

New Evidence Informs Future Living-Learning Residence Hall Design





ABSTRACT

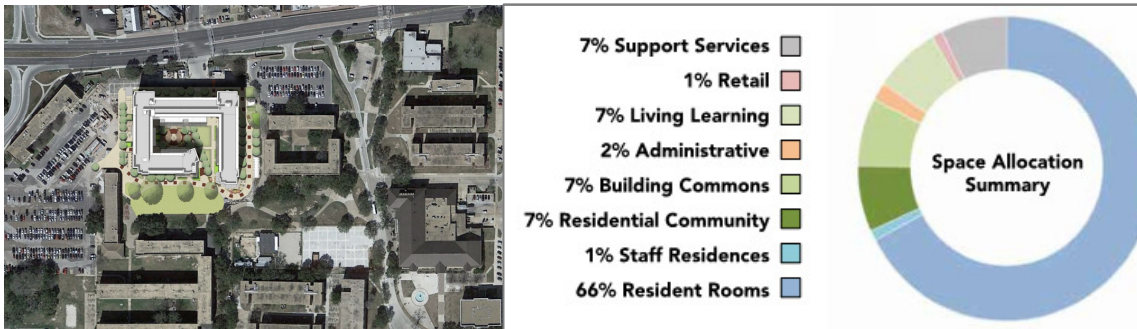
College and university student housing facilities are taking a new shape by developing learning centers within student living environments. This trend has created innovative ideas, but the research on the efficiency of those spaces is missing in literature. This study addresses this issue with a post-occupancy evaluation of a newly constructed (2013) student housing facility that incorporates living-learning components. The residence hall's ground floor contains mixed-use functions such as a community learning center, game room, media room, convenience store, coffee shop, music practice room, tutoring areas and classrooms; the floor and its amenities are accessible to all campus students. The upper four levels are dedicated to housing accommodations and restricted to residents only. The study's main objectives were to: a) Identify the level of satisfaction with the project mission and the prioritized goals; b) Measure the users' satisfaction with their physical environment; c) Identify successful design features; and d) Identify areas for improvement. The data collection process involved four methods: an online survey to measure residents' satisfaction (32% response rate); face-to-face individual interviews (30-45 minutes) with resident-assistants and students; ethnographic observation by researchers for seven days; and, focus group interviews with eleven stakeholder groups (e.g., academic partners, department of residence life, facilities services, energy services, residence education, housing conference and tours) who were involved during the project planning and programming.

The study endeavored to determine what worked, what didn't and possible areas of improvement. Major findings include: a) the mixed-use model with various social-academic spaces invites more student utilization, creates better social interaction and sense of community, and increases students' satisfaction; b) the community learning center with an advanced computer lab and multiple collaborative study rooms helps support students' academic success; c) in the upper-accommodation levels, diversity in lounge design avoids feeling institutional, and increases mingling among students; and d) combining kitchen, dining and living areas for open-plan community lounges provides opportunities for social-cooking student interaction and creates a sense of home. This study has identified areas of success and areas of improvement. It also developed recommendations based on the analysis. These recommendations help architects and housing administrators planning and designing future projects (implemented in four new projects). The housing administrators have utilized this knowledge to improve the facility and modify their operation and maintenance, which, in turn, helps the user groups. The significant takeaway for the stakeholders from this study is that university housing is remodeling four residence halls based on these study suggestions. The study method (mixed-method) also carries significance for future research in these disciplines. Another significant outcome of this POE study is that it has opened an opportunity to develop a student satisfaction survey questionnaire. The survey tool (questionnaire) has been published in a peer-reviewed conference proceeding which provides a standardized tool for the user's evaluation of the physical environment, functional or social environment, and utilization rate. This study planned to disseminate the findings to various audiences (housing professionals, student-affair professionals, architects, interior designers and manufacturers) so that lessons learned from the post-occupancy evaluation can be replicated or applied in other settings. Several strategies were considered: publish a peer-reviewed article in an international conference proceeding; present the research findings in two more conferences—at an internationally attended design research conference and at an internationally attended campus-housing professionals' conference; white paper and newsletter published in a free-access website; and one article in the process of publication in a popular magazine that delivers 4,500 printed copies to housing-professionals and campus chief housing officers. The study is targeted to be published in two articles in peer-reviewed journals.



