

Correctional Facility + Education

A prototypical approach: Designing an educational facility within a minimum-security correctional facility to improve learning through real life situations and reduce recidivism.

A Thesis Submitted to the Faculty of the Interior Design Department
in Partial Fulfillment of the Requirements for the
Degree of Master of Fine Arts in Interior Design
at
Savannah College of Art and Design

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Acknowledgments

I would firstly like to thank my faculty thesis advisor, Professor Liset Robinson of the Savannah College of Art and Design. She consistently allowed this paper to be my own work but steered me in the right direction whenever I needed it. I would also like to thank Professor Brian Sweny, whose well-detailed feedback was always helpful. In addition, I would like to thank Professor Peili Wang for his feedback on the graphics, presentation, layout, building codes, details, and so on.

My thesis mentor Mark Van Allen and my advisor Lesley Braxton were extremely patient throughout the project. I would like to thank Mark Van Allen for taking the time out of his busy schedule to meet with me every other week to take the project forward. He was also helpful in guiding me to the relevant resources and people helpful for my research. Lesley Braxton pushed me in the right direction and constantly supported this project. She ensured that I was in the right track and did not lose the aim of this project.

I would also like to thank Professor Boney Casamassima to guide for the LEED sustainability standards. She helped me understand LEED more in depth and how it could be applied in my project.

My professors and mentors helped me get connected to the right people and I really appreciate all my interviewees for putting in the expert knowledge they have provided this project.

My friend, Delaram and my mother were extremely encouraging throughout the process and am thankful for their support during my emotional breakdowns.

Lastly, I'd like to thank the staff of the ACA Library at SCAD-Atlanta who helped me reach the relevant academic resources for the research and John Coopman at the Writer's Studio for editing my paper.

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Abstract

CORRECTIONAL FACILITY + EDUCATION

Designing an educational facility within a minimum-security correctional facility to improve learning through real life situations and reduce recidivism.

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May 2019

This thesis addresses criminal behavior through merging a new facility of education with a prison for non-violent female offenders in order to create a positive change. The School of Criminology and Forensic Psychology will provide an environment for students to learn from real-life situations through ongoing case studies of the inmates. Students will also focus on crime scene investigation and will have both conventional and non-conventional learning environment settings. The students/ investigators will interact with the inmates to gain practical skills and intellectual potential that will facilitate them in their future cases as professionals. At the same time, inmates will experience a normalization of lifestyle within the prison, rehabilitation, and counseling. A prototypical design of this research will be incorporated in a correctional facility in St. Louis, Missouri. Research for this thesis will be facilitated by a literature review of scholarly articles, case studies, statistics, precedent analyses, and interviews.

Keywords: Rehabilitation, criminal behavior, investigation, education, criminology

Thesis Statement

Interaction of students of Criminology and Forensic Psychology with non-violent female offenders can help reduce recidivism and provide a sense of self-confidence for offenders. This facility will also include normalization of lifestyle within the prison along with rehabilitation and counseling services.

Hypothesis

Merging a correctional facility and a school of criminology and forensic psychology will reduce recidivism.

Research Limitations

1. This research is only based in the US.
2. Visiting a Prison in person is not possible. Therefore, I visited a jail instead.
 - a. Prisoners are not accessible to the general public, so their input cannot be sought.
3. Low availability of resources of the latest design trends in prisons and schools of criminal justice.
4. The gap in research on prison design and prison education.

Research Questions

1. What role can interior design play in maximizing safety and interaction between inmates and students?
2. How can the combination of a school of criminology and a minimum-security prison improve the performance of case study investigations carried out by teachers and students?
3. Can interior design assist with behavior modifications of prisoners?
4. Can interior design reduce recidivism?

Definition of Terms

Criminology

Criminology is defined as the scientific study of crime, criminal behavior, and law enforcement. Criminology studies crime, how society responds to crimes and how crime can be prevented. Criminology examines the psychological, hereditary and environmental causes of crime. It also examines the modes of criminal investigation and conviction. The study of criminology also analyzes the effectiveness of punishment or correction methods as compared with forms of treatment or rehabilitation. In short, it is the scientific study of the non-legal aspects of crime, including its causes and prevention. A very famous definition of criminology is as follows: "the study of the making of laws, the breaking of laws, and reactions to the breaking of laws. (US Legal)

Forensic Psychology

Forensic psychology, as defined by the American Psychological Association, is the application of clinical specialties to the legal arena. This definition emphasizes the application of clinical psychology to the forensic setting. It is different from criminology in that it is (Jane Tyler Ward, Ph.D., 2013)

Non-violent crimes

Non-violent crimes are those crimes that do not involve the use of any force or injury to another person. The seriousness of a non-violent crime is usually measured in terms of economic damage or loss to the victim. Some of the more common non-violent offenses may include most property crimes, such as theft, embezzlement, receipt of stolen goods, and arson of personal property,

fraud, tax crimes, other forms of white-collar crime, bribery, drug use, drug abuse and drugs' sale.

(Legal Match, n.d.)

Jail vs Prison

Jails are locally operated short-term facilities that hold inmates awaiting trial or sentencing or both, and inmates sentenced to a term of less than one year, typically misdemeanants. (Bureau of Justice Statistics)

Prisons are longer-term facilities run by the state or the federal government that typically hold felons and persons with sentences of more than one year. Definitions may vary by state. (Bureau of Justice Statistics)

Recidivism

Recidivism is one of the most fundamental concepts in criminal justice. It refers to a person's relapse into criminal behavior, often after the person receives sanctions or undergoes intervention for a previous crime. Recidivism is measured by criminal acts that resulted in rearrests, reconviction or return to prison with or without a new sentence during a three-year period following the prisoner's release. (National Institute of Justice)

Incarceration

The state of being confined in a jail or prison. (Merriam Webster)

Theories

Defensible Theory

The idea of dividing space into smaller and clearly defined spaces often described as public, semi-public, and private. These interior spaces are territories and the user has territoriality. The architect and city planner Oscar Newman presented this idea in his book *Defensible Space*. (Newman, 1973)

Proxemics

Proxemics refers to the idea that there is a public, social, private and intimate space that surrounds each one of us. The subcategories include nonverbal communication, haptics (touch), kinesics (body movement), vocalics (paralanguage), and chronemics (structure of time).

Biophilia

The biophilia hypothesis suggests that humans possess an innate tendency to seek connections with nature and other forms of life. Edward O. Wilson introduced and popularized the hypothesis in his book, *Biophilia* (1984). He defines biophilia as "the urge to affiliate with other forms of life".

Justification of Research

Through this project, prisoners and students get the opportunity to take part in lessons together. This will give students the chance to experience real-life situations and offer the prisoners intellectual stimulation and a deeper understanding of their problem. The prisoners will be a part of someone's learning process and growth, thereby providing them with a sense of self-confidence and responsibility. This may promote a sense of dignity and empowerment which can reduce their chances of re-offending.

Literature Review

Introduction

The United States is home to about 4.4% of the world population but has the highest rate of prisoner intake. Despite decreasing crime rates, St. Louis, Missouri, remains amongst the cities with the highest percentage of both violent and nonviolent crimes. These rates are 11 times higher than the national metropolitan area average (Council of State Government Justice Center, 2017). Also, St. Louis, MO, has been ranked among the most dangerous cities in the United States (Missouri Highway Patrol, 2019). With an increase in crime rates, it was found out that Missouri had the fastest-growing female prison population in the U.S. from 2010 to 2015. 85% of women were admitted for non-violent crimes, while this percentage was 69% for men (See Fig. 1)

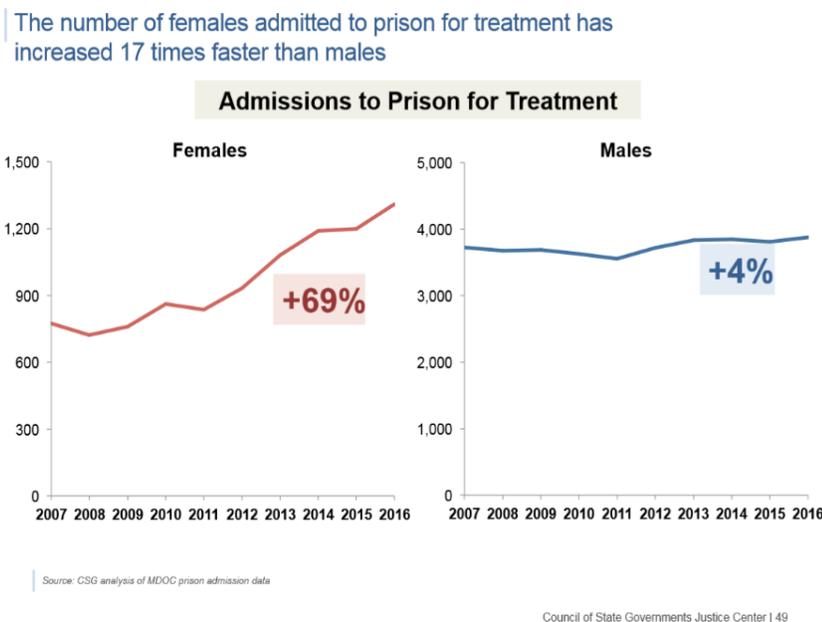


Figure 1: Admissions to Prison for Treatment. Reprinted from Justice Reinvestment in Missouri, by A. Barbee, G. Call, R. Druckhammer, B. Shelor, 2017, Retrieved from https://csgjusticecenter.org/wp-content/uploads/2017/11/MO-JR-Pres-Oct-24-2017_FINAL-v2_rev.pdf.

Two-thirds of women were admitted to prison for technical violations (property and drug offenses), compared to just half of men (See Fig. 2).

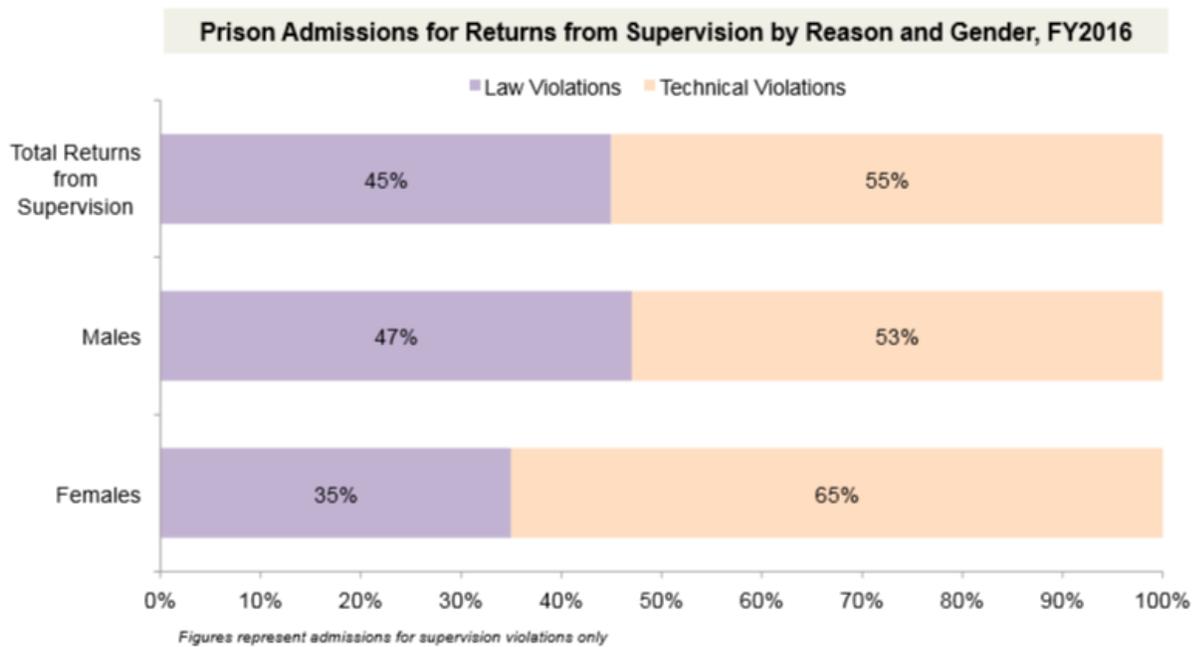


Figure 2: Prison Admissions for Returns from Supervision by Reason and Gender. Reprinted from Justice Reinvestment in Missouri, by A. Barbee, G. Call, R. Druckhammer, B. Shelor, 2017, Retrieved from https://csgjusticecenter.org/wp-content/uploads/2017/11/MO-JR-Pres-Oct-24-2017_FINAL-v2_rev.pdf.

Over the past decade, there was a significant increase in female non-violent offenders, mainly for property and drug offenses. Not only this, but the number of females admitted to the prison for treatment also increased seventeen times faster than males (See Fig. 3).

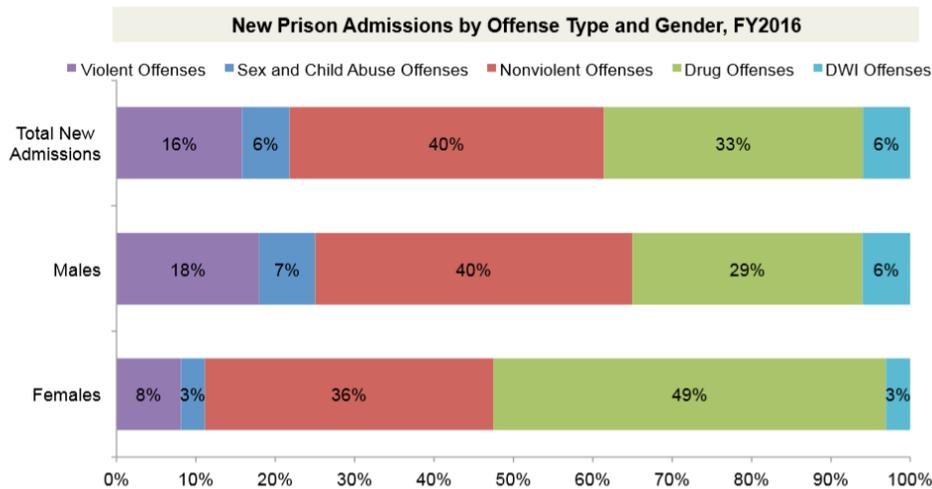


Figure 2: New Prison Admissions by Offense Type and Gender. Reprinted from Justice Reinvestment in Missouri, by A. Barbee, G. Call, R. Druckhammer, B. Shelor, 2017, Retrieved from https://csgjusticecenter.org/wp-content/uploads/2017/11/MO-JR-Pres-Oct-24-2017_FINAL-v2_rev.pdf.

Based on the research, the data from the Council of State Governments Justice Center also stated that more than 50% of women who were incarcerated had experienced some form of childhood trauma.

(See Fig. 4)

Trauma is strongly associated with mental illnesses and substance use disorders as well as incarceration

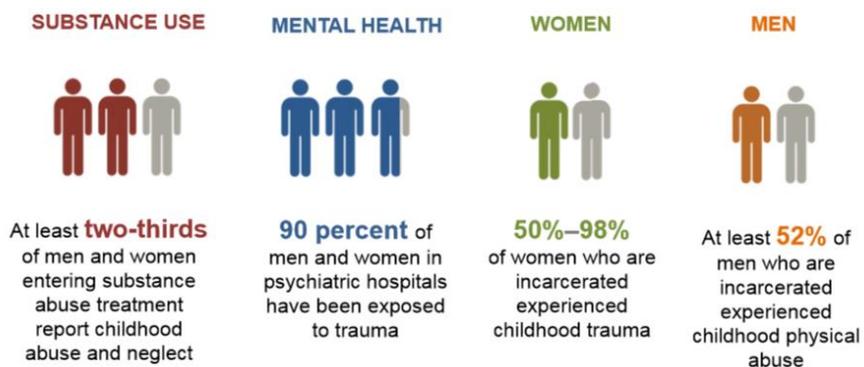


Figure 4: Admissions due to Trauma. Reprinted from Justice Reinvestment in Missouri, by A. Barbee, G. Call, R. Druckhammer, B. Shelor, 2017, Retrieved from https://csgjusticecenter.org/wp-content/uploads/2017/11/MO-JR-Pres-Oct-24-2017_FINAL-v2_rev.pdf.

