COLLABORATIVE APPROACH FOR SOCIALLY ORIENTED DESIGN IN ARCHITECTURE EDUCATION

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ABSTRACT

Working with the International Commission of the Red Cross (ICRC) and several prison-related government organizations, students on a bachelor-level architectural studio assignment related to prison design were assigned a project to improve their socially oriented-design skills and to integrate an open approach to learning and public engagement. The task goal was to provide design solutions to improve living conditions in prisons to inspire inmates to cultivate their social behavior skills and attitudes toward life. A stepwise approach was taken to strengthen the student knowledge base and clarity in the decision-making process to improve social situations related to architectural design. In addition, students were provided with different information sources and learning experiences while in direct contact with professionals, experts, and individuals affected by existing conditions. The analysis was based on design results, related discussions, and student self-reflection. The teaching methodology aimed to integrate the design studio more closely into existing, design-relevant social issues. Results show that proposed designs suggest an increased awareness of social problems and an understanding of people-centered needs linked with goals to improve conditions for prisoners. In addition, public access to the results, coupled with the prevalent public stigma against improving prison conditions, helped students develop critical thinking and reasoning skills when working with others. Improvements for future courses should include exploring a greater variety of relevant, critical, socially-oriented aspects associated with architectural design tasks and extending collaboration and engagement with suitable individuals and/or groups.

Keywords: Architectural design; design education; social-oriented design; human-centered design

1. INTRODUCTION

Among the core values held by King Mongkut's Institute of Technology Thonburi (KMUTT) is its philosophy to be a social change agent, to be seen as an institution that serves as a knowledge provider that interacts with society in efforts to improve life. (KMUTT, 2017). Considering realistic framework conditions, the teaching method practiced at the School of Architecture and Design (SoA+D) ensures philosophy is instilled in its graduates. An essential element in the architecture studio course is to inspire students to be ready for the "real world" and bring them closer to the professional world. The school invites enthusiastic and committed people, companies, or institutions to join design projects.

Previous attempts to combine design tasks with realistic, often pragmatic, professional-oriented requirements were found to have restricted students' creative design development, with the resulting work often commenting only on functional, technical, or economic terms. As a result, social-oriented design demands in the second-year studio became a mandatory element as an architecture task. The challenge was to create a learning scenario that relates to a real-life situation, with social science or humanitarian aspects, to encourage creative, critical, sometimes unprecedented, or norm-breaking design work.

However, given the curriculum's learning objectives, sophomores typically work on moderately challenging design projects that focus on differentiating between public and private spaces and their connection and impact on human behaviour. Conventional tasks are, for example, institutional arrangements such as a school and a dormitory complex or a museum with workshops. These are usually medium-sized buildings that allow for variations in access and functions. However, it was felt the potential to critically address and influence social problems was somewhat limited and not sufficiently challenging as might be when dealing with prison facilities.

Collaborating with the International Committee of the Red Cross (ICRC) to establish an education-based alliance to undertake prison design, SOA+D agreed to work together in their bachelor studio during the second study year. Presenting international-oriented guidance for prison design improvement (ICRC, 2018), ICRC suggested students consider and create alternative examples from existing design solutions in Thailand. ICRC also agreed to share their universal knowledge in prison management and design in a lecture and offer student consultation and comments on their projects by three experts from the organization's habitat and water-engineering department. The studio project also received support from the Ministry of Justice (MOJ), the Thailand Institute of Justice (TIJ), and the Department of Corrections (DOC). Representatives from the later office deal with actual prison design tasks associated with existing prison facilities, an open prison facility in Nakhon Nayok, and a women's prison facility in Ratchaburi, Thailand.

This research aims to study education methods to teach architectural design in connection with socially-oriented issues to encourage students to develop a critical understanding by integrating them as design components into studio design and actively improving existing contemporary societal concerns. It was expected students would come to understand and discuss existing societal problems and their circumstances and engage with