CASE STUDY PROJECT

This residence hall is located in the northside of the campus. The campus is one of the largest in size in the United States. About 11000 students live on-campus housing. No freshmen required housing (except Corps of Cadets and some specific programs). 11 Living Learning Communities. The last residence hall built in 1989, no new residence halls had been built for 20 years. In the meantime, the off-campus housing market had expanded dramatically, creating a very competitive market. Many eyes were on the planning, in part because the site was located on an important corner of campus. The 253,452 SF Hall's construction set the tone for new student housing projects planned to revitalize the north side of campus. The project's site development included: the demolition of three existing residence halls and an administrative office, existing site improvements, relocation of existing utilities, extension of all needed utility services for the proposed new facility along with parking, sidewalks, lighting and landscaping.



PROGRAM: 648 Beds, 42 Beds per Community, % of Net SF (65% Beds, 10% Community, 7% Academic Support, 7% Commons, 3% Administrative, 8% Support), Total 394 SF / Student.

MISSION STATEMENT: The new Northside Residence Hall will be a world class living-learning community and destination – a place to live at the Heart of the Aggie Experience that celebrates diversity, and draws students together through academic success, history, tradition, and spirit. This sustainable and environmentally friendly facility will seamlessly blend indoor and outdoor experiences. Serving as the “living room” for the Northside community, this innovative, creative, and fun residence hall will feel like home.

DESIGN DEVELOPMENT: In order to understand the users’ unique realities, needs, goals and vision, the design team held interactive charrette-style sessions where they worked with project stakeholders to brainstorm programmatic issues and clearly define the design challenges. The building has no back side. The design helps define the northern edge of campus.



GROUND FLOOR PLAN



Organizationally a community of its own, this neighborhood is also an integral part of the greater Northside village. Serving as “village square” it is a destination for students to find what they need and want – whether it’s play or academic focus. The design features a community learning center for access to the latest software, and collaborative and individual learning spaces. A video production studio, music practice rooms, a 3,000 square foot game room, gardening area, and outdoor gathering space help support students’ personal, social and academic success. It also is able to serve the greater campus with classroom, media room and multipurpose gathering spaces.



Connecting place to people





Community Lounges & Kitchens

TYPICAL UPPER LEVEL PLAN

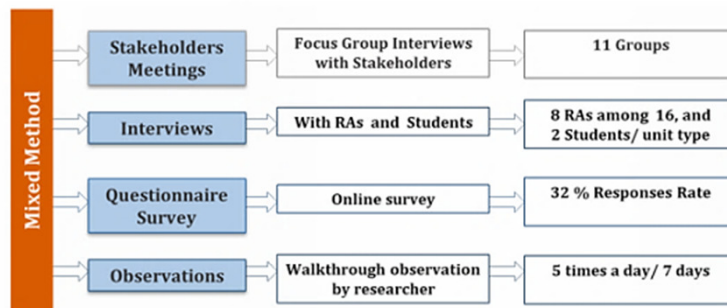
The academically centered residence hall provides a living-learning environment for 648 students. Each of the single and double occupancy semi-suite units contain private bathrooms. Communities of 40 students and one Resident Assistant (RA) share a common community lounge, kitchen and study rooms. The need to balance the benefits of a large building with the need for creation of smaller communities was addressed by considering the entire 3,500 student Northside community as a village. Within this village, the new residence hall is a vibrant neighborhood. Each floor is considered a block. Each community of 40 creates a street. Each individual unit is a home. Gradually breaking down the community scale helps to convey to the student that they are known and valued as individuals and contribute to, and are a vital part of, the greater whole.



