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Experiential Learning in Campus Evaluation: Integrated Design Research Methodologies

Rebekah Ison Radtke
University of Kentucky

How can we utilize the campus as an active and engaging laboratory for design students? How can we create an inclusive design research model in higher education? By utilizing a post-occupancy evaluation process, students completed a nine-month study to investigate and assess the investment in student living and learning spaces. The process utilizes design research as a community-engaged model, with collaboration among a diverse group of administration, partners, staff, faculty, and most importantly, students. By combining the need for design research on campus and a framework for participatory research models, this case study reveals the importance of assessing campus buildings to support learning and engagement.

The physical campus environment is constantly changing to stay current and to address students' needs. This means that buildings are being updated, redesigned, torn down and new buildings are constructed with the intention to impact student retention (Hajrasouliha and Ewing 2016). Because of this ever-changing landscape there are, at any point in time, multiple design projects underway on any campus. These projects are often determined by administrators or the physical campus division and evaluated based on utilization of space and economic impact (Avery 1994). The results reveal a focus in higher satisfaction ratings from staff rather than students (Temple 2008). Rarely does a classroom or a dorm room become influenced or designed by those who inhibit the space daily, which often leads to dissatisfied occupants or misplaced funding that doesn't address the needs of the users. By allowing students, those who are our campus' main users, to engage in the design process on campus we can provide administrators key insights into space utilization, assessment and provide students experience in the academic world that provide real world research experience. The development of curricular and co-curricular research allows engagement with operations and gives students a deeper understanding of the design process.

This study focuses on undergraduate design research as in integrated approach to evaluation of the built environment on campus. Using a mixed methods approach, students were tasked with consuming and collecting research to conduct a post-occupancy evaluation of a new campus living/learning community residence hall, evaluating the impacts of student success in the space. By utilizing a post-occupancy evaluation process, interior design students completed a nine-month study to investigate and assess the investment in student living and learning spaces. A post-occupancy evaluation (POE) is a systematic assessment of an occupied building to better understand the effectiveness of certain design elements (Zimring 2001). The results of this study were shared with campus administrators to apply the findings to future campus residential hall development.

Framework

Students were tasked with conducting a multimethod experimental approach to research on campus. Students were charged to develop a framework used the process of both qualitative and quantitative measures to gain insights into the living learning residence hall experience. Using a newly constructed campus residence hall as a case study for the research, students were involved throughout the process. Completing space assessments, behavioral observations, administering questionnaires, conducting focus groups, analyzing data, and making recommendations based on their experiences were all considered critical to the research and to the learning experience. To capture qualitative data, students conducted focus groups and created community involvement events to get resident feedback. Quantitative data was collected through surveys and observations. Surveys were administered to understand student preferences, sense of community and furniture preference. Two rounds of week-long observations provided data to understand occupancy, behaviors, affordances, noise, and temperature of spaces. At the end of the semester, students had amassed a large repository of student data to

Rebekah Radtke is an Assistant Professor in the School of Interiors, College of Design, University of Kentucky.

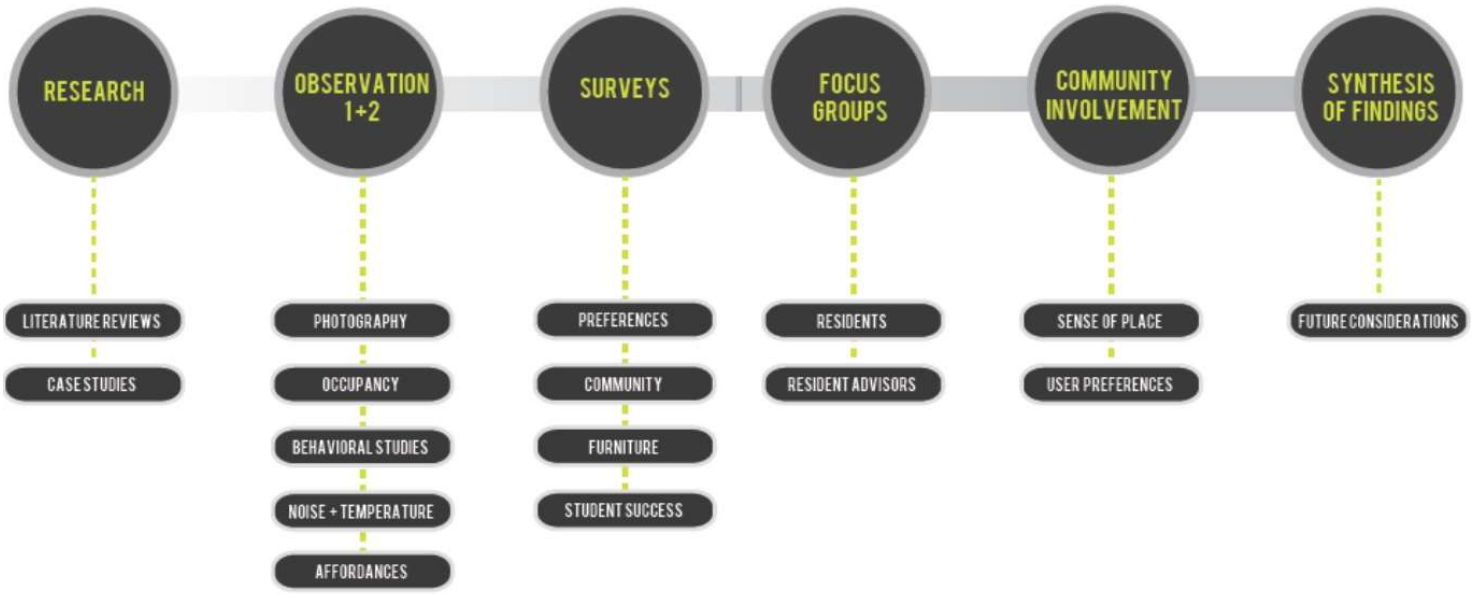

Figure 1. **Research methodology framework**

apply to their class project: designing a residence hall on campus. However, to further leverage the valuable data collected, interested students spent a summer analyzing the data collected and contextualizing it with national survey data. To analyze the findings, a team of four undergraduate researchers worked with their professor to analyze and synthesize the data collected and presented a final document with presentation to the university administration.

