

MINNESOTA



**POST-OCCUPANCY
EVALUATION**

**Indoor Environment Quality + Classroom Environment
Normandale Partnership Center (NPC)
Normandale Community College, Bloomington, MN
Report 2**

April 2015, Minneapolis, MN

Sustainable Post-Occupancy Evaluation Survey (SPOES)

B3 Guidelines

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1.0 Overview

The purpose of this report is to examine the connection between sustainable design criteria used in the design of the Normandale Partnership Center (NPC) facility and occupants' satisfaction with their classroom environments located in the NPC. The NPC facility was designed using the B3 Guidelines (formerly known as the Minnesota Sustainability Guidelines or MSBG) and completed for occupancy in 2011. The B3 Guidelines track specific state-funded, B3 buildings as a means of demonstrating real outcomes aimed at the conservation of energy resources, creation and maintenance of healthy environments, and occupants' satisfaction with their environments. The Sustainable Post-Occupancy Evaluation Survey (SPOES) was developed to assess human outcomes in workplace, classroom, and residence hall settings in compliance with the B3 Guidelines project tracking requirements. This is a report of occupants' (hereafter called students) responses at 3.5 years post-occupancy. The survey was conducted in April, 2015 and is the second of two required survey events for this building. (Report 1 can be found at <http://www.b3mn.org/poe>)

This SPOES report focuses on students' satisfaction with the physical environment as related to 25 indoor environment quality (IEQ) criteria such as lighting, thermal, and acoustic conditions in their primary classrooms. Students' satisfaction with the facility (site, building, and interior) and the effect of the facility's physical environment on their perceptions of their academic performance and health also are included. Finally, a brief look at students' commuting and physical activities within the building are reported. The report provides descriptive information about students' perceptions of the IEQ of their work environments. In addition, this information serves the broader development of knowledge regarding the influence of IEQ on employees.

2.0 Method

SPOES consists of a self-administered, Internet-based, questionnaire submitted to and completed by students. The SPOES questionnaire has been tested for **validity** (measures what it is intended to measure) and **reliability** (repeatability or replicability of findings). Students rate their level of satisfaction on a **Likert-type scale** (measurement scale) from 1 (very dissatisfied) to 7 (very satisfied) with IEQ of the facility and their primary classrooms. They also rate the influence of their physical environment on their perception of their academic performance and health on a scale from 1 (hinders) to 7 (enhances). There were no physical measurements taken of environmental conditions such as temperature or acoustic level. This study is limited to students' perceptions.

The report provides a descriptive summary of the results stated as a **mean** (average of all responses), **standard deviations** (SD) (how different scores are from each other and the mean), and **number of responses** (N) for each question analyzed. The mean for a 7-point scale is 4.00. Lower or higher means reflect stronger tendencies towards dissatisfaction/satisfaction and hinders/enhances. Means that are close to the center of the scale (4) are considered to be neither dissatisfied/hinders or satisfied/enhances.

When interpreting **mean** responses, the following labels were used:

- 1.00 - 3.50 dissatisfied (hinders)
- 3.51 - 4.50 neither satisfied (enhances) nor dissatisfied (hinders)
- 4.51 - 7.00 satisfied (enhances)

An IEQ Score is also calculated for students' satisfaction with IEQ in their primary classrooms. This is a statistical combination of category-level IEQ scores, which results in a single IEQ score for all respondents and is reported in an IEQ Scorecard.

2.1 Description of the Questionnaire

Students first rate their level of satisfaction with the facility (site, building, and interior) and the influence of their physical environment on their perception of their academic performance and health. Then they respond to questions about their satisfaction with their primary classrooms in relation to IEQ criteria from the B3 Guidelines. Additionally, students' physical activities and commuting practices are investigated.

In the SPOES questionnaire, the 25 IEQ criteria listed below are evaluated. There are two levels of criteria, categories and attributes. As shown in the list, the 'overall' criteria are boldfaced and called 'categories' or 'category level' criteria. A category is broader or more general such as Overall View Conditions or Overall Indoor Air Quality. Some categories have 'attributes' or 'attribute level' criteria and provide greater detail about the category. For example, Overall Thermal Conditions is a category level question, and there are four attribute level questions related to thermal conditions such as adjustability, air velocity (draft), humidity, and temperature. Overall Acoustic Conditions is a category with attributes of students' ability to hear desired sounds and their ability to limit undesired sounds. There are 10 category-level and 15 attribute level questions. Means are calculated and reported for all category and attribute-level criteria.

