
Revitalizing Underutilized Social-Study Areas in a Student Residence Hall



ABSTRACT

Study Team

This research project was conducted with a collaborative effort between TreanorHL, Department of Architecture of the University of Kansas (KU), Department of Residence Life of Sam Houston State University (SHSU), and a furniture manufacturing company. Sharmin Kader was a Ph.D. Candidate and Malia Bucher was a M.Arch. student at KU while designing and conducting this research study.

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Social interaction and a sense of community among students in a residence hall play a vital role in student well-being and academic success. Thus, social-study areas in a residence hall play a significant role in providing places where students can unload their experiences and stress with their peers. In today's residence halls, the interactions between hall-mates have been significantly reduced due to several reasons. Two significant reasons are: construction of more semi-private residence halls in which students are spending more time in their private rooms and student dependency on the internet-based virtual social world. In addition, there is a gap in traditional design concepts regarding addressing current needs which has led to creating underutilized spaces. The need for identifying innovative design solutions that invite students for more utilization is evident. To fulfill this goal, this study considered experimentation with various design interventions to create an attractive environment for students.

To fulfill this goal, the study considered experimentation with various design interventions to create an attractive environment for students. Such as adding privacy curtains, providing comfortable furniture, and creating a *Living-Room* style arrangement. A quasi-experimental research design with a mixed method of data collection was considered. Data collection includes interviews, observations and surveys. A 300-bed residence hall, which has six similar underutilized study areas, was selected for this investigation. Among these six areas, five were changed per the research plan during the spring break in 2015. Data were collected twice (pre-test & post-test) using the same measures. The final design decisions were made based on these research findings.

Most of the interventions increased utilization, satisfaction, social interaction, and a sense of community. Some new and interesting findings were revealed. For example, a good number of students reported that they do not like having a window view in study areas because it distracts them during study. Students also like a variety of styles in study areas instead of similar ones on each floor. The final design decisions were made based on these research findings. Additionally, a design-checklist with three different concepts of design-templates are recommended to create better-utilized study areas.

This study has focused on improving student well-being through designing a better study environment. The systematically collected evidence illustrates that an improved design attracts more students, eventually increases interaction among hall mates, and creates a better sense of community. The design checklist and three design templates provide guidelines for design professionals and for housing administrators to create a new facility or renovating an old one. These findings (guidelines) are being translated to other new projects and are helping significantly to convince clients that a better design has better outcomes. These design-research project findings have been disseminated to various audiences (housing professionals, architects, interior designers, and manufacturers). So far, this study has been presented in four conferences of various disciplines, displayed in the most popular magazine of housing-professionals, and published in a free-access online white-paper.

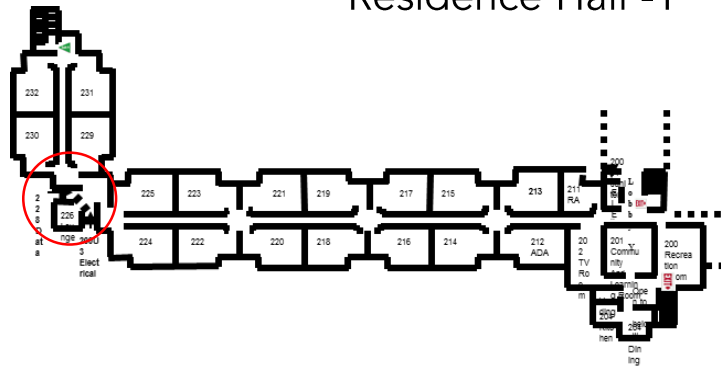


PROJECT BACKGROUND

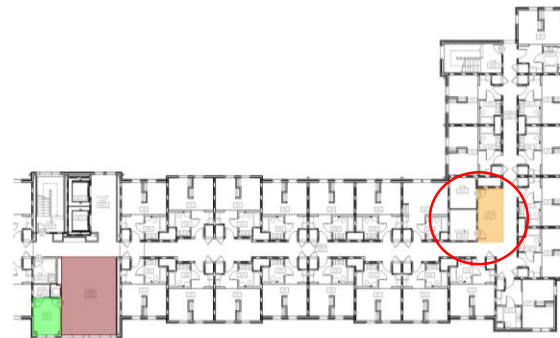
Problem statement: In today's residence halls, the interactions between hall-mates have been significantly reduced due to several reasons. Two significant reasons are: construction of more semi-private residence halls in which students are spending more time in their private rooms and student dependency on the internet-based virtual social world. In addition, there is a gap in traditional design concepts regarding addressing current needs which has led to creating underutilized spaces. The need for identifying innovative design solutions that invite students for more utilization is evident.

Project: This project was derived from a critical design issue: underutilized study areas in two newly constructed residence halls in a university at Texas. In one case (constructed in 2006), the areas were visually isolated with glass doors from the corridor (Figure-1) and in the other case (constructed in 2011), the areas were completely open (Figure-2). In both, the areas were under or never utilized by the residents. The housing director mentioned one piece of evidence of these underutilized spaces, in the second project the chairs were placed on top of the table for floor-cleaning purposes and those chairs had remained there for the rest of the semester. They were never taken down by the students to use.

Residence Hall -1



Residence Hall -2



PROJECT BACKGROUND

Project Aim: The client (Department of Res-life of a University) communicated with the architectural firm to remodel /design the wing study areas of the second residence hall (constructed in 2011). The architectural firm along with a group of researchers from another university and a furniture manufacturing company conducted experimental research in these wing-study areas to come out with the final design decisions. The project aim was to find out what the reasons are of these underutilized spaces and how to design or remodel these spaces so that the students would utilize them more. Making students leave their semi-private rooms and motivating them to use common spaces in residence hall carry a great significance in overall well-being of students.



THEORETICAL BACKGROUND

Why social interaction among students is significant in a residence hall

Pascarella and Terenzini (1991) noted in their reviewed publication that residence hall living has been positively linked to a variety of outcomes: increases in aesthetic, cultural, and intellectual values; a liberalizing of social, political, and religious values and attitudes; increases in self-concept, intellectual orientation, autonomy, and independence; gains in tolerance, empathy, and ability to relate to others; persistence in college; and bachelor's degree attainment. In their recently reviewed publication (2005), they indicated that many of these gains associated with living on campus may be indirect, rather than direct, due to the increased opportunities for social interaction provided when students live on campus. Sohrab Rahimi (2015) also categorized the advantages associated with social interaction in residence hall, in his thesis's literature review section: increases retention rates; improves educational performance; helps students develop college-specific values; helps integrate minorities; and, helps generate a friendly and favorable campus atmosphere. For all these reasons, planning and designing a residence hall that facilitate and enhance social interaction is significant (Paine, 2008; Rahimi, 2015; and Lawless, 2012).

How social-study area design is impacting student outcome

Social interaction and a sense of community among students in a residence hall play vital roles in student well-being and academic success. Thus, social-study areas in a residence hall play providing places where students can share their academic experiences with their peers and release stress – which will help them concentrate more on study and overcoming difficulties. Also, making students leave their rooms and attracting them to social spaces will eventually increase interaction among hall mates - which will create a better sense of community and provide a sense of belonging. Many students leave a university if they feel disconnected and marginalized from their community. So, a better utilized space can influence students' overall physical and psychological well-being, improve academic performance, and increase graduation rates. Knowing how to create successful spaces will better utilize state money to reduce underutilized spaces.