The post-occupancy evaluation process conducted by the students revealed four key issues that impacted student success in the design: community, user suitability, amenities, and operations. The students outlined the successes of the implemented design and areas for improvement of the finished building. These findings and recommendations have been used to effectively redesign existing spaces and have impacted future living and learning spaces on campus. This study set a model for engagement in university design projects by utilizing effective evidence-based design. By using evidence-based design, universities can use innovative methods in research-driven design models with a multidisciplinary collaborative team of administrators, staff, faculty, and most importantly, students.

Literature Review

To fully understand the process and the projects this paper outlines, the following topics have been outlined in the literature review to contextualize the nature of the work. The topics are selected because they are all forces that impact student learning and the residence hall experience on campus.

Experiential Learning

Experiential learning as we define it today was pioneered by John Dewey, which closely aligns with the foundations of design education, focusing on problem-solving and active learning (1938). Kolb continued to develop this thinking linking learning experiences to learning environments, valuing reflection in the learning process (1984). By providing direct learning experiences, students can learn more accurately from engagement (Keeton, Sheckley, & Griggs 2002). These experiences provide a deeper level of teaching and learning because of the applied nature of the work; it connects to faculty scholarship where the faculty member and the students become co-learners. The interconnectedness of experience, knowledge, and skills integrate to create a powerful learning process (Marullo & Edwards 2000).

Student Housing

Student housing has come a long way from the dormitories occupied by the baby boomer generation. The current student population is accustomed to more amenities and more privacy at home. As a result, when they transition to college, students expect more from student housing than their parents did (Students Today Seek Quality Off Campus Housing). Universities have started to redefine what housing should be based on new student demands. Understanding the variety of functions college housing

should support is an important step in the design process. Residence Halls differ from dormitories in that they create an environment that encourages much more than just sleeping (Colorado Mountain College). Research is vital to support this change in college housing. Therefore, we need to put an emphasis on post-occupancy evaluations, which benefit both designers and housing occupants.

Figure 2. **Champions Court I: Residence Hall that was the site for the study.**

Figure 3. Class in action: **Students beginning concept boards for the residence hall design project.**

Community

A main function of student housing is to create community among the residents. Even students recognize that living on campus supports community building and academics better than off-campus housing (Eligon, 2013). Residence Halls can support students academically and socially by providing faculty offices, learning environments, and educational programs as well as housing students in small groups (Palmer, Broido, & Campbell, 2008). Residence halls should also support students working toward common goals, which will to prepare them for the professional world (Bordass & Leaman, 2013). This could come in the form of Living Learning Programs that encourage students to work together to create their own learning environment and enhance their areas of expertise. Universities are now shrinking the typical size of bedrooms to make more room for community spaces that encourage interaction among residents (Fabris, 2014). This gives evidence that universities highly value having a sense of community within residence halls.

Retention

In order to maximize retention in on-campus housing, we must understand students' reasons for staying or leaving (Li, Sheely II, & Whalen). This information can be uncovered by communicating with residents in the form of focus groups, questionnaires, or other techniques (Dorms of Distinction: Top Residence Halls for Today's Students, 2008). It is important for designers to understand that building occupants are "experts" on how a building functions for their needs (Watson, 2003). Opinions of students and staff should be taken seriously so designers can address their concerns. Residence halls must be up-to-date in order to attract college students to live there (Students Today Seek Quality Off Campus Housing). The residence hall needs to give students some amenities and privacy in order to encourage them to stay on campus, but not too much privacy, as it may discourage student interaction. To increase retention, residence halls must find a good middle ground between private and open spaces.

Building Performance

Building evaluations collect evidence to inform future design (Bordass, Stevenson, & Leaman, 2010). Fortunately, they also have the power to improve the current state of the evaluated building by giving suggestions for changes or renovations. A great way to include occupants into the evaluation process is to seek their feedback. This will encourage cooperation and empower them to give opinions that will improve the future of design (Watson, 2003). Post-occupancy evaluations should be unbiased and produce results that are easy to understand for the public (Bordass, Stevenson, & Leaman, 2010). One way to keep post-occupancies unbiased is by including actual quotes from occupants in the findings. It is tempting for designers to hide the weaknesses of their buildings, but being transparent with the results produces the best outcome.

