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Spatial Preference In Relation To Curriculum

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ABSTRACT

Educational buildings present complex layouts due to their programs, functional schemes, strict demarcation or uncertainty of circulation routes, and social spaces, especially if the building is a transformed one with various university-level disciplines packed together. In buildings housing disciplines that function differently, the use of spaces reveals some discordance in the layout. Moreover, the social behaviour of students also diversifies accordingly.

As peer-to-peer learning is a crucial part of contemporary education, informal spaces play important roles to create this social bond through interactions, encounters, co-presence, and such in the gathering areas. The aim of this study is to explore whether the type of education, department's architectural layout, and study programs have any effect on the students' spatial preference in a university building. The case study area located on a university campus is part of a building that was originally a textile factory and showroom. The building houses the faculties of architecture and design, engineering, and English preparatory schools. Labyrinth-like configuration of the current use with many functions and different behaviour modes taking place at the same time displays emergent social interactions in the non-allocated spaces. To reveal the social gathering habits and preferences of the students, a structured questionnaire has been implemented. The results of the questionnaire showed the most frequently used areas and their purposes. Integration analysis of the floor plans, determined, identified and correlated with the perceptions and social gathering preferences of students showing that the habits of spatial uses differ according to the curriculum of the departments.

KEYWORDS

User preference, University building, Curriculum, Space usage pattern

1 INTRODUCTION

United Nations has set 10 Sustainable Development Goals (SDG 4) for 2030. Among these, Target 4.3 of SDG 4 aims "to ensure equal access for all women and men to affordable quality technical, vocational and tertiary education, including university". It is widely accepted that the aim of all higher education programs is to respond to the demands of the day and to bring prosperity to societies. Therefore, an available variety of tertiary education for everyone is a goal for countries worldwide. Higher education aims to create a highly qualified, informed workforce that generates innovative research and develops new technologies (Arslan & Altınbaş Akkaş, 2014; OECD, 2016). According to the Turkish Statistics Institute (TÜİK), youngsters between 15 and 24 years, shape up 15.4% of Turkey's population. Because of the demand for a university degree diploma among the young population, the government policies have also caused an increase in university numbers across the country, and 71 new universities were opened since 2010.

Educational buildings present a complex spatial layout due to their programs, functional schemes, strict demarcation or uncertainty of circulation routes, and social spaces, especially if the building is a transformed one with many different university-level disciplines packed together. Different disciplines may require specialized spaces to meet educational and practical needs that are necessary to execute a successful curriculum. However, in a building, which houses various disciplines that function differently, the use of spaces for conventional lecture halls, studios, labs, and such reveals some discordance in the spatial layout. Moreover, quoting, Winston Churchill, "We shape our buildings, and afterwards our buildings shape us" the social behaviour of students belonging to these different disciplines also diversifies accordingly. Even though university-level education focuses more on the requirements of the disciplines, the second stage of socialization of young adults provides opportunities for teamwork, shared responsibilities, controlled individualism, and such.

Although it is arguable, from an economical perspective, the reuse of buildings is considered sustainable. Since the land value is too high, especially in metropolitan cities like Istanbul, universities have chosen to find suitable buildings rather than building new ones to start education. Opening universities in the short term with political concerns have caused these institutions to settle in buildings that were built for different functions and not appropriate for educational purposes. In most cases, these buildings were poorly transformed into university buildings with concerns of spatial adequacy rather than a design strategy (Ünlü, et al., 2009). This shortage in the building supply has also caused institutions to house different disciplines under the same roof which are diversified by their educational methodologies and spatial needs.

Universities are educational institutions that aim to improve the social skills of individuals as well as their academic knowledge. As Webster (2008) and Dutton (1991) emphasize architectural education orients students to acquire specific manners and language, where peer motivation gains

importance compared to conventional lecture-based disciplines. Therefore, social interaction is among the essential qualities of design education. For example, Wang, et al. (2010) emphasize the need for social interaction in terms of knowledge sharing, especially in architectural design studios. McCormick, (2004) supports the importance of knowledge sharing and resource exchange especially in dealing with complex design projects, whereas, Chiu and Shih (2005) remind the notion of peer to peer learning, which enables the students to form an insight into the cooperative essence of the design disciplines. Therefore, gathering areas are among the important determinants of architectural programming and architectural design in educational buildings along with the educational spaces (Ünlü, et al., 2009). The spatial design and configuration of university buildings play an important role in shaping the users' movement, interaction patterns, and social behaviours between students, in a positive or negative manner by encouraging the students to gather or socialize in spaces that are designed for this purpose or not (Büyükşahin Sıramkaya & Aydın, 2017; Fouad & Sailer, 2017).