Prisoner Classification

In order to see which inmates will be a part of the new merging educational facility, it is important to classify the prisoners based on their histories. According to American Correctional Association, the Department of Correction (DOC) classifies an inmate each time he/she is newly admitted to the department. Seven factors determine the overall risk level:

1. The inmate's escape profile;
2. Severity and violence of the current offense;
3. History of violence;
4. Length of sentence;
5. Presence of pending charges, detainers, or both;
6. Disciplinary history; and
7. Sample risk group membership.

Typical Behavior Pattern	Custody Levels		
	Minimum	Medium	Maximum
Risk of Escape	No History	No escape history in the past 5 years	High Probability of escapes
Behavior	No History of violent behavior	No History of violent behavior in the past 5 years	A recent history of violent crimes

(Typical Behavior Patterns for various levels of custody for inmates in the correctional facility. (American Correctional Association, 2016))

Rehabilitation for Non-Violent criminals

Over many decades, there has been a paradigm shift in prison design. Modern prisons are now focusing on reducing the rate of post-release reoffenders and rehabilitating the inmates whose mental health and addiction needs have to be met. A change is seen in terms of safety and security (Mckenna, B., Skipworth, J., & Pillai, K., 2017). There is an increase of interpersonal connection between employees and inmates through direct supervision. However, traditional forms still seem to continue for a higher degree of offenders.

Direct and Indirect Supervision

Classification and separation in a correctional setting is important because of the length of stay. Inmates who are incarcerated for longer periods can form dangerous subcultures within the prison population if they are not separated by classification. Large facilities often involve inmate populations within minimum-, medium-, and maximum- security housing. These security levels reflect the type of supervision (versa (Phillips; Griebel, 2003, p.119). As per the Forums of Corrections Research, "Indirect" supervision is defined as the method of supervising inmates whereby correctional officers monitor inmate living areas from enclosed posts. "Direct" supervision places correctional officers right in the living unit where they are required to have continuous, direct personal interaction with inmates.

According to National Institute of Corrections (NIC), "direct" supervision combines two key elements—the physical design of the jail and an inmate management strategy—to reduce the problematic inmate behavior commonly seen in correctional facilities. Direct supervision jails focus on actively managing inmate behavior to produce a jail that is safe and secure for inmates, staff, and

visitors. Staff interacts continuously with inmates in the housing units, actively supervising them to identify problems in their early stages. They use basic management techniques to prevent negative behavior and encourage positive behavior. There are no barriers separating staff and inmates in the housing units. The physical design of the correctional facility supports the management of inmate behavior by reducing physical barriers that impede staff/inmate interaction, by ensuring there are clear sightlines into all areas of the housing units, and by incorporating design elements, fixtures, and furnishings that promote positive inmate behavior. Outdoor recreation is also provided to let inmates visit a dayroom. Acoustical ceilings and wall panels absorb sound and reduce noise, which allows the officer to take control and hear the voices of inmates. (Fairweather, 2000, p.91)

Psychological and physical effects of prison environments and design

The minds of people are different in different cultures, and there is no one single formula to solve any case. However, a few common things can be identified, such as the size of the institution, the operational philosophy, violence and fear of violence, perceived safety, and the relationship between design and construction. There is no clear relationship established between design and behavior. There are too many variables that affect the management procedures and personal characteristics of the inmates. The design is only one of the many variables, and it is often not easy to identify its effects quickly. (Fairweather, 2000, p.31)

Among the many variables, one significant change that has been seen over the years is the shift from a radial layout of indirect supervision to direct supervision, where more staff-inmate contact is encouraged. This shift affects a profound psychological and security change between the inmates and the staff. The overall experience of an inmate is traumatic and stressful and severely affects health and

wellbeing— both physical and psychological. Stress levels vary from the time inmates enter the prison till the time of their release. The problem is not the physical environment, but what keeps them disconnected from family and friends, loss of freedom, concern about their life after their release, maintaining self-esteem and identity, and how to manage their time while they are there.

Overcrowding is a significant source of stress in various prisons because it causes social unpredictability. Overcrowded prisons also tend to be less effective. Design can support the process of rehabilitation. If it does not make it better, it should not harm it either. Through design, the dignity of the staff, visitors, and prisoners shall be maintained (Fairweather, 2000).

Location of the prison also plays a significant role in terms of psychological effects. Prisons should be located within reasonable proximity to and have connections with the community with which the prisoners have the closest ties. Good public transportation and ease of access to family and friends not only provides prisoners psychological reassurance, but it makes running the prison facility more comfortable, in comparison to if its location was remote. The prison location is just as important as with any other facility (Fairweather, 2000, p.31-34).

Education

Various studies have shown that education has a positive impact on inmates' behaviors. Inmates who receive education are less likely to return to prison and more likely to find a job in comparison to those who were not a part of the education programs (Davis, 2013, p.39). But, this only works if these programs are intensive and can establish an alternative community within the prison and if they offer post-release services (Linden and Perry, 2008, p.39).

For successful prisoners' education, it is important to address factors that will enlighten prisoners on the nature and structure of society but also equip them with the knowledge that will help them to stay away from prison when they are released and regain their freedom. Basic education should vary from one education system to the other. In this sense, prisoners' basic education must be different from that of regular schools. All prison education may be equipped with reading, writing and language skills. Researchers have found that prisoners were more willing to learn if classes were taught in their mother tongue (Benson, 2004). Frank discussions should be initiated around sociological foundations so that the prisoners are aware of the social issues that they have not heard of before. Assisting inmates in learning techniques would empower them to keep learning on their own when they leave prison. Learning life skills – like communication skills, literacy, cycling, driving, and problem-solving – will allow them to better integrate into the larger society. (Biao, 2018)

Inside-Out Prison Exchange Program

The Inside-Out Prison Exchange Program is an educational program with an innovative pedagogical approach tailored to effectively facilitating dialogue across difference. It originated as a means of bringing together campus-based college students with incarcerated students for a semester-long course held in a prison, jail or another correctional setting. The practice of bringing incarcerated (inside) and non-incarcerated (outside) people together for engaged and informed dialogue allows for transformative learning experiences that invite participants to take leadership in addressing crime, justice and other issues of social concern. The Inside-Out pedagogy and methodology creates these collaborative, creative contexts. (The Inside-Out Prison Exchange Program, n.d.)

Through this program, it was seen that the prisoners stimulated their brains and used a current situation to make things better. The inside students helped the outside students build a legal document that they thought would be beneficial in their own rehabilitation. An interview with a Professor of the Inside-Out Prison Exchange Program talks more about this program later in the paper.

Budget

According to Davis (2013, p.39), research suggests that prison education programs are cost effective. \$1 investment in prison education reduces incarceration costs by \$4 to \$5 during the first three years of post-release.

Also, direct supervision can also reduce costs by improving staffing and other efficiencies that result when potential problems are investigated before they erupt into serious incidents. (Phillips; Griebel, 2003,p. 119)

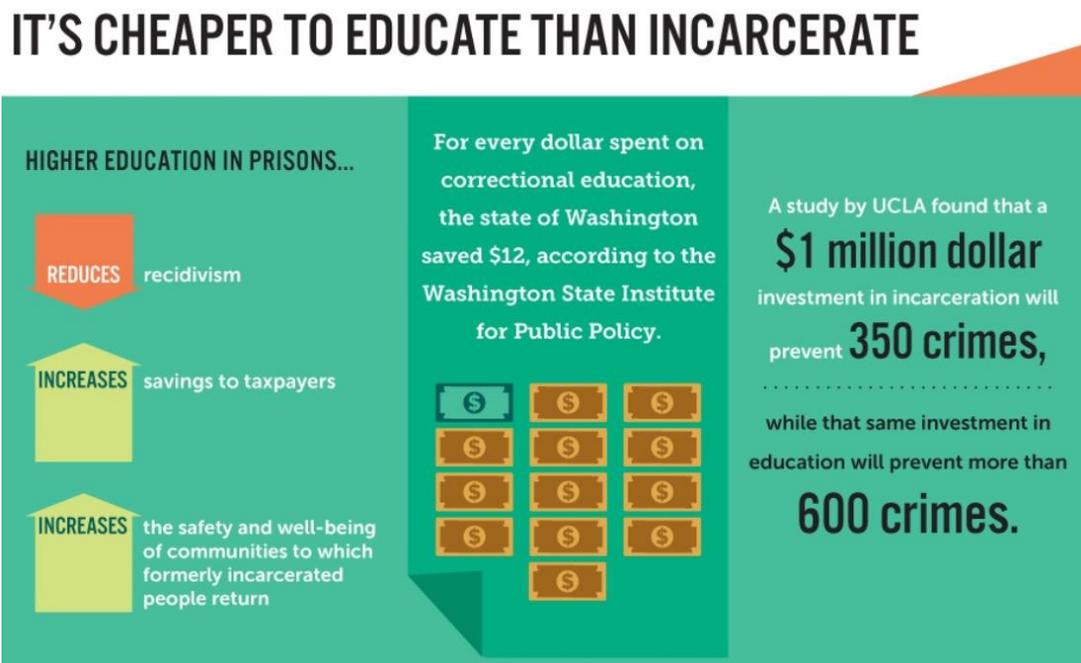


Figure 3: Infographic, Education is better than incarceration. Reprinted from Breaking The Prison Cycle Through Education Infographic, 2014, Retrieved <https://elearninginfographics.com/breaking-the-prison-cycle-through-education-infographic/#sthash.v0FzfzZt.qjtu>

Interior Design

Security is among the many components that entail the hard issues of providing physical barriers. Inmates' behaviors are also influenced by how an inmate feels in the physical environment based on its looks. Physical barriers are needed not only to protect society from the incarcerated individuals, but also to protect these individuals from one another. These levels of security vary per custody as mentioned previously in the paper. Interiors with repetitive forms and alternative combinations of high ceiling volumes and cellular spaces can be characteristic of a prison. Transitions from one space to another may involve shifts of human scale from smaller to larger spaces, or vice versa (Phillips; Griebel, 2003,p. 109-110).

Materials: Wall finishes are comprised of masonry and/or concrete with paint and wallcovering for public areas. Doors may feature stained hardwood paneling with hardwood millwork. Accessible suspended acoustical ceilings and appropriate acoustical performance may be provided in most court rooms, but smooth, hard ceilings are featured in major public areas. For flooring, carpet with wood or rubber base is provided in a few common areas. Stone or terrazzo flooring with seamless wall coating or vinyl wall covering on walls and dry wall ceilings with appropriate lighting design can be featured in public areas. Ceilings should be as high as possible. Directional and location graphics shall also be incorporated in the design. In rooms such as conference rooms and court rooms, carpet is typically used along with drywall, acoustical ceilings and panels and recessed lighting. All materials must be durable and withstand heavy use (Phillips; Griebel, 2003, p.110).

Sound: Correctional facilities are notoriously hard-surface environments, meaning sound travels easily. The reverberation of different materials and human voices can be harsh to the point of undermining habitability. Acoustics of spaces such as classrooms or multipurpose rooms shall be

designed to support concentration for individual studying or group gatherings. Sound control materials that could be vandalized should be applied only on ceilings and on high-wall surfaces.

Light: Access to the natural environment through daylight is considered essential for human physical and psychological well-being. Integrating natural light along with artificial light during the day is an effective way to provide high-quality illumination while saving energy. The main purpose is that the light fixtures shall not be vandalized. If they are within the reach of the inmates, the fixtures must be durable and resistant to vandalism. Light colors in warm tones, with non-specular surfaces for paint and dull finishes for metal are preferable in general, especially for those who may have impaired vision or depression. Light deprivation can be a serious problem (Phillips; Griebel, 2003, p.144-145).

Conclusion

In comparison to other areas of education, prison education is scarce. There's even less information on how prison environments can be improved to reduce costs and recidivism rates in the US (Biao, 2018, p. 242). Originally, prisons were conceived to be a place for punishment, and not a learning institution. Current and future efforts and research to improve the current scenario of learning spaces in the prison world should be instituted. According to the Council of State Governments Justice Center, Missouri needs to establish a more community-based treatment and programming and rely less on prison-based programming, which is less effective.

Case Studies

Sheriff's Treatment and Re-entry Facility

Sheriff's Treatment and Re-entry Facility (STAR) in Santa Barbara County addressed future external expansion capability. The functional program areas were the heart of this report. Areas were separately divided for males and females. Direct supervision was kept in mind while designing the facility. Evidence-based systems of programs and transitional services were to be offered. The design of spaces that allowed more free movement of the inmates while keeping security was also considered. This facility also offered professional skills and training programs based on cost effectiveness.

A few recommendations by Liebert and Associates and Rosser International, Inc. to implement Evidence-based practices were:

- Early intervention and screening/assessment to classify and target offenders appropriately in all parts of the systems. This meant identifying the low risk offenders who can be considered for alternative programs and moved out of the jail.
- Utilization of a risk/needs assessment to facilitate how higher risk offenders, who are placed in an intensive treatment unit, can participate in groups of different settings.

STAR offers a variety of programs such as:

1. Substance Abuse Counseling
2. Cognitive Curriculum
3. Seeking safety (women's programming)
4. Anger management
5. Employment/job readiness

6. Education
7. Family support groups
8. Parenting skills
9. Family programming
10. Wellness classes and stress management
11. Transition and relapse planning
12. Co-occurring programs

All these programs contribute to *Thinking for a change*. The goal of these programs is to fully prepare the inmates for release (Liebert and Associates, Rosser International, Inc, 2015).

Athens Clarke County Jail

Reduction in recidivism rates is a sign of excellent service and rehabilitation. Athens Clarke County Jail's incarceration rate has lowered in the past few years. Various cells are empty because the recidivism rates at the jail went down. There are cameras everywhere, and the plan is radial. There are different levels of supervision for the inmates. Those under high security follow the radial and indirect form of supervision. Whereas, those



Figure 4: Eating Room, Athens Clarke County Jail, photograph taken by the author



Figure 7: Flooring, Athens Clarke County Jail, photograph taken by the author

under medium and low security follow the direct supervision method. Inmates who are non-violent and have almost completed their sentence period also help in the kitchen, laundry, and other services.

The jail has simple finishes, mostly concrete, tiles, and neutral color paints. It has the right tools for wayfinding without having signage. Patches of tiles on the floor with different colors are used among the various areas of the jail. The direction of the tile also indicates a change in direction. In a few areas, wall colors are also used to indicate the different areas.

Different furniture settings indicate the level of security of the inmates. Flexible and soft furniture settings are used for the low and medium security inmates, whereas, stainless steel furniture bolted to the ground is used for high-security inmates. All public areas had provisions for daylight.