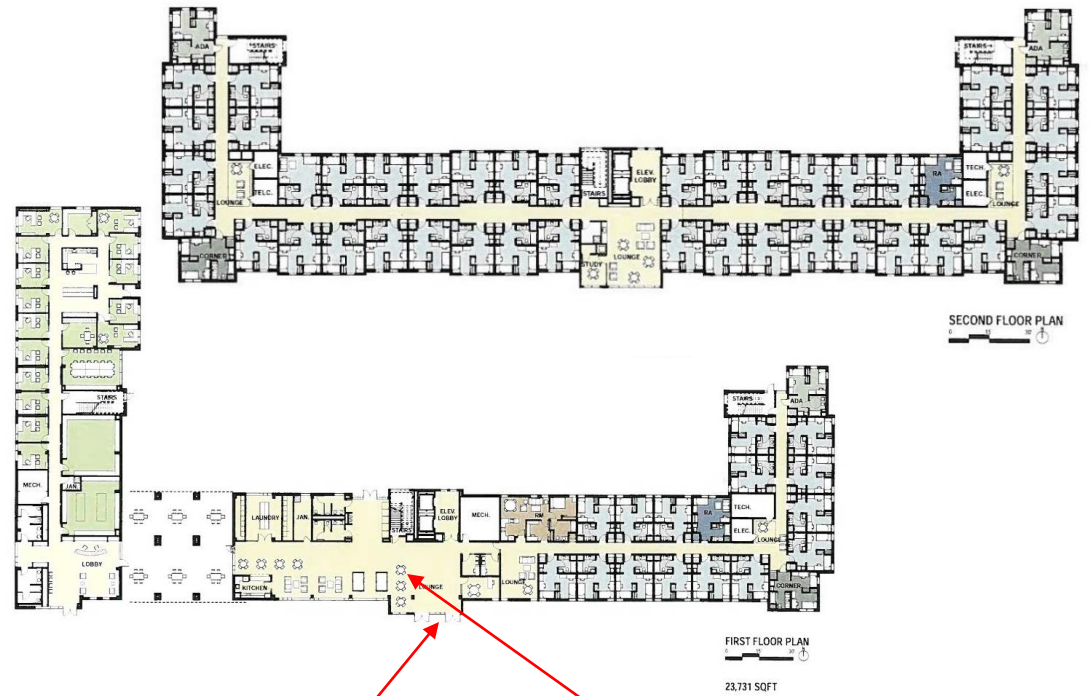
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- Paine, D. E. (2008). An exploration of three residence hall types and the academic and social integration of first year students. ProQuest.
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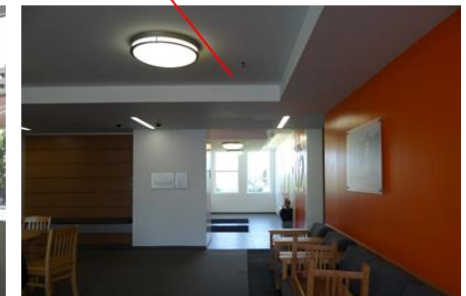
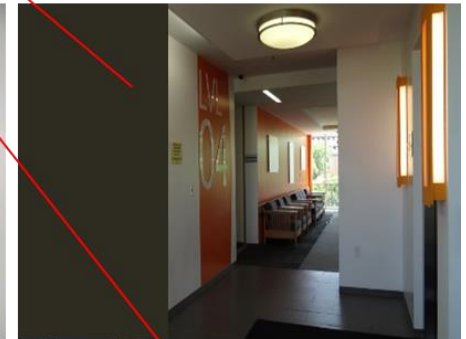
SETTINGS

The residence hall is in a central location of the university and close to the dining center. The hall shares its first floor with the Residence Life Office and the first floor has a lobby attached with the hall director's office, lounge area with a TV, the only TV in this hall, along with a ping pong and pool table, a kitchen, a laundry facility, a large patio at the back with a BBQ stand. Four swings are placed in the covered open area between the hall first floor area and the res-life office. It contains 300-beds.



SETTINGS

The upper-level accommodation floors have a c-shaped layout with the floor common areas located in the center and each wing has a study area. The units have a loft-like layout and offer a semi-private living arrangement that includes a kitchenette and full bath.



RESEARCH DESIGN



RESEARCH METHODS

EVIDENCE BASED DESIGN

This study has considered the eight steps of evidence based design process to develop a research based solution to these study lounges which considered a quasi-experimental research design. Evidence-based design is a field of study emphasizing credible evidence to influence design. "The deliberate attempt to base building decisions on the best available research evidence with the goal of improving outcomes and of continuing to monitor the success and failure for subsequent decision making" (Center for Health Design).

RESEARCH QUESTIONS

This project has four questions,

What design issues are impacting student behavior for not using these spaces?

What design concepts or features would attract students or impact their behavior positively to use these spaces?

Is there any relationship between residence hall physical environmental design (place design) and student behavior to use or not-use these study areas?

What are the design considerations for future?

PROCESS

This project considered a research approach (evidence-based design) to improve outcomes and to develop evidences for further implementation.

1st Question: To address the first question, "design issues that are impacting underutilization", an initial site visit and analysis was conducted in August, 2014. Eight possible design issues were identified (discussed in next page).

2nd Question: To address the second question, "design concepts/features that attract students for better utilization", the study considered a quasi-experiment research with various design interventions to create an attractive environment for students. This process has multiple steps and considered pre-test and post-test data collection using the same measures. The steps are:

- Identify relevant evidence – three processes were followed to identify the design recommendations to create better utilized study areas.
 - a) A search of relevant literature – an intensive literature search was conducted in multiple databased (PsycINFO, Social Science Citation Index, Science Citation Index, ProQuest Dissertations & Thesis, Avery and Cochrane Library; Wiley online library), in Google for reports, books, white papers, and online magazines.
 - b) Analyzing student feedback.
- After analyzing all the information, this project developed some hypotheses and three design concepts with expectations that would create better utilized study areas [discussed later]; for example, adding privacy curtains, providing comfortable furniture, and creating a Living-Room style arrangement. A quasi-experimental research design with a mixed method of data collection was considered. Data collection includes interviews, observations, and surveys. This experiment took place in six similar upper-level study areas. Among these six areas, five were changed based on the investigation plan during spring break. Data were collected twice: before changes and after changes.

3rd Question: The answer of the third question relies on the results of the second question. If the experimentation creates better utilization, then the answer would be positive that there is a relationship between the environmental design and student behavior.

4th Question: To address the fourth question, this study has analyzed the outcome of each design feature and developed a design checklist.

After analyzing the positive and negative design features, a design checklist and three design templates have been recommended.



INITIAL ANALYSIS

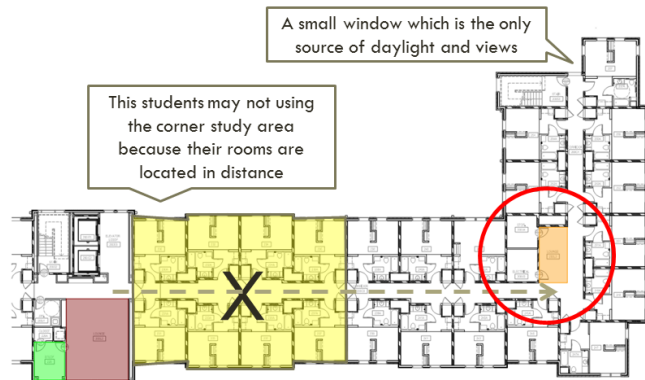
Among all these identified design issues, only last four can be changed or modified for experimentation. The residents were interviewed to get their feedback about:

How often they use this study area?

Why and why not they are using this space?

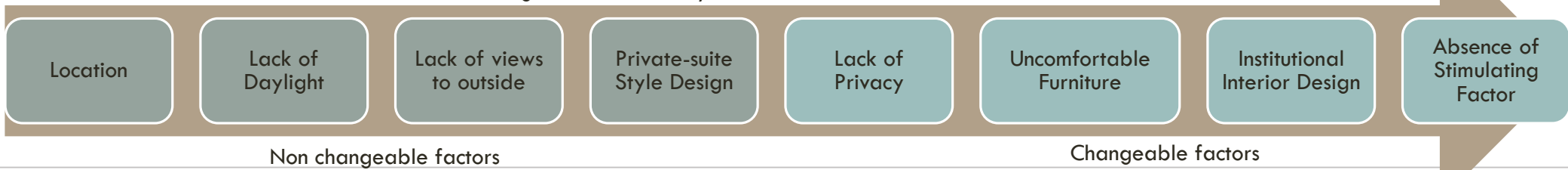
What are their opinions about the design and furniture of this space?