The case study area of this paper is a university building where different educational programmes take place. The Faculty of Architecture and Design, The Faculty of Engineering, and the English Preparatory Schools are located in the same building. These schools have departments which are differing from each other in terms of spatial needs and spatial uses. For example, the English Preparatory School operates in traditional classrooms, for reading and writing-based lectures, while using semicircle classrooms to enable mutual conversation for speaking hours. Upitis (2004) defines this type of learning as factory-type, which is also ironic, considering that the university building is transformed from an actual factory. Upitis (2004) uses the factory analogy as putting a homogeneous group of children in a confined space called a classroom, processing them with knowledge, testing them according to standards, and transferring them to the next processing container until they are ready to enter the workplace. The departments of the Faculty of Engineering, use the traditional factory container classrooms for lectures but also various labs located in different parts of the campus. We may think that this type of education has is a bit more freedom with a bit more inclusivity compared to the classical systems. On the other hand, in terms of physical space use, the departments of the Faculty of Architecture and Design are also quite varying within the faculty itself. By nature, design education has to be both creative and interactive; however, these qualities need to be nourished with new and continuous experiences from different sources. For design students, these sources may be the lectures, research, observations, exchange of ideas, and critiques not only from the professors but also from their peers. In this case, socialisation during school hours plays an important part in the students' education. Therefore, the aim of this study is to explore whether the type of education, department's architectural layout, and study programmes have any effect on the students' spatial preference in a university building.

2 THEORY

Use of resources first of all means making an economy within the possibilities, regardless of the quality and quantity of the resource. As a result of the economic depression that the world fell into in the 70s, the efficient use of resources and workforce was among the most important management decisions. The reflection of these decisions on education, highlighted the concepts of efficiency, productivity, and rationality (Ercan, 1998). However, since these concepts take place in the field of education, production, and service in a similar way, it has caused education to move away from its sociological and psychological characteristics and become an economic and political phenomenon. Since the human factor and authenticity are extremely important, especially in design education, some global approaches have also eroded the original methods of the discipline.

Educators basically have two approaches to preparing their programs. One of them is the curriculum design that focuses on the courses and their orders of deliverance, and the other is the curriculum development method that includes the physical environment and administrative issues (Gökhan & Atasoy, 2005). Upitis (2004) discusses that the sensitivity towards childhood development through the positive support of the architecture for the education environment has been lost after the kindergarten stage. In addition to students, teaching, academic and administrative staff, especially in design programs, building, and infrastructure features are also important parts that form a whole. Site selection approaches for educational buildings today revolve around the dilemma of small-scale units scattered in the city or large-scaled concentrated campuses outside the city. In a study conducted by Çabuk and Ünal (2003), the criteria for campus selection of universities in Istanbul were questioned. In the results obtained, it has been revealed that many universities prefer campuses on large lands outside the city for educational buildings and direct their investments accordingly. It has been observed that some administrations are undecided on an extremely important issue in terms of education quality, such as the location of educational buildings, or they simply make their investment decisions primarily according to land prices. Uline (1997) reminds Dewey's utopian school image, where he emphasised physical space, such as large grounds, gardens, greenhouses, and open-air interiors, above all other conditions. Design education buildings relatively include more interpretable and interrelated spaces in line with the character of architecture and design education. Since the structure of architecture and design education diverge from other disciplines, the relations between lecturers and students, and the long hours spent in the studios cause them to interact with space and each other much more (Cabadak & Şalgamcıoğlu, 2019). Moreover, especially in architectural education, the physical environment that will support the student's creativity and designer identity is extremely important.

According to Hillier and Hanson (1984), architecture is not simply giving shape to a matter; when architects shape matters, they are also shaping spaces where people exist. Similarly, according to Ittelson, (1970), the built environment is a concept in which physical parameters and social parameters are intertwined. Therefore, all kinds of built environments designed by humans should be considered not only as physical but also as a social phenomenon. Along with the physical characteristics of complex planned environments, the social groups existing in the said environment create certain perceptual changes in individuals using the same space and also direct their behavior. Hence, architecture has a direct relationship with social life. The space syntax model, developed by Hillier and Hanson, proposes a method of talking about the relationships between social patterns and spatial organizations (Ortega-Andeane, et al., 2005). While social interaction of the students creates a peer-to-peer learning environment, Hillier and Hanson (1984) suggest that students in schools are visitors, who do not have control over the space. However, the way the students gather in corridors or prefer to meet in specific spaces within the building is a form of controlling the environment. Therefore, the integration levels of these preferred spaces are of importance for this research.

Integration in a convex space describes a graph, which measures the shortest distance between all spaces. Hillier and Hanson (1984) define integration as a normalised measure of distance from any space of origin to all others in a system. In general, it calculates how close the origin space is to all other spaces, and can be seen as the measure of relative depth. In this sense, this normalised distance also shows the physical (permeability) and visual (visibility) accessibility of spaces in the system. A dimension of architecture that affects social patterns is especially visual accessibility. On integration graphs, directly accessible and integrated areas can be seen. On the other hand, mean depth analyses occur according to the number of spatial syntax steps required to reach space. If space is reached by a single step, the degree of shallowness for this space is high. On the contrary, if the step number increases to reach space, the depth of space is high. A space becomes hardly accessible as the depth value increases. Therefore, the spaces that are desired to be used by fewer people, usually are located in deep areas. Another concept related to the interaction of the individual with the space is related to how the individual perceives the space visually. According to Benedikt (1979), who introduced the concept of isovist area, spatial perception varies according to the spatial location of the individual in the environment, gaze direction, route, and kinaesthetic state. Isovist area describes a directly visible area of 360 degrees, in a space from a single node. With the isovist analysis, the information of the points with the highest visual access in the space is reached.