Figure 8: Minimum-security housing area, Athens Clarke County Jail, photograph taken by the author



Figure 5: Medium-security Area, Athens Clarke County Jail, photograph taken by the author



Figure 10: Classroom, Athens Clarke County Jail, photograph taken by the author



Figure 11: Skylight in common areas, Athens Clarke County Jail, photograph taken by the author

Through discussion with one of the employees at the jail, it was discovered that the problem was not in the availability of resources, but in the funding from the government. There have been several proposals to the government, but they seem to allocate funds in other areas rather than to invest in rehabilitation of the prisoners. Designing good interiors and services becomes a challenge when the government is unwilling to invest in the built environment of the facility. Therefore, the classrooms in the jail are comprised of a table, a few chairs, a board, and a bookshelf. A portion of the School of Criminology can fund the prison education system. (Officer, Athens Clarke County Jail, Personal Communication, February 5, 2019)

Precedent Studies

The precedent studies were divided into 3 categories.

1. Rehabilitation

- a. Center for Psychosocial Rehabilitation / Otxotorena Arquitectos
- b. Proyecto Hombre/ Elsa Urquijo Arquitectos

2. Education

- a. John Jay College of Criminal Justice/ SOM
- b. University of Arizona James E. Rogers College of Law/ Gould Evans

3. Prison

- a. Storstrøm Prison / C.F. Møller
- b. Halden Prison / Erik Møller Arkitekter + HLM Architektur

Rehabilitation

Center for Psychological Rehabilitation has a private, but collaborative approach. It has various classrooms and training rooms with a flexible setting and counseling rooms for one on one sessions. The open environment provides a therapeutic essence to address chronic mental illness. A system of patios allows a flow of natural light into space. Simultaneously, the visual and physical barriers resolve the issue of intimacy and movement of staff.

Proyecto Hombre has a very calm and therapeutic educational setting. It is comprised of outpatient therapy area, administrative area, residential area, workshop area, and sports area. The overall color theme of the space is white and hints of neutral. This helps the volumetric spaces to look even larger. There is daylight penetration throughout the interior space which helps in healing and enhances productivity.

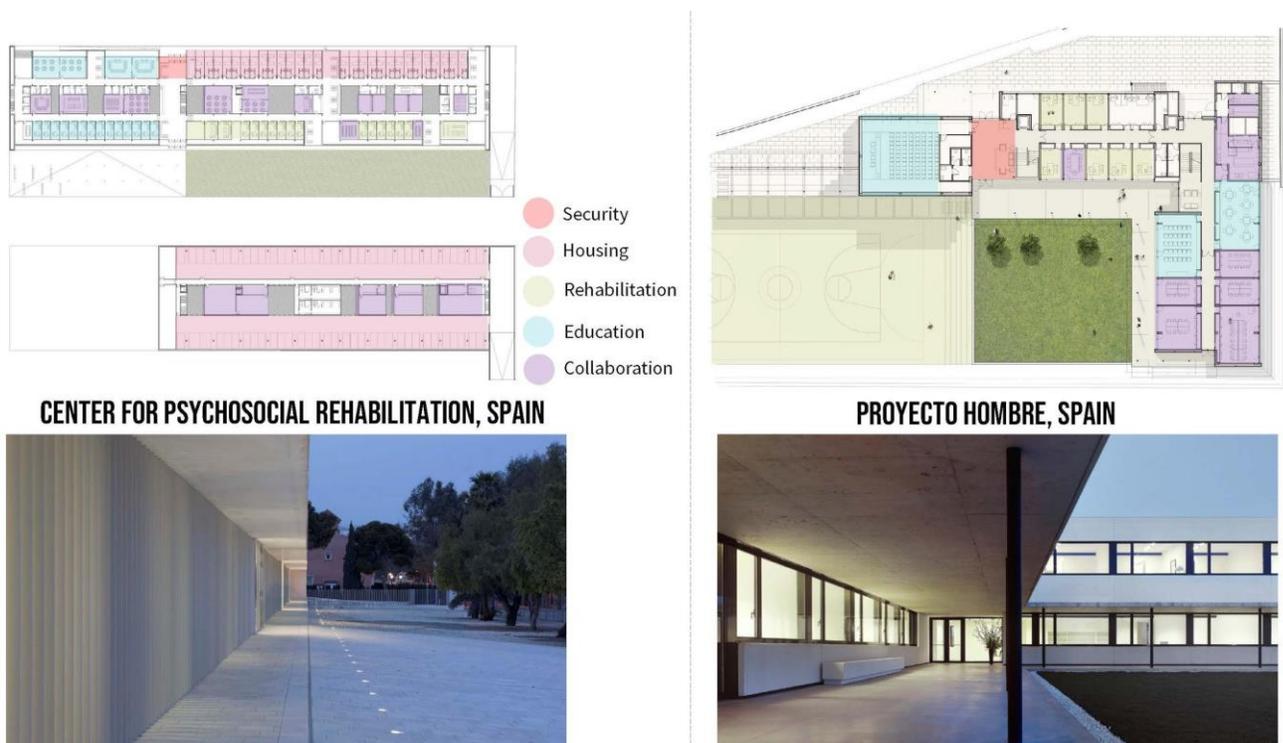


Figure 6: Precedent Studies, Rehabilitation

Education

Jay John College of Criminal Justice has focused on student interaction and chance encounters. The discussion is an essential aspect of education and sharing knowledge is one of the best and fastest ways to learn. It combines a rooftop area open to the sky with the conventional settings of classrooms, laboratories, auditoriums, faculty offices, lounges, and conference rooms provides a broad range of educational settings. Only students and faculty with identification badges can enter into the school. The abundant natural lighting in the interior space makes it look lively too and gives a sense of time through the passing day.

The University of Arizona was transformed from a low lit space to an open space with volumes of light coming in. Flexible spaces for socializing connected visually to the quiet spaces, providing spaces to students for studying — this enhances communication and collaboration throughout the college.

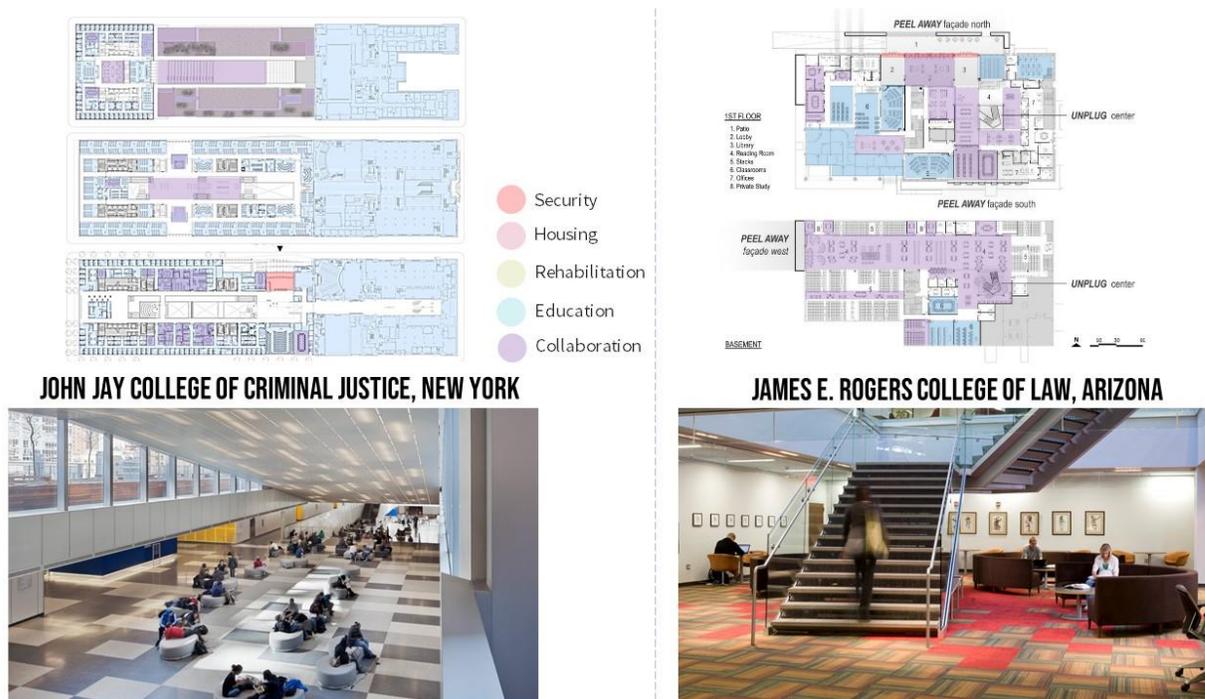


Figure 7: Precedent Studies, Higher Education

Prison

Storstrom Prison is designed as a space which supports inmates mental and physical wellbeing, but at the same time ensures a safe and pleasant work environment for the employees. The interior spaces of the inmates' zone were designed to look like streets to match the landscape of the surroundings. The prison also provides outdoor and indoor physical exercise activities, but no gym equipment. It is believed that providing inmates with strength building equipment will make for stronger inmates who can be physically harmful to the staff (Officer, Athens Clarke County Jail, Personal Communication, February 5, 2019). The sleeping units are planned around the green area and had natural light penetrating into the rooms for inmates' wellbeing. Community kitchens provide an opportunity for the inmates to interact, be friendly, and normalize their daily routine.

At Halden Prison, the theory is followed that the inmates' sentence should be a rehearsal for a life without crime. The aim was to find a middle ground between punishment and freedom. Use of natural materials in the space connects the inmates to nature. There are recreation rooms with



Figure 8: Precedent Studies, Prison

television and designer furniture. The communal amenities comprise of workshops, game rooms, open kitchens, sound studio, library, rock climbing wall, and forested paths. Not only are the inmates provided with amenities but for any work they helped with, they are also paid in this facility.

Conclusion

In all the precedent studies, it was found out that daylighting and connection to nature were important for rehabilitation. The new trend of collaboration is also growing with flexible furniture settings while creating territories for security. Interior spaces were designed to resemble the outside world and light soft colors and lighting systems were used throughout the space. Soft furnishings were also used to make the spaces welcoming and interactive. In addition, it was seen that the security zones were wither at the center of the building or the main entrance.

Interviews

Interview 1: Criminal Lawyer

A criminal lawyer based in Los Angeles, California, mentioned that many crimes take place due to mental illness (Criminal Lawyer, Personal Communication, January 6, 2019). Those with psychiatric disorders may get addicted to drugs, which leads to poor social interactions that affect employment and relationships. This situation may lead to loss of jobs and poor or no income, which results in theft for food or more drugs. She also mentioned that previous victims of sexual abuse or domestic violence are likely to become abusers later in life because these become learned behaviors. Her solution to such a circumstantial mental illness is therapy. She suggested that a person should be

part of support groups, go to individual therapy and potentially be prescribed medication. Upon being asked her thoughts about direct supervision, she said that direct supervision is very helpful. However, professionals in a social service field, such as teachers and therapists, can be better supervisors because they can deal with people in a non-punitive manner. Her thoughts about how interior design can help to reduce recidivism were positive. According to her, an aesthetically pleasing environment can help people with mental illness, especially those suffering from depression. She mentioned daylight as an essential factor and spaces that look more like homes or classrooms, and less like cages, would be beneficial. She thinks that combining a school of criminology with a prison facility will help students to become good prosecutors who empathize with their clients to fix causes rather than punish. She also said that a less rigid structure is required to create a therapeutic space, meaning there is no one-size-fits-all solution.

Interview 2: Professor at Inside Out Prison Exchange Program

The Professor had similar insights as the Criminal Lawyer. She described that the inside out prison exchange program is a semester-long program for students of criminology for extra credit. Students in the program go through cumbersome screening processes to be a part of this program as there is a high-security aspect involved. Usually, the setting is one-to-one prisoner-to-student or more students with one prisoner. The study group may vary from 4 students to 30 students depending on the lesson for that day. The learning is reflection-based as there is no library, online or in the prison facility. She noticed that such a study program had enhanced the learning capabilities of students and prisoners and enlightened prisoners' intellects and potentialities. Her response to the question of how interior design can aid in the reduction of recidivism was that the current setting seen in prisons is highly institutional. If there were softer looking furnishings and color in the space, it would positively

affect the prisoners psychologically. (Professor at Inside Out Prison Exchange Program, Personal Communication, February 19, 2019)

Interview 3: Forensic Psychologist at John Jay College of Criminal Justice, New York

In the interview with the forensic psychologist, who is also a Professor at John Jay College of Criminal Justice in New York, it was found that students who meet with prisoners during their education are in their master's program or pursuing their Ph.D. in criminal justice and forensic psychology. She mentioned that prisoners' behaviors could improve through evidence-based treatment and the culture of the space, which is profoundly affected by the type of light and noise in the space itself. According to her, the merging of a school of criminology with a minimum-security correctional facility will be beneficial as students in regular education programs are not allowed to visit such facilities. If the students of criminology and forensic psychology can meet with the prisoners, they can conduct better research and put evidence-based learning to use. When asked about her opinions about creating a learning environment without causing vandalism, she said that dialectical therapy could be helpful. Dialectical therapy is a form of therapy that is used to treat suicidal and self-destructive behaviors. She also said that there are ongoing vocational facilities and art programs, such as poetry classes, that are already taking place. She added that trade experiences could help with the inmates' life skills that are lost during their time incarcerated. When asked how interior spaces can be improved for inmates and students who are learning together, she said that there should be more flexibility in the learning environment. If the furniture is loose, it should not be able to be used for self-harm and be destruction proof. The furniture should be heavy but should look and feel soft and comfortable. For women who suffer from trauma, their environment should be self-soothing. It could be as simple as a beautiful blanket or soft music in the background. She added that women are not comfortable when they are strip searched. So, if there is a way that strip searching can be avoided, such as through the

technology used at airports, it would help them feel much better psychologically. Economically, if the inmates are educated, it will reduce overall expenditures in the prison system. (Forensic Psychologist, Personal Communication, February 27, 2019)

Interview 4: Clinical Psychologist

During the interview with the Clinical Psychologist, it came up that women and men have different needs. Women deal more with family issues and get upset on occasions such as birthdays and festivals. Men are comparatively not as emotional as women. For rehabilitation, people attend individual or group therapy regularly. Parenting classes help individuals to develop a parenting style, or learn from their mistakes, gain confidence or even network with other parents. For prisoners, the Clinical Psychologist mentioned that a great way to make the inmate feel a part of a community is by putting up art around their area done by them. Another way to normalize them is to let outside people come in and talk to them about what has been going on in the outside world. (Clinical Psychologist, Personal Communication, March 05, 2019)

Conclusion

From all the interviews it can be deduced that daylight is an important factor for human wellbeing. It is important to look at the kinds of finishes that are chosen for spaces because they can affect a mind psychologically. Community spaces are highly encouraged for interaction and better social behavior.

Project

Facility Vision

The aim of the facility is to:

- Create a collaboration between students of criminology and forensic psychology with non-violent female offenders in a minimum-security correctional facility to reduce recidivism.
- Incorporate biophilic elements for connection to nature.
- Normalize lifestyle by providing a regular day working environment.

Facility Mission

Facilitate- Separation from the housing environment can provide respite to the inmates and restore their minds as they transition between their housing unit and school. Inmates can use spaces such as the library when the students are not around. This allowance will create a sense of freedom for them.

Connect- Connecting students of criminology and non-violent female offenders to learn from each other can create a sense of self-confidence and responsibility.

Transform- Creating a place that "feels different" by using soft-looking spaces that feel comfortable and create a shared atmosphere. When people like their space, they are more likely to respect it. Use of warmer finishes can help to reduce the cold environment.