An IEQ Satisfaction Score is also calculated for students' satisfaction with IEQ in their primary classrooms. This is a statistical combination of the 10 category-level criteria only and results in a single, mean IEQ Satisfaction Score for students' satisfaction with the physical conditions of their primary classrooms. Attribute-level criteria are not included in the IEQ Score because unequal weight would be given to criteria that have both category and attribute-level questions.

In the following list, **category (boldface)** criteria are listed in alphabetical order. If a category has attributes, they are listed with the category.

Overall Acoustic Quality

- Ability to hear presentations
- Ability to understand desired sounds
- Extent of background noise

Overall Appearance (aesthetics)

Overall Cleaning and Maintenance

Overall Daylighting Conditions

- Ability to adjust daylighting
- Amount of daylighting

Overall Electric Lighting Conditions

- Ability to adjust electric lighting
- Amount of electric lighting

Overall Furnishings

- Ability to adjust furnishings
- Function of furnishings

Overall Indoor Air Quality

Overall Technology

- Ability to see materials presented
- Access to electric outlets

Overall Thermal Conditions

- Ability to adjust thermal conditions
- Air velocity (drafty/stagnant)
- Humidity (dry or moist)
- Temperature (hot or cold)

Overall Vibration and Movement

2.2 Limitations

Students' participation is voluntary, and responses are self-reported. As is true with all survey research, the responses indicate students' perceptions. There were no physical measurements, e.g., temperature, humidity, or lighting levels, of the environment taken.

3.0 Sample Description

3.1 Description of Building

The NPC facility resides on the campus of Normandale Community College, a part of the Minnesota State Colleges and Universities system, and is located at 9700 France Avenue South in Bloomington, MN. There are currently over 14,500 students in attendance at Normandale. The NPC facility (see Figure 1) is comprised of 27 classrooms, faculty offices, and common student areas. These areas are distributed across three floors and 76,000 square feet. The facility provides offices for faculty and staff who work in business, accounting, hospitality, continuing education, and customized training.



Figure 1 Normandale Partnership Center Building (Photo credit: <https://normandale.ims.mnscu.edu>)

3.2 Description of Respondents

The NPC had approximately 2600 students with classes in this facility during the spring semester period and administration of the survey event. The response rate to the questionnaire was approximately 4%. Of those responding, 55% were female, 41% were male and 4% were other. The mean age of respondents was slightly over 25 years, with a range of 21 to 60+ years.

Students responded that in their primary classroom or laboratory environment, 23% spend more than 1-2 hours per week in their primary classroom or laboratory environment, 53% spend more than 3-4 hours per week, and 23% spend more than 1-2 hours per week in their primary classroom or laboratory environment.

Regarding the amount of time students spend in other parts of the NPC facility, 48% of the students spend 1-2 hours in the NPC facility outside of the classroom, 27% of students spend 3-4 hours per week

in other parts of the facility; 25% spend more than 5 hours in NPC other than their primary classroom or laboratory environment.

Next, students were asked about their satisfaction with the course they were taking in the NPC classroom and the amount they learned in this class. Results indicate that students were **satisfied (M = 5.92)** with the course and were very satisfied with the amount learned (**M = 6.08**).

Finally, students are exposed to concerns for the environment and sustainable initiatives throughout social media, initiatives on campus, and courses of study. Students were asked how important sustainability was to their own point of view. The mean score relating to the importance of sustainability was **6.14**.

4.0 Findings and Discussion

4.1 NPC Facility (Site, Building, and Interior): Overall Satisfaction, Learning Experience, and Health

Students responded to questions concerning the NPC facility (site, building, and interior) and their overall satisfaction with the facility, overall perceptions of their learning experience in relation to the facility, and their overall perception of their health in relation to the facility. Table 1 shows the means and standard deviations of their responses as well as how the responses are interpreted. Figure 2 is a graph that shows the mean for each question with a blue mark. The standard deviation is represented by a green/red, vertical bar with green representing satisfied (or enhanced) and red representing dissatisfaction (or hindered). Gray represents the ‘neither/nor’ range of responses. In cases where there were no dissatisfied responses, the bar will be all grey and green. This graph is simply a visual image of the findings from Table 1.