3 DATASETS AND METHODS

The aim of this study is to explore whether the type of education, department's architectural layout, and study programmes have any effect on the students' spatial preference in a university building. The research is conducted at the Istanbul Commerce University, Küçükyalı settlement. In line with this purpose, a structured survey had been presented to students of the Faculty of

Architecture and Design and the English Preparatory School who are the main users of Block A, and to the students of the Faculty of Engineering who are the secondary users of Block A. In addition to this survey analysis, a syntax analysis has also been applied to obtain the syntactic data of the mentioned building, Block A.

3.1 Case Study Area

The case study area is the Block A building in the Küçükyalı settlement of Istanbul Commerce University. The campus is next to the main highway, which connects Istanbul to other cities. The building is surrounded by residential areas behind, while there are business centers and a shopping mall on the other side. This complex urban function of the area makes the building easily accessible by public transportation since there are metro stations and bus stops located nearby to serve the area. The settlement consists of three separate buildings: Block A, Block B, Block C. Block B, and Block C are connected on the ground floor level with an entrance hall. Block A is connected to this entrance hall with a bridge on the second-floor level (Figure 1).

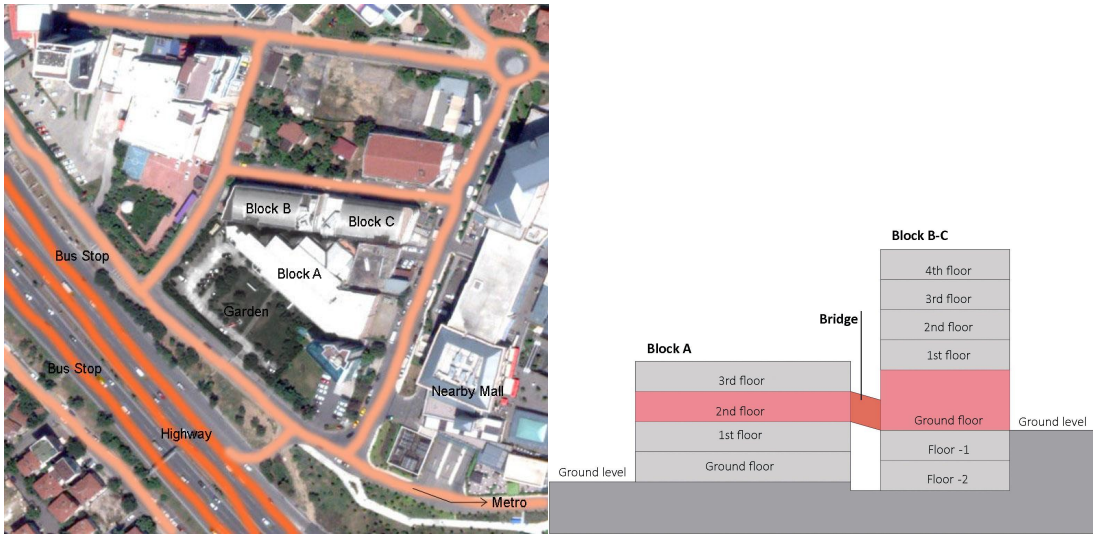

Figure 1: Master Plan (Google Maps) and the section of buildings. The section shows the connection between buildings

There is front yard, a small garden that functions as a buffer area with the trees for the noise coming from the highway in front of Block A. The use garden is unfortunately limited because of this uncontrollable noise. Block A building was a textile factory and then re-designed as a university building. Since Block A was also shaped by three separate buildings, there are different structural axes which caused the building to have a complicated plan layout. Since this building was designed to function as a textile factory, the window parapets are higher than usual according to a standing work basis. Therefore, this design of windows prevents students from seeing exterior space during lectures or studios working on drafting tables.

On the ground floor of block A, the studios of the Fashion and Textile Design department, the cafeteria, and the stationery are located. The workshops of the Fashion and Textile Design

department are located on this floor since the programme necessitates heavy and bulky machines for various purposes. However, since the ground floor does not have enough amount of daylight, due to window sizes and existing trees, students of this department are disadvantaged. In order to compensate for this disadvantageous situation, the design studios on the 3rd floor are commonly used for designing, drafting, and for lectures. On the other hand, there is also a cafeteria located on this floor with a wall-to-wall glass façade, which allows students to see the natural exterior space and trees in the front yard.

The first floor of the building is used as the English Preparatory School and has more classrooms than the other floors. On the second floor of the building, there are traditional classrooms, lecturer offices, computer labs, engineering labs, and a bridge that connects the building to block B and block C (which are not part of the research). Lastly, on the third floor, there is a conference hall, a lecture hall, an exhibition hall which is being used as an exam area during the exam periods, and the studios of the Faculty of Architecture and Design, which are being used by all departments of the faculty. These studios are the largest in the building and have a big amount of daylight. As a conventional part of design education, student projects from design departments are often exhibited on this floor.

3.2 Survey Analysis

The survey had been implemented in situ, before the Covid-19 restrictions. To define the space preferences of the users, a survey was presented to the students, which consisted of twelve questions. The respondents had been chosen among the main users of Block A, who are the students of Architecture (ARCH), Fashion and Textile Design (FASD), Interior Architecture and Environmental Design (INARCH), Industrial Design (IND) departments, and the English Preparatory School (ENGP), and also students from the Faculty of Engineering (FENG) who are the secondary users of Block A. The first part of the survey aimed to reveal the demographic structure of respondents by means of their gender, the department they study, study year, and building usage time. 55 students participated in the survey and the results are given in the tables below.