Client Identification

The Missouri Department of Corrections fosters public safety, health, and wellness. They support victims and give back to people in need. They facilitate treatment, education, and job training to equip justice. (Missouri Department of Corrections)

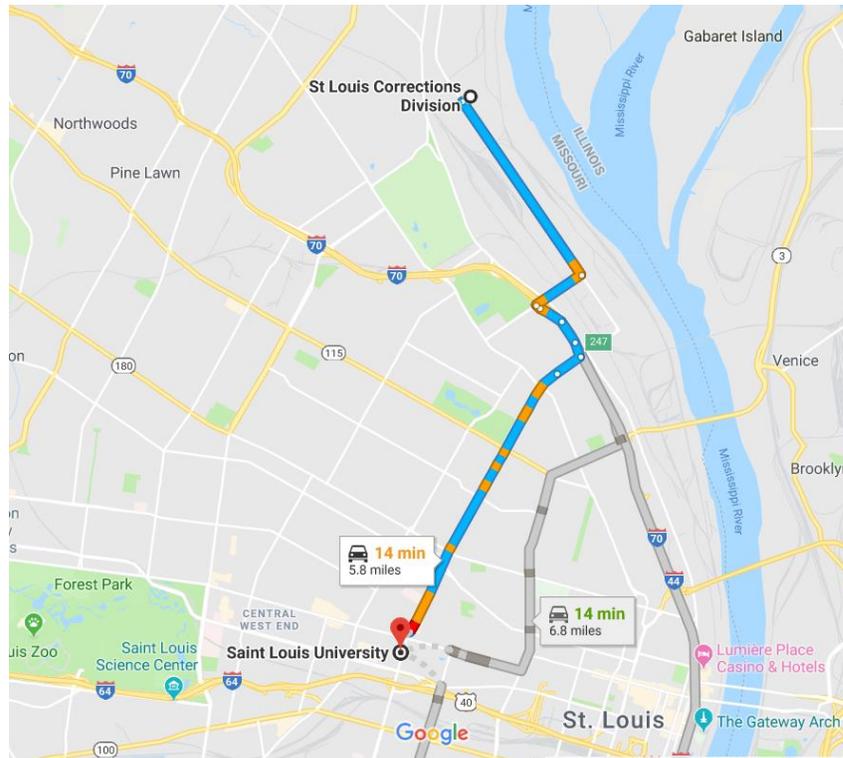


Figure 9: Distance between Missouri Department of Corrections and Saint Louis University, Google Maps

In addition to the law and legal studies and social justice, *Saint Louis University* is opening a new academic field in criminology and forensic psychology (assumed for design purposes). Part of their curriculum will be studied in the Saint Louis Corrections Division. It is approximately a fifteen-minute drive away from the Saint Louis Corrections Division.

Project Site and Building Analysis

The site location is in Saint Louis, Missouri, because of the rising rates of female recidivism in the Missouri in past few years. The Mississippi River flows on the east of the site, giving an opportunity for quality views from the interiors of the building. The site is Saint Louis Corrections Division where the merging educational facility will be incorporated. The incorporated building has four floors in which the first floor houses the merged components, and all the other three floors are a part of the non-violent female offenders' housing and medical facilities.

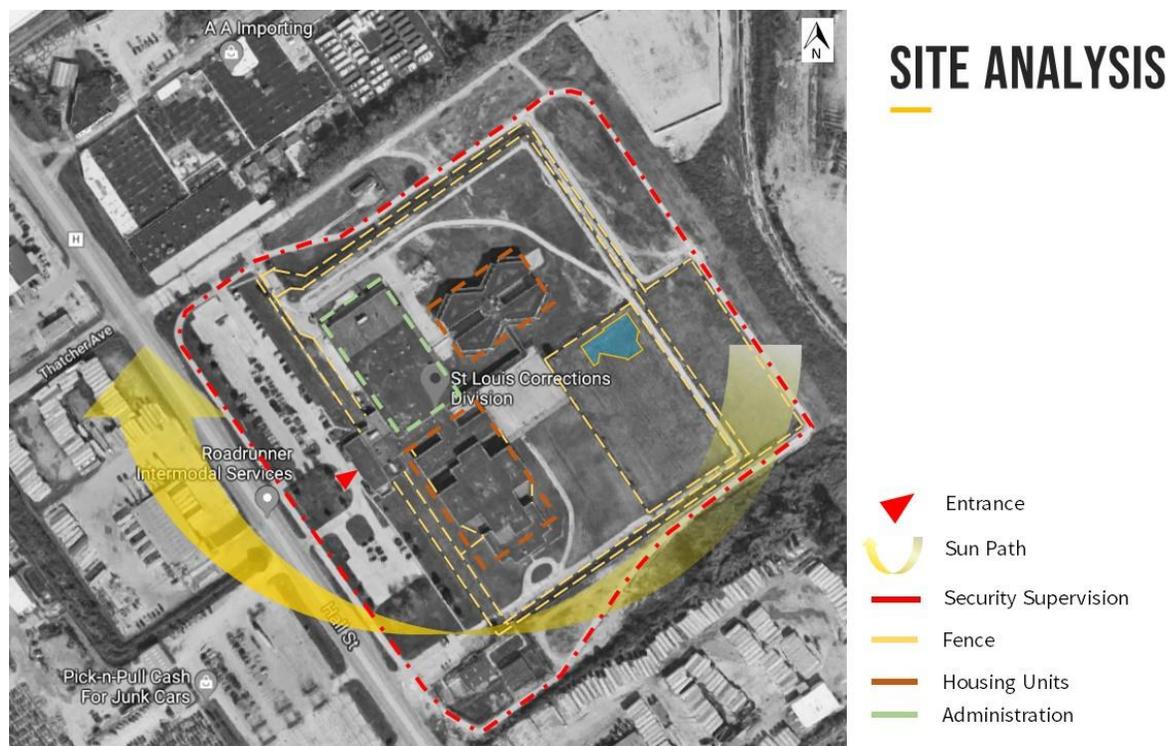


Figure 10: Site Analysis

EXISTING BUILDING ANALYSIS



Figure 11: Existing Building Analysis

Project Goals

Through this project, the government will be willing to invest in the built interior environment for the prisoners. When the government invests in a better environment for them, there may be a positive change in inmate behavior which will result in reduced recidivism. Millions of dollars are spent on an inmates nationally. When the population within the prison reduces, the expenditure per inmate will also go down (as per Budget).

Project Drivers

1. Encouraging interaction in space
2. Rehabilitative spaces such as counselling rooms
3. Adding architectural interest in design circulation
4. Use of soft-looking furniture and other finishes
5. Designing a calm, therapeutic and warm environment

Sustainability

Sustainability is a way to avoid the depletion of natural resources in order to maintain ecological balance. In this project for an educational facility, LEED (Leadership in Energy and Environmental Design) v4 will be used. LEED Green Building Rating systems in version 4 have been developed for both building design and construction. Understanding these guidelines can help to design a building more efficiently. (Tucker, 2009)

As for the existing building, where there are four floors, only the first floor will be redesigned for higher education and rehabilitation purposes. Irrespective of function, human well-being is vital since the design is for the people.

The LEED Points that will be incorporated in this project are as follows with their descriptions following the list:

1. Sustainable Sites

- a. Construction Activity Pollution Prevention (required)
 - b. Rainwater management
 - c. Light Pollution Reduction
2. Water Efficiency
 - a. Outdoor Water Use Reduction (required)
 - b. Indoor Water Use Reduction (required)
 - c. Building-Level Water Metering (required)
 - d. Outdoor Water Use Reduction
 - e. Indoor Water Use Reduction
 - f. Water Metering
3. Energy and Atmosphere
 - a. Fundamental Commissioning and Verification (required)
 - b. Minimum Energy Performance (required)
 - c. Building-Level Energy Metering (required)
 - d. Fundamental Refrigerant Management (required)
 - e. Optimize Energy Performance
4. Material and Resources

- a. Storage and Collection of Recyclables (required)
 - b. Construction and Demolition Waste Management Planning (required)
 - c. Construction and Demolition Waste Management
5. Indoor Environmental Quality
- a. Minimum Indoor Air Quality Performance (required)
 - b. Environmental Tobacco Smoke Control (required)
 - c. Enhanced Indoor Air Quality Strategies
 - d. Low-Emitting Materials
 - e. Construction Indoor Air Quality Management Plan
 - f. Indoor Air Quality Assessment
 - g. Thermal Comfort
 - h. Interior Lighting
 - i. Daylight
 - j. Quality Views
 - k. Acoustic Performance
6. Innovation
- a. Innovation

b. LEED Accredited Professional

SUSTAINABLE SITES

Rainwater Management: To minimize impervious surface areas and avoid flooding the municipal sewer system, rain gardens, porous pavements, and open grid paving in the parking lot will be provided. LEED requires the impervious surface to contain less than 50% perviousness. Rainwater can also be harvested and reused as an alternative for potable water. Filtered rainwater can be used for toilet flushing.

Light Pollution Management: Overexposure to artificial light can cause drowsiness in humans. Through personal experience, it may also lead to headaches. Ways to avoid up-light, glare and light trespass need to be taken care of while designing this space.

WATER EFFICIENCY

Outdoor Water Reduction: A minimum of 30% reduction by irrigation is required as a prerequisite for LEED. A reduction can be established through several plant species and irrigation systems. Xeriscaping may also be done (no irrigation) that forces the smart use of outdoor water.

Indoor Water Use Reduction: Consumption of water for toilets, urinals, showers, pantries, and other applications can be determined through various appliances. Use of water-efficient fixtures and fittings can reduce water usage by a good percentage. Dual flush or high-efficiency toilets can be used, which save water by 20% in every flush.

Water Metering: Permanent water meters will be installed to measure the total potable water use of the building. Through this system, USGBC can ensure that the requirements are met to identify any areas for improvement.

ENERGY AND ATMOSPHERE

Energy Demand: By maximizing the southern exposure to the sun, the building will have increased daylight and passive solar heating. By minimizing western exposure, annual cooling costs can be reduced. While education is provided in criminology and forensic sciences, education can also be provided on their patterns of energy consumption to reduce energy demand.

Energy Efficiency for HVAC systems: A lot of energy is required to change the temperature of high-density materials such as concrete and brick. Use of thicker material for exterior walls (such as brick or concrete) can slowly absorb the heat, resulting in less electricity usage and, storing the heat in the walls themselves during the day while the temperatures inside the building remain constant and unheated. Incorporation of natural ventilation is also a good strategy to reduce energy usage. A fresh breeze of air within the structure can be achieved with an adequate number of openings. However, incorporating natural ventilation may be a challenge in this project as inmates can try to escape or cause vandalism.

For lighting, LEDs and layers of lighting can be used as they provide more light with less electricity consumption. Installation of lighting controls will monitor lighting consumption which will help to reduce costs and increase efficiency.

MATERIALS AND RESOURCES

Reusing existing materials and salvaged materials in existing buildings can save tons of materials. These materials include framing, walls, flooring, ceilings, and so on. Not only will re-using save materials, but it will also reduce costs. Using pre-consumer recycled content such as Fly-ash can be used for the concrete floor finish throughout the educational facility. Designing for flexible spaces

can help to increase the reusability of materials in the future and reduce the overall renovation costs. The reuse is inclusive of furniture, fixtures, and lighting selections.

INDOOR ENVIRONMENTAL QUALITY

To protect the health and comfort of building occupants, indoor environmental quality is an essential aspect. Thermal, visual, and acoustical qualities of a building also help in creating a comfortable environment and increasing productivity. Varying temperatures throughout the building can increase thermal comfort and increase productivity by 2.7% to 7%.

Tobacco smoke control will be among the easiest factors to control in this institutional building. Due to high-security reasons, activities like smoking are not permitted in or around the building. Overall, to ensure that the indoor air quality is not contributing to respiratory diseases and allergies or other diseases, measures such as periodic maintenance and replacement of air filters, implementation of green cleaning practices, and increases in ventilation would be taken care of.

To avoid VOC emissions or keep them as low as possible, products certified by Green Seal (paints and coatings), Green Label (carpets), GREENGUARD (Furniture, seating, wallcoverings, upholstery), and FloorScore (wood, ceramic, vinyl, laminate, rubber, linoleum) can be used.

Daylight: Daylighting is an essential resource that should be used in green building. Daylighting systems such as light tubes, windows, and glass doors can be used to maximize daylight without creating any discomfort. Optimum daylighting can increase human productivity and comfort, positively affect mental and physical health, and save costs due to decreased use of artificial lighting.

Lighting control systems are just as crucial as penetrating daylight into space. Employees of the building should be able to adjust at least 90% of the lighting to a minimum of their lighting

levels—on, off, mid-level. Manual controls shall be incorporated in the same space with controlled luminaires.

Acoustics: For all occupied spaces, sound isolation should meet composite sound transmission class ratings specified by USGBC, reverberation time requirements, sound reinforcement (for more than 50 people) and masking systems (not to exceed 48 dBA). (Koralturk, 2016)

The points mentioned above are only a few ways to meet LEED sustainability standards. By meeting these green building standards, occupants are exposed to less indoor pollutants and have higher air, lighting, thermal and acoustical qualities compared to the occupants of other buildings. According to the U.S. Environmental Protection Agency, about 90% of people's time is spent indoors (Koralturk, 2016). For this project, the inmates spend even more time indoors in comparison to the general public. Therefore, contributing to the health and comfort of the building occupants is extremely important.

Concept Statement

Now and Then provides a new outlook for students of criminology and non-violent female offenders. *Now* refers to the current situation of being confined in the correctional facility and *Then* refers to the productive individual they will become after being a part of the education program.

CONCEPT

NOW AND
Then...



Figure 12: Design Concept- Now and Then



Figure 13: Conceptual Sketches

Concept Narrative

The goal is to facilitate, connect and transform non-violent inmates into productive members of society by designing a positive environment for a community which will improve human behavior by sharing knowledge and guiding how the future may look. With the exposure to new knowledge, self-

awareness, and a fresh perspective, it may be learned that the path to the destination is not as long as it may seem.

The current situation in the prison is very rigid. The space has an extremely individual approach to it. It uses plain finishes, dull colors and extremely hard surfaces. Transforming the space from this dull environment to one that has more biophilic elements, including curvilinear shapes, softer finishes, and more texture, will make the internal spaces livelier and more livable. An approach that has more collaborative spaces will break the monotony of the current design and uplift the users positively.



Figure 14: Nine points of design

User

The main users of this facility are the non-violent female offenders, and students of criminology and forensic psychology who have gone through a screening process before being selected to be a part of

Table 12.1 a Revised occupant load calculations from IBC 2018 Table 1004.5

MEANS OF EGRESS

**TABLE 1004.5
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT**

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR ^a
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit gallery and museum	30 net
Assembly with fixed seats	See Section 1004.6
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	150 gross
Concentrated business use areas	See Section 1004.8
Courtrooms—other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mall buildings—covered and open	See Section 402.8.2
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

a. Floor area in square feet per occupant.

