Preference Study Environment of Group Study Room in University Library (A Case Study at Tishk International University Library)

Shaaban Mustafa Shukur [1] & Hafedh Yahya [2]

[1&2]Architecture Department, Faculty of Engineering, Tishk International University, Erbil, Iraq
[2] Department of Architecture, Collage of Engineering, University of Mosul, Mosul, Iraq
Correspondence: Hafedh Yahya, Architecture Department, Faculty of Engineering, Tishk International University, Erbil, Iraq
Email: hafedh.yahya@tiu.edu.iq

Abstract: This paper made an investigation at TIU library to indicate to where the group study rooms at the library provide a preference study environment for students, to identify students' satisfaction with current group study rooms situation and their preference for better group study rooms, and to identify factors in preference study environment in terms of size of rooms and furniture. The methodology was descriptive field survey, a questionnaire survey consisted of 20 students enrolled in the TIU to assess their satisfaction with current group study room, and a face to face interview with librarians to identify essential factors in preference study environment. Outcomes of this study provided suggestions in improving group study rooms at TIU library. The results showed that current size and number of group study rooms were not sufficient and students were using other spaces outside library for collaborative activities. The results also showed that although the group study rooms were crowded always, the students generally were not satisfied with current interior environment of group study rooms and they gave priority to number of rooms they liked most to see improved. Interview results showed that despite the reality that students' desire for collaborative activities is growing continually, current numbers of group study rooms are not sufficient, current old furniture and small size of rooms are not providing a preference study environment for students at TIU library.

Keywords: Academic Library, Group Study Room, Preference Study Environment, Students' Satisfaction, Furniture, Collaboration

1. Introduction

Codispoti and Frey defined library as "The library is neither home nor work, but a "third place" for students to study and socialize" (Codispoti & Frey, 2007). "The term 'third place' originates with the sociologist" Ray Oldenburg (1989) as cited in Kylie Bailin Changes in Academic Library Space (Bailin, 2011).

Hisle conducted a study about the changing role of the library in the academic enterprise, and explained that "The third place role of the library has led the design of the physical environment to include a collaborative area to gather and interact, and large open spaces in lieu of small study rooms". He also stated that "The university library has developed into a center of learning and collaboration that can truly become the heart of campus within the university community". He added that "current role of the library is to satisfy a need for an environment that promotes student collaboration and peer learning" (Hisle, 2005). Campbell, as cited in Peterson, defined academic library as "complex institutions with multiple roles (Campbell, 2006).

The traditional role of library was to symbolically reinforce the spirit of learning by providing areas for reading and meeting, while current trend in library design has shifted toward the student learning commons and group study areas" (Peterson, 2013). Applegate conducted another study about academic library in which he showed that "outside classroom, undergraduate students have a decided preference to use the library for their academic work" (Applegate, 2009).

In their study, Head believed that "the new trend of library collaborative spaces where students can access resources while sitting and working together has arrived" (Head, 2016). This idea also supported by Bennett (Bennett, 2009), as cited in Head, who explained that "an academic library is no longer a place for just reading (Head, 2016), but also a place to work and more. Traditional model of yawning reading rooms and dark rooms separated by stacks of books is incompatible with the digital age". "The library of today and tomorrow must provide resourceful spaces that support a wide range of users' learning and research activities while accommodating rapid advances in information technology (IT)" stated by Butler & Baty (Butler, & Baty, 2007), as cited in Head 's research.

Although in their study, Head categorized academic library studying spaces into two main types: Individual studying space and collaborative learning space, there are many types of academic library spaces including group study rooms which we concentrated on in this paper (Head, 2016).

In their study, Peterson stated an explanation about college library spaces. He defined collection space as an open space for book shelves between which there should be enough space for circulation and shelves should be flexible as well. Electronic workstation is a space supplied by technological facilities in which students or staff use for personal work or studying work. Staff workstation is a space for staff with a front desk and often locates at the entrance. During an observation in their study, the author identifies individual studying space as most popular space used by students for individual study (Peterson, 2013). Students usually look for a quiet and visually isolated space for individual studying purposes (Fig. 1.). These spaces are not under the scope of this study.