DATA COLLECTION METHODS

This study design used a mixed method (quantitative and qualitative research) of data collection. The building was opened in 2013 and the data were collected in end of 2016 spring semester—three years after the building’s opening. This timing was meant to allow facility operation and management enough time to settle in. The time of year was chosen to allow the students (housed August to May) enough time in their accommodations to provide a robust answer. This POE is Institutional Review Board (IRB)-approved. Data was collected using four methods, outlined below:

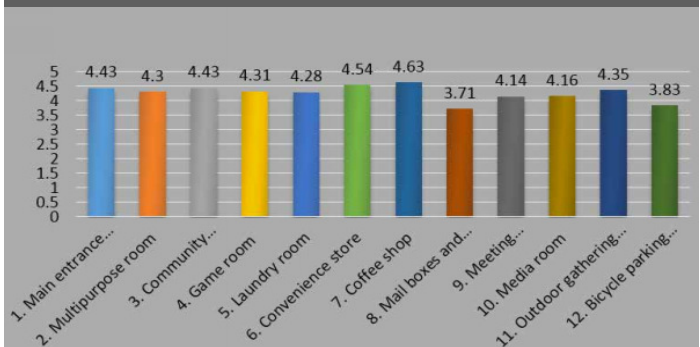
1. **Student Satisfaction Survey:** An online survey was conducted using the initial pool of questionnaire inviting all the residents (response rate was 32%). The survey started on April 26, 2016, and continued through May 31, 2016. The questionnaire contained 70 questions (took an average of 9 minutes). Students were given a \$5 Starbucks gift card upon finishing the survey.
2. **Observation by the Researcher:** The researcher conducted walk-through observations of the facility five times a day for seven days during the spring semester of 2016.
3. **Focus group Interviews with Stakeholders:** The researcher conducted focus group interviews with eleven stakeholder groups: Custodial/Facilities Services; Transportation Services; University Police Department/Security/Environmental Health & Safety (EHS); Housing Assignments, Conferences, Tours; Residence-Life Central Administrative Office; University Energy Service; Res Ed-this Staff; Academic Partners/Academic Support Initiatives (ASI) Staff of Department of Res-Life (DRL); Telecom & Computing Info; Dining Service; and student leaders of the campus. These stakeholders were involved to develop this project’s goal and programming. They were asked three main questions: How successfully did the project fulfill the mission statement and goals? What is your positive feedback? What are areas for improvement? Some meetings were twenty minutes long, and some lasted for more than one hour.
4. **Individual Interviews:** The researcher interviewed students and resident assistants (RAs). Interviews were conducted with students of each room type and eight RAs out of sixteen. All interviews were conducted face-to-face and were audio recorded.



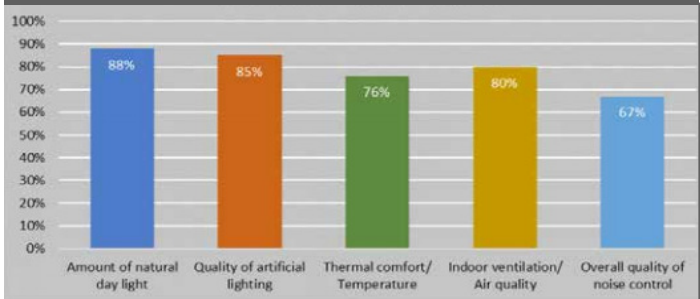
Student Satisfaction about Project Goals



Satisfaction about First Floor Community Spaces



Student Satisfaction about Indoor Environment



KEY FINDINGS

After analyzing all the four types of data, the study can summarize that the mission statement and project goals were met successfully. To build a world-class living-learning community and destination on campus that is sustainable, environmentally friendly, celebrates academic success, tradition and history, we implemented many design elements that were rated as highly successful by students and stakeholders. Based on feedback from these design elements, we have developed the following recommendations for future design and construction.

LIVING LEARNING MODEL: The benefits of designing a multi-use living-learning center may provide 100% occupancy. Its amenities and convenience may also provide a better model to compete with off-campus housing. This model creates better student social interaction/engagement and attracts conference groups.

ENERGY EFFICIENCY: All energy-efficient elements are working very well. The building is consuming less from an energy perspective than was thought initially. This Hall is designed with a domestic hot-water system, which is very energy efficient. It provides on-spot hot water from the faucet, eliminating complaints about cold showers.

RECYCLING: This Hall is designed with recycling features that provide education and encouragement to students to adopt sustainable living. The design features include: a) Separated trashcans and separate recycling options in the trash room, b) Curd-box recycling options, c) Water bottle fill-up station, d) Two-way toilet flushing systems, e) Multiple locations for trash rooms.

FRONT DESK: Providing the front desk with a panic alarm helps anyone, including the police, come and ask about any information or any incidents. It also acts as a gathering point for tour groups.