Table 1. NPC facility - overall satisfaction, learning experience, and health

Facility (site, building and interior)	Mean	SD	N	Interpretation
Overall Satisfaction	6.21	1.19	86	Satisfied
Overall Learning Experience	5.72	1.33	85	Enhances
Overall Health	5.20	1.30	85	Enhances

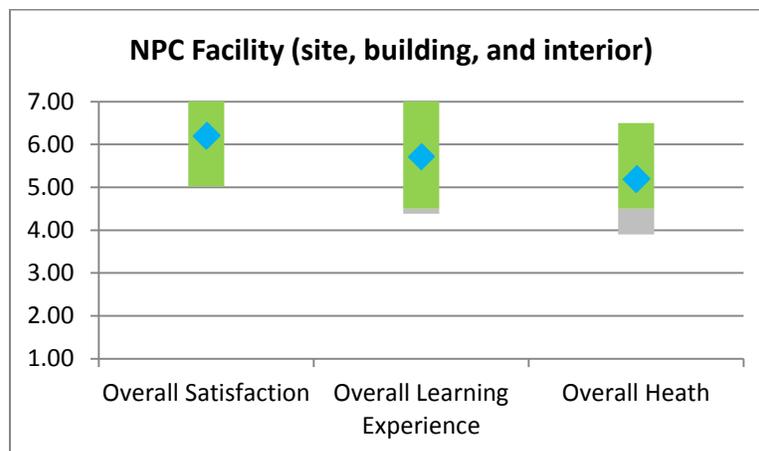


Figure 1. NPC facility - overall satisfaction, learning experience, and health

Results indicate that students were **satisfied (M = 6.21)** with the NPC facility (building, site, and interior) and reported that their overall learning experience was **enhanced (M = 5.72)** by the facility. Students reported that their overall health was **enhanced (M = 5.20)** by the facility.

4.2 Primary Classroom: Overall Satisfaction, Learning Experience, and Health

Students responded to questions concerning their overall satisfaction and overall perceptions of their learning experience and health as related to their primary classroom. Table 2 shows the means and standard deviations of their responses as well as how the responses are interpreted. Figure 3 is a visual image of the findings from Table 2.

Table 2. NPC Primary classroom – overall satisfaction, learning experience, and health

Primary Classroom	Mean	SD	N	Interpretation
Overall Satisfaction	5.77	1.50	84	Satisfied
Overall Learning Experience	5.48	1.49	86	Enhances
Overall Health	5.11	1.36	84	Enhances

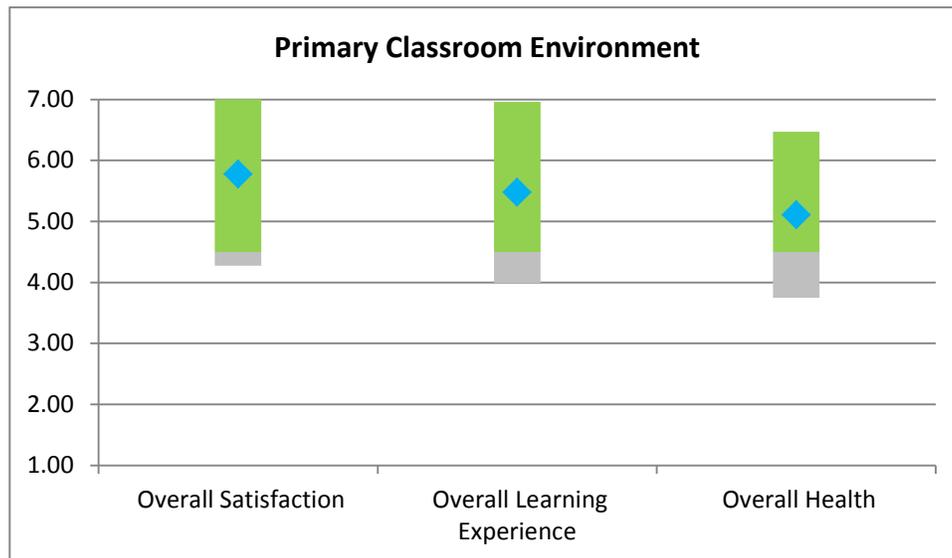


Figure 2. Primary classroom - overall satisfaction, learning experience, and health

Results indicated that students were **satisfied (M = 5.77)** with their primary classroom, their overall learning experience was **enhanced (M = 5.48)** by their primary classroom, and their overall health was **enhanced (M = 5.11)** by their primary classroom.