What would attract them to use this space more?



DESIGN ISSUES	POSSIBLE REASONS
Location	The wing-study area is in the corner of a L-shaped wing which is almost 120' away from its beginning point. The rooms which are located towards the beginning might have found this study area distant and might have chosen the nearest study area in the center location.
Lack of Daylight	Many environmental-psychologist have established the significance of 'presence of daylight' in human behavior. These corner study areas are lacking daylight. There is a small window at the end of the corridor which doesn't provide any daylight to this space.
Lack of Views to Outside	Again, the views to outside nature has found significant for human being by many studies. The lack of views to outside might be a reason of the underutilization.
Private-suite Style Design	The private semi-suite room provides students opportunity to study and stay in their room with comfort, which might be a reason for
Lack of Privacy	Privacy plays a significant role in human behavior. These areas are lacking visual and auditory privacy which could be a vital reason for the students for not using these study areas.
Uncomfortable Furniture	The study areas contain a round wooden desk, four wooden chairs without any cushion, and two sofa-chairs with cushion on back and seat, and wooden hand-rest. All these furniture pieces are heavy to move. This furniture may not be comfortable to the students to sit for a long time to study, or may not provide enough flexibility to use comfortably.
Institutional Interior Design	The study area has three white-bright ceiling lights and white paints on all sides, which are creating an institutional look or missing a warm and cozy interior design. This might be a reason for underutilization.
Absence of Stimulating Factor	These areas are missing any form of art-deco or any stimulating factor that could attract students to use these spaces. For example, a painting, a white board to write, or any playful elements.

Design Factors that may influence underutilization



Successful Concepts in LITERATURE

The THIRD PLACE

"...provides opportunities for important experiences and relationships in a sane society, and are uniquely qualified to sustain a sense of well-being among its members" (Oldenburg, 2000)

- A place that exists outside sleeping and study areas
- Primarily social space
- A place to gather and enjoy one another's company



Components to create a third place in a residence hall (Suggested by lawless, 2012)

CHOICE AND CONTROL

- Multiple activities in one space. Students would rather enter a space with many things happening rather than just one. (Nugent, 2012)
- Control over environmental factors, such as color, lighting, temperature, and maintenance. Greater degree of satisfaction among the students (Lawless, 2012)

FLEXIBILITY AND ADAPTABILITY

- Maneuverable furniture (Nugent, 2012)
- Furniture with different Postures (Steelcase)
- Paintable surfaces, such as white boards, tack boards, chalk boards (Lawless, 2012)

COMFORT AND EASE

- Psychological and physical security - prospect and refuge, sense of autonomy (in a public space, but still feel unobserved) (Kaya & Weber, 2003)
- Home-like environment - (contains a sofa & items of sentimental value) and Access to Nature (Lawless, 2012).

COMMUNITY

- The hearth - Represents intimacy, gathering, and nourishment; Cafes, coffee bars, anywhere people can gather to eat, talk, read, or work (Heerwagen, 2004).
- Can help promote tangible traditions (Lawless, 2012).
- Identifiable features: Such as artwork, school spirit, cultural reference (Lawless, 2012).



DESIGN CONCEPTS

With these design features, three design concepts have developed to create Third Places in residence hall. [Next Page]

REFERENCES

Oldenburg, R. (2000). *Celebrating the Third Place: Inspiring Stories about the "Great Good Places" at the Heart of Our Communities*. New York: Marlowe & Company.

Lawless, J. W. (2012). *Moving Home to College: Socio-Physical Factors in Creating 'Home' in Temporary Environments*. PhD Dissertation, the University of Kansas.

Heerwagen, J. H., Kampschroer, K., Powell, K. M., & Loftness, V. (2004). Collaborative knowledge work environments. *Building research & information*, 32(6), 510-528.

Kaya, N., & Weber, M. J. (2003). Territorial behavior in residence halls: A cross-cultural study. *Environment and Behavior*, 35(3), 400-414.

Nugent, J. (2012). Residential common spaces that really work: a post-occupancy study. *Planning for Higher Education*, 41(1), 234.

Steelcase. <https://www.steelcase.com/>



DESIGN CONCEPTS

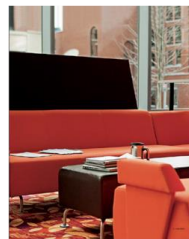
We will create better utilization and satisfaction through the use of:



Stimulation Factors



Comfortable, multi-purpose furniture



Home-like Interior Design

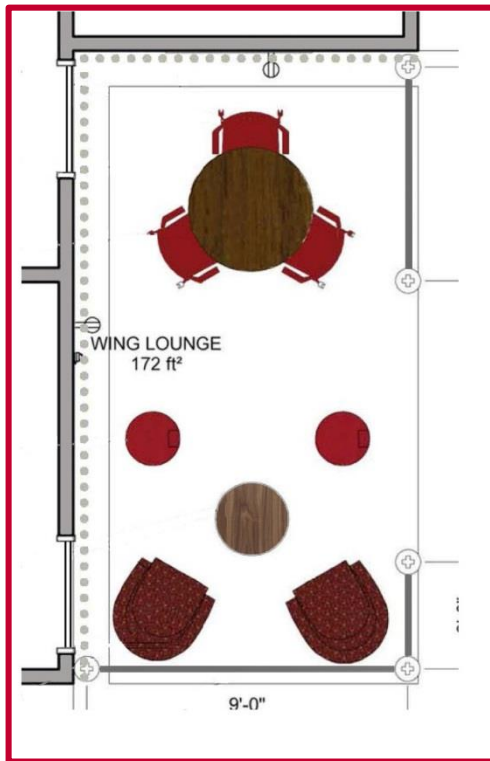


Privacy Screens, High back Furniture



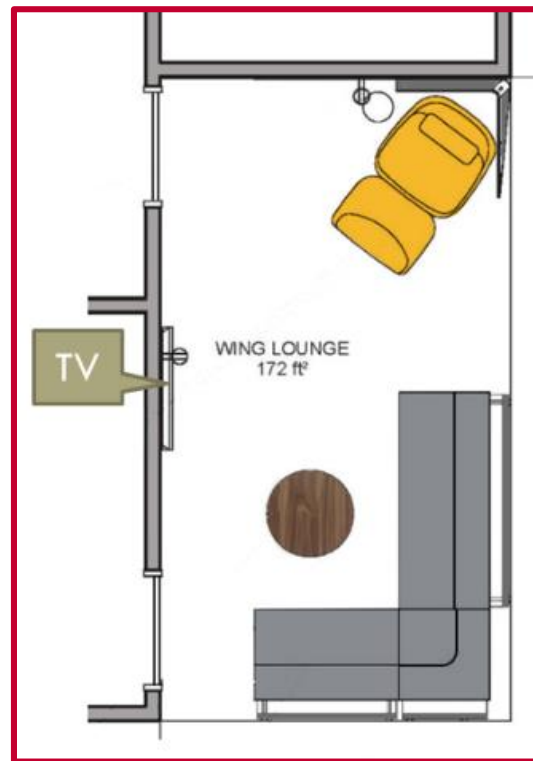
Three Design Concepts for Experimentation

Suitable for group study with flexibility for a big group, or two small groups. White board for writing and discussion.



COLLABORATION
STUDY

Suitable for relaxing, studying, group discussion utilizing TV screen. Suitable for lounging.



LIVING ROOM STYLE

Mix of collaborative and living room style. Suitable for relaxing, studying individually or in small group. Suitable for lounging.