GAME ROOM: Design game rooms with multiple amenities: a) Niches and alcoves, b) Main-circulation way with multiple entrances into the space. c) Various types of furniture for multi-purpose activities, d) Attractive views to the outside that create visual connections, e) Adjacencies with other amenities such as laundry, mail room, convenience store, and coffee shop.

LAUNDRY ROOM: Design the laundry room with visual connections to nature and outdoor/indoor activities. Provide scope for study and work spaces and nearby entertainment. Consider a ratio of 1 washer and dryer per 25 students. Provide security cameras and natural lights.

COMMUNITY LEARNING CENTER (CLC): Consider the following features for designing a successful CLC: Comfortable furniture, Various types of furniture, Options for group study and individual study, Privacy should be in three layers—open, semi, and complete privacy, Provide more study rooms with multi-media, Provide printer with a color-print option, Provide whiteboards, Comfortable sofa and chairs for relaxed postures.

RETAIL: Consider a coffee shop and convenience store for students.

NOOKS & CRANNIES: Design circulation pathways or corridors with small nooks and crannies, because they are highly utilized by students. Provide comfortable furniture and outlets. Design some with access to daylight and views, and some without connection to the outside. Provide some with maximum privacy and some in an open location.

COURTYARD: Design courtyards with multiple seating arrangements, Wi-Fi connection, outlets, and shading devices. Students use these spaces for socializing and studying. Provide relaxing elements such as a rocking chair or hammock. Arrange the layouts in such a way so the outdoors can be used for programming and serves as an extension of a multi-purpose room.



KEY FINDINGS

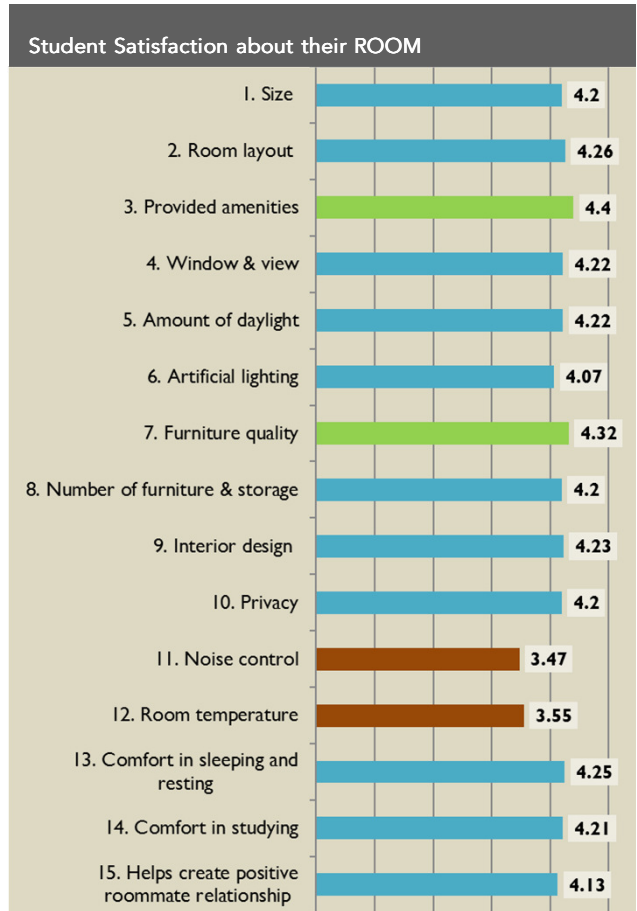
COMMUNITY LOUNGE & KITCHEN: this Hall is designed with two different layouts in upper-level community lounges. Students like this diversity in the layouts. The combined layouts (kitchen, dining, living, TV) provide opportunities to watch and cook at the same time. The following features for community kitchens and lounge areas should be considered: Kitchen stoves with safety features to lock/protect from youth groups of summer conferences, Comfortable living room with TV, Large kitchen counters so students can use them for group study and modeling, Whiteboards or whiteboard-painted walls for group discussion and display, Nice views to the outside with adequate daylight, Meaningful artwork that represents a sense of community, Semi-privacy, so that the spaces have visual connectivity as well as enough privacy for activities.