Living Learning Programs

Living Learning Programs are increasing in popularity in university residence halls. They help to create learning environments outside of the classroom for students with similar career goals and interests. When there are spaces that

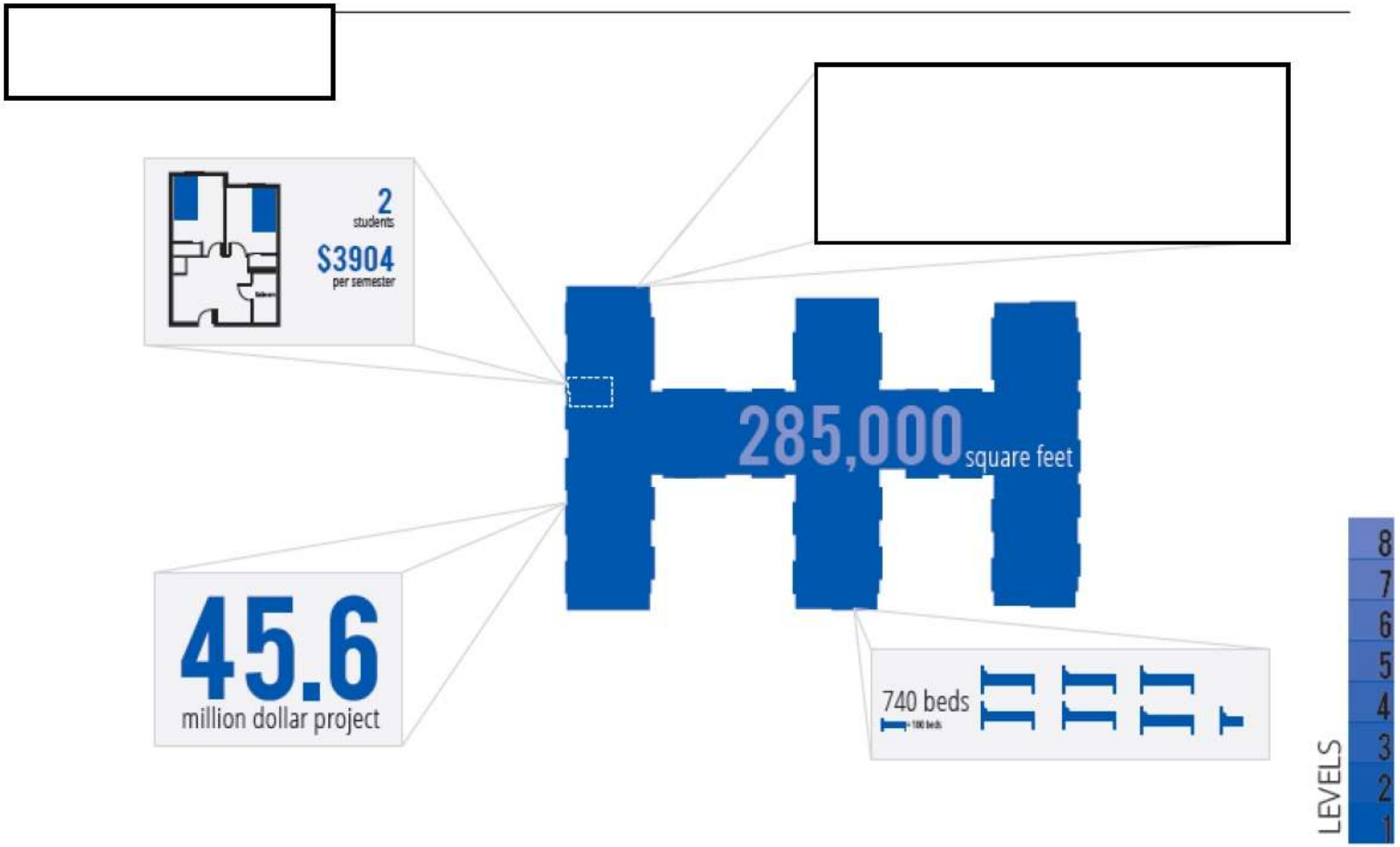

Figure 4. **Facts about the residence hall.**

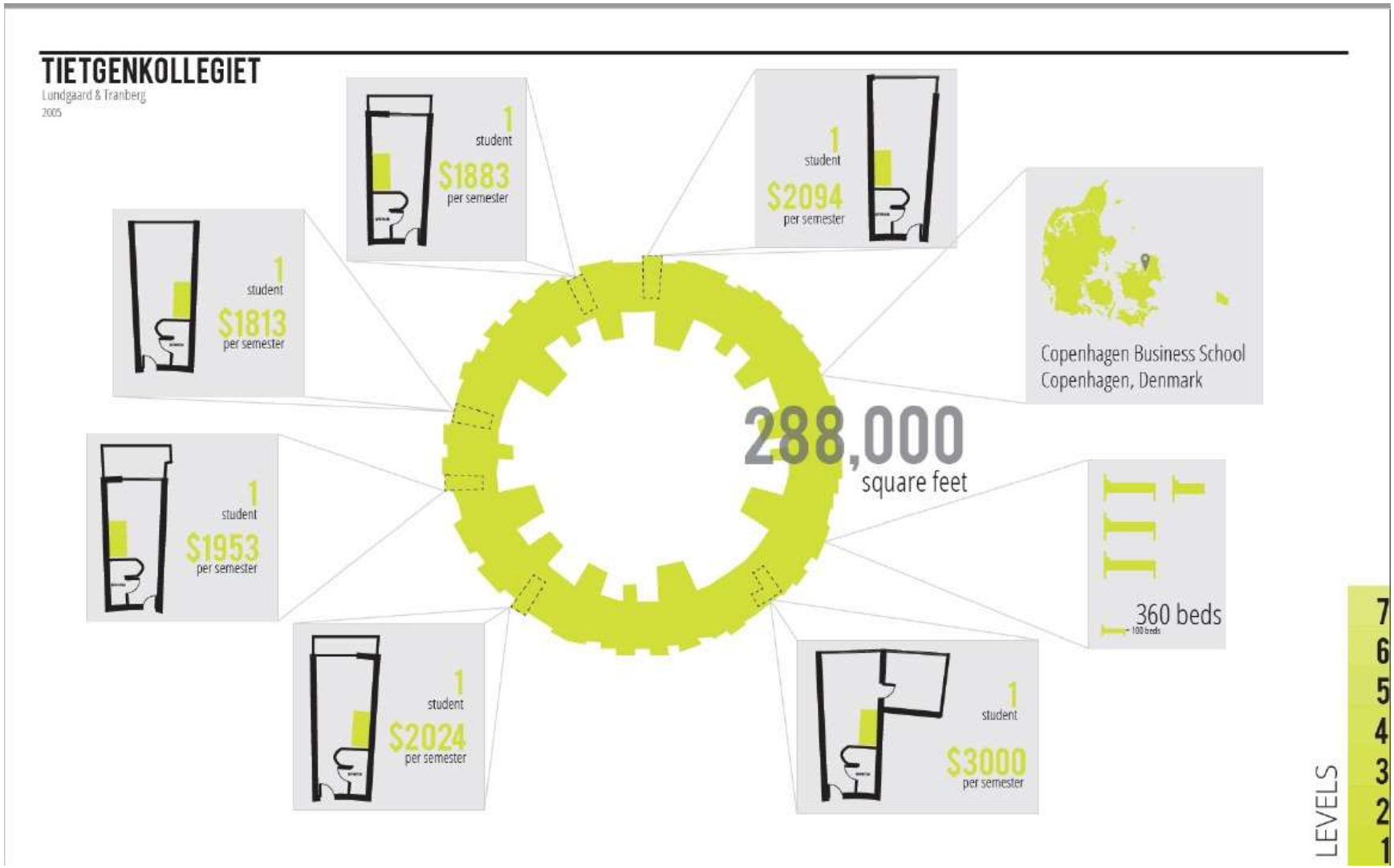

Figure 5. **An Example of one of the case studies conducted for the study.**

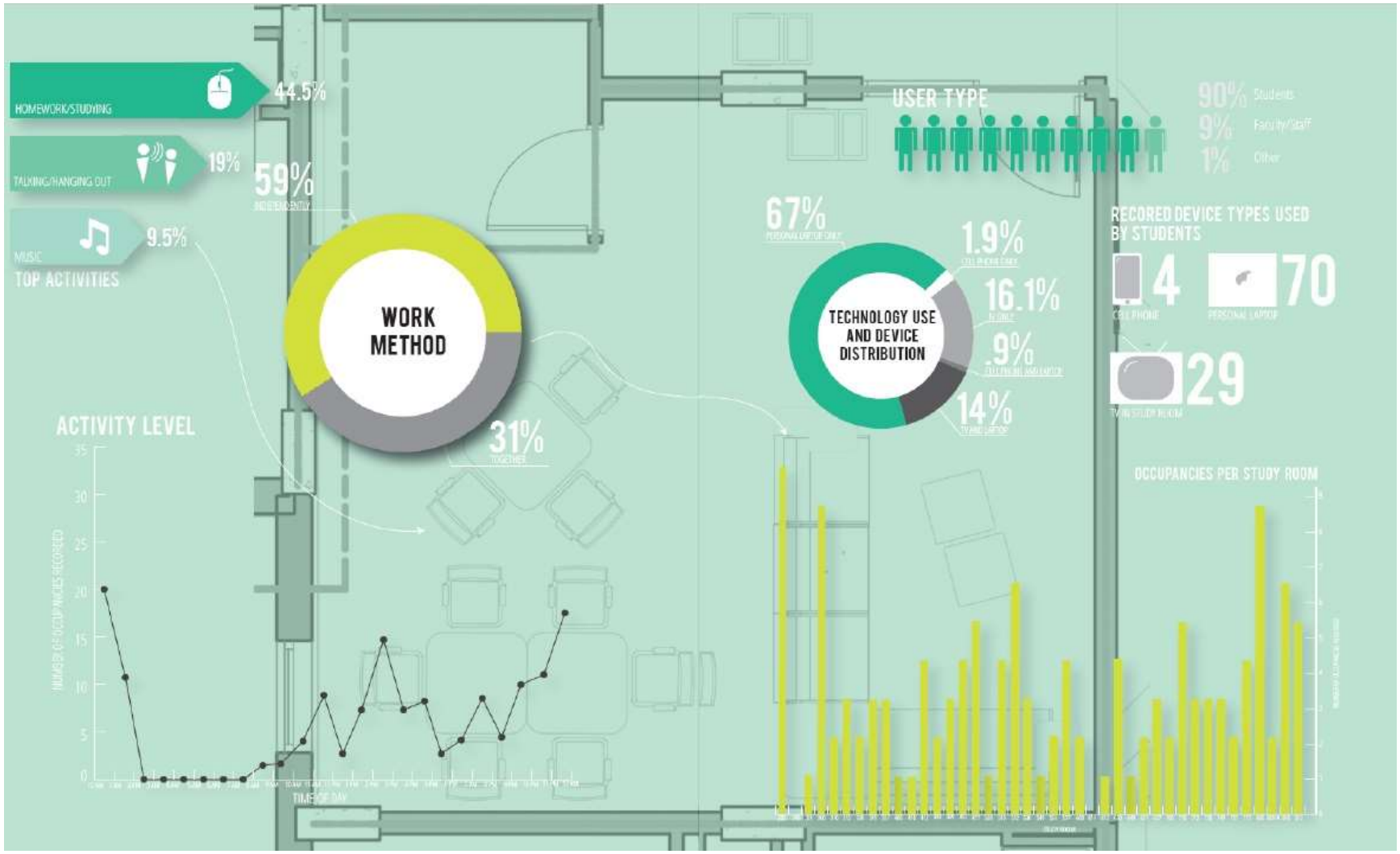

Figure 6. **Summary of findings from the first round of observations.**

support students academically in their residence halls, their classroom performance is improved (Palmer, Broido, & Campbell, 2008). Living Learning Programs also aid in a smooth transition from high school to college. This includes adapting socially as well as academically (Brower & Inkelas, 2010). When students are able to form community around similar interests and majors, they are able to connect to their campus and feel secure, which allows them to focus and better thrive in their academic pursuits.