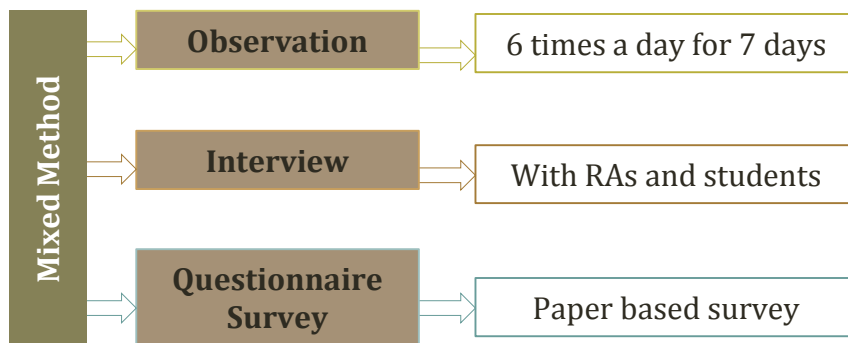
MIX STYLE



RESEARCH DESIGN

DATA COLLECTION

This study considered experimenting various design features (e.g., privacy, furniture) and design concepts (Collaboration Study, Living Room or Mix Style). To fulfill these objectives, a quasi-experimental design research with mixed method of data collection (qualitative and quantitative) were considered. Data were collected using three processes: face-to-face interviews, observation by the principal investigator (six times a day for seven days), and paper-based surveys. For interviews, three students and the resident-advisor from each wing were selected. Observation was conducted by the researcher for 6 times a day for 7 days. Every social space of the hall was observed to record the occupancy rate and students behavior or functional pattern. For survey, this study has considered paper based survey, the questionnaire were distributed to the students and were asked to drop the surveys in the drop box. This study is approved by the Institutional Review Board (IRB).

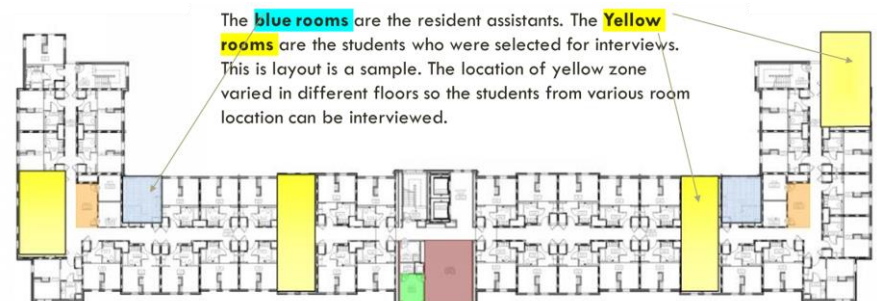


INTERVIEW SUBJECT SELECTION

Interview subject selection was based on the location of the student room to achieve diverse opinions. Before experimentation 2 students and the RA was interviewed from each wing (the following figure). But, after changing the scenarios, for the second round of interviews, more students were interviewed.

After Change: For interview purpose four groups of students were interviewed.

1. The previous RAs and students were asked.
2. Students who had started using the changed study areas after the spring break. (RAs helped to identify these students)
3. Students who had seen the changes but never used any study areas after the spring break. To find out the reason why they did not used those areas. RAs helped to identify these students which was difficult.
4. Migrated students, who live in another floor or another wing in the same residence hall, but like to use a particular study areas in another wing. RAs helped to identify these students.
5. At last the hall director were interviewed.



TYPICAL FLOOR LAYOUT

DATA COLLECTION TIMELINE

For this experiment, the spring 2015 semester was selected because the students would have experience of staying in that residence from the fall semester. The baseline data were collected five weeks after the beginning of the semester. The environments of #2 to #6 study areas were changed during the spring break according to the plan. After the five weeks of spring break, the post-occupancy data were collected so that students could experience both scenarios for five weeks. Both data collection processes were similar.

SURVEY

Sample questionnaire [a part]

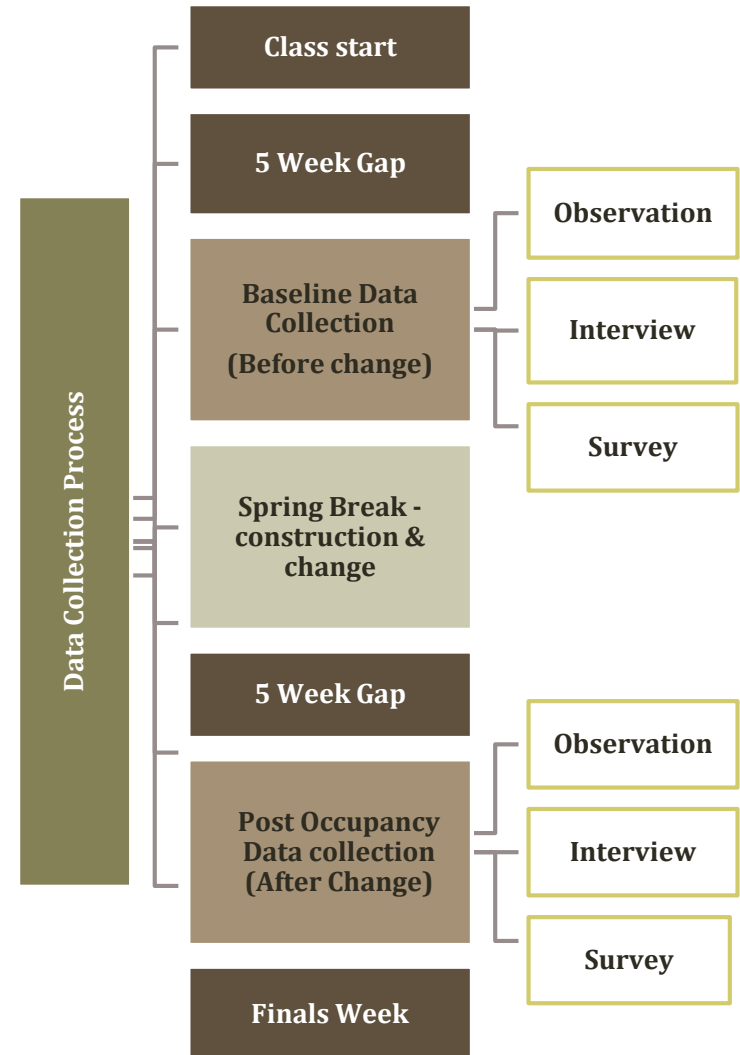
Please indicate your level of satisfaction with the following on Furniture of the Study Areas.	Strongly Dislike	Dislike	Neutral	Like	Strongly Like
Comfortable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attractive appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to move	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Durable and stable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supports various postures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allows for different activities (study & relax)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to configure into a small flexible group	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suitable for collaborative study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Before Survey response rate – 61%

After Survey response rate - 54%

Please indicate your level of satisfaction with the following on Corner Study Area Design.	Strongly Dislike	Dislike	Neutral	Like	Strongly Like
Appearance/look	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Location (In relation to your room)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function (study & relax)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furniture (Type)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of furniture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furniture arrangement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visual privacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auditory privacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sense of enclosure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wall color	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Absence of daylight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Absence of outside views	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please answer the following questions on Social & Study Areas of this hall [Check the one fits best]	Never	Once a month	Once a week	2 - 4 times a week	Almost daily
How often do you spend time with other students in the social spaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you study with other students in the social/study areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you use the corner study area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SIX STUDY AREAS

EXPERIMENTATION ARRANGEMENTS

Collaboration	1	NO CHANGE (as a control) (Exactly same)
	2	ADDED PRIVACY CURTAIN (original furniture, function and layout)
	3	CHANGED FURNITURE (original function and same layout, no privacy feature added)
	4	FURNITURE + PRIVACY CURTAIN (original function and same layout)
Living	5	FURNITURE + PRIVACY + FUNCTION + INTERIOR (Design Concept is <i>Living Room</i> like environment with TV, couches & chairs)
Mix	6	FURNITURE + PRIVACY + FUNCTION + INTERIOR (Design Concept is <i>Mix</i> like environment with various types of furniture)

CONSTRUCTION & MONITORING

Construction of these five study areas was happened during the spring break, within nine days while students were not there. After the spring break, when the student came back, the hall director send these five wings' students an email mentioning about the change. The first scenario, No Change – controlled group, did not received any email.