The distribution of respondents by gender is 14 males with the amount of 25.45% and 41 females with the amount of 74.55%. The experience period e of students in the building has been categorised into 5 groups. Those groups are 0-1 year, 1-2 years, 2-3 years, 3-4 years, and +4 years. There was no respondent who had been using the building for more than 4 years. The biggest group of respondents by the experience years in the building is 1-2 years, consisting of 22 respondents (Table 1). The aim of this question is to reveal how well do students know the building and whether the usage of areas of the building depends on the length of experience.

Table 1: Distribution of students by experience

period	**n**	**%**
0-1 year	9	16.4%
1-2 years	**22**	**40%**
2-3 years	12	21.8%
3-4 years	12	21.8%
Total	**55**	**100%**

The next part of the survey consisted of 6 questions and was aiming to determine the space usage pattern of students from different departments, different grades, and how their spatial needs differ over time. These 6 questions are Q1: space preference for spare times, Q2: space preference for breaks less than 15 minutes, Q3: space preference for the longest day spent at university, Q4: space preference for studying in exam periodsQ5: space preference for staying alone, and Q6: space preference for meeting others.

To define the space usage pattern of students for different purposes, a total of 5 spaces were selected on the building after observations and were presented on the survey form. These spaces are; the cafeteria, front yard (garden), classrooms and studios, exhibition hall, and corridors. The respondents were asked to rate these spaces on a 5 point Likert-type scale regarding the questions given above. Students evaluated these spaces by their personal preferences and needs from 1, as never used/preferred to 5, as most frequently used/preferred. By the results, the most frequently used 3 spaces were determined for sample analyses, for each department, and for each question. The mean values for these spaces are given in the tables below, with darker shades to lighter shades showing intensity of preference frequency.

Table 2 is showing the results for Q1 and Q2, which seek the evaluation rate of the given spaces for spare time and short breaks of less than 15 minutes. According to the results, the order of preference for the most frequently used three spaces by the mean values in the sample both for spare times and short breaks are; the 1st cafeteria, 2nd front yard (garden), and the 3rd classrooms and studios. The results show that the space usage pattern of students from the Faculty of Architecture and Design is in line with the sample results. But the results are differing for the ENGP and FENG. Students from these groups tend to spend time indoors and prefer corridors rather than the front yard for their 2nd and 3rd preference for spare time and short breaks. Even though the cafeteria is the most preferred location for all groups, it could be assumed that students from the FENG do not prefer to use the front yard for short breaks since the yard is a relatively long distance to blocks B and C. As the results for ENGP students show that the front yard is not among their most frequently preferred three spaces, it could be concluded that these students prefer to stay inside the building for their spare times and short breaks.

Table 2: Spatial Preference for Spare time and Short Breaks Less Than 15 Minutes (Questions 1 and 2)

Table 2	Architecture		Fashion and Textile Design		Interior Architecture		Industrial Design		English Prep. School		Faculty of Engineering		Total Mean	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Cafeteria	**4.8**	3.9	**4.1**	**3.9**	3.1	3.2	**4.1**	3.4	**4**	**4**	**4.7**	**4.7**	**4.1**	**3.9**
Garden	3.9	**4.1**	4	3.8	3.3	**3.8**	4	**4.8**	2.3	2.3	4.6	1.4	3.7	3.4
Classrooms and Studios	3.7	2.4	3.2	3.6	**3.6**	3.4	3.2	3	2.9	2.9	2.1	3	3.1	3.1
Exhibition Hall	1.9	1.8	1.4	1.4	1.5	1.7	1.5	2	1.7	1.7	1.2	2	1.5	1.8
Corridors	2	1.7	2.2	2.2	2.6	2.1	2.3	1.9	2.7	2.7	2.2	2.4	2.3	2.2

Table 3 shows the results for Q3 and Q4 that explore the preference rate for spaces for the longest day spent at the building and during the exam periods, which may be stressful for the students and they may need socialising even more. According to the results, the order of preference for the most frequently used 3 spaces by the mean values in the sample for Q3 (the longest day spent at the building) are: 1st front yard (garden), 2nd cafeteria, and 3rd classrooms and studios. The order of preference of the Faculty of Architecture and Design for Q3 is opposite to the sample results. The results of respondents from this faculty show that studios are the 1st preference for design students on the longest day spent at the building. The design-based curriculum has an applied structure that causes the students to spend long hours in the studios and study collaboratively, and this structure shapes the space usage pattern of students. The order of preference for Q4 (space preference during exam periods) is 1st classrooms and studios, 2nd cafeteria, and 3rd front yard (garden). The results of the Faculty of Architecture and Design for Q4 are in line with the sample. The students tend to use the studios during exam periods since studios are proper spaces for the applied structure of a design-based curriculum, which requires collaborative study and special tools and furniture. The results of Q4 differ for the English Preparatory School and Faculty of Engineering from the other departments. The cafeteria is the 1st preference for these students during exam periods. Presumably, these students prefer the cafeteria since the theoretically based curriculum of these departments does not require any special space or layout for studying.