SOCIAL-STUDY SPACES: Consider the following recommendations for social study spaces: a) provide plenty of study rooms throughout the building in various sizes to accommodate three-person to ten-person groups. They do not need to be high-tech, but should have multiple outlets and Wi-Fi connection; b) a combination of various types of furniture which are comfortable, attractive, flexible, playful, easy to move and durable; c) design with various level of privacy—open, semi-private and private; d) avoid the institutional or monotonous environment and try to create a warm, welcoming and homelike environment; e) Include a stimulation factor such as a new amenity (TV), function (kitchen), or look (artwork) that can motivate students to use the space; f) Provide options to allow natural light and views to the outside with control; g) Include maneuverable furniture with options for different postures for multiple functions; h) Provide options for student control over their micro-environment, especially related to noise and visual privacy; i) Create a focal point to represent the concept of hearth: to create intimacy and gathering. Promote traditions by representing identifiable features such as artwork, school spirit, cultural references, paintable surfaces, whiteboards and chalkboards; j) Distributing a variety of social spaces in various mix-and-match styles can help unify communities of students.

MIX SUITE STYLES: this hall was designed with four different unit types: two single semi-suite; one single semi-suite; two double semi-suite; and one double semi-suite. Each of the single- and double-occupancy semi-suites contain private bathrooms. Students and stakeholders both liked the mixed suite style designs. The diversity in room/units' type and provision for single rooms provides a better housing model to compete with off-campus housing. this Hall also gets the most requests for conferences because it is new and has the variety of room types. Among the four types, the two-single rooms are popular for conference groups where the occupants can lock their room and can share the bathroom. Single bedrooms are also popular.

HIGH CEILINGS IN STUDENT ROOMS: this hall is designed with high, 12-foot ceilings to overcome the claustrophobia that might come with 8 or 9-foot ceilings. This extra volume allowed the beds to be elevated to provide ample closet and storage room below the beds. Students like the high ceilings.

PRE-MANUFACTURED BATHROOMS: Utilizing pre-fab bathroom construction provides a high quality product at a lower cost and can be built in a shorter amount of time. After installation, test ventilation/exhausting system.





POTENTIAL BROADER IMPACT

The study findings recommend how to create a better living-learning environment 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. This POE study has also provided an opportunity to develop a student satisfaction survey questionnaire which has published in a peer-reviewed conference proceeding. This survey questionnaire provides a standardized tool for the user's evaluation of the physical environment, functional or social environment and utilization rate. This tool articulates student opinions on three levels. Fixed or structural features include those which are permanent architectural elements, such as building layout or room size. Semi-fixed features include less permanent architectural elements (toilet fixtures, finish materials, etc.). Non-fixed features include the presence of ice machine, furniture and others. The anticipated outcomes of this tool are: a) the users' satisfaction rates will provide information to develop a design guideline for architects and interior designers to apply design skills more effectively; b) the findings will improve commissioning processes by defining students' requirements; c) this tool improves management by providing knowledge about operation and refurbishment; and d) this tool also carries value in future research on student housing environments. This tool assesses the living-learning environment in global context: physical setting, social environment, utilization rate, self-reported outcomes, such as GPA and academic success. This tool was developed as an initial effort. This study has limitations and needs further research, including the consideration of experts' opinions and further field testing to validate and modify the list of evaluation criteria. Although this tool was developed for use in undergraduate student housing studies and is not generalizable for other types of student housing, it can be used as a template to develop others. These findings are creating the ground work for further research.

SUMMARY

The findings from this post-occupancy evaluation study has a significant impact on the design projects. This residence hall is designed with several innovative ideas: a mixed-use model (first-floor amenities are accessible by campus students and upper-levels are private to the residents); having a community learning center (CLC) and academic spaces; providing a kitchen in every wing lounge; designing four different unit types—two single semi-suite, one single semi-suite, two double semi-suite, and one double semi-suite; designed with high (12-foot) ceiling to overcome claustrophobia; recycling features; and other innovative design and programming features. This study has identified areas of success and areas for improvement. It also developed recommendations based on the analysis. These recommendations help architects and housing administrators in planning and designing future projects. The housing administrators have utilized this knowledge to improve the facility and modify their operation and maintenance, which also helps the user groups. The significant takeaway for the stakeholders from this study is that university housing is remodeling four residence halls based on these study suggestions. The study method (mixed-method) also carries significance for future research in these disciplines.