Figure 1: collection spaces of TIU library (by authors)

1.1 Group Study Rooms

Group study rooms as Head explained "are intended for students who wish to collaborate in groups for projects or other works (Head, 2016). Even though they are not intended for individual use, sometimes they get used for individual study purposes". Collaborative spaces are designed for users to work together and use technologies to access information and share ideas, brainstorm, innovate, and practice presentations and work together on projects as shown in (Fig. 2). Collaborative learning spaces are often manifested in configurable furnishings, small group meeting rooms and/or active learning classrooms (Butler & Baty, 2007).

Figure 2: photograph of the collaborative learning space (Campbell, 2006).

Figure 3: photographs of the group study room in TIU Library (by authors)

"Group work is emphasized in college coursework now more than ever, and is the basis for the collaborative nature of the student learning commons. The library illuminate all of the reasons that group work is becoming increasing important, and continues to be a symbol of learning on campus" (Campbell, 2006). "The interior space at the library can contribute to student success and provide students with a unique study environment that accommodates student collaboration and study achievement" (Peterson, 2013). Thus, it is important to make an investigation about group study rooms.

In this paper, we investigated group study rooms at TIU library to indicate if they provide preference study environment for students.

1.2 Objectives of the Study

The main objective of the study is to assess Students' satisfaction level with the group study rooms and their preference for better group study rooms, to identify important factors in preference study environment, hence to identify appropriate recommendations that help in developing group study rooms at TIU library.

2. Literature Review

Academic library interior environment has been a common issue for a wide range of researches. Many studies have been conducted to investigate what types of spaces academic library should contain to provide ideal study environment for its students, and to foster creativity and innovation. Many studies have conducted surveys to identify useful suggestions for library renovation and redesign at digital age. In his study, Kylie believed that developing of students' learning requirements at 21st century has been criteria for a lot of academic libraries to develop their places to ideal learning environment (Bailin, 2011). The key findings of some studies have been conducted in this field show that although digital age students tend to learn, study, work and share ideas in collaborative open spaces with flexible furniture; libraries need to keep providing places with inviting quiet study environment for extend study purposes.

In Kylie's study, a survey was conducted on changes in academic library space (Bailin, 2011). It was a case study at the University of New South Wales to indicate to what rate the library is successful to supply students' requirements including space design aspect. Framed interviews were used as data collection method that done by one member of the Library team. The dependent variable was students' level of satisfaction with the library spaces and the independent variables were refurbishment at the library spaces regarding to facilities. The findings were that a quiet place is always a requirement for students, and students highly value the library as a place to gather and learn because it is the place that provides a flexible and collaborative environment with sufficient services for students. The author also found that always one of successful elements of the design has been adjustable, changeable and collaborative quality of the studying area.

Another study was carried out by Bieraugel & Neill, in which a survey was conducted on the fostering student creativity and innovation in academic library spaces (Bieraugel & Neill, 2017). The data were collected using a questionnaire survey and a structured interview from a student population expressed all faculties at a big undergraduate university. The dependent variable was learning (exploiting, exploring), and the independent variables were the five behaviors (questioning, reflecting, experimenting, observing, and networking). The key findings were that one of leading places that help encouraging creativity in students are collaborative and group study rooms. They suggest that trend of library design need to develop to providing quiet and reflection spaces, collaboration and interaction spaces to examine, explore and experiment.