Figure 16: Table 1004.5, Occupant Load Calculations from IBC

CURRENT SPACE REQUIREMENT						
Ref #	Room Name	Size/SF	# of People	Quantity	NET SF	Occ.
1. RECEPTION						
1.01	Lobby / Entry Area	1400	18	1	1400	B
1.02	Screening	1020	3	2	2040	I
1.03	Sally Port	180	3	2	2040	I
1.04	Coat / Luggage Storage	85	1	1	360	B
					NET SF Subtotal	5840
					Circulation (30%)	1752
					Gross SF	7592
2. EDUCATION						
2.01.1	classrooms- small	180	5	2	360	B
2.01.2	classroom- large	1515	54	1	1515	B
2.01.3	classroom- larger setting	680	8	1	680	B
2.02	faculty office	140	2	6	840	B
2.03	Forensic Research Lab	810	12	1	810	B
2.04	Library- reading	2100	30	1	1000	A3
2.05	Informal Collaboration	5000	80	1	5000	A2
2.06	Cafeteria	2100	50	1	2100	A2
					NET SF Subtotal	12305
					Circulation (25%)	3076.25
					Gross SF	15381.25
3. SUPPORT/ COUNSELLING						
3.01	Break Room (seats 6)	180	6	1	180	B
3.02	Conference Room (seats 14)	335	14	1	335	B
3.03	AV Room	120	2	1	120	S
3.04	Storage	200	2	1	200	S
3.05.1	Concelling Rooms- Group	330	10	1	330	B (accessory use)
3.05.2	Concelling Rooms-Individual	180	3	2	360	B (accessory use)
3.06	Toilets	200	8	2	400	
					NET SF Subtotal	1925
					Circulation (25%)	481.25
					Gross SF	2406.25
					Total Circulation	5309.5
					Total Gross SF	25379.5
					Total Occupancy	311

Figure 17: Occupancy Space Requirement/Programming Chart

Schematic Design

While space planning, I found a White Paper- Steelcase article, “**How Classroom Design Affects Student Engagement**” that described the various types of seating arrangements that encourage interaction. That became the base point for my space planning. The paper described how classroom design affects student engagement. According to the paper, classrooms are now designed for active learning, meaning, they are physical environments that focus on engaging experiences for students and faculty. It was seen that the socio-fugal arrangement of classrooms was rated lower in comparison to the new, socio-petal classroom settings. The criteria through which these classroom designs were rated were collaboration, focus, activity involvement, multiple means, in-class feedback, real-life scenarios, best way to learn, physical movement, stimulation, level of comfort participating, and experience enrichment. Through the socio-petal classroom settings, percentages in creativity, motivation, and ability to achieve higher grades and engagement all increased (Steelcase 360, 2014).

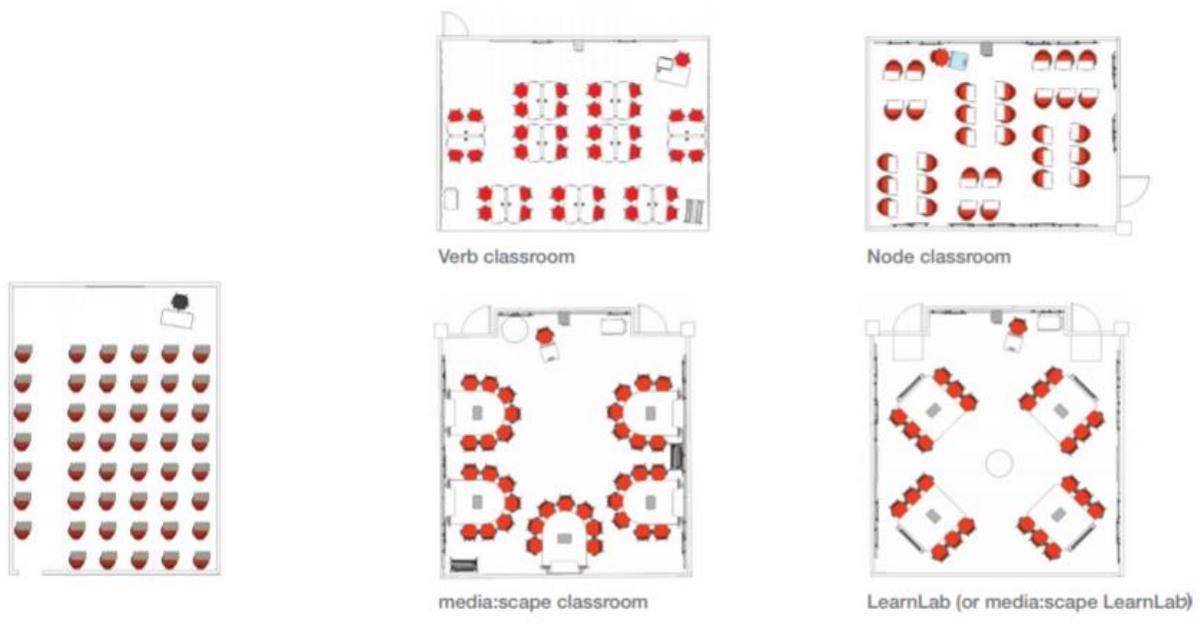


Figure 1: Standard Classroom

Figure 2: Steelcase Advanced Learning Environments – 4 Scenarios

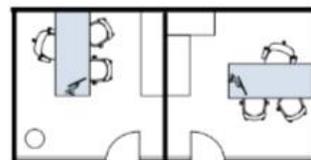
Figure 18: Standard Classroom vs Advanced Learning Environments. Reprinted from How Classroom Design Affects Student Engagement, by Steelcase, 2014, Steelcase, White Paper. Retrieved from https://www.steelcase.com/content/uploads/2015/03/Post-Occupancy-Whitepaper_FINAL.pdf

I came across another article by Knoll, “**The Emerged Law Practice,**” which described the shift in working style of law offices. The effects of range of futuristic shared spaces were described as follows:

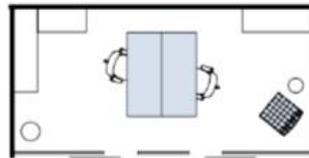
- Progression in technology has streamlined the workflow, minimizing human labor.
- Support staff is reduced and/or is delegated other tasks and responsibilities.
- With improved cloud computing systems, people can now work remotely—reducing the number of hours spent at the office.
- Spaces with movable furniture, sound systems and other technology can serve multiple roles and audience (Knoll, Inc., 2019).

Rearranging Space

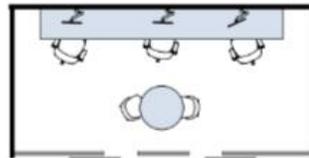
One space (200 sq. ft.), two (10×10) rooms, shown in five different design layouts.



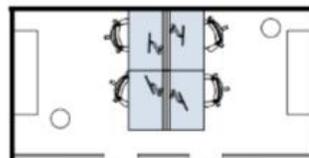
Traditional
Two 10×10 offices



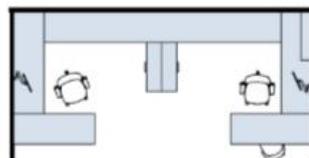
Mobile Studio
Center wall is removed and sliding doors are added to maximize square footage



Shared Workspaces
Center wall is removed, a large worksurface and shared meeting table is added to accommodate 3 people



Benching Studio
Center wall is removed and a benching station is added to accommodate 4 people



Benching Studio
Center and front walls are removed to accommodate administrative stations

Walkthrough

On the exterior entrance of the building, bicycle racks are provided to encourage students and faculty to reduce carbon footprint. A shower in the entrance lobby has also been provided for their convenience. The provision for bicycle facilities and shower contributes to LEED points. Students and faculty enter from the northeast vestibule into a lobby area. They drop off their bags and other belongings in the coat room while waiting in the waiting area. After check-in, they go through a screening process where they and their belongings are scanned thoroughly to ensure that nothing inappropriate is brought into the educational facility. After the screening process, the students and faculty enter the sally port that opens into a cafeteria. The cafeteria is adjacent to a large multi-purpose room that can be used as a large classroom setting. The cafeteria is also next to a smaller classroom that has a collaborative discussion space and individual workstations.

The food preparation room is also adjacent to the cafeteria. The food is cooked in another building and brought into this facility. This cafeteria guides the students to take mainly two paths—they can either go towards the private zones, faculty rooms and counseling rooms, or they can go towards the informal collaborative space next to a smaller set of classrooms. A forensics research lab has also been provided to store case files and samples, conduct research for on-going cases, and have discussions about those cases. Faculty restrooms are provided separately.

The semi-circular stage/ auditorium area is in the center of the educational space and becomes a focal point for gathering. Seminars, presentations, and documentaries can take place here. The inmates enter through a sally port, also known as the library, in this project. The library is enclosed so that the inmates can use it while the facility is not in use by students or faculty. The inmates enter the informal collaborative space next to the smaller set of classrooms where 1:1 ratio of student to inmate

learning takes place. They walk from a dark area with concrete finish into a brighter zone with biophilic elements, flexible furniture, and softer finishes. The environment is therapeutic and welcoming. Restrooms for both, males and females are provided as per occupancy type and occupancy load calculations per IBC.

USER JOURNEY



Figure 20: User Journey

The floor plan or block diagram (See Figure 27) is divided into various sections. There is an entry for the public, who drop off their bags at the check in on the left and go through a screening process before they enter the sally port into the common area. The café resides here with large classrooms adjacent to it. Next to the vestibule is a food prep zone. Food is cooked in the adjacent building and will be brought in to serve the users. Up here, the faculty rooms, counselling rooms are more secured to avoid inmates moving freely in this area. A stage for sharing the learning is the heart of the facility and smaller settings of classrooms can be seen close to it. The library is located in a way so that the inmates can use it when the students are not around.

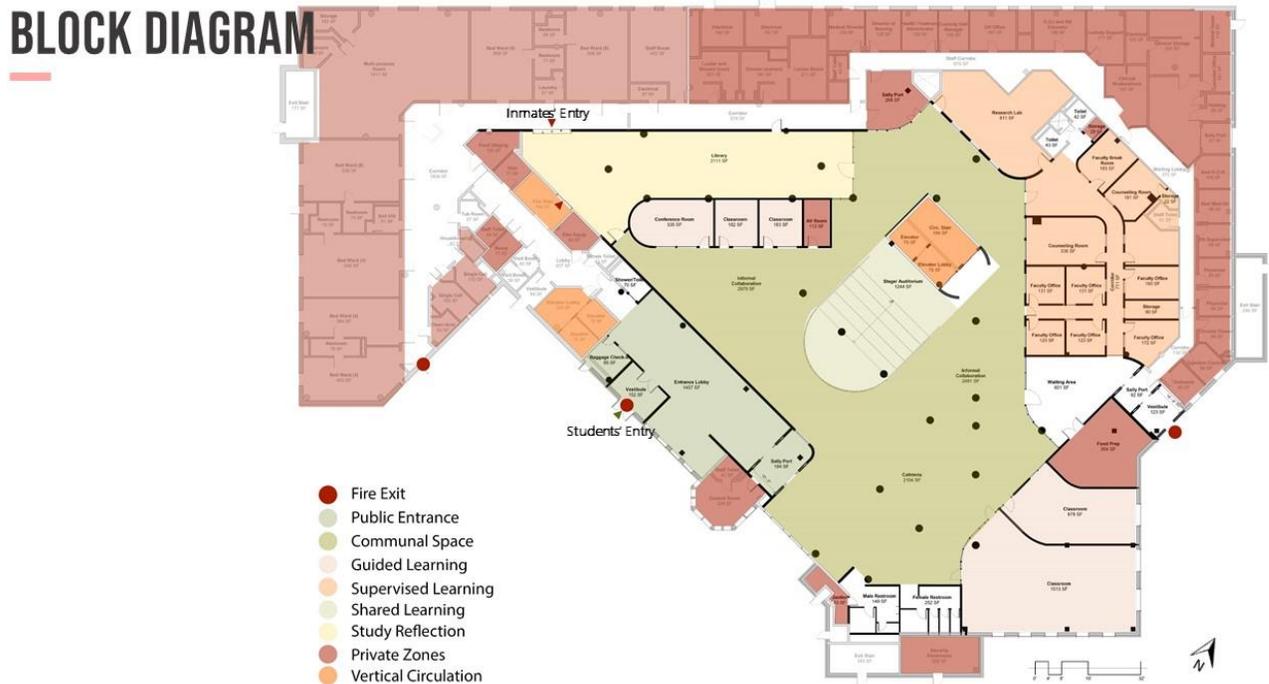


Figure 21: Floor Plan/ Block Diagram

In the furniture plan (see Figure 28), different settings of furniture in the cafeteria can be noticed. There are seatings for 4, 6, along with a communal table. The food service will take place next to the food prep room. The large classroom has flexible setting and can be used for more than one purpose. Since the occupancy load for this room is more than 50 people, two exits have been provided. The longest diagonal of the room is 60' and the doors are 20' apart. The next classroom has computers for the inmates to learn and revise their computer skills. This is a part of normalization. The faculty rooms are separate because of delicacy of cases and conversation. There is one group counselling room and two individual counselling rooms. Restrooms for staff have been provided separately. The research lab can be accessed by students from the outside and the faculty from the inside.

A stage in the centre can be used to discuss users' learnings, give presentations and show documentaries. The common space can be used for meetings and informal communication. Smaller classrooms have more personal education and training— more 1:1 ratio of inmate to student learning. The conference room is also spacious enough to have private larger group discussions.

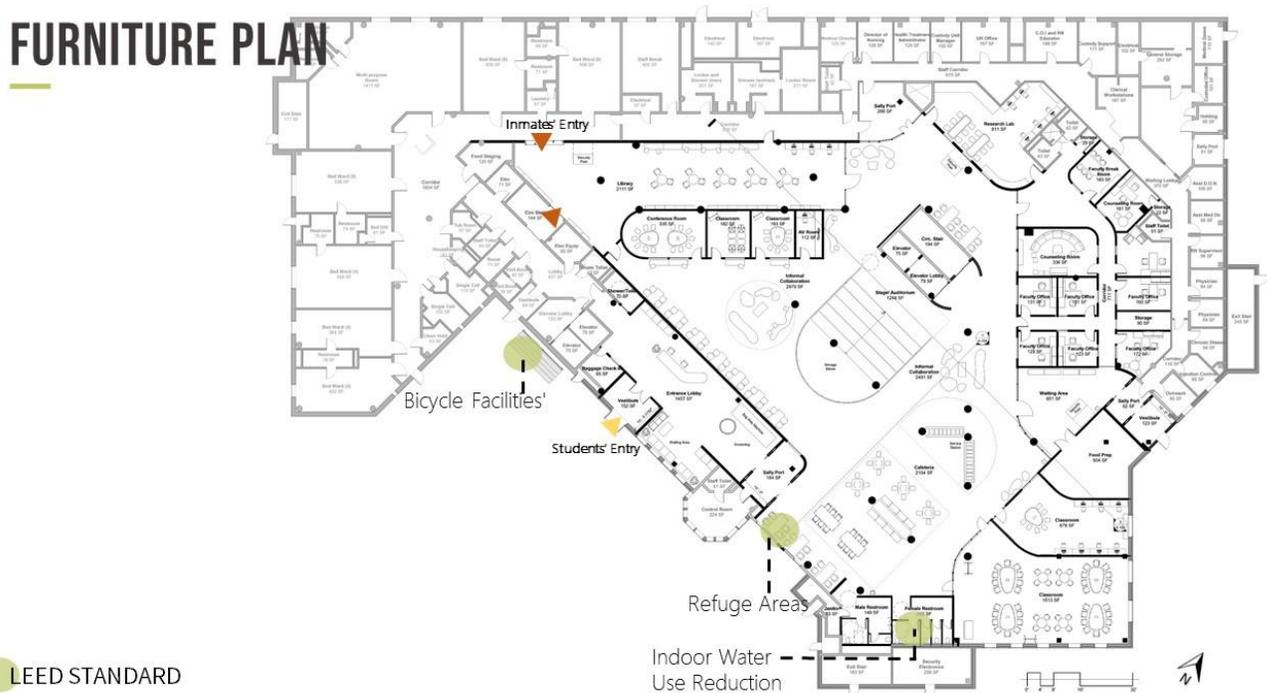


Figure 22: Furniture Plan

Reflected Ceiling Plan

Elements from nature, such as leaves and petals are used to design the ceiling design. The leaves have varying depths to create a volumetric interest. A canopy of organic-shaped petals has been provided over the cafeteria to give a forest-like environment. Recessed lighting is seen throughout the space with 2' x 4' grid lighting in classrooms, offices, the research lab, and entrance. Strip LED

lighting can also be noticed in the large classroom settings. Skylights are also provided to penetrate natural light into the space. The library has clerestories to let natural light penetrate into the housing and administration corridor space of the existing facility. These clerestories help to maximize the use of natural light. (See Figure 29)



Figure 23: Reflected Ceiling Plan

Materials

Concrete with fly-ash finish is used throughout the space to comply with LEED standards. Baswaphon has been used for wall and ceiling finishes to reduce echoes and add an acoustical treatment to the loud space. Moss walls add more to the acoustical treatment of the building. Flooring and ceiling changes with pine wood finish add to the biophilic element along with class-A fire-rated

wallcoverings and moss walls. Tempered glass is used for classrooms and other closed areas to prevent vandalism. Furniture pieces and upholstery are made of wood and recycled content and may be considered for LEED certification. All the mentioned materials, especially wallcoverings and change in flooring patterns, can be considered strong wayfinding elements throughout the facility

Life Safety Plan

Since it is the harmful gases from the smoke that kills a person, 2 smoke zones have been provided— one in the housing units and the other in the educational facility—for everyone to seek refuge in case of fire. The exits are located as per the 1/3 diagonal rule of IBC.