Table 3: Spatial Preference on Longest Day at University and Exam Periods (Questions 3 and 4)

Table 3	Architecture		Fashion and Textile Design		Interior Architecture		Industrial Design		English Prep. School		Faculty of Engineering		Total Mean	
	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4
Cafeteria	**4.4**	3.8	3.4	3.6	3.2	2.3	3.2	3.3	3.7	4.3	**4.6**	**4.8**	3.8	3.7
Garden	4.1	1.9	3.4	2.8	3.5	2.5	**4.6**	1.8	3.3	2.7	**4.6**	3	**3.9**	2.5
Classrooms and Studios	4.2	**4.4**	**4.2**	**3.9**	**4**	**4.3**	3.4	**3.9**	3	3.5	3.2	3.3	3.7	**3.9**
Exhibition Hall	1.8	1.3	1.2	1.1	1.7	2	1.8	1.6	1.7	1.7	2.3	2	1.8	1.6
Corridors	2.1	1.2	1.9	1.4	1.8	1.9	1.7	1.6	2.7	1.7	2.7	1.9	2.2	1.6

Table 4 shows the results for Q5 and Q6; these questions explore the preference rate of the students both for spending alone time and meeting with others. According to the results, the order

of preference for the most frequently used three spaces by the mean values in the sample for Q5 (staying alone) are: 1st front yard (garden), 2nd cafeteria, and 3rd classrooms and studios. Since the garden provides a large area, it allows students to stay away from others when they are in need. Contrary to the sample results from students of the Department of Industrial Design, English Preparatory School, and Faculty of Engineering who tend to use the cafeteria instead of the garden for the solitary state. It could be assumed that these students prefer the cafeteria since it offers different furniture layouts and wall niches to create spaces that allow them to stay distant from the others. The order of preference for Q6 (meeting others) is the 1st cafeteria, 2nd front yard (garden), and 3rd classrooms and studios. Although the cafeteria is the first preference in the results for this purpose of use, results are varying in particular for each department. The in-situ observations show that the garden and the cafeteria are preferred for meeting with the others since these spaces are easy to reach, serve several functions and allow students to gather and sit in groups either formally in the cafeteria or informally in the front yard.

Table 4: Spatial Preference for Staying Alone and Meeting Others (Questions 5 and 6)

Table 4	Architecture		Fashion and Textile Design		Interior Architecture		Industrial Design		English Prep. School		Faculty of Engineering		Total Mean	
	Q5	Q6	Q5	Q6	Q5	Q6	Q5	Q6	Q5	Q6	Q5	Q6	Q5	Q6
Cafeteria	3.4	3.9	2.9	**4.7**	2.1	**4.2**	**4.3**	4.7	**3**	**4.7**	**4.6**	**4.3**	3.4	**4.4**
Garden	**3.9**	**5**	**3.4**	4.3	**4.7**	**4.2**	3.9	**5**	2.3	3	4.3	**4.3**	**3.8**	4.3
Classrooms and Studios	3.1	3.7	3.1	3.1	2.9	3.8	2.8	2.6	**3**	2.4	3	2.5	3	3
Exhibition Hall	1.6	2	1.2	1.6	1.4	2	1.8	1.8	1.7	1.7	2.3	1.5	1.7	1.8
Corridors	1.6	1.9	1.4	1.8	2.3	2.4	1.9	1.2	1.7	3	2.2	1.4	1.8	2

3.3 Syntax Analyses

For the syntactic phase of the analyses, the University of Michigan (UM) licensed Syntax 2D software was used to determine the syntactic values of the spaces in the building. The floor plans have been converted into Dxf files, and then imported into the Syntax 2D software. The span size (grid size) has been adjusted to 100 centimetres, which is equal to the size of door openings in the building. The integration analysis quantifies the extent to which spaces are related directly or indirectly to each other. When few spaces have to be crossed to get from one point to another, these spaces are called shallow/integrated and get high integration values, which means they are easy to access. On the contrary, when a number of spaces have to be crossed to get from one point to another, the spaces are called deep/segregated and get low integration values, which mean they are relatively hard to access (Ortega-Andeane, et al., 2005). Syntactic analyses not only give the numerical values of integration but also many other variables such as mean depth, connectivity, isovist related parameters, and such. These numerical values are represented on a colour scale; with red being the most and blue being the least of whatever dimension of the space is being analysed. Therefore in an integration graph, most integrated cells are shown in red while most segregated cells are shown in blue.

Table 5: Connectivity, mean depth, integration, and integration-n values for each floor

	Connectivity	Mean Depth	Integration	Integration-n
Ground Floor	1,22E+02	3,28E+06	6,46E+10	5,29E+11
1st Floor	5,62E+01	3,79E+06	2,16E+10	2,80E+11
2nd Floor	5,67E+01	4,06E+06	2,01E+10	2,32E+11
3rd Floor	1,47E+02	2,94E+06	7,69E+10	5,56E+11

The integration analysis of the ground floor shows that the most integrated part of the space is the cafeteria, which acts as a horizontal circulation element connecting the entrance hall to the deep parts of the floor and to the stairs and elevator (Figure 2). The front yard (garden) covers a large amount of surface and is one of the most preferred/used spaces in the settlement. Although respondents stated that the garden is one of the most frequently used three spaces, the observations show that students tend to use a very limited section of the garden, which has a concrete pavement. According to observations, this section is used as an exterior area for smoking, rather than as a recreation space. Therefore, only this mentioned section of the front yard has been included in the syntax analysis. However, this situation is also related to the time of the season, because the surveys and observations were done during the mid to late fall semester. For example, during the late spring and summer months whole of the front yard is being used by the students as there will be large pillows on the grass and some of the cafeteria furniture would be taken out. Therefore, it is safe to say these results are related to a limited period.