4.3 Primary Classroom: Satisfaction with Indoor Environment Quality (IEQ)

Students responded to questions concerning their satisfaction with IEQ criteria (thermal conditions, indoor air quality, acoustic conditions, etc.) related to their primary classroom. Table 3 shows the means and standard deviations of their responses as well as how the responses are interpreted. It must be noted that all responses, regardless of the classroom, were combined so these are composite means of all classrooms in NPC. Figure 4 is a visual image of the findings in Table 3.

Table 3. Primary classroom - satisfaction with IEQ conditions

#	IEQ Criteria (1-25) (Category level criteria are bold face)	Mean	SD	N	Interpretation (D = Dissatisfied) (S = Satisfied)
1	Overall cleaning and maintenance	6.28	1.11	86	Satisfied
2	Ability to hear presentations	6.25	1.09	85	Satisfied
3	Overall appearance (aesthetics)	6.13	1.23	85	Satisfied
4	Overall vibration and movement	6.12	1.10	84	Satisfied
5	Amount of electric lighting	6.11	1.24	84	Satisfied
6	Overall electric lighting	6.07	1.40	83	Satisfied
7	Ability to understand desired sounds	6.07	1.33	84	Satisfied
8	Overall acoustic quality	6.07	1.18	86	Satisfied
9	Overall indoor air quality	6.02	1.28	86	Satisfied
10	Ability to see materials presented	5.99	1.28	85	Satisfied
11	Extent of background noise	5.89	1.37	84	Satisfied
12	Air velocity (drafty or stagnant)	5.87	1.34	86	Satisfied
13	Overall technology conditions	5.86	1.52	85	Satisfied
14	Humidity (dry or moist)	5.85	1.36	85	Satisfied
15	Temperature (hot or cold)	5.81	1.18	86	Satisfied
16	Ability to adjust electric lighting	5.80	1.59	82	Satisfied
17	Overall thermal conditions	5.74	1.42	85	Satisfied
18	Function of furnishings	5.58	1.73	86	Satisfied
19	Overall furnishings	5.54	1.66	85	Satisfied
20	Overall daylighting	5.53	1.67	85	Satisfied
21	Ability to adjust furnishings	5.43	1.73	86	Satisfied
22	Amount of daylighting	5.40	1.67	85	Satisfied
23	Access to electric outlets	5.36	1.64	84	Satisfied
24	Ability to adjust thermal conditions	5.33	1.33	84	Satisfied
25	Ability to adjust daylighting	5.24	1.78	84	Satisfied

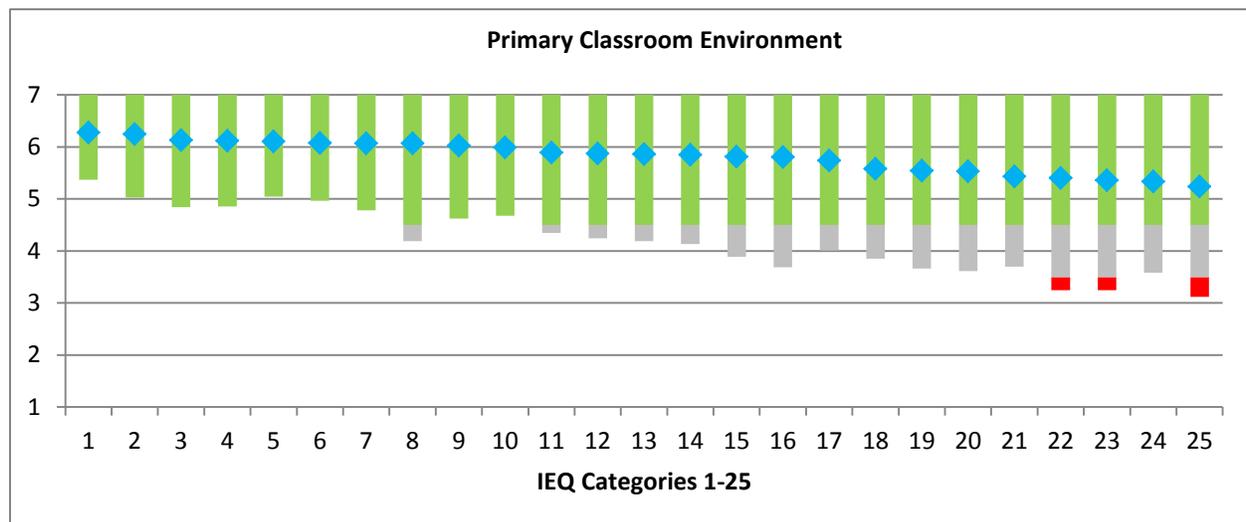


Figure 3. Primary classroom - satisfaction with IEQ criteria (IEQ 1-25 are listed in Table 3 above)