Webb, Molly & Sawyer conducted a survey on measuring library space use and preferences: charting a path toward increased engagement. Determining the students' desire for seating inside library spaces regarding type of furniture and location was the aim of the investigation. The data were collected using a multi-method research approach such as videography and survey. The independent variable was the space quality (type of furniture, location), and the dependent variable was the students' preference of using the library spaces. The findings showed that despite the reality that students sometimes tend to study individually and as part of one group in some other times, there are some specifications that are important for UD students in choosing group study spaces such as: quietness of places, facilities of places, places they can administrate, places with flexible furniture and places that provide a combination of human demands with studying actions. Finally, they suggest that a digital age library need to provide both individual study places and group study places for students but each with special specifications (Molly & Others, 2008).

The variables of this study related to furniture and size of rooms within group study rooms including furniture layout shape, furniture material, furniture type, and size of the group study rooms.

3. Methodology

This part starts with a descriptive field survey that was done to describe the current situation of the group study rooms. Then an undergraduate questionnaire survey that was conducted to assess the students' satisfaction level with the group study rooms and preference for better group study rooms. Participants of the survey consisted of a sample of students' population represent the 4th stage at architecture department. The selection of the 4th stage students at Architecture department based on their experiment of using library during the previous three years of their studying at college and their background knowledge about interior space environment.

This followed by an interview that was done with librarians to identify features of the preference study environment within group study rooms. The confidentiality of participant learners and librarians were kept anonymous.

3.1 Research Sub-questions

What is the students' satisfaction level with current group study rooms and preference for better group study rooms?

What are important physical features of a better study environment within group study rooms relating to (furniture and size of the rooms)?

3.2 Descriptive Field Survey

This study used a descriptive field environment at the group study rooms located at the rear part within the library. It was taken at morning in the winter semester of 2019 when the university students were doing midterm exams. Describing the current condition of the group study rooms was based on this field survey results. To back up the description, the field survey includes picture analysis. Dimensional floor plan of the library including group study rooms is shown in Fig. 4. below.
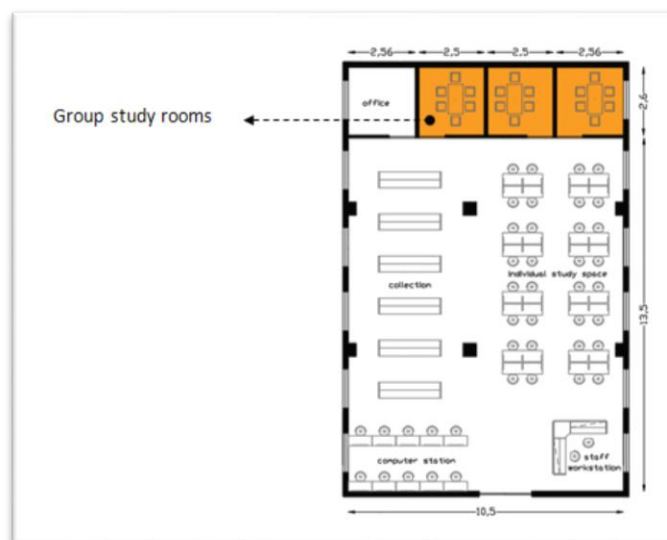

Figure 4: Floor plan of the TIU library (by authors)

3.3 Questionnaire Survey

This study aimed to collect data on students' satisfaction and preference for a better study environment. For this purpose, it conducted a structured questionnaire survey. The survey consisted of undergraduate students. The survey process was done through paper submission to students. An Undergraduate sample of 20 students participated in the survey. A simple random sampling was used in choosing the survey students. The survey was conducted at the end of semester and all students responded to the survey.

The survey was consisted of 15 questions. The construction of questions based on the research questions, some of them were repeated in other surveys and found through literature review, and some of them were produced from talking about the issue with students. The question types were dichotomous, categories, and open ended questions asked to collect data. The question number 9, asking respondents to choose one of four pictures, was inspired from the image board technique that was found through literature review (Peterson, 2013). The last question was an open ended question asked students to "write it down if there any missing descriptions about the group study rooms at Tishk International University Library that would help produce a preference study environment for them, and the first question was a demographic question about gender.