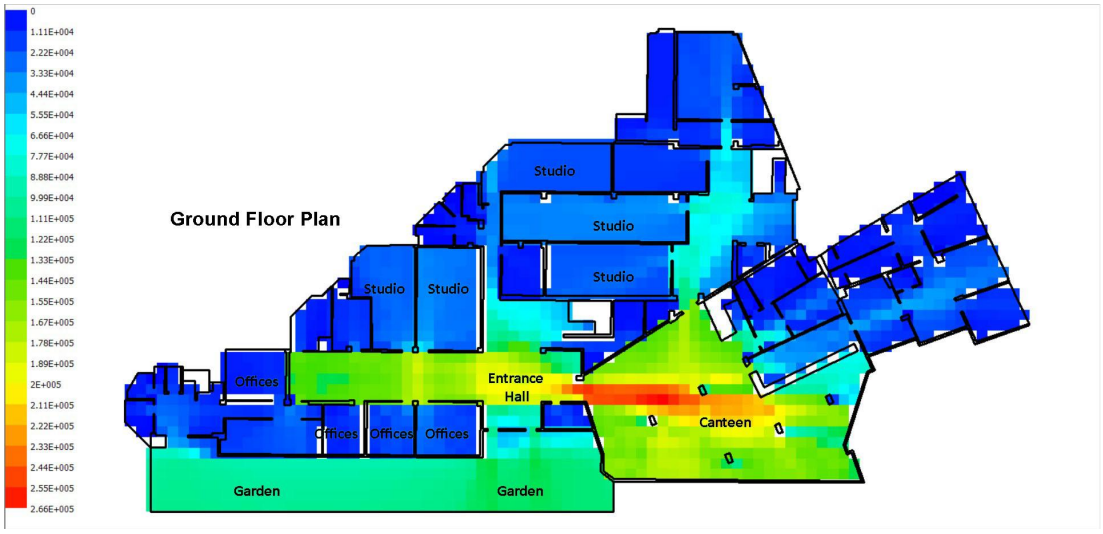

Figure 2: Ground floor, integration analysis

As an integrated space, it could be said that the cafeteria has been located correctly. The results of the survey analysis are also in line with this hypothesis. The respondents stated that the cafeteria is the most preferred area to meet others. The nearby location to the main entrance, and

to stairs and elevator, and also the high integration and, isovist values of cafeteria makes it a great place for such activities like gatherings and meeting others.

The first floor of the building consists of a number of classrooms and lecturer offices, which are serving the English Preparatory School. The most integrated point of the floor is the corridor in the middle of classrooms and, stairs and elevator (Figure 3). This location of the classrooms makes them easily accessible from the lecturer's offices and from the other floors. The main users of this floor are the English Preparatory School students. These students stated that their most preferred spaces are the cafeteria, the classrooms, and the corridors in the order of preference. It could be assumed that the close location of classrooms to the stairs, allows students to use the cafeteria for short breaks, which is on the ground floor. This result may explain the reason for the pattern of students preferring the cafeteria for spare time and short breaks.