Results indicate that students were satisfied with all of the IEQ criteria in their primary classrooms. Satisfaction with IEQ criteria ranged from means of 5.24 to 6.28. These findings support the **moderate to high level of student satisfaction** with the IEQ of their classrooms. Further information about their

perceptions can be found in Appendix A. Open-Ended Responses.

4.4 IEQ Satisfaction Scorecard

The IEQ Satisfaction Score is determined by calculating a mean of all 10 category level IEQ criteria. At this time, all criteria are weighted equally in this calculation as little evidence exists that provides rationale for weighting some criteria heavier than others. The IEQ mean is representative of a fair overall IEQ score and can serve as a benchmark of students' satisfaction with the physical environment of their primary classroom. As shown in Figure 5, the **IEQ Satisfaction Score** for NPC is **5.94**.

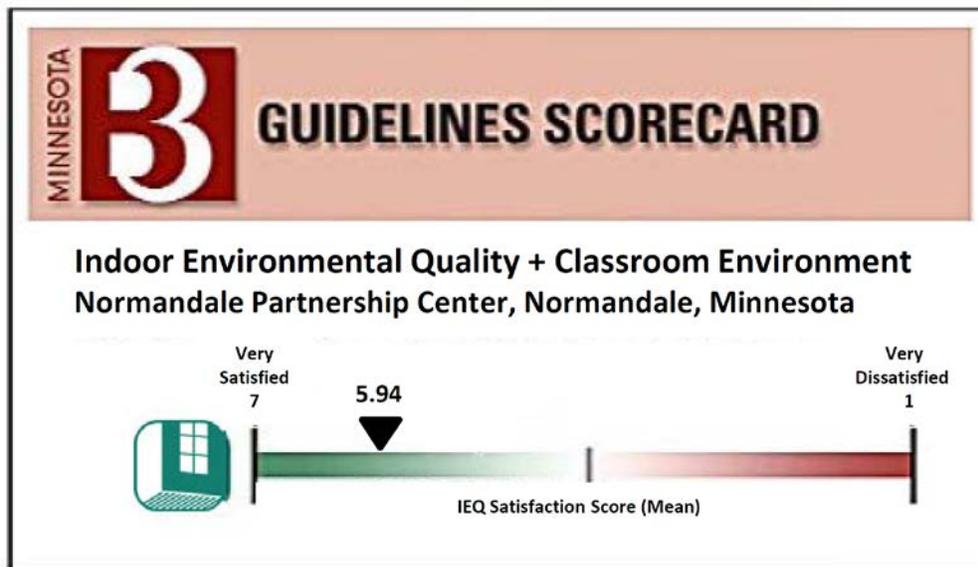


Figure 4. Primary Classroom - IEQ Satisfaction Score

Overall, the students showed a highly positive satisfaction level with the IEQ of NPC classrooms as indicated by the mean score of **5.94**. As shown in Table 3, six IEQ categories were above **6.00** and helped to increase the IEQ Score. Categories over 6.00 include Overall cleaning and maintenance (**M = 6.28**), Overall appearance (aesthetics) (**M = 6.13**), Overall vibration and movement (**M = 6.12**), Overall electric lighting conditions (**M = 6.07**), and Overall acoustic quality (**M = 6.07**), and Overall indoor air quality (**M = 6.02**). The other four category level IEQ criteria are all above **5.53** and still contribute to the positive score. Please note that the IEQ Satisfaction Score only uses the category level criteria (those labeled 'Overall'; see section 2.1, paragraph 3 for explanation). This high IEQ score sets a high benchmark for continued assessment of students' satisfaction.

5.0 Physical Activity Engagement and Commuting Practices

In the final section of the survey, students responded to questions regarding their overall physical activity while at NPC (site, building, and interior) and their commuting practices.