POST OCCUPANCY DATA COLLECTION

After five weeks of gap from the spring break, the research went to the site again and collected the post-occupancy data using the similar survey tool and observation protocol. For interview purpose four groups of students were interviewed.

the previous RAs and students were asked.

Students who had started using the changed study areas after the spring break. (RAs helped to identify these students)

Students who had seen the changes but never used any study areas after the spring break. To find out the reason why they did not used those areas. RAs helped to identify these students which was difficult.

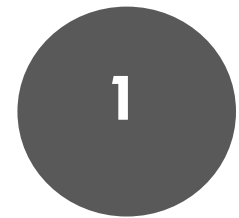
Migrated students, who live in another floor or another wing in the same residence hall, but like to use a particular study areas in another wing. RAs helped to identify these students.

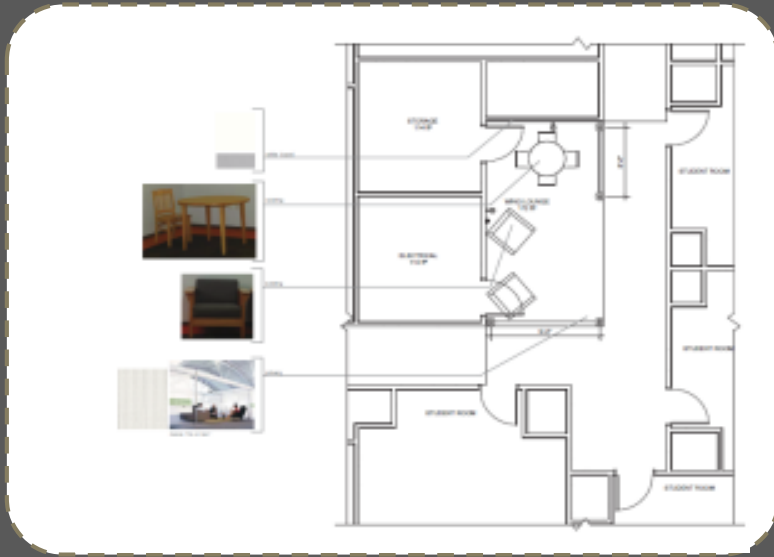
At last the hall director were interviewed.





NO CHANGE
(EXACTLY SAME)

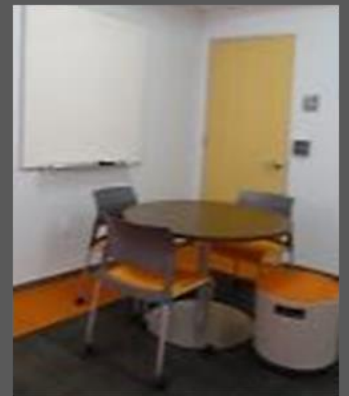
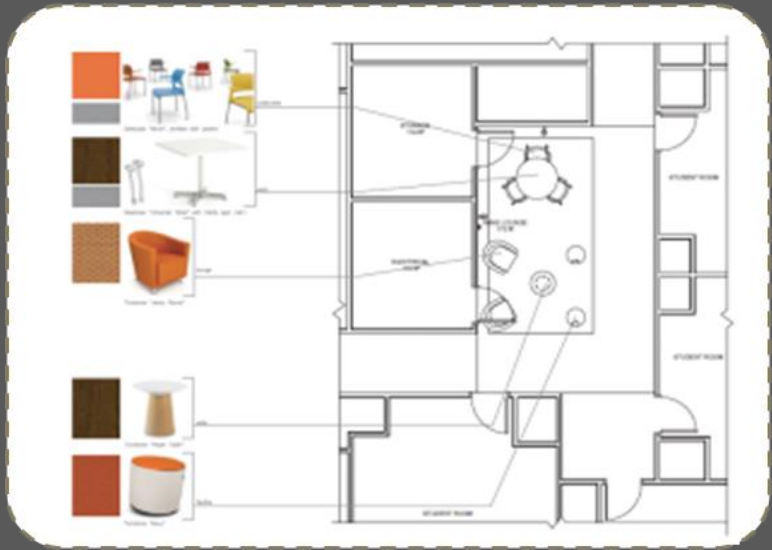




PRIVACY CURTAINS ADDED

(ORIGINAL FURNITURE, FUNCTION AND LAYOUT)

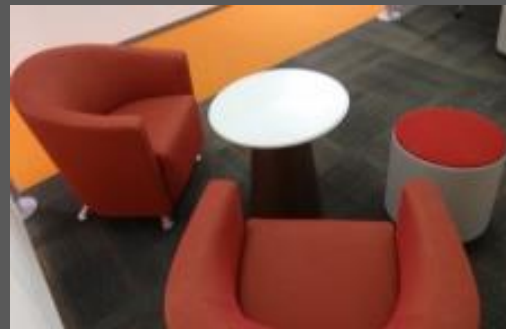
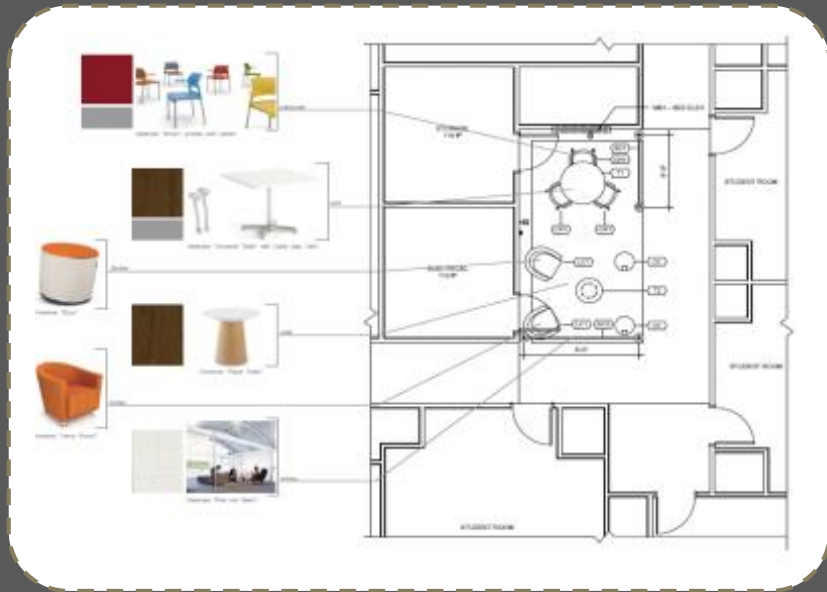




FURNITURE CHANGE

(ORIGINAL FUNCTION AND LAYOUT)





FURNITURE + PRIVACY CURTAIN

(ORIGINAL FUNCTION AND LAYOUT)



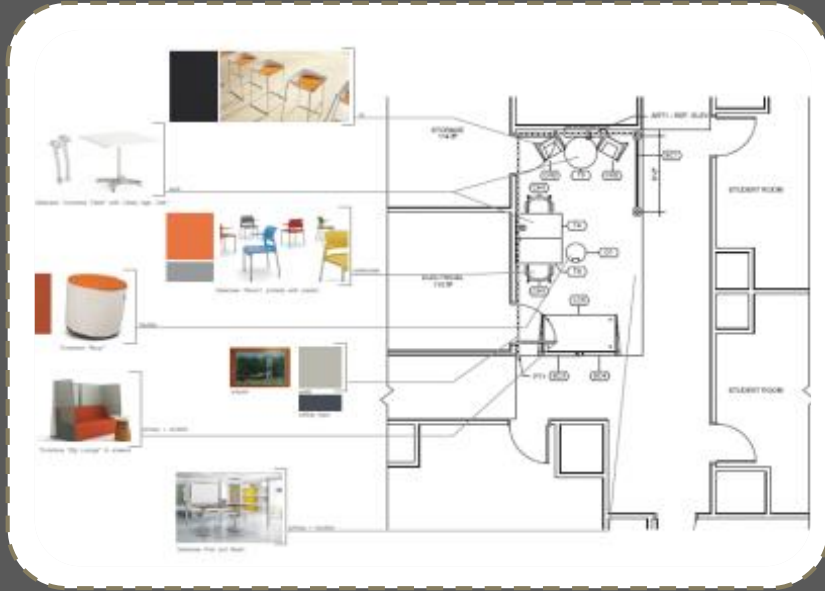


CHANGED FURNITURE, PRIVACY, FUNCTION, & INTERIOR

(LIVING ROOM LIKE ENVIRONMENT WITH TV,
COUCHES & CHAIRS)