Contributing factors currently to students and housing on campus are focused on programming, retention and performance, but this article focuses on how community and experiential education are also important to the success of student housing. In this case study, the residence hall was selected because it was a newly opened residence hall on campus that addresses the key priorities identified in the literature review. It was a programmed living space with living learning opportunities and a model for the rest of the campus. Students were interested in this new environment on campus because it was new and provided amenities that other dormitories did not offer.

Building Context

Located on North Campus, Champions Court I is a co-ed residence hall opened in 2014 under the university's contract with a private partnership. The residence hall holds 740 residents on its eight floors. It features living learning communities, which place students with the same major or with similar interests together and provide activities and special services that are related to the community. The residence hall featured the Engineering Residential College, EDLIFE Community, iNet Community, CI Connect Community, and Business Enterprise Community during the 2014-2015 school year. Champions Court I features two-bedroom suites, providing students with their own room and one bathroom to share. Each floor includes between 2-6 study rooms, and laundry rooms on floors one and two. The third floor features a community kitchen for the residence hall with a stove, dishwasher, and full-size refrigerator. The eighth floor features a roof top garden for residents to enjoy. The second floor looks onto the lobby below, providing an open, inviting feeling to the space. The residence hall also includes murals created by students at the University of Kentucky in the College of Design. The site was selected for the study because of its diverse population, high concentration of LLPs, and location.

Pedagogy Methodologies

In the spring semester an interior design education studio completed a post-occupancy evaluation of a residence hall to explore the utilization of learning spaces for the Living Learning Programs. The focus of the study determined how public and group space influences student success. Over the course of the summer, a team of four students worked with their professor to analyze and synthesize the data collected in the spring semester. Students were involved throughout the process: completing space assessments, behavioral observations, administering questionnaires, conducting focus groups, analyzing data, and making recommendations based on their experiences.

The class of 12 second-year interior design students created high quality design research that supports student and faculty collaborative research on campus. Beginning with IRB certification, students completed of a series of online tests to certify the students as researchers and to ensure the students know the appropriate process for collecting data. After each student in the studio became IRB certified, they completed several research exercises including analyzing articles and designing infographics. While researching articles, the students worked in a study room in Champions Court I, which helped them to understand the design of the building and stay focused on the importance of the task at hand. Being exposed to scholarly articles allowed students to look at residence halls in a new way, explore modern educational design ideas, and guide their focus to certain topics. Designing infographics for the research ideas they discovered helped to organize information, see relationships among ideas, and share findings visually with others.

To incorporate the students' research, the class brainstormed four main goals: which were sense of place, productivity, community interaction, and learning styles. The students explored these issues in a creative way by designing and submitting entries to a mural competition for the new residence halls. Four of the students from the class won the competition and will have their mural designs featured in the new residence halls. In addition, students were asked to design a learning intervention for campus. Students were challenged to design a learning environment for the future that allows learning to occur everywhere and helps increase student engagement and learning retention. Solutions varied from desks that accommodate learning disabilities to interactive way-finding kiosks throughout campus.

In order to explore the world of educational design, students submitted videos to a Herman Miller contest that answered the question, "What's next in learning spaces?". The students worked together in groups of four, taking ten days to create a storyboard, film, and edit footage to create a video submission. Of the three groups, one student group received an honorable mention from the national competition for their submission.

Throughout the semester, the students had the opportunity to participate in the post-occupancy evaluation

by completing observations in shifts from 8 am to 2 am. Students also took part in organizing focus groups and a community activity to better understand the opinions of the residents after the semester was completed. A research team of undergraduate students and their professor organized the data collected over the summer.

Study Methodologies

Case Studies

Case studies were investigated to understand the context and best practices within residence hall design. The case studies share aspects with the goals and context of the residence halls including sustainability, amenities, furniture use, Living-Learning Programs, student retention, communities, and engagement. Other contemporary residence hall projects give insight into the challenges and potential solutions of residential hall design. The case studies were used to benchmark this residence hall among other institutions.

Observations

An integral part of the post-occupancy evaluation of Champion's Court I was observing and recording students' use of public spaces. The building's public spaces were studied over the course of two separate one-week rounds of observations. The observations were spread out over the semester to give insight into the behavior of students around two very important academic times: midterms and finals weeks. Observers recorded activity levels, furniture use, and temperature, coupled with photographs and sketches over floor plans. This provided insights into occupancies of study rooms, common space usage, and furniture use.