5.1 Physical Activity Engagement

Providing students with opportunities for alternative paths of travel around the classroom building, e.g., taking stairs as opposed to the elevator, provides opportunities to engage in additional types of physical activities. Engaging in physical travel throughout the learning environment can be associated with healthier lifestyles.

Table 4. Overall physical activity (walking, stair use, etc.) affected by the NPC facility

NPC Facility (Site, Building, and Interior)	Mean	SD	N	Interpretation
Overall physical activity (walking, stair use, etc.)	5.67	1.31	84	Enhanced

Results indicate that students felt that NPC **enhanced (M = 5.67)** their physical activities (walking, stair use, etc.).

5.2 Commuting Practices

NPC is a facility within Normandale Community College located on 98th and France Avenue South in Bloomington, MN. The institution resides on a 90-acre wooded lot 1.5 miles south of a major highway that runs through the Minneapolis/St. Paul Metro area. The campus is convenient to public transportation and bicycle trails.

Table 5 provides results on students' primary mode of transportation; Table 6 summarizes commuting distances between home and the NPC facility; and Table 7 summarizes students' ability to commute using alternative choices (walk, public transit, bike, van, or carpool, etc.). These results, although not related to IEQ, do offer the College insight into students' commuting behaviors and opinions. These data can provide important information about commuting practices that can reduce transportation energy consumption.

Table 5. Commuting Practices – NPC Primary mode of transportation

Commuting Practices Home to NPC	Drive alone (or with children <16)	Public Transit	Carpool / vanpool	Walk / Combo
Students commuting mode (%)	80%	9%	6%	5%

Related to primary modes of transportation, 80% of students drive alone (or with children under 16), 9% used public transit, 6% used carpool or vanpool resources, and 5% walked or used a combination of other modes of transportation

Table 6. Commuting Practices – NPC Commuting distance traveled

Miles Traveled One Way	0-5 miles	6-15 miles	16-30 miles	31+ miles
Students commuting distance (%)	13%	48%	34%	5%

Results indicate that 13% of students commute 0-5 miles one-way between home and NPC, followed by 48% who commute 6-15 miles, 34% commute 16-30 miles, and 5% who commute over 31+ miles to NPC. All commuting mileage is reported as one-way miles.

Table 7. Commuting practices – NPC location and alternative commuting behaviors

NPC Facility (Site, Building, Interior)	Mean	SD	N	Interpretation
Ability to commute in alternative ways	4.40	1.70	83	Neither Hinders or Enhances

Results indicated that the location of the NPC **neither hindered nor enhanced (M = 4.40)** students' ability to commute to class in alternative ways, e.g., walk, bicycle, public transit, van or carpool, etc.

6.0 Conclusions

6.1 Summary

A post-occupancy evaluation was conducted of students of NPC at approximately 3.5 years after its renovation in 2011. About 4% of the students who are enrolled in classes in NPC responded to the survey.

The survey included questions related to students' overall satisfaction with the facility (site, building, and interior) and influence of the facility on their overall learning experience and health. Students were **satisfied** with the facility (**M = 6.21**); they found the facility **enhances** their overall learning experience (**M = 5.72**) and **enhances** their overall health (**M = 5.20**). When students were asked these same questions about their primary classroom, they reported overall **satisfaction (M = 5.77)** with their primary classrooms. They also reported that their overall learning experience was **enhanced (M = 5.48)** by their primary classrooms, and their overall health was **enhanced (M = 5.11)** by their primary classroom. As the range of scores was from 1-7, these scores indicate satisfaction is moderately high.

Most of the survey questions related to students' satisfaction with the IEQ criteria in their primary classrooms. Students' responses showed they were **satisfied** with the all of the IEQ criteria. There were no mean satisfaction scores below 5.24. (Ability to adjust daylighting), and the highest was 6.20 (Overall cleaning and maintenance). This is a moderately high level of satisfaction for most of the IEQ criteria.

From the students' responses, an IEQ Score was developed and shows respondents' satisfaction with the IEQ of all category level criteria. For NPC, the IEQ Satisfaction Score was **5.94**. This score reflects a moderately high satisfaction level with IEQ categories. Finally, students reported that NPC **enhances** their physical activity, which is one of the sustainable design criteria that influences occupant behavior.