5





CHANGED FURNITURE, PRIVACY, FUNCTION, & INTERIOR

(MIXED STYLE/CAFÉ LIKE ENVIRONMENT WITH
VARIOUS TYPES OF FURNITURE)



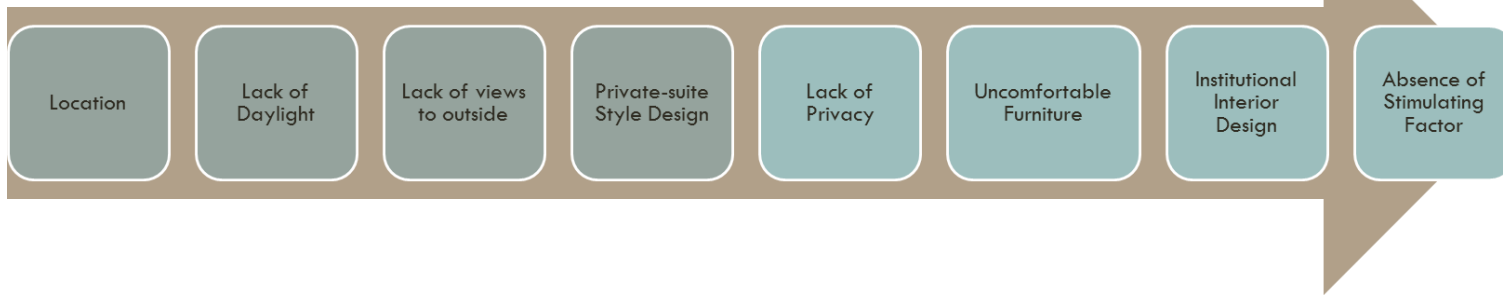
ANALYSIS AND FINDINGS



FINDINGS

After analyzing all the data from survey, interviews, and observation, the following findings are developed for the following eight topics.

RESULTS AND DISCUSSION: ALL THE DESIGN FEATURES

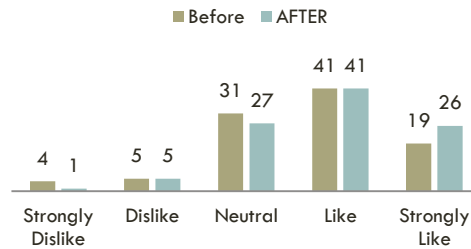


DOES LOCATION MATTER?

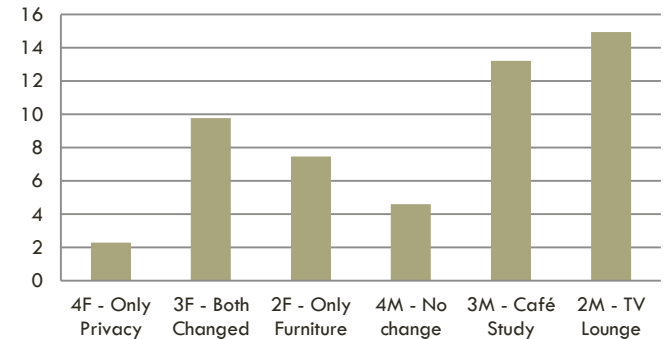
FINDINGS: From the interview, Some students like to go another corner study to avoid the distraction by his/her own environment and people. Also, from observation and interview it has found that students who use the corner study MOST, are located near to the corner study area (One point to consider that none of them have used these spaces before). From Survey, 30% Increase of the Satisfaction Rate after the change about the location of the corner study according to their room location. Male sides are visited more then female side.

SUMMARY: Some students would like to travel/ walk to another wing's space if they will find some stimulating factors. Some wants to go away from their area for solitude or concentration in their own study. Some students prefer to have it near or in-front of their room. Students who are located near to the social/study spaces tend to use that spaces more.

Satisfaction about Location



Used by Other Wings' Students



Diversity in distribution – Create various types of study areas and distributed those through out the residence halls. It provides different opportunities and increase utilization, and creates more intermingle among students.

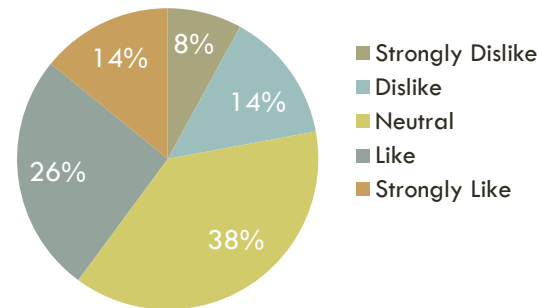


LACK OF DAYLIGHT – DOES IT MATTER?

FINDINGS: From interview, it reveals that Daylight does not matter for most of the students as they like to study at night in their residence hall. But for some students, absence of daylight is a disliking factor. From observation, it came out that Southside openings create glare during summer time, so students tried to avoid seating those table which are near to those openings in the floor lobby. From Survey, 38% was neutral, 40% like about the absence of daylight. But 22% dislike the absence of daylight.

SUMMARY: This study has proved that absence of daylight may not matter for creating a better utilized study areas. however, there is a significant amount of research in Environmental Psychology have proved that presence of daylight has multiple benefits for social and study areas, it would be better to have the daylight opportunity with careful consideration to avoid GLARE.

Absence of Daylight

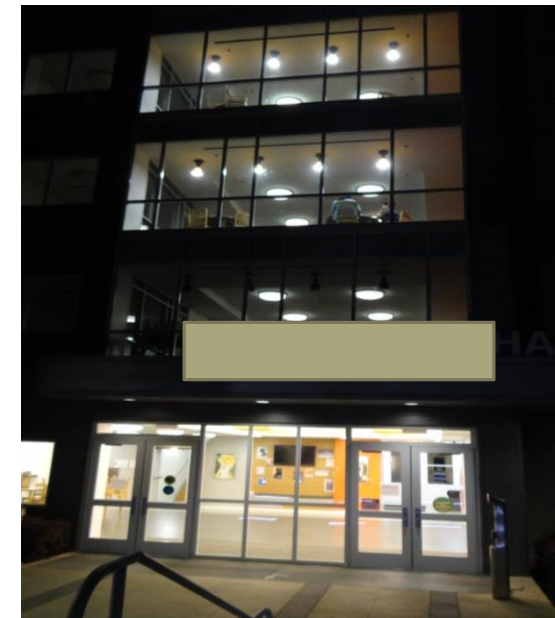
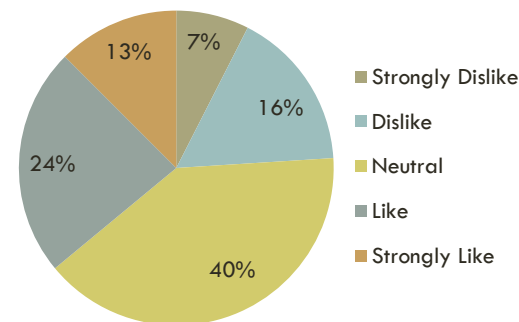


VIEWS TO OUTSIDE

FINDINGS: From interview, majority of the students mentioned that having a View to Outside could be a distraction for them to concentrate in their study. Also, most of them study at night, and some mentioned that having a big opening without blinds or privacy control (floor lobby area) are uncomfortable, as they can't see outside, but people from outside can see them. But, a few students mentioned having a view could be positive for their study. From observation, it was clear that students are avoiding seating near to the floor lobby glass area, as they can be seen from outside clearly. From Survey, 23% disliked, 40% Neutral, and 37% liked the Absence of Views to Outside.