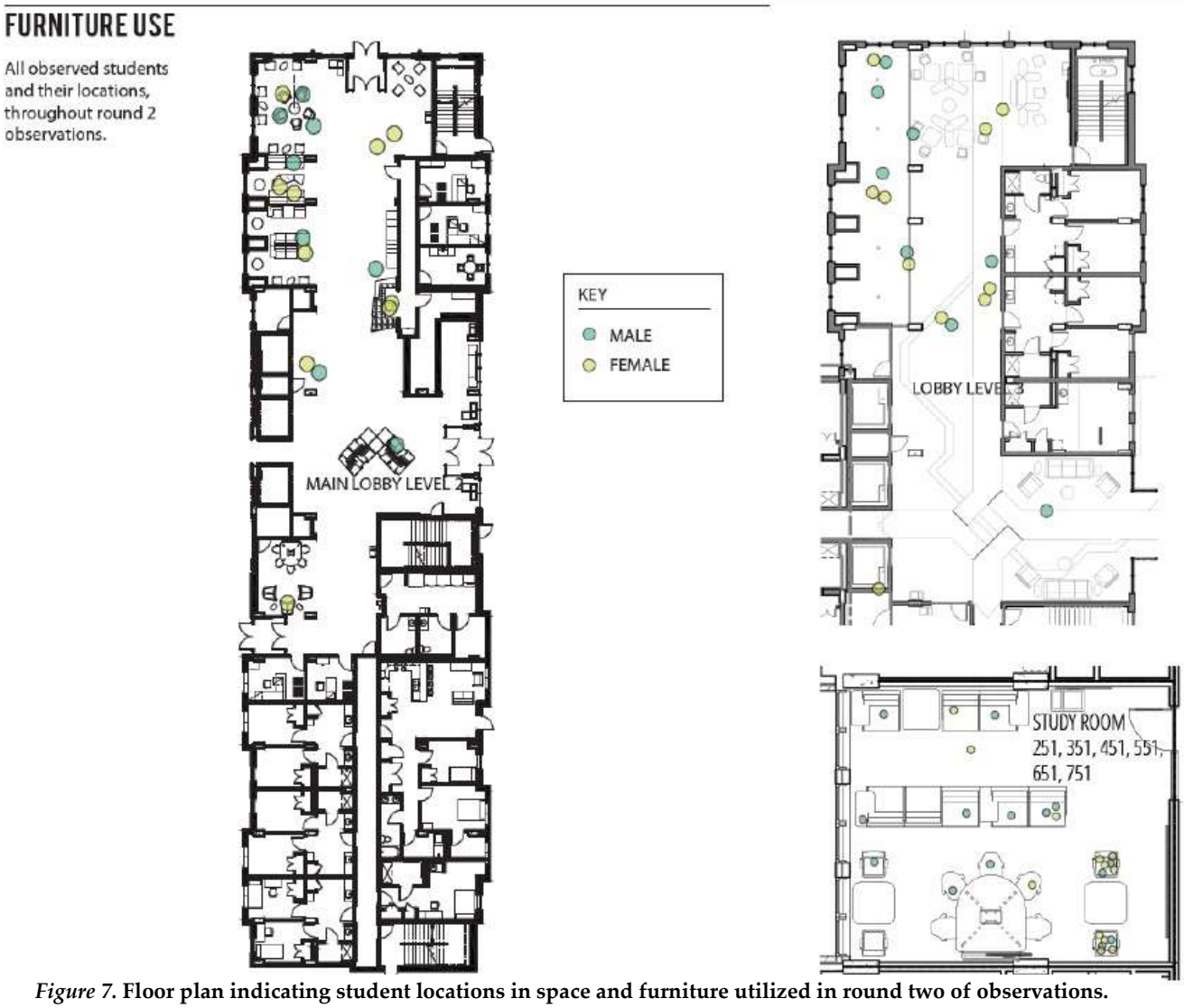

Figure 7. **Floor plan indicating student locations in space and furniture utilized in round two of observations.**