All of the participants were from 4th stage at Architecture Department including both males and females. Excel program was used in statistical analyzing of the survey collected data. In the questions about satisfaction level of students, 3-levels of variables were applied, (satisfied, neutral and dissatisfied), and they were coded as 1 for satisfied, 2 for neutral and 3 for dissatisfied.

3.4 Interview

This study aimed to collect data on preference study environment features related to size of rooms and furniture. For this purpose, it conducted an interview with librarians. The interview process was done through asking structured questions. A sample of 1 librarian participated in the interview. Choosing the librarian based on the reality that he had experience about 15 years in this profession.

The interview was consisted of 16 questions. Some of them were repeated in other surveys and found through literature review, and some of them were concluded from talking about the issue with students. The question types were open ended questions and one of them was category.

4. Result

Assessing the students' level of satisfaction with the group study rooms and identifying the students' preference study environment were the main targets for this study to provide new suggestions that help in improving learning spaces within library. An informal observation, an undergraduate student survey, and an interview were used for this purpose.

4.1 Descriptive Field Survey

The TIU library is at right side at the second floor of main building. The entry to the library opens to a corridor that attaches lecture halls together and is a pedestrian loop around the floor. Adjacent rooms include University lecturer and staff offices. It has been built in 2008. The crowd interior spaces of the library and the low ceiling showed the compactness of the library. The main open hall of the library included staff work space and computer workstation spaces at the front part; individual study spaces

(desks) and collection spaces at the rear part. Three group study rooms were at the end of the library which students needed to pass the entire library hall to access them, as shown in Fig. 5. below.

Figure 5: Photograph of the compact library main hall during descriptive field survey (by authors)

The three rooms were at the back section of the library main hall. They were adjacent to the individual study spaces, collection spaces, and a small office. The rooms' doors were opened to the main hall of the library, and narrow corridors between individual study desks, collection spaces, staff workstation space, and computer work stations access the group study rooms to the entrance.

The descriptive field survey showed that individual study seats and computer work station seats were not sufficient for the current large amount of students in the TIU library based on the reality that many students leave the hall after they found no empty seats inside the library to fulfill their learning purposes.

4.1.1 Size

The descriptive field survey also revealed that only three small group study rooms each with a small size and table of 4-6 seats were not sufficient for the university students based on the fact that students used empty lecture halls and in cafeteria to do their group works when they didn't find any empty group study rooms inside the library. Yet, the library either had to elect between (less individual study and collection space) and (more group study rooms), or (less group study rooms) and (more individual and collection space), because the library space was limited. As shown in Fig. 6. below.

Figure 6: The small size group study rooms during descriptive field survey (by authors)

4.1.2 Furniture

Based on the descriptive field survey results, the current furniture inside group study rooms were old and not suitable for group study spaces. The tables and chairs material was partly metal and it produced undesired noises during collaborative activities. As shown in Fig. 7. below.

Figure 7: The group study rooms' furniture during descriptive field survey (by authors)

4.2 Questionnaire Survey

This study aimed to collect data on students' satisfaction and preference for better group study rooms. For this purpose, it conducted a structured questionnaire survey. 40 percent of respondents were male and 60 percent were female. The analysis of questionnaire survey results is shown in tables 1 to 6 below.

Table 1: How often do students visit the TIU library?

Number of days	Percentage
2-3 days each week	% 65
Daily	% 35

Table 2: Students' spending time at the TIU library during their visits

Spending Time	Percentage
Less than one hour	% 35
1-3 hours	% 50
More than 3 hours	% 15

When asked do students visit group study rooms and do they study at group study rooms, all students stated that they visit and study at group study rooms.

Table 3: Students' satisfaction with current group study rooms' interior environment

Satisfaction Level	Percentage
Satisfied	% 10
Neutral	% 30
Dissatisfied	% 60

Table 4: Student's satisfaction level with the current size of the group study rooms

Satisfaction Level	Percentage
Satisfied	% 20
Neutral	% 35
Dissatisfied	% 45

For the question does TIU Library have sufficient group study spaces available at the times they need? Majority of respondents stated that the library doesn't have enough group study rooms available when they need which were 90 percent.