SUMMARY: "A view to Outside (Nature)" found very positive in several research (Kaplan & kaplan, 1989; Ulrich, 1984 - cited by 2846; Moore, 1982, and lots of other significant research). It reduces stress and increase comfort. The concept of Biophilia and it's impacts found significant in human mind and body. Design should provide the opportunity to control the views to outside from the study areas so that the students can create their desired environment for study.

Views to Outside



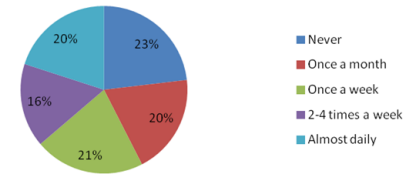
PRIVATE SUITE STYLE

FINDINGS: From interview it reveals that All the students like their room and privacy. Almost half of them mentioned they like to be in their own, in their room. Don't like to hang out with other students in this residence hall. Some of them like to study in their room and don't like to study else where, but some mentioned that they can't study in their bedroom because they feel sleepy after sometimes, so they always get out of their room for study; either inside the hall or outside.

- During Interviews, some of the RAs mentioned that they had to share room during Fall semester, so they were more out for study or social interaction, or phone conversation. Some mentioned that they come out from their room at mid-night for study, cell phone conversation or to meet other students when their roommate is in sleep.
- From observation, it was clear that students comes out at mid-night for entertainment, gathering, or for study.

SUMMARY: Even in a private-suite style design, a better design of study area can attract more students to come out there room and utilize it more.

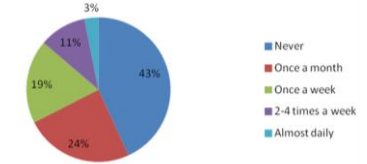
How often do you spend time with other students in the social spaces?



57% frequently spend time with other students

43% never or rarely spend time with other students in the social spaces.

How often do you study with other students in social or study areas?



33% frequently study with other students in study areas.

67% never or rarely study with other students in study areas.

PRIVACY

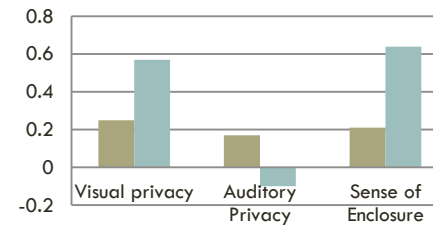
FINDINGS: form Interview – All the students mentioned about lack of privacy as one of the reason for underutilization of Corner Study area. Complained about visual privacy, some complained about noise from the hallway . Some were worried about using the space for group discussion to create noise. After the change, students mentioned liking the privacy curtain and also the raised furniture back. Some of them mentioned to improve the auditory privacy or the noise control. From observation, the ONLY Privacy changed area was used for three times in the second round, whereas it was only found used for one time. In Survey, 24% increase of utilization in the ONLY privacy change.

SUMMARY: Providing semi-privacy with enough Sense of enclosure plays a vital role in creating a successful study area. Design must consider the issue of connectivity , too enclosed space may lose the connectivity with surrounding space and sometimes ended up creating an isolated space, which may cause underutilization.

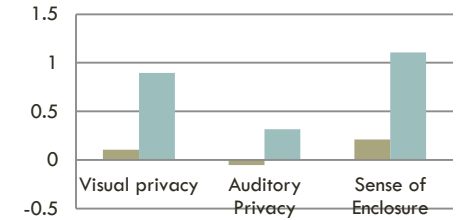
“Very comfortable, able to concentrate and study” - Student
 “Very quiet love the curtains” - Student



TV Lounge – Raised Back



Privacy Curtain



FURNITURE

FINDINGS: Students mentioned about the previous furniture “uncomfortable”, “old”, “grandma style”, “unattractive”. Some of them never sat in the lounge chair ever. All of them liked the new furniture, mentioned that “love it”, “so comfortable”, “like modern look”, “all the old must go”. Students like sofas a lot, from observation – they like to lay down or relax in the sofa when they come back from their class.

SUMMARY: Furniture plays the most significant role in users’ satisfaction and utilization. Furniture must be comfortable, attractive, flexible and playful, easy to move, and durable. Combination of various types works best.



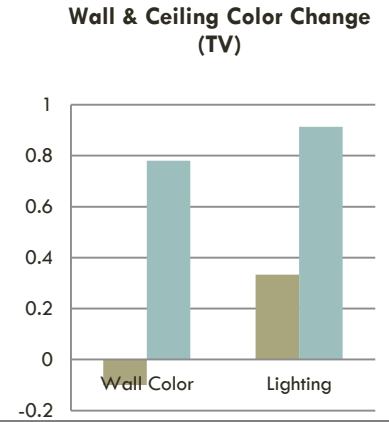
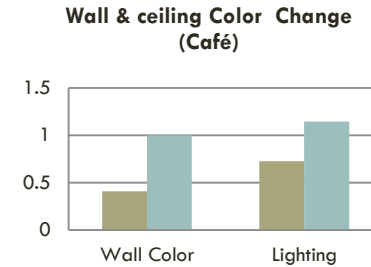
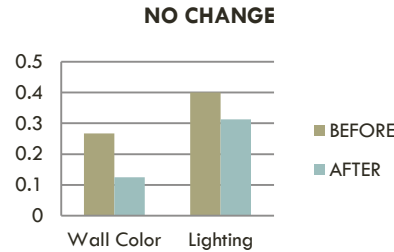
Scenarios	Utilization Rate	Satisfaction Rate	
		Furniture	Design
No Change	17% increase	94% Decrease	33% Decrease
Only Privacy	24% increase	26% Decrease	50% Decrease
Only Furniture	100% Increase	32% Increase	67% Increase
(Pri + Fur) Change (Collaborative)	92% Increase	69% Increase	193% Increase
All Change (TV Lounge)	120% Increase	23% Increase	182% Increase
All Change (Mix)	55% Increase	19% Increase	149% Increase



INTERIOR (COLOR & LIGHT)

FINDINGS: Interview – Students from the changed wall & ceiling color, and also from other floors RAs and students mentioned that they like the new ceiling color and wall color. One student of the Café Style mentioned that it created an ambient environment which helps to concentrate for study. Survey – 56% wall color satisfaction decreased. 25% decrease of satisfaction in lighting. 112% and 150% increase of wall color (average 131%). 167% & 57% increase of lighting satisfaction (average &112%).

SUMMARY: Interior color scheme and lighting plays a vital role in the design and users' satisfaction. Design should consider to avoid the institutional and monotonous environment, instead consider to create a warm, welcoming and homelike environment.



ATTRACTION FACTORS

FINDINGS: Most of the students mentioned about having a TV in their own floor: either in corner study or in the floor lobby. Some of them mentioned to have game room, exercise room, or a small computer room with printer. Few students mentioned to have a kitchen in their floor. After the CHANGE, all the students mentioned that they would like to have TV. It became viral that the 2nd floor male side got TV. But, some mentioned that they like to have study area with white board in front of their room instead of TV. White board became a community landmark, there was a countdown going on, some inspirational comments to send the message to others. The 4th and 5th scenarios became more successful because they both have stimulating factors. New furniture worked as a stimulation too.

SUMMARY: For revitalization, design must consider some factors that would work as a stimulation for the students, so that they will feel motivated to use this space. It could be either a new amenities/ function, new look/appearance.