6.2 Recommendations

The satisfaction scores are certainly in the positive direction, however, it is important to continuously work on IEQ criteria before there is dissatisfaction. For IEQ categories that have physical measurement possible, e.g., thermal, acoustic, and lighting, it is recommended that these measurements be taken in classrooms. Recommendations follow:

Acoustic Conditions

- Identify acoustic criteria for overall requirements.
- Determine if any task areas differ now from their original spatial layout/use (study rooms adjacent to noisy spaces).
- Develop specialized acoustical performance requirements to support functional programming

residents' tasks (e.g., sources of recurrent noise that need to be controlled, special user populations that may have distinct auditory performance limitations, or multiple uses of building spaces that may have different acoustic criteria). Identify and apply appropriate acoustics modeling software for the project.

- Measure acoustic performance onsite with full building systems (heating, ventilation, air conditioning; HVAC) running.
- Identify residents' privacy concerns via focus groups and/or log complaints relative to acoustical conditions for further evaluation.
- Consider residents' tasks within shared spaces to determine if spatial layout changes can be made for increased acoustic control.

Lighting Conditions

- Identify residents' lighting performance criteria that are to be met to achieve goals by conducting onsite measurements of existing illumination and compare them to standards for residents' tasks as identified by the Illuminating Engineering Society (IES).
- Determine if any task areas differ now from original intent to be sure illumination quantity and quality are not impeded by physical changes to the space (i.e., walls, ceilings, furnishings, fixtures, or equipment).
- Develop additional quality lighting criteria as needed for special facility (e.g., influence of daylight quality or quantity) or employee (e.g., age, task duration) issues.
- Log complaints related to lighting conditions for further evaluation.
- Identify poor lighting conditions in the workspace caused by a lack of control over daylighting, which can cause glare and eyestrain.

Personal Adjustability

- Determine if adjustability issues arise with temperature, lighting, or furnishings via a focus group.
- Identify personal, individual problem areas and relate them to other IEQ issues via log of complaints relative to adjustability.
- Provide education to residents about any existing/achievable adjustment options, e.g., furnishings, air diffusers, lighting, temperature control, etc.

Privacy Conditions

- Identify residents' privacy concerns via focus groups or log complaints relative to privacy to determine if visual or audio privacy is most affected.
- Determine if any task areas or responsibilities differ from original intent and develop alternatives or modifications.
- Consider adding noise masking equipment and/or visual screening depending on the nature of the complaints.
- Document and compare acoustic privacy problem areas with acoustic measurements to pinpoint specific problem areas.

Thermal Conditions

- Measure thermal performance conditions on site.
- Log complaints related to thermal conditions for further evaluation.
- Determine special thermal comfort requirements or problems that may be encountered in the building due to physicality of work activities, duration of sitting, or design/layout considerations. Focus groups can be useful in identifying problem locations.

- Determine if any residents' task areas differ now from original layout to determine if air flow is meeting systems design intent.
- Review conditions that affect thermal comfort using ASHRAE Standard 55-2004 or *Human Factors Design Handbook* (see B3 Guidelines).

This study investigated students' satisfaction with the facility and primary workspaces. IEQ satisfaction is individual, but the results of the survey show a central tendency of moderately high satisfaction with the facility and all IEQ criteria. The results can be used as a diagnostic tool to aid in improving IEQ conditions for students and to set the benchmarks from which improvement can be measured in the future.

Appendix A. Open-Ended Responses

Students had the opportunity to raise specific concerns on the overall facility and their primary classrooms. Important information can be gleaned from the open-ended responses. NPC students raised specific concerns about the following themes: cleaning and maintenance and technology. There were positive comments as well, which included an overall satisfaction with the building. Following are the open-ended responses. Generally, the comments are shown as written.

Cleaning and Maintenance

- The bathrooms are often dirty and stink. The elevator gets stuck, and is on the fritz constantly. When I addressed the overheating of the kopp/overlook area and the partnership bldg., the bldg services gentlemen told me, "that's just the way it is."
- I take an evening class and the bathrooms are always being cleaned during our break so you have to go super far to use the bathroom. The doors are always locked to the classroom and never seem to be unlocked in proper time and it didn't create a welcoming feel.

Building Services Amenities

- Sometimes the door at the top of the stairs is locked and sometimes the elevator doesn't work.

Furnishings

- The tables are kind of hard to use. They have these funny diagonal legs that make using the chairs awkward.