Table 5: Student's preference for furniture layout shape of group study rooms

Furniture Shape	Preference Percentage
Circular shape	% 60
U-shape	% 05
Square shape	% 05
Rectangular shape	% 30

Question number 11 was a multiple response type asking how important are the following aspects in your preference group study room? (Furniture material, Size of the room, Furniture shape, a variety of seating options, Furniture color), and students ought to choose one of these levels (important, neutral, less important) for each aspect. All students ticked 1 for (size of room) as an important aspect, follows by (furniture shape) ticked by 17 respondents as an important aspect; 13 respondents considered (furniture material) as an important aspect, the rest of students considered it as neutral; only 3 respondents considered (furniture color) as important aspect, where 14 of them considered it as neutral; and no respondent considered (variety of seating options) as an important aspect, 14 of them considered it as less important.

Table 6: Student's preference for tables and chairs materials of group study rooms

Furniture	Furniture Material	Percentage
Table	Wood	% 80
	Plastic	% 20
Chair	Wood	% 30
	Plastic	% 70

All students stated that they prefer movable furniture when asking them whether they prefer movable or fixed furniture types for a preference group study room. For the question "what feature of group study rooms you would like most to see renovated and improved at the TIU library?" 30 percent of respondent students chose size of the rooms to show that current size of rooms is not sufficient; half of respondents gave the priority to number of rooms as they believed that current room numbers are not sufficient, 20 percent chose furniture. The last question was an open format question asked students to "write it down if there any missing descriptions about the group study rooms at the TIU library that would help produce a preference study environment for them" but all students left it empty.

4.3 Interview

This study aimed to collect data on preference study environment features related to size and furniture for this purpose it conducted an interview with a librarian. The analysis of the interview results, and the significant aspects that are important inside preference group study rooms and suggested by the expert librarian are stated below. Based on the interview results, the group study rooms get visited most by the students, and regarding furniture, size and number of rooms, group study rooms had problems more than other spaces.

4.3.1 Satisfaction

Table 7: Satisfaction level of the librarian with the group study rooms

Aspect	Satisfied	Neutral	Unsatisfied
The current condition of size of group study rooms			Dissatisfied
The current condition of furniture material			Dissatisfied
The current condition of furniture shape and type			Dissatisfied
The current condition of number of group study rooms		Neutral	

4.3.2 Size and Number of Group Study Rooms

Table 8: The librarian's preference for size and number of group study rooms

Aspect	The librarian preference	Note
Size of group study rooms (compare to current group study rooms)	Larger than current group study rooms.	Current group study rooms are (2.5*2.5)m^2
Number of group study rooms for current situation of TIU library	6	With variety of sizes.

4.3.3 Furniture

Table 9: The librarian's preference for furniture in preference group study rooms

Aspect	The librarian preference	Note
Table material	Shiny wood	It could be wiped easily.
Chair material	Light wood with anti-noise plastic pad under bases.	
Table layout shape	Circular table	Students will be able to collaborate better, and it will provide a more intimate working environment.

Furniture style	Uniform	Too much variety in furniture type in one room will create sense of chaos.
Furniture type	Movable	Students move a lot during collaboration activities.
Number and types of seats	4-6, 7-9, 10-12	There should be several group study rooms with a variety of number of seats.

5. Discussion and Recommendation

This paper was made to assess students' level of satisfaction with current group study rooms, and to identify important features of group study rooms in order to suggest appropriate recommendations that help in improving the studying environment. The paper described the current condition of the group study rooms, and looked at satisfaction level to indicate what is important for students in the current planning of the university library. Features of preference study environment were identified regarding furniture, number and size of rooms.