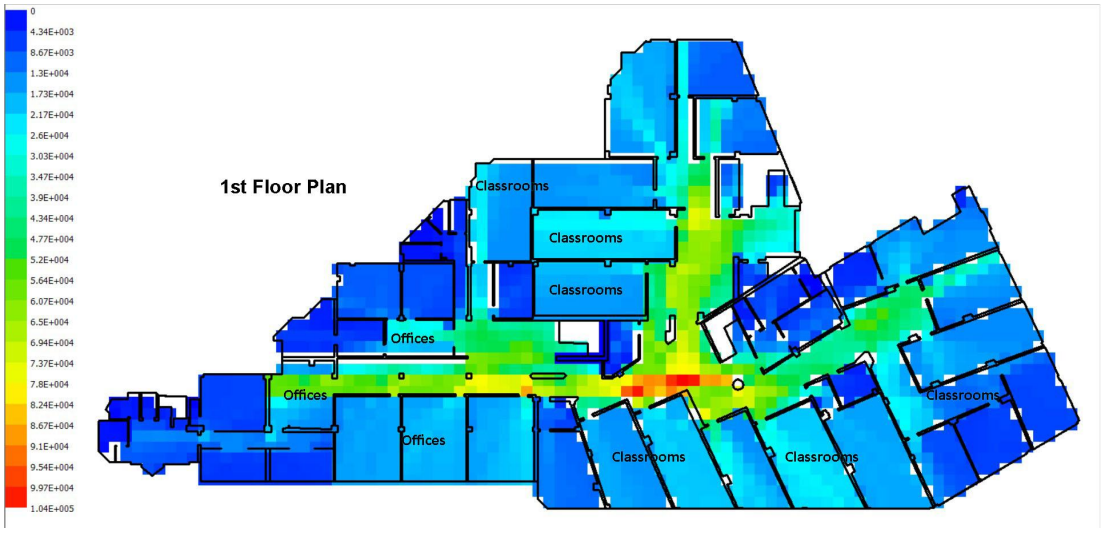

Figure 3: 1st floor, integration analysis

The second floor contains different spaces for various functions, such as lecturer offices, classrooms, and computer labs, along with connecting block A to the other blocks. This floor acts as a circulation area since the bridge connecting block A to the other blocks is located on this floor. Besides, its complex function scheme causes this floor to be used extensively during the day. Also, the labyrinth-like layout of this floor causes students to struggle with wayfinding. The integration analysis shows that the most integrated area on the floor is between the stairs and elevator, the classrooms, and computer labs (Figure 4). Although the bridge connects block A with other blocks, because of the tectonics of the building, it is located in a deep area. This hard accessibility may be the reason why FENG students do not wish to use the front yard much.

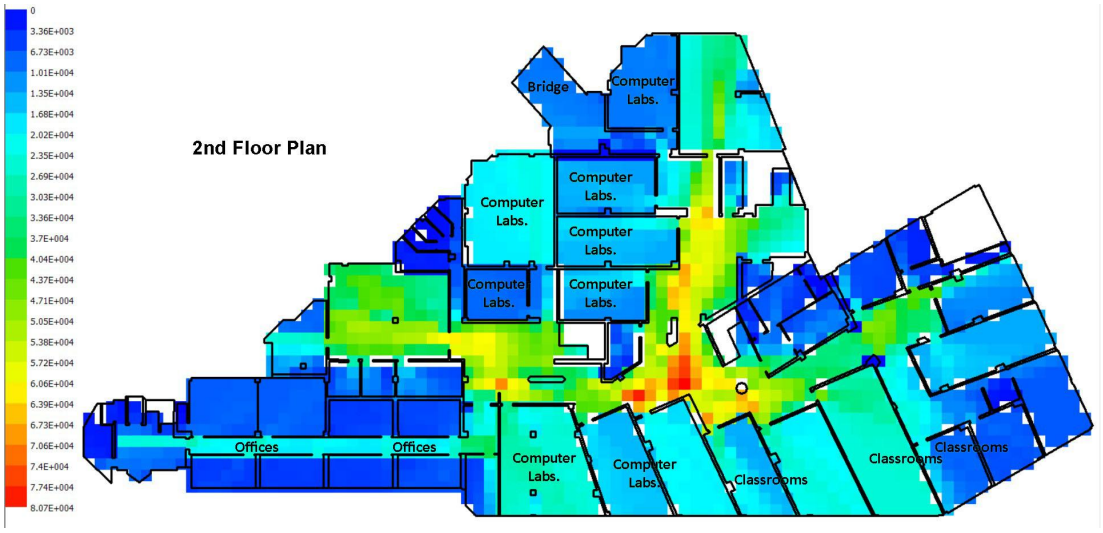

Figure 4: 2nd floor, integration analysis

There are studios for design departments, a lecture hall, a conference hall, and an exhibition hall located on the third floor. As the result of the integration analysis, the area between the conference hall and exhibition hall seems to be the most integrated point (Figure 5). Although the conference hall has a high integration value, it is used only a number of times for events and is closed usually. The exhibition hall also has a high integration value, but the results of survey analysis show that it has the lowest mean values for order of preference in general, and observations also show that it is rarely used by the students for socialisation. The only used part of the exhibition hall is behind the columns, where seating elements exist. Even though this space is not significantly used for syntactic properties, behind the column location provides opportunities to see without being seen, as denoted by Appleton (1975) in the prospect and refuge theory.

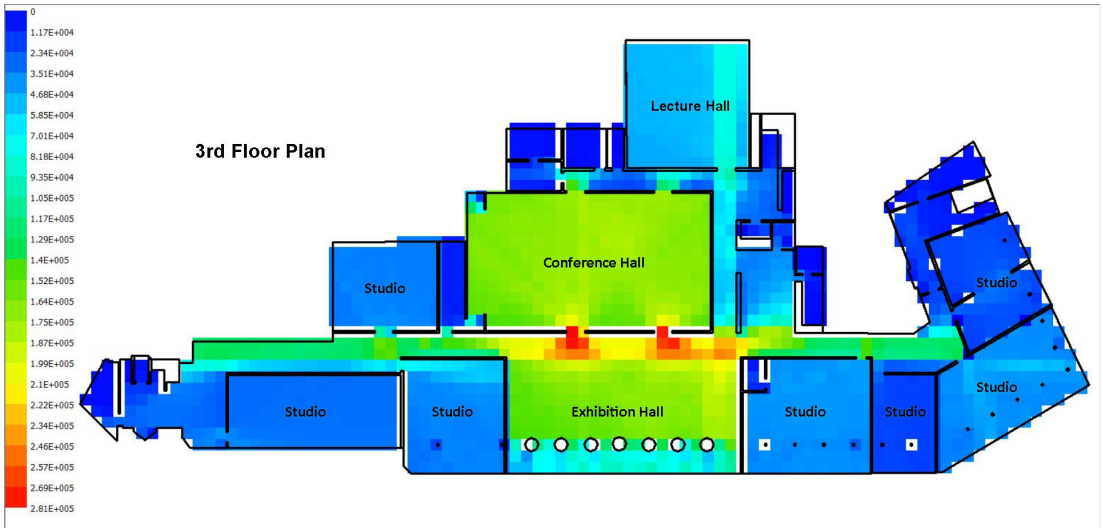

Figure 5: 3rd floor, integration analysis

The main users of this floor are the students of the Faculty of Architecture and Design. The studios by all the departments are used during the week. Although having a lower integration value, the space in between the elevator, studios, and the exhibition hall is densely used by the