LIFE SAFETY

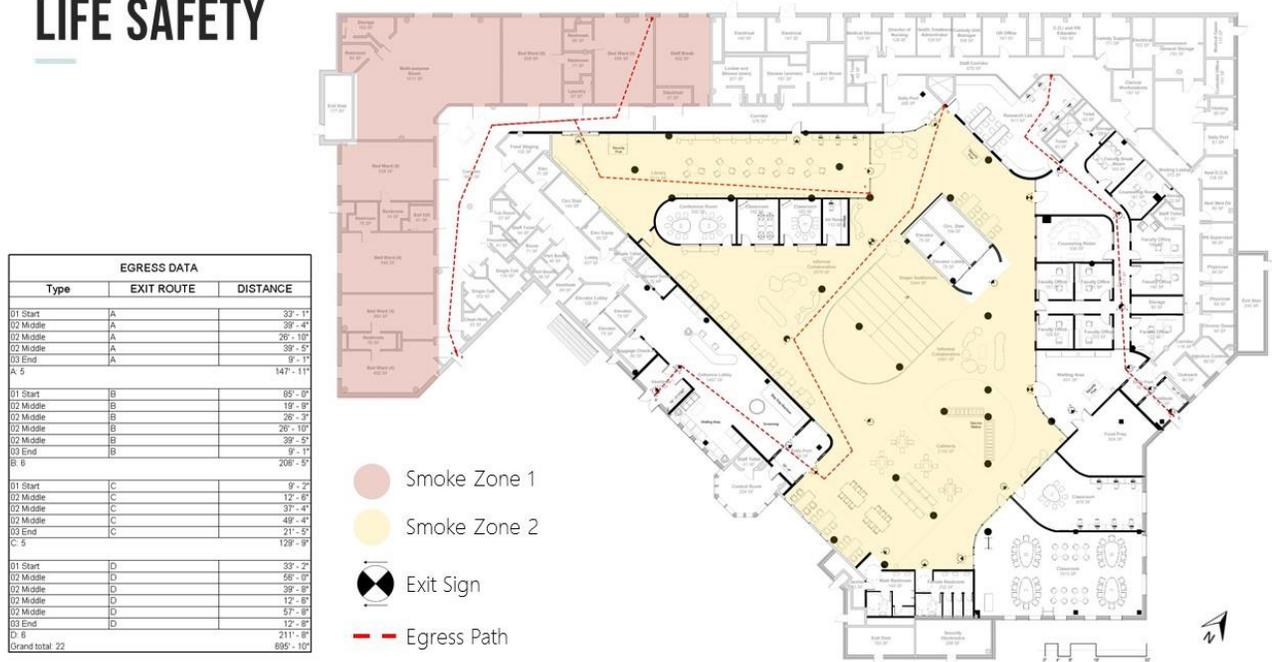


Figure 24: Life Safety Plan

Wayfinding

Different patterns and colors of wallcovering have been used throughout the space for wayfinding. Flooring pattern changes can also be noticed with a few sticker wayfinding tools to prevent any form of vandalism. Ceilings are also played around with to differentiate among various moods and functions of the spaces.

WAYFINDING

Flat surface way finding systems will be incorporated (destruction free).



Figure 25: Wayfinding Elements

The library is the first entry zone of the inmates which also behaves as a sally port. It has a warm color tone with flexible furniture. The wallcovering by Knoll and ceiling material baswaphon can be considered for LEED certification. Skylight has been provided for daylight with clerestories so that daylight can pass into the housing and administration corridor. LED recessed lights are used to illuminate the space as well. Computer systems have been provided for inmates to practice their technical skills. A glazing has been provided at one end which acts as a preview into the main facility. Concrete flooring has been finished with Fly Ash to comply with the LEED standards as well.



Figure 26: Render, Library

The inmates enter from a narrow space to a open space that encourages social interaction and has biophilic elements. The common area or informal orientation zone has an open view to all spaces. It incorporates bar height meeting spaces, flexible spaces and individual work zones as well. The

ceiling replicates the leaves at different levels and brings in a biophilic element through its shape and material.

Baswaphon has been used as the ceiling material and can contribute to acoustics along with LEED credits. The moss wall adds to the biophilic and acoustical element, and also complies with LEED standards.

INMATES' ENTRY



Figure 27: Render, Inmates' Entrance

INFORMAL ORIENTATION

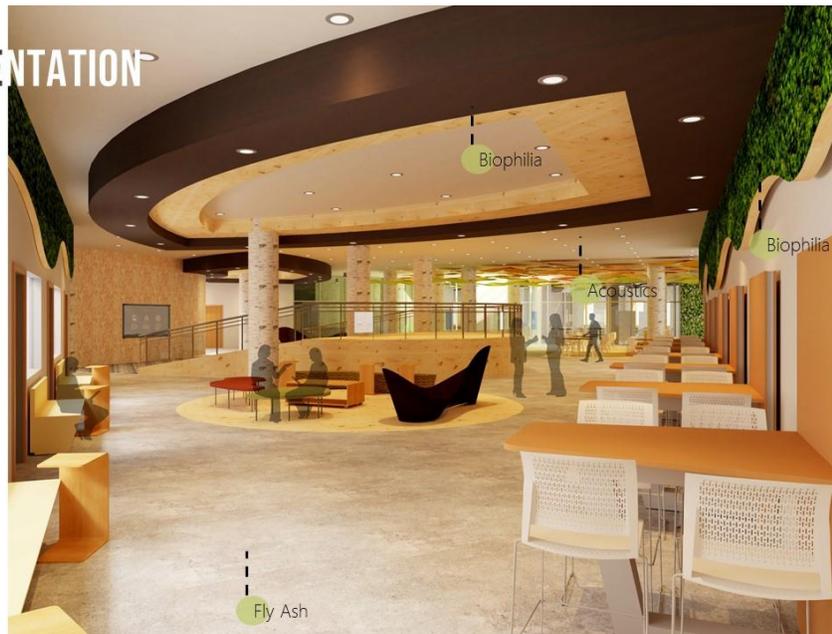


Figure 28: Render, Informal Collaboration

The common area leads to the stage where documentaries and presentations can take place. Flooring that replicates the pebbles that can be found near sea add interest to this space and act as a strong wayfinding element.

AUDITORIUM



Figure 29: Render, Auditorium

Birch Bark finished column has been given throughout the educational facility to imitate the finish of trees. Upholstery for furniture that can be considered for LEED certification has been used. The ceiling is acoustical, made of felt. The suspended panels are at a height where the inmates cannot reach—preventing vandalism. The café also has views to outside. Flat stickers and wallcoverings have been used as way finding elements to prevent vandalism.

CAFETERIA



Figure 30: Render, Cafeteria 1

The dichroic film has been used on glass for the skylight which gives different color reflections within the space at different times of the day. The Scintilla- wall panel by Sensile Systems adds more interest to it as one can play with that wall panel that creates different shadows when one touches it.

CAFETERIA



Figure 31: Render, Cafeteria 2

The classroom has a flexible setting. LED strip lighting has been used to illuminate the space. A television screen that will be operated only by security is provided for the current way of learning. iPads will be provided to the inmates with limited Wi-Fi for study. A large group of students and inmates can together study and learn from each other. Quality views have been provided to improve learning and productivity as well.

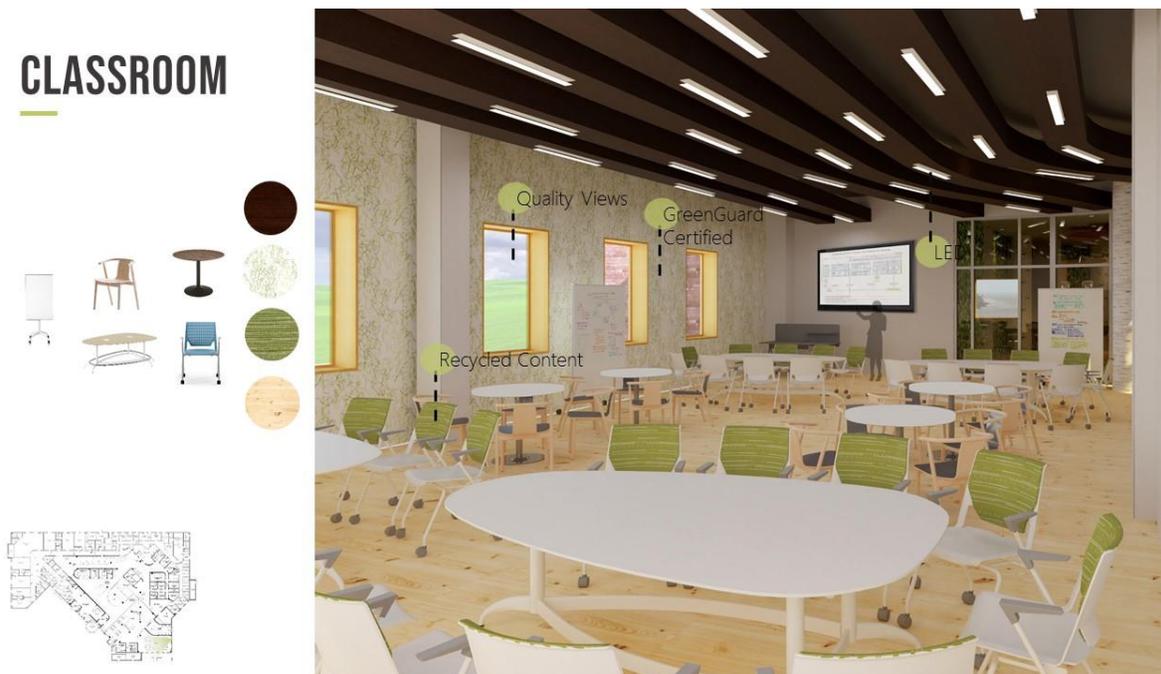


Figure 32: Render, Classroom/Multi-purpose Room

Conclusion

Someone said, “The hardest prison to escape is your mind.” If you set your mind to something, you can achieve it. And that’s what this project is trying to do—change the minds of the inmates positively to reduce recidivism and modify them into productive members of the society. By providing education to the inmates, recidivism rates will go down and so will the expenditure on prison facilities.

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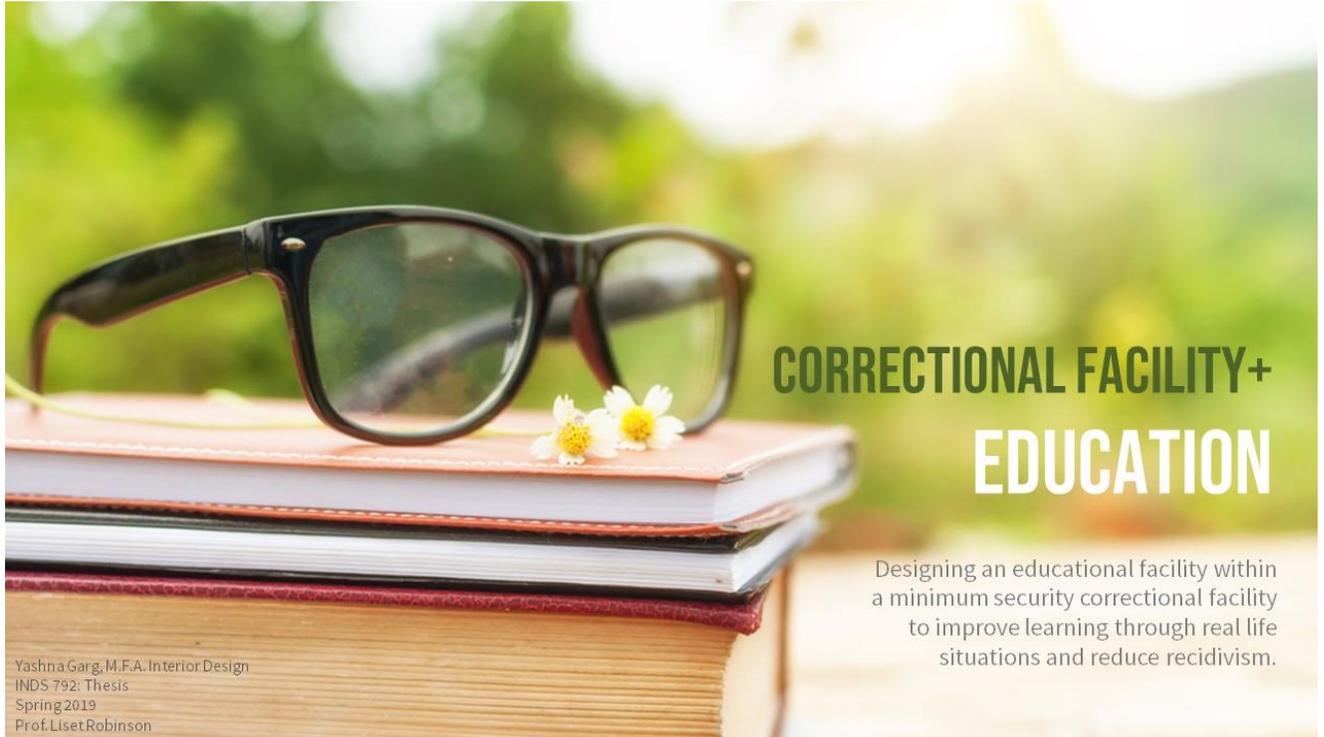
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APPENDIX A: Presentation



ABSTRACT



Create A Positive Change
Learn Of Real Life Situations
Interaction

THESIS STATEMENT



Interaction of students of Criminology and Forensic Psychology with the non-violent female offenders can help **reduce recidivism** and provide a sense of **self-confidence** to the offenders.