- Students survey results showed that only 10 percent of survey students were satisfied with the current interior environment condition of the group study rooms. Students valued movable furniture. The conclusion of students' answers for furniture selection was that the furniture should be comfortable and can be spread out inside the room.
- For the students, number of rooms was the aspect they would like most to see renovated in group study rooms at TIU library, and this is in opposite with the librarian's idea who gave the priority to current furniture to see renovated, his idea was based on being informed about many university libraries he had been travelled since last 15 years.
- The groups study rooms should be supported with better furniture including shiny wooden tables that can be wiped easily with anti-noise plastic pads under their bases, and wooden chairs that can carry flexible loads of students during the collaboration activities.

The findings of this paper are to help in providing a better learning environment for students through increasing the size of rooms, number of rooms to a sufficient rate, and improving the furniture condition at the university library.

6. Conclusion

The interior space designs inside libraries are not providing a preference study environment for their students. Results of this paper showed us the same situation in the group study rooms at TIU library which were not providing a preference study environment for students regarding furniture and size of rooms. The study spaces within a library should do several things. On a functional level the space must be quiet, and a certain level of control over other aspects such as furniture arrangement (Peterson, 2013). Evaluation and measurement is a key to the success of any library.

To enhance the physical quality each academic library should gauge their student fulfillment and plan the spaces in the light of the requirement of students. So, the library spaces of TIU should also fulfill its students' needs and requirements. Accordingly, the results of this study showed what type of study environment the students need and require as a better study environment, and identified important features of a preference group study rooms in terms of furniture and size of rooms. Hence, the

appropriate recommendations that have been concluded by this study will inspire the future renovation at the TIU library.

Finally, we can say that the group study rooms design orientation within library needs to be re-assessed based on the reality that recent academic library designs are trying to fit into the student preference study environment.

7. Recommendation for Future Research

- Repeat the study using different methods of collecting data such as (observation) to raise the accuracy level of results.
- To enlarge the range of data on this topic, the study need to be repeated at other universities and departments.
- Repeating the study focusing on other aspects inside the same space or/and same aspects inside other spaces within academic library would give new findings.

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Appendices

Appendix 1: Questionnaire Survey Questions

QUESTIONNAIRE

Dear Student,

We would request you to spare your precious time in completing this questionnaire, which would enable us to enrich our knowledge and complete this study successfully. This survey is anonymous, so feel free to choose your answers. Thank you for participating.

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1- Are you male or female?

○ Male ○ Female

2- How often do you visit Ishik University library?

○ Daily ○ 2-3 days in week ○ 10-12 days in month

3- How long do you stay at the Ishik University Library during your visits?

○ Less than 1 hour

○ 1-3 hours

○ More than 3 hours

4- Do you visit group study rooms at the TIU Library?

○ Yes ○ No

5- Do you study in groups at the Ishik University Library?

○ Yes ○ No

6- How much are you satisfied with the group study rooms' interior environment at the Ishik University library?

😊	😐	☹
Satisfied	neutral	unsatisfied
○	○	○

7- Does the Ishik University Library have sufficient group study space available at the times you need?

○ Yes ○ No

8- How much are you satisfied with the current size of the group study rooms at the Ishik University library?

| Satisfied | neutral | unsatisfied |
| ○ | ○ | ○ |

11- Which one of these furniture shapes do you prefer for an ideal group study room?

○ U-SHAPE ○ CIRCULAR

○ SQUARE ○ RECTANGULAR

12- Imagine your ideal study environment. How important are the following factors in your ideal group study room?

Furniture material	○ important ○ neutral ○ less important
Size of the room	○ important ○ neutral ○ less important
Furniture shape	○ important ○ neutral ○ less important
A variety of seating options	○ important ○ neutral ○ less important
Furniture color	○ important ○ neutral ○ less important

13- What material do you prefer for chairs in ideal group study rooms?

○ Wood ○ Steel ○ Plastic

○ Others (please mention) ....

14- What material do you prefer for table in idea group study rooms?