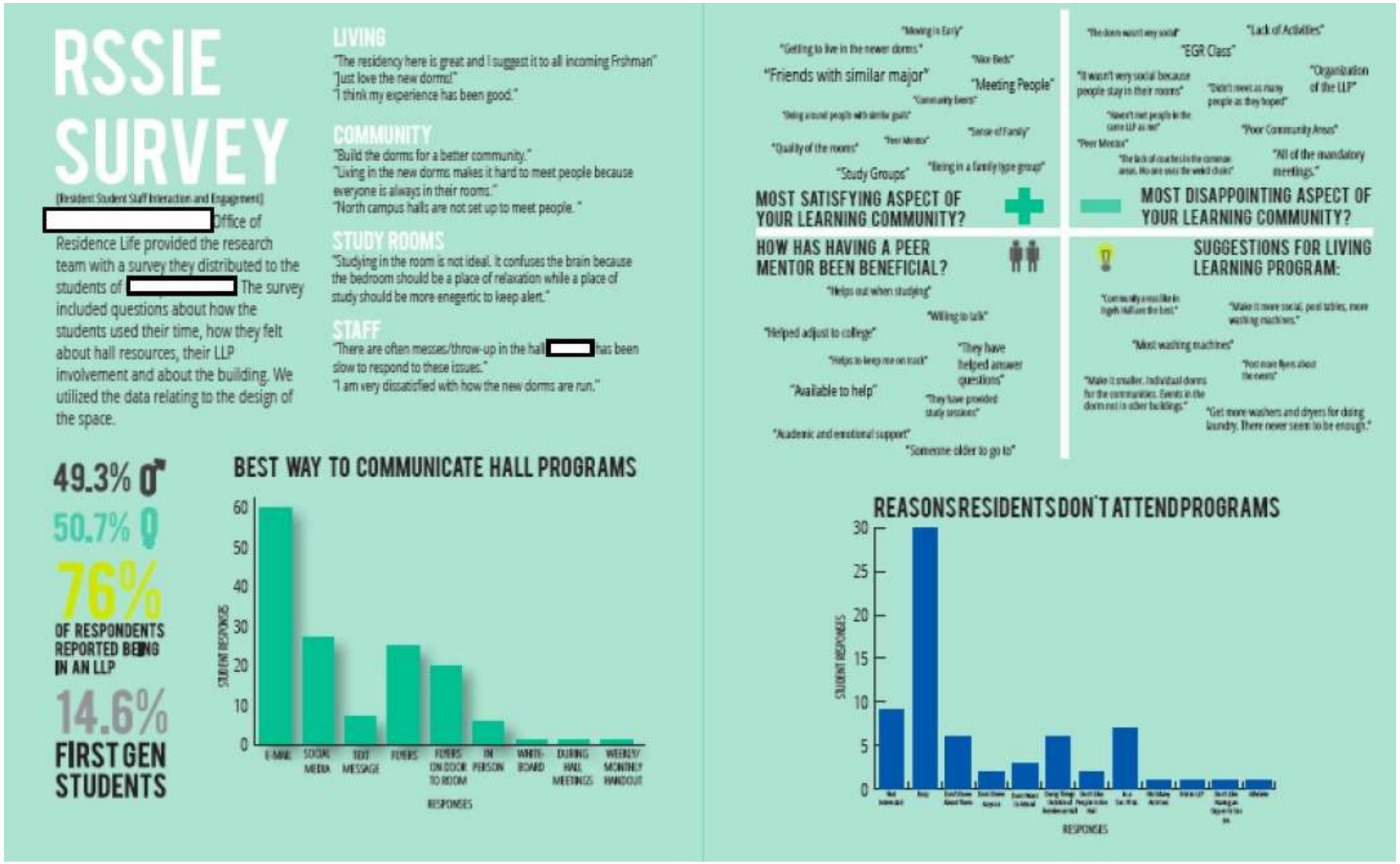

Figure 8. **Survey results summary from the office of residence life administered to residence hall occupants.**

