.
- Montazem Al-Qaem, A. (2004). *The role of Iranians in the foundation of Islamic schools and universities*. Institute of Humanities and Cultural Studies. Comprehensive Human Sciences Portal.
- Mousavi, S. M. (1994). Madares-ha-ye Nezamiye, nokhostin marakez-e amouzesh-e aali dar Eslam [Nizamiya schools, the first centers for higher education in Islam]. *Mesbah Quarterly*, (11), 83-102.
- Pirnia, M. K. (2006). *Ashenaei ba memari Islami Iran* [Introduction to Islamic Architecture of Iran]. Tehran: Soroush Danesh.
- Rahmatnia A. R. & Hayati, H. (2018). *Life in the courtyards of traditional Qajar housings*. Case study: Traditional housings in Behbahan. First Conference on Iranian Islamic city. Tehran, Institute of Culture and Art Institute of Academic Jahad. Retrieved from https://www.civilica.com/Paper-ICIIC01-ICIIC01_007.html
- Rumelo, H. (1963). *Ahsan al-Tawarikh*. Corrected by Narman Syden. Tehran: Sadr Library Publication.
- Sabki, T. (1945). *Tabaqat Al-Shafeiyah al-Kubra*. Cairo: Al-Hussainiyah Publication.
- Safavi, S. (n.d.). *Tohfe-ye Sami*. by Homayoun Farrokh. Tehran: Elmi Publication.
- Shahabi, A. A. (1963). *Endowments*. Iranshahr. National Commission for UNESCO in Iran.
- Soltanzadeh, H. (2007). Schools. In M. Y. Kiani *Iranian*

Architecture in Islamic Era. Tehran: Samt.

- Sultanzadeh, H. (1985). *Tarikh-e madare-se Iran az ahd-e bastan ta tasis-e darolfonon* [History of Iranian Schools from the Ancient to the Establishment of the Dar-ul-Founun School]. Tehran: Ageh Publication.
- Sami'i Azar, A. (1997). *Tarikh-e tahavolat-e madares dar Iran* [History of School Changes in Iran]. Tehran: Organization for Development, Renovation and Equipping Schools of I.R. Iran.
- Tabatabaai, M. H. (1984). *Tafsir al-Mizan*. (M. B. Mousavi

Hamadani, Trans) Tehran: Rajah Cultural Publication Center.

- Turner, C. (2000). *Islam without Allah: The Rise of Religious Externalism in Safavid Iran*. Britain: Curzon Press.
- Vasiq, B. & Ghadrddan Maleki, R. (2016). Mafhom-e amozesh va tasir-e an dar memari-ye madares-e Islami dar moghayese-ye tatbighi-ye madares-e saljigi va safavi [The concept of education and its effect on the architecture of Islamic schools and comparative study of Seljuk and Safavid schools. *Journal of Researches in Islamic Architecture*, 4(3),40-58.

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