○ Wood ○ Steel ○ Plastic

○ Others (please mention) ....

15- What furniture type do you prefer for studying at ideal group study rooms?

○ Movable ○ Fixed

16- What feature of group study rooms you would like most to see renovated and improved at the Ishik University?

○ Furniture ○ number of rooms ○ Size

17- Please write it down if there any missing descriptions about the group study rooms at the Ishik University Library that would help produce an ideal study environment for you.

....
....
....

Before submitting this questionnaire, you might wish to review your responses. You may change any response.

THANK YOU FOR YOUR ASSISTANCE

Appendix 2: Questions and Answers of the Structured Interview with Librarian

Question from the paper	Answer from the librarian
Which spaces get visited MOST by students at the TIU Library for studying?	It depends on the time; computer station spaces during research days and individual study desks during exam days get visited most; otherwise, group study rooms get visited most by students.
Which space has more problems than other spaces in providing preference size and furniture for students?	Regarding space size and furniture, group study rooms have problems more than other spaces.
How much are you satisfied with the current group study rooms' interior environment condition at the TIU library?	The current condition is not sufficient for students; the rooms get over crowd usually and they become a source for noise sometimes; the furniture types are old and not sufficient in number and quality.
How much are you satisfied with the current condition of furniture in the group study rooms at the TIU library?	Not satisfied.
What physical aspects of group study rooms are MOST important for a preference study environment?	Size of rooms is most important aspect; furniture and location of rooms are less important aspects compare to the size of rooms.
Does the TIU library have enough group study rooms available?	The current three group study rooms are not enough, based on the reality that often groups of students leave the library after they find no empty group study rooms; sometimes they left their bags and books inside the room at early morning as a sign that the room has been taken.
What size of furniture do you prefer for group working in a preference group study room?	There should be several group study rooms with a variety of sizes (4-6seats, 7-9seats, and 10-12seats) inside a library; there should be no room less than 4 seats.
Which one of these furniture shapes is more preferable for a preference group study room? (U-shape, Circular, Square, Rectangular)	The Circular is an appropriate shape for group study rooms based on the reality that it is more flexible, students will be able to collaborate better, and it will provide a more intimate working environment compare to other shapes.
Imagine a preference study environment for a group study room.	It should has been designed such that can accommodate one of group sizes that mentioned above; there should be a uniform type of furniture with an ordered suitable variety of colors that are comfortable for eyes. Too much variety in color and shapes will create sense of chaos.

What material would you prefer for tables and chairs in preference group study rooms?	Table material should be a shiny wood and could be wiped easily based on the reality that students often use it as a writing board; chair material should be a light movable wood with plastic pad under bases to prevent making undesired noises during movement; chair joints should have been designed such flexible that can carry load of students during activities.
What furniture type do you prefer for preference group study rooms?	Movable type of furniture is more appropriate for group study rooms based on the reality that students often move a lot during collaboration.
What feature of group study rooms you would like most to see renovated and improved at the TIU?	The priority would be given to current furniture of group study rooms which are old and not suitable anymore for a preference studying environment; this would follow by the number of rooms which are not sufficient for current population of the university.
What size do you prefer for each group study room to be a preference study environment at the TIU library? Compare your answer with the current size of rooms.	A preference group study room size should be larger than current compact rooms at the library which have an area about only (2.5*2.5) m2 for each.
How many group study rooms do you prefer for TIU library?	The number of current rooms needs to be doubled at least, although there will usually be demand for more rooms based on the reality that the Students' demand and desire for group study rooms and collaborative work grow continually.
Please tell if there any missing descriptions about the group study rooms at the TIU library that would help produce a preference study environment for students.	Besides of descriptions mentioned above; the size of the rooms need to be enough sufficient to accommodate flexible sofas, and some other facilities such as data show and boards for students. Although the rooms need to have no problems acoustically, they need to have transparent partitions at front side for the privacy issue.