students as is observed. The reason for this pattern is, the area has seating elements and a relatively high isovist value (isovist perimeter: 24497.9458 cm), which allows the students to control the ongoing action around them (Figure 6). According to the results, it could be assumed that seating elements are an important component of space for the students.

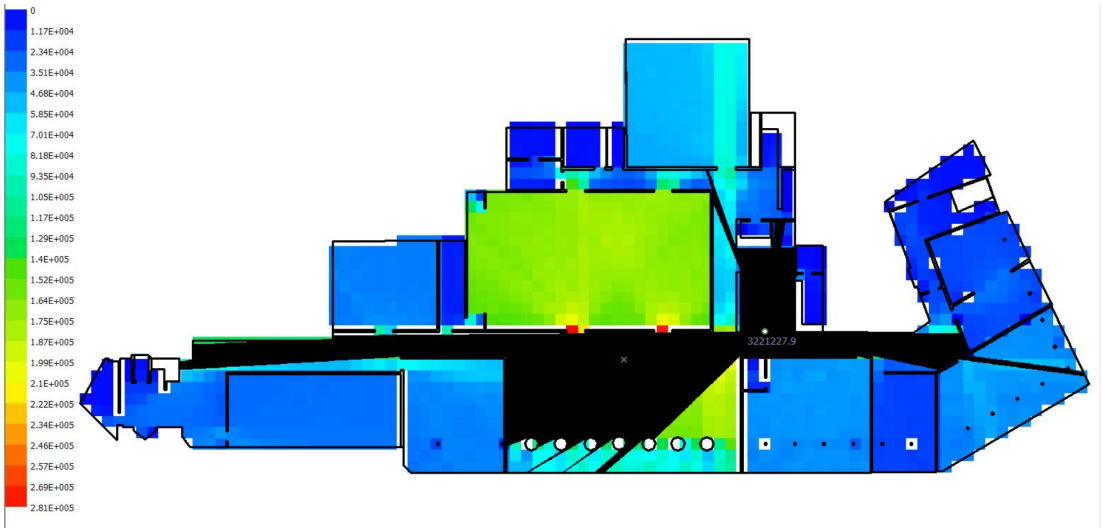

Figure 6: Isovist analysis of the most used area on the 3rd floor

4 RESULTS

This research aimed to explore whether the type of education, department's architectural layout, and study programs have any effect on the students' spatial preference in a university building. The findings show that educational spaces like studios, which are often used by students as a result of design education, take on additional functions like spending their spare time or meeting others. Based on the survey and syntax analyses it could be assumed that, though space is syntactically proper for social activities or gatherings like the Exhibition Hall in Block A, the lack of proper spatial components, such as seating elements, obstructs the development of such activities. Students tend to use the areas with seating elements even though these spaces are syntactically not proper for such activities. However, design education's unique way of setting patterns of interaction among students showed that spaces that they gather or preferred to spend time presented either syntactically integrated spaces or showed a sense of belonging as in the case of classrooms and studios.

It is understandable for the ENGP students to spend more time in spaces close to their classrooms such as corridors, because this group generally will be using the building for one year only, therefore their sense of belonging has not been formed yet. On the other hand, their education model and the related spaces they use are not something unique to a specific discipline, but rather a continuation of a conventional high school theoretical lecture. Thus the use of the cafeteria, classrooms, and corridors may be presenting adequate solutions for their socialisation needs, without putting much thought into it.

As for the FENG students, their schedule is split between buildings, and they are the most mobile group of Block A. Engineers feel most at home in their labs, therefore it is seen that their sense of belonging is also split between buildings. As students of an education model that seeks the optimum solutions for problems, FENG students prefer, use, and evaluate the spaces according to their feasibility; in this case according to distance to the next class in their programme. Therefore, the congruence of spatial preference with the syntactic ones is of secondary importance for this group.

According to the results of the survey analysis, students use the front yard (garden) to stay away from others and spend some alone time, either for a private phone conversation, or a quick smoke of a cigarette. The observations prove that, with its large surface area and the vegetation, the garden is a proper area to serve such intention, although students use a limited area for limited activities. Based on the results of the exhibition hall, it could be assumed this pattern of student behaviour may be the result of the lack of seating elements. Since the seating elements are limited and located on the concrete ground area, students might be avoiding the use of other parts of the garden, especially in poor weather conditions.

These results show that the curriculum affects the students' spatial preferences, especially for design-based departments. Since this is the initial research, the results are tentative. To improve these findings, the survey analyses may be repeated using a wider set of questions and a larger number of participants. The questions may be limited to the preference evaluation of specific spaces, specific uses of those spaces, and their relationship to syntactic data. In future studies, cognitive maps also can be used to detect the spatial perception of students by the departments.

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