	Scenarios	Utilization Rate	Satisfaction about Design
1	No Change	17% increase	33% Decrease
2	Only Privacy	24% increase	50% Decrease
3	Only Furniture	100% Increase	67% Increase
4	(Pri + Fur) (Collaborative)	92% Increase	193% Increase
5	All Change (TV Lounge)	120% Increase	182% Increase
6	All Change (Mix)	55% Increase	149% Increase



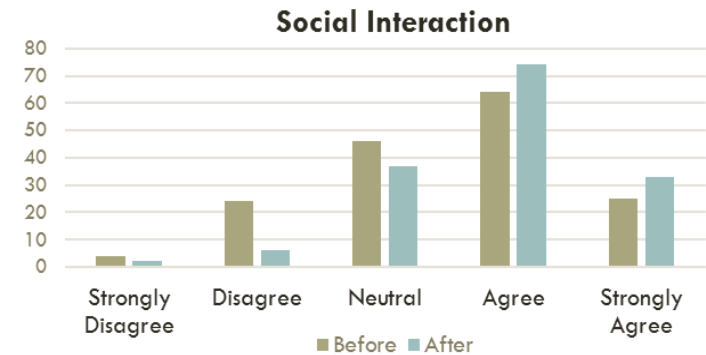
INCREASE SOCIAL INTERACTION

FINDINGS: From interviews, majority of the students and Resident Assistant mentioned that the changes have increased social interaction among students. Also, from the observation log, it is clear. The survey is showing the students feedback about the social interaction in the hall.







"It has brought more social aspect to some of the floors. If someone walks by they talk and socialize more about the change in the furniture. More people want to use the space, so if people don't know each other and want to use it they will socialize. There have been a lot more variety of people using it and even bringing friends to use it, allowing for more socialization and opportunities"

"They are here every day playing video games and hanging out",
 "As far as the change, a lot of people have been coming out a lot more. Before I would just here noise in their room, after they would bring snack and friends over and chill outside. That would be the biggest change. They are a little more outgoing and people would stop by and talk",
 "It has helped significantly in socialization at this hall"

"I see more social interaction in the lounges and more of company environment so it allows students to really feel comfortable here so they can do whatever they need to do"



RESULTS

EXPERIMENTATION		Utilization Rate	Satisfaction Rate	
			Furniture	Overall Design
1	 No Change (as a control)	17% increase	94% Decrease	33% Decrease
2	 Only Privacy Curtains Added (with original furniture)	24% increase	26% Decrease	50% Decrease
3	 Furniture Change (with original layout)	100% Increase	32% Increase	67% Increase
4	 changed privacy curtains and furniture (in original or layout)	92% Increase	69% Increase	193% Increase
5	 Changed seating (in Living Room Lounge)	120% Increase	23% Increase	182% Increase
6	 Changed seating (in Mixed Layout)	55% Increase	19% Increase	149% Increase



RECOMMENDATION

DESIGN CHECKLIST

Diversity in distribution – Create various types of study areas and distributed those through out the residence halls. It provides different opportunities and increase utilization, and creates more intermingling among students.

Furniture – Select comfortable, attractive, flexible and playful, easy to move, and durable furniture. Combination of various types works best.

Privacy – Semi-privacy with enough sense of enclosure and visual connectivity. Avoid too enclosed space may lose connectivity with surrounding space and ended up creating an isolated, unwelcoming and underutilized space.

Interior Design - Avoid institutional or monotonous look and create warm, cozy, and homelike environment.

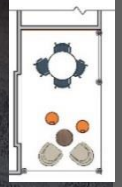
Attraction Factors- Presence of stimulating factor: either a new amenities (e.g., TV), or function, or new look. It motivates students and increase utilization.

Access to Nature –Design should provide the opportunity to control the views and glare so that the students can create their desired environment for study.

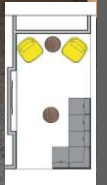
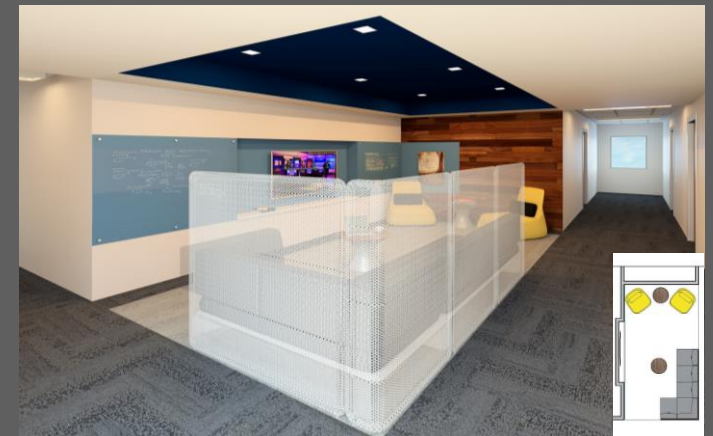
Flexibility and Adaptability- Maneuverable furniture with different Postures. Space should have the furniture types that will allow multi function.

Choice & Control – Design should consider to provide options for control over the micro environment, and specially on noise and visual privacy.

Community Landmark – Try to create a focal point which will represent the concept of hearth to create intimacy and gathering. Also, it help promote tangible traditions by representing identifiable features, such as artwork, school spirit, cultural reference, or paintable surfaces, or white boards, tack boards, chalk boards.



LIVING ROOM STYLE



MIX – COLLABORATION & LIVING ROOM STYLE



THREE DESIGN CONCEPTS (Templates)

CONTRIBUTION

Broader Contribution: An improved design will attract students to use the social spaces more, which will increase academic and social support, and will increase student success and ensure overall well-being. It will provide students a place where they can share their academic experiences with their peers and release stress – which will help them concentrate more on study and overcoming difficulties. Also, making students leave their rooms and attracting them to social spaces will eventually increase interaction among hall mates - which will create a better sense of community and provide a sense of belonging. Many students leave a university if they feel disconnected and marginalized from their community. So, this research-based environment will influence students' overall physical and psychological well-being, will improve academic performance, and will increase graduation rates. Knowing how to create successful spaces will better utilize state money to reduce underutilized spaces.

Contribution in Design: This project experimented various design interventions and most of these increased the student utilization rate, satisfaction rate, social interaction, and a sense of community. The study recommends some innovative design criteria: create an intimate-warm environment; provide comfortable, attractive, and flexible furniture; design semi-privacy with enough sense of enclosure and visual connection; provide a stimulating factor such as TV; create a focal point (e.g., a hearth) to encourage gathering; promote tangible traditions (school artwork); and, allow natural light and views with a control system. It also recommends three different types of layouts as a design templates which provides guidelines to the design professionals and to the housing administrators to create a new facility or renovating an old one. Additionally, some interesting findings were revealed such as some students reported that they do not like having daylight or a window view in their study areas because these features are distracting to them during study. Another interesting finding is students like a variety of style in study areas instead of similar ones on each floor. The study provides suggestion about functions, amenities, and space distributions (such as variety in each floor) which are very supportive for future planning and programming. Students also suggested some operational issues that can be utilize by the housing administrators for improvement.

Contribution in Research: In research design, some new techniques were utilized which provided positive outcomes. The mixed-method triangulation delivers a holistic understanding. Observation at mid-night was a unique idea. It revealed that the student activities are completely different on those late hours because their roommates are already in bed and to maintain quietness more students are out in the common areas for studying, talking over cell phone, watching movies, playing games, chatting with others, tutoring, cooking or warming food, etc. Another technique was also successful, the paper-based survey provided more response rate (61% and 54%) in comparing to another online survey (20%) with the same students. These findings are creating the ground work for further research. More research need to focus on these type of social-study area design, focusing on diverse layout in same housing, amount of daylight, other stimulation factors.

Potential applications to other environmental areas: The study findings recommend how to create a better study environment for the students in a residential setting. These findings can also be translated to any form of student housing facility such as the traditional dorm style or semi-apartment style. The notion of creating diversity and flexibility in the study areas can be utilized in any learning environment such as in library design, educational building design, student-center design, or school design. The concepts of designing a better collaboration space can also be utilized in creating an office or work environment.