DEFINITIONS

Non-violent Crimes

Incarceration

Recidivism

Prison Vs Jail



DEFINITIONS



Forensic Psychology

Criminology

Direct Supervision

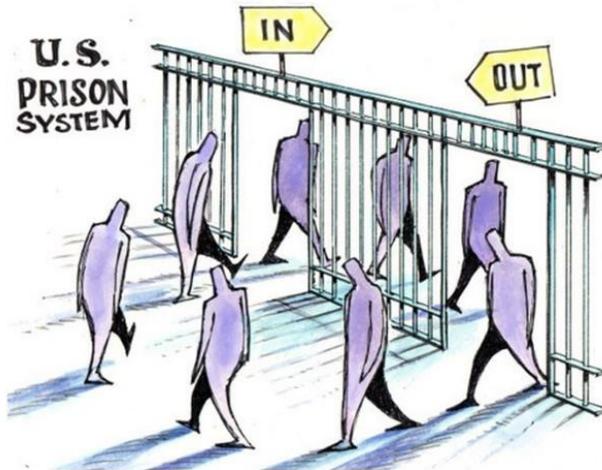
Indirect Supervision



RESEARCH QUESTIONS

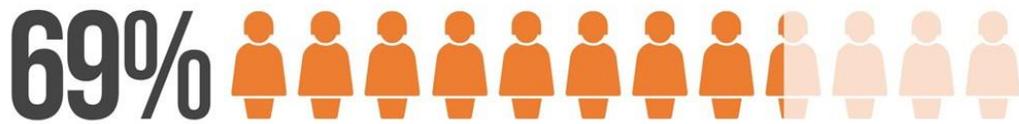
1. What role can interior design play in **maximizing safety and interaction** between the inmates and students?
2. How can the combination of a school of criminology and minimum security prison improve the performance of investigations carried out by teachers and students?
3. Can interior design assist with **behavior modification** of prisoners?
4. Can interior design reduce recidivism?

WHY THIS PROJECT?

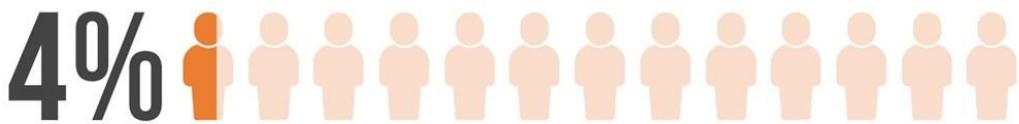


RECIDIVISM WITHIN 3 YEARS

4.4% of world population
22% of prisoners



Female



Male

NEW ADMISSIONS TO PRISON FOR TREATMENT IN MISSOURI: 2007-2016

EDUCATION AND REHABILITATION



1 INSIDE OUTSIDE PROGRAM

2 COUNSELING

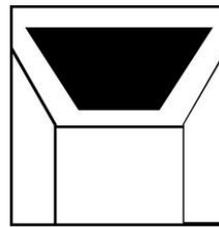
INTERIOR DESIGN



Security



Acoustics

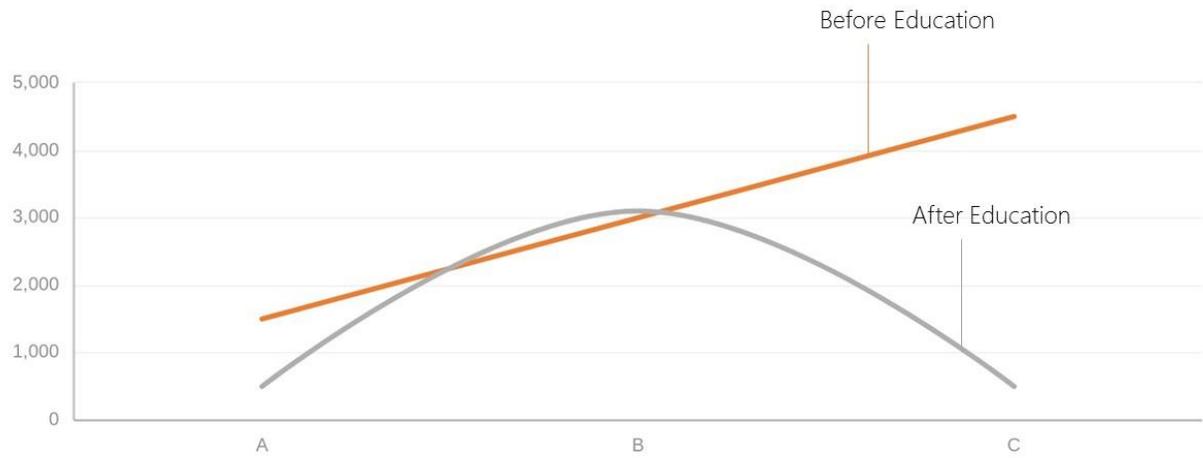


High Ceilings



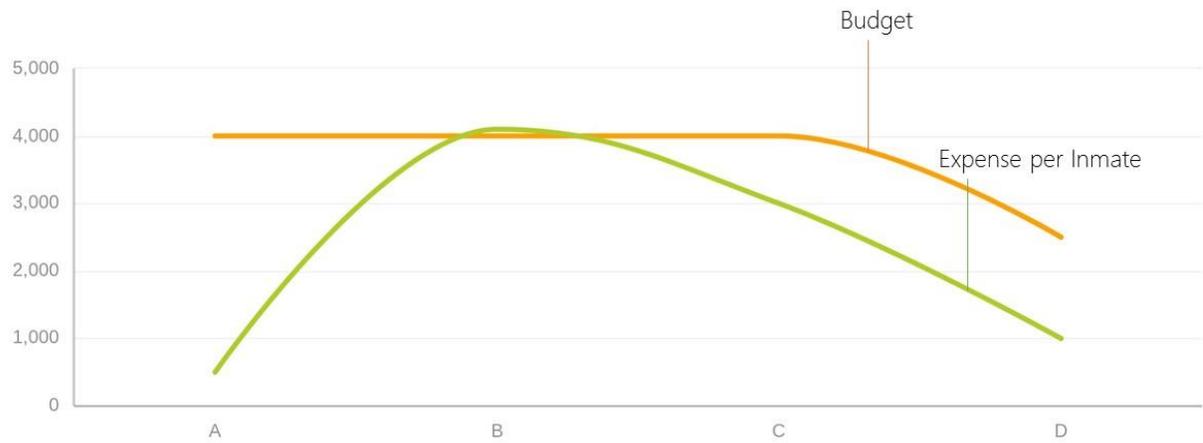
Light

CONCLUSION: NUMBER OF INMATES



*Quantities stated above are assumed for graphical representation and explanation only. They are not real statistical data.

EXPECTED OUTCOME CONCLUSION: EXPENDITURE



*Quantities stated above are assumed for graphical representation and explanation only. They are not real statistical data.

INTERVIEWS



CRIMINAL LAWYER

FORENSIC PSYCHOLOGIST

Professor at John Jay College of Criminal Justice

PROFESSOR

Inside-Outside Exchange Program

CLINICAL PSYCHOLOGIST



CASE STUDY

EDUCATION

Recidivism rates went down

WAYFINDING

Colors of walls and flooring

DAYLIGHT

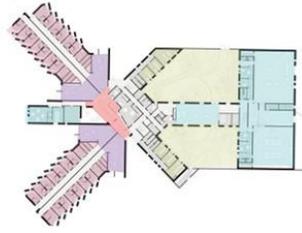
All public spaces

FURNITURE

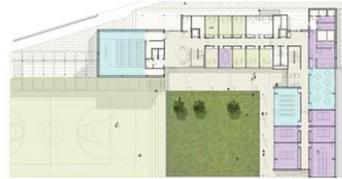
Dependent on level of security



PRECEDENT STUDIES

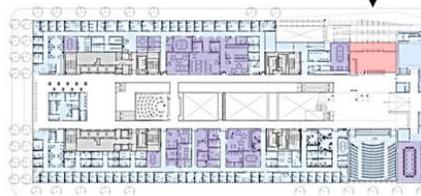


PRISON



REHABILITATION

- Security
- Housing
- Rehabilitation
- Education
- Collaboration



EDUCATION

CONCLUSION



DAYLIGHT



SOFT-LOOKING FINISHES



COMMUNITY SPACES

FACILITY VISION



CONCEPT

Now and *then...*

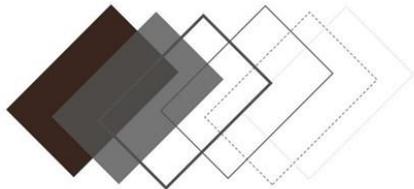
Provides a new outlook for the students of criminology and non-violent female offenders.

NOW AND

Then...



FACILITY MISSION



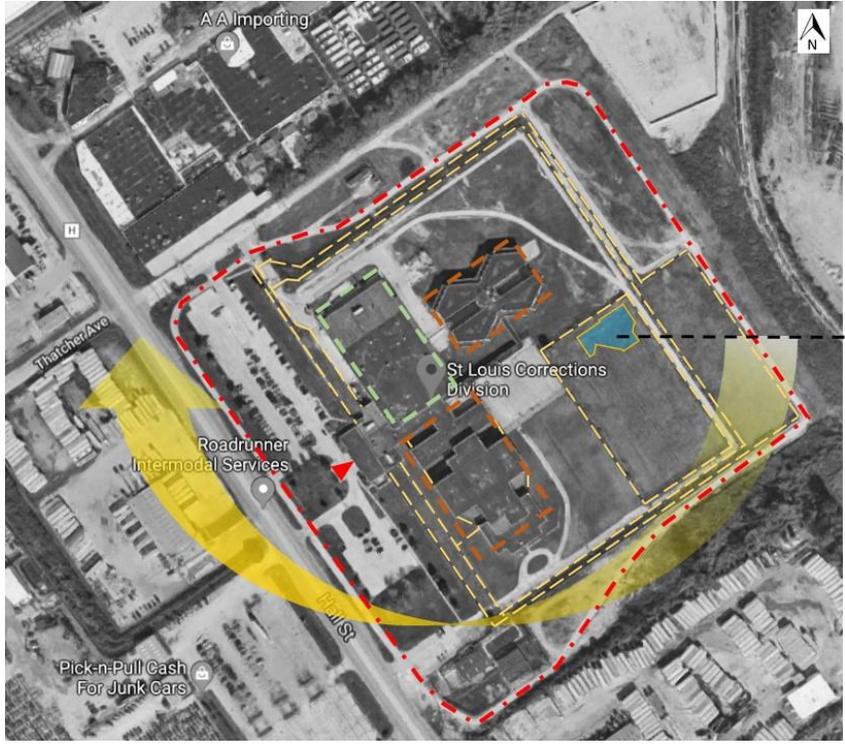
IMPROVING LIFE-SKILLS THAT ARE LOST DURING INCARCERATION



LOCATION

7600 Hall St, St. Louis, MO 63147, U.S.A





SITE ANALYSIS

- Building Location
- ▲ Entrance
- ☺ Sun Path
- Security Supervision
- Fence
- Housing Units
- Administration

CLIENT



SAINT LOUIS
UNIVERSITY™

— EST. 1818 —

USER



NON-VIOLENT FEMALE OFFENDERS



STUDENTS OF CRIMINOLOGY AND FORENSIC PSYCHOLOGY



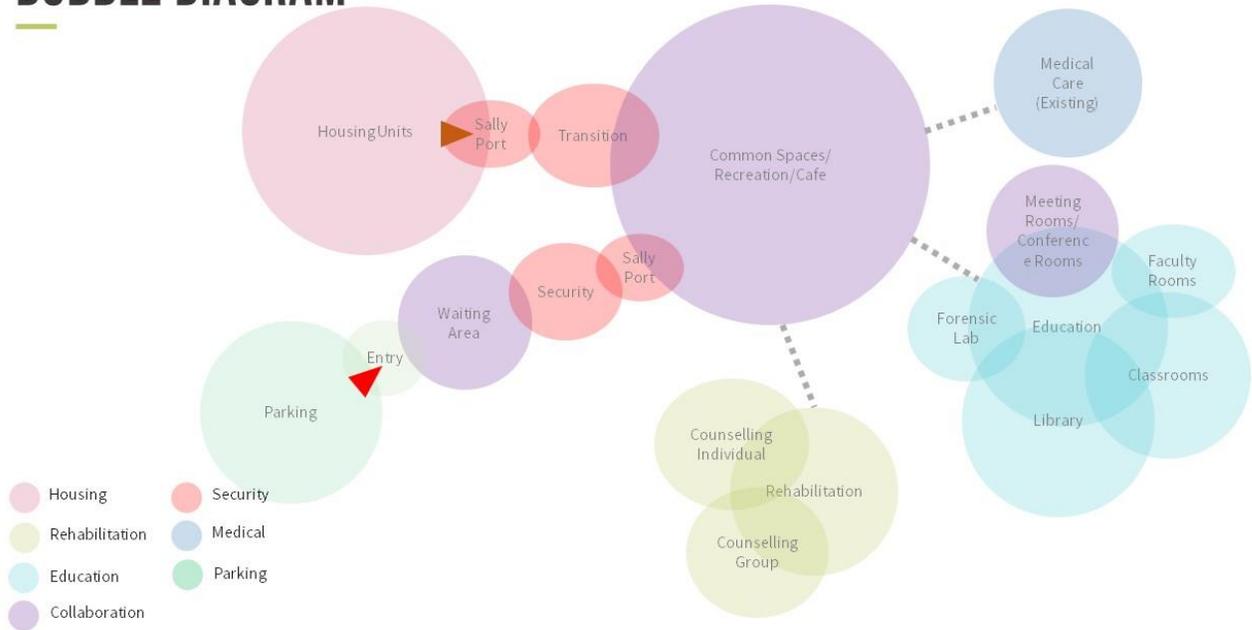
FACULTY, OFFICERS AND STAFF

EXISTING BUILDING ANALYSIS



BUILDING PHOTO

BUBBLE DIAGRAM



PROGRAMMATIC SPREADSHEET

Total Square Footage: 25,000 SF
No. of exits: 3

CURRENT SPACE REQUIREMENT						
Ref #	Room Name	Size/SF	# of People	Quantity	NET SF	Occ.
1. RECEPTION						
1.01	Lobby / Entry Area	1400	18	1	1400	B
1.02	Screening	1020	3	2	2040	I
1.03	Sally Port	180	3	2	2040	I
1.04	Coat / Luggage Storage	85	1	1	360	B
					NET SF Subtotal	5840
					Circulation (30%)	1752
					Gross SF	7592
2. EDUCATION						
2.01.1	classrooms- small	180	5	2	360	B
2.01.2	classroom- large	1515	54	1	1515	B
2.01.3	classroom- larger setting	680	6	1	680	B
2.02	faculty office	140	2	6	840	B
2.03	Forensic Research Lab	810	12	1	810	B
2.04	Library- reading	2100	30	1	1000	A3
2.05	Informal Collaboration	5000	80	1	5000	A2
2.06	Cafeteria	2100	50	1	2100	A2
					NET SF Subtotal	12305
					Circulation (25%)	3076.25
					Gross SF	15381.25
3. SUPPORT/ COUNSELLING						
3.01	Break Room (seats 6)	180	6	1	180	B
3.02	Conference Room (seats 14)	335	14	1	335	B
3.03	AV Room	120	2	1	120	S
3.04	Storage	200	2	1	200	S
3.05.1	Concelling Rooms- Group	330	10	1	330	B (accessory use)
3.05.2	Concelling Rooms-Individual	180	3	2	360	B (accessory use)
3.06	Toilets	200	8	2	400	
					NET SF Subtotal	1925
					Circulation (25%)	481.25
					Gross SF	2406.25
					Total Circulation	5309.5
					Total Gross SF	25379.5
					Total Occupancy	311

FURNITURE PLAN



LEED STANDARD

REFLECTED CEILING PLAN



LIFE SAFETY

EGRESS DATA		
Type	EXIT ROUTE	DISTANCE
01 Start	A	39'-11"
02 Middle	A	39'-4"
02 Middle	A	26'-10"
02 Middle	A	39'-5"
03 End	A	9'-11"
A 5		147'-11"
01 Start	B	65'-0"
02 Middle	B	19'-0"
02 Middle	B	26'-3"
02 Middle	B	26'-10"
02 Middle	B	39'-5"
03 End	B	9'-11"
B 6		208'-5"
01 Start	C	9'-2"
02 Middle	C	12'-8"
02 Middle	C	37'-4"
02 Middle	C	49'-4"
03 End	C	21'-5"
C 5		129'-0"
01 Start	D	39'-2"
02 Middle	D	56'-0"
02 Middle	D	39'-0"
02 Middle	D	12'-0"
02 Middle	D	57'-0"
03 End	D	12'-0"
D 6		211'-0"
Grand total 22		685'-10"



- Fire exit
- Smoke Zone 1
- Smoke Zone 2
- Exit Sign
- Egress Path

WAYFINDING

Flat surface way finding systems will be incorporated (destruction free).