IAQ Conditions

- Air is stale

Lighting (Daylight / Electric)

- I love the openness and all the windows! The natural light is great!
- The first and second floors have large windows that let the sunlight in. The third floor windows are much smaller and less accommodating of natural lighting. There isn't really anything that can be done about this, but it was the only critical observation about the physical environment that stood out in my mind.

Technology Conditions

- Projects constantly fail in classes, almost every week. Please upgrade/replace your projectors.
- There are frequent technology issues in the classrooms. Problems with projectors, screens, lights, and door locks have occurred in multiple classrooms.

Thermal Conditions

- It is extremely hot at the overlook all year round. That area is meant for studying and relaxing and nobody can enjoy the area. There is absolutely no air downstairs during the summer.

View Conditions

- It is difficult to have a class with components both the projector screen and on the whiteboard because the screen covers the front board and the other whiteboard is too close to the computers. I have to swivel my chair back and forth just to look at the whole thing!

Overall Positive

- The class room set up is really nice
- The fact that it has good lighting, comfortable seating, and good climate control as well as integrated technology has greatly assisted in my learning.
- I love the windows
- Not much complaints. Awesome, large windows, comfortable chairs and tables. Long distance from the front side of Normandale College, though.
- I love the way the new wood smells it makes it more inviting to sit in front of the glass wall and work
- It's designed well. The open windows are nice.
- This building is a nice addition to Normandale. The extra seating around the building for studying is great and the classrooms are well maintained with being clean and appearance.
- The common areas provide a broad array of available spaces for meeting other students for collaborative projects. They provide a relaxed setting that is more comfortable than your typical library or off-site location and this enhances the learning experience.
- I really enjoy how the classrooms are set up, the interior is modern, and decorated exquisitely.
- I enjoy the many bathrooms and water bottle filling stations.
- Love the interior.
- Beautiful building.
- I like the (interior and exterior) modern look of the Partnership Center. The halls of the building feel open, and it is usually quiet which helps me to feel focused.
- I think it is a wonderful space.
- I really like! The openness of the space (windows, high ceilings, etc.) makes classes over there much more enjoyable
- I like my classes in Partnership Center as it is more comfortable and bright than the other building.
- I just love how the partnership center is set up. It has a clean and welcoming feel, but it also has lots of quiet places to study.
- Sometimes I will walk all the way from the opposite end of the school to use the bathrooms in the partnership center. Some of Normandale's bathrooms in the older areas are DISGUSTING beyond a good scrubbing.
- It's a quiet and comfortable area to be. I quite enjoy spending time in that building. It has an overall good room temperature and I don't find myself getting too warm or cold in that partnership center.
- I love the whole campus, and the Partnership Center is especially nice.
- Love this space, it's beautiful and I get exercise
- It pleases me to see the signs on the restroom doors to know what hours of the day it will be closed due to maintenance. It gives the students a sense of cleanliness and puts the question of "Is the restroom being cleaned?" to ease.
- I like that the environment is nice and quiet

Appendix B. Glossary

Descriptive statistics

Statistics used to summarize large sets of data (i.e., means, frequencies, medians). Descriptive statistics describe only the sample under consideration and are not intended to infer results to the larger population.

Frequency

A descriptive statistic that provides information about how many of a particular response or measurement are observed.

Likert-type scale

A measurement technique, employed in questionnaires and interviews, that utilizes a range of standardized response categories such as strongly agree, agree, etc.

Mean

The average score of a set of data calculated by adding all scores together, then dividing by the number of scores.

N

The number of subjects or participants responding to the questions, or a single question, in the study.

Reliability

The repeatability or replicability of findings; the same results are produced each time. Instruments and procedures should produce the same results when applied to similar people in similar situations, or on a second occasion.

Standard deviation

A statistic used to measure the variability of a group of scores (how different scores are from each other and the mean). For example, if the range of scores is 1-7 and the mean (average) is 5.0 with a standard deviation of 1.0, then the scores are closely clustered around the mean, i.e., there is one unit of variation among all scores. If the mean was 5.0 and the SD was 3.0, there is a broader range of variation among the scores...a smaller SD means the scores are similar and the mean score is likely to be more accurate and more useful (this is better!).

Validity

The extent to which an instrument or procedure measures what it is intended to measure (internal validity). The generalizability of results to another population (external validity).