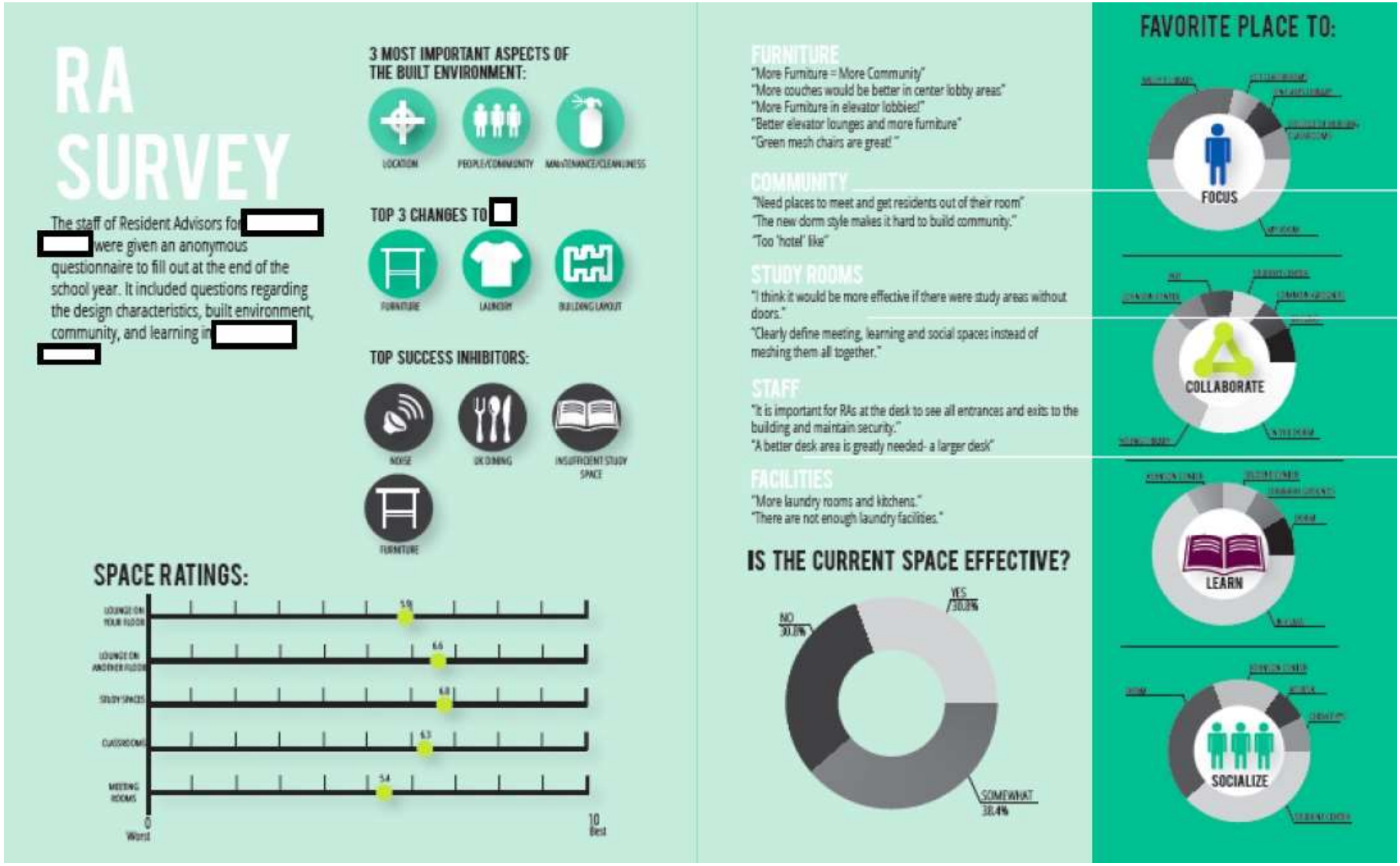

Figure 9. **Survey results summary from resident advisors.**

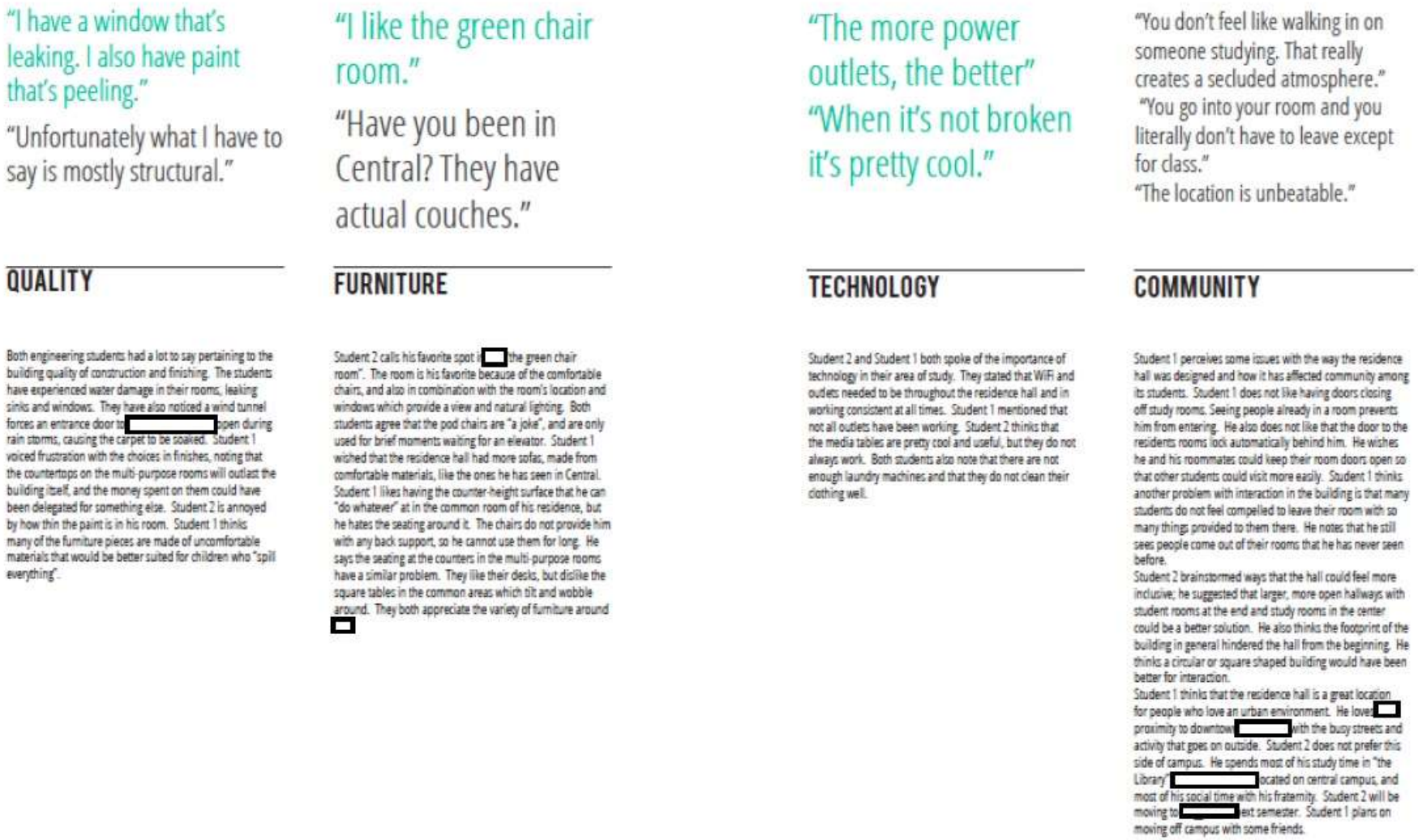

***Figure 10*. Excerpts from focus group.**

Figure 11. **Summary of data collected at the community event hosted in residence hall.**

Surveys

The Office of Residence Life provided the research team with a survey they distributed to the students of Champions Court I. The survey included questions about how the students used their time, how they felt about hall resources, their LLP involvement and about the building. We utilized the data relating to the design of the space.

The staff of Resident Advisors were given an anonymous questionnaire to fill out at the end of the school year. It included questions regarding the design characteristics, built environment, community, and learning.

Focus Groups

Members of the research team conducted focus groups, in which students were directly asked a set of questions addressing issues such as furniture use, Living- Learning Communities, study habits, and socializing, to better understand student satisfaction within the residence hall. The focus groups conducted with the users of Champion's Court I provided clear insights into what aspects of design were perceived successful or successful.

Community Involvement

The research team hosted a community event in Champions Court I. A booth was set up with several questions so that residents passing could answer questions about CCI by writing their answer down on a post-it note and sticking it to the question.

Conclusions

By strategically assessing projects on campus in an engaged research model, students can take an active role in transforming the academic environment. Inclusive design research is a mutually beneficial process that can greatly impact how higher education projects are implemented on campus. By utilizing the post occupancy evaluation process as a pedagogy model, students were able to have a high impact learning experience that made them research generators, not just consumers of research. This research revealed how to actively engage students in design research in the campus environment, but also allowed the university administration to see the implications of applied design research and the impact it can have on campus design. As a result, university housing has been able to implement new strategies to address issues identified in the study. The research was instrumental to the design team responsible for the next phases of housing implemented on campus. It has influenced the new housing, and the findings will be applied to augment existing residence halls on campus. By combining students, staff, administration, partners, and faculty, a robust experience yielded rich data that can be implemented for assessment of existing and future campus designs. Student participation in design research is critical for advancement in the future of academic spaces and is essential to successful designs in higher education environments.

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