SECTIONS

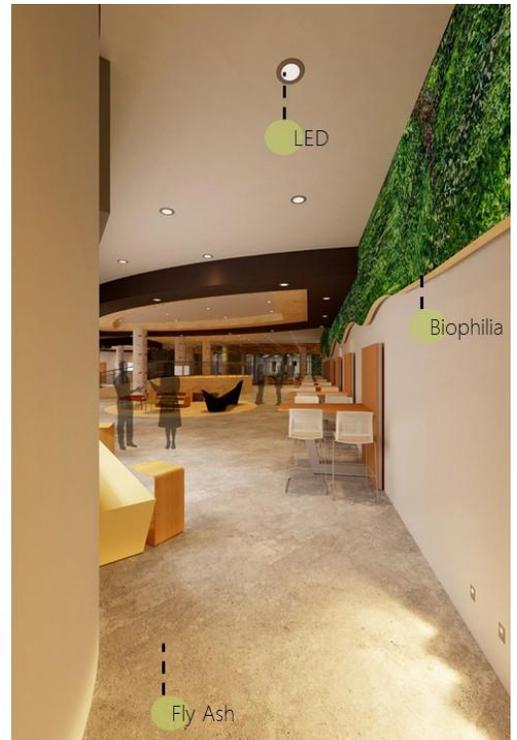


LEED STANDARD

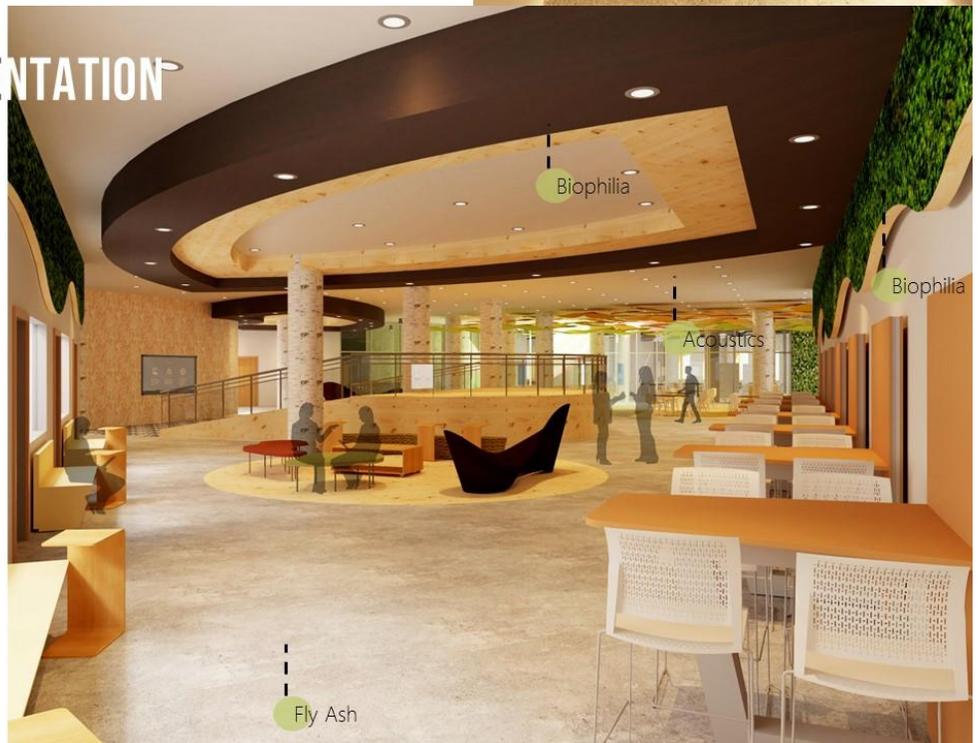
LIBRARY



INMATES' ENTRY



INFORMAL ORIENTATION



AUDITORIUM



CAFETERIA

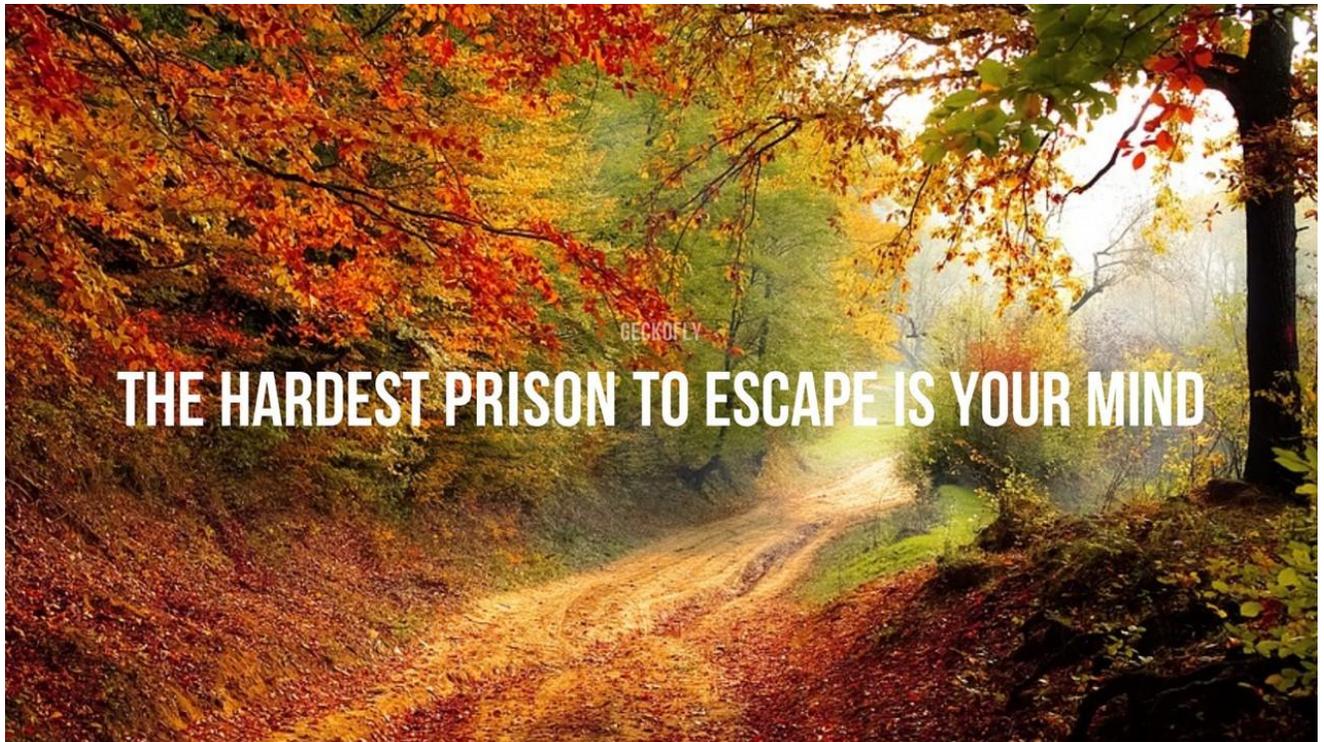


CAFETERIA



CLASSROOM





APPENDIX B: Final Boards

WORKING WITH UNIVERSITY OF MISSOURI
ARCHITECTURAL COLLEGE
PHD. CANDIDATE

CORRECTIONAL FACILITY+ EDUCATION

PROJECT OVERVIEW

This thesis addresses criminal behavior through an educational facility within a correctional facility for **non-violent female offenders** in order to create a positive change. The **School of Criminology and Forensic Psychology** will provide an environment for students to learn from real-life situations through ongoing case studies of the inmates. Students will also focus on crime scene investigation and will have both conventional and non-conventional learning environment settings.

U.S. PRISON SYSTEM

NEW ADMISSIONS TO PRISON FOR TREATMENT IN MISSOURI: 2019-2016

69% FEMALE **4% MALE**

INMATES BEFORE EDUCATION

INMATES AFTER EDUCATION

LOCATION

Saint Louis, Missouri, United States
Ranked as most dangerous city in U.S.

THESIS STATEMENT

Interaction of students of Criminology and Forensic Psychology with the non-violent female offenders can help reduce recidivism and provide a sense of self-confidence to the offenders. This facility will also include normalization of lifestyle within the prison along with rehabilitation and counseling services.

SITE ANALYSIS

- Entrance
- Day Room
- Housing Department
- Office
- Activity Room
- Staff Reception

CLIENT
Missouri Department of Corrections
Saint Louis University, Missouri

USER
Non-violent female Offenders
Students of criminology and forensic psychology
Faculty, officers, and staff

INMATES' ENTRY 1

2 LIBRARY

FACILITATE

Separation from the housing environment can respite the inmates and restore their minds as they transition between their housing unit and school. Inmates can use spaces such as the library when the students are not around. This allowance will create a sense of freedom for them.

CONNECT

Connecting students of criminology and non-violent female offenders to learn from each other can create a sense of self-confidence and responsibility amongst each other.

TRANSFORM

Creating a place that "feels different" by using soft finishes that feel comfortable and create a shared atmosphere. When people like their space, they are more likely to respect it.

NOW represents their current situation of being confined in the correctional facility. **THEN** refers to the person they will become after being a part of this educational facility.

EXISTING BUILDING ANALYSIS

- Inmate Housing
- Admin and Support
- Medical facilities
- Counseling
- Education
- Recreational
- Areas of Scope

FACILITATE CONNECT TRANSFORM

NOW AND

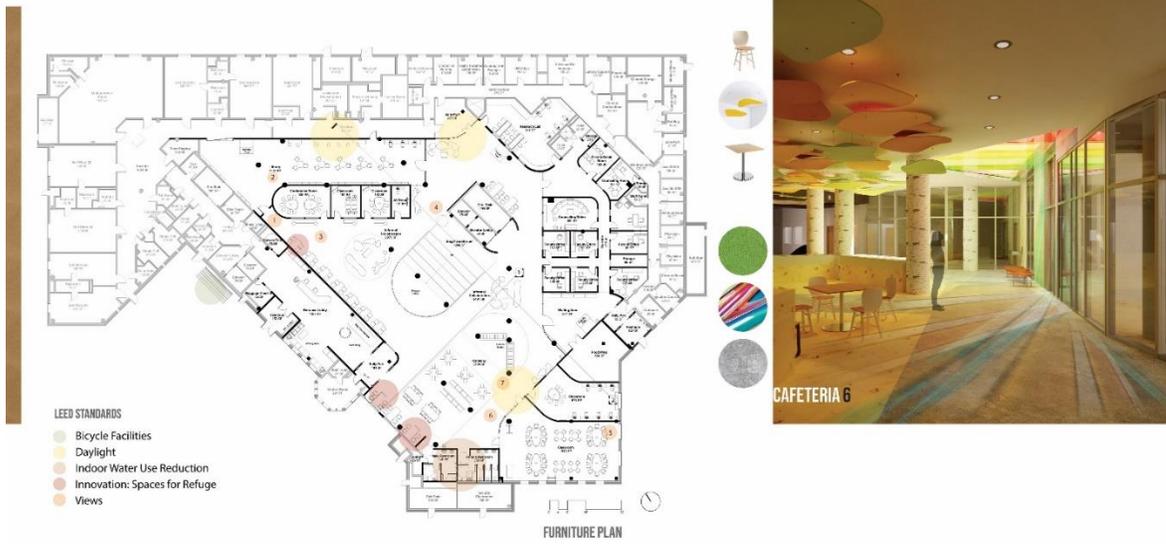
CONCEPT

Then...



THEORIES

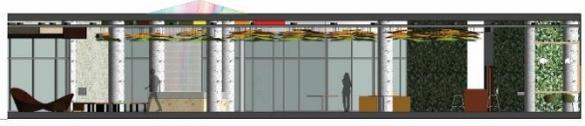




USER JOURNEY



1/8" = 14'-0"
1/8" = 9'-0"



SECTION 1



THE HARDEST PRISON TO *escape* IS YOUR MIND



SECTION 2

APPENDIX C: LEED V4 Checklist



LEED v4 for BD+C: New Construction and Major Renovation
Project Checklist

Project Name: Correctional Facility+Education
Date: May 29, 2019

Y	?	N			
			Credit	Integrative Process	1
0 0 0 Location and Transportation 16					
			Credit	LEED for Neighborhood Development Location	16
			Credit	Sensitive Land Protection	1
			Credit	High Priority Site	2
			Credit	Surrounding Density and Diverse Uses	5
Y			Credit	Access to Quality Transit	5
Y			Credit	Bicycle Facilities *need shower	1
			Credit	Reduced Parking Footprint	1
Y			Credit	Green Vehicles *EV charging+priority parking	1
0 0 0 Sustainable Sites 10					
Y			Prereq	Construction Activity Pollution Prevention	Required
			Credit	Site Assessment	1
			Credit	Site Development - Protect or Restore Habitat	2
Y			Credit	Open Space	1
Y			Credit	Rainwater Management	3
Y			Credit	Heat Island Reduction	2
Y			Credit	Light Pollution Reduction *light reduction at night	1
0 0 0 Water Efficiency 11					
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
Y			Credit	Outdoor Water Use Reduction	2
Y			Credit	Indoor Water Use Reduction	6
			Credit	Cooling Tower Water Use	2
Y			Credit	Water Metering	1
0 0 0 Energy and Atmosphere 33					
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
Y			Credit	Enhanced Commissioning	6
Y			Credit	Optimize Energy Performance	18
Y			Credit	Advanced Energy Metering	1
Y			Credit	Demand Response	2
Y			Credit	Renewable Energy Production *Solar panels	3
Y			Credit	Enhanced Refrigerant Management *HVAC	1
Y			Credit	Green Power and Carbon Offsets *Buying	2
0 0 0 Materials and Resources 13					
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
Y			Credit	Building Life-Cycle Impact Reduction	5
Y			Credit	Building Product Disclosure and Optimization - Environmental Product Declarations *Red List free products	2
Y			Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
Y			Credit	Building Product Disclosure and Optimization - Material Ingredients	2
Y			Credit	Construction and Demolition Waste Management	2
0 0 0 Indoor Environmental Quality 16					
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
			Credit	Enhanced Indoor Air Quality Strategies	2
Y			Credit	Low-Emitting Materials	3
Y			Credit	Construction Indoor Air Quality Management Plan	1
Y			Credit	Indoor Air Quality Assessment	2
Y			Credit	Thermal Comfort *providing ability to shift temperature in environment	1
Y			Credit	Interior Lighting *LED, Layers	2
Y			Credit	Daylight *skylight and windows	3
Y			Credit	Quality Views *nature views	1
Y			Credit	Acoustic Performance *acoustical panels and ceiling treatment	1
0 0 0 Innovation 6					
Y			Credit	Innovation *spaces for refuge	5
Y			Credit	LEED Accredited Professional	1
0 0 0 Regional Priority 4					
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
0 0 0 TOTALS Possible Points: 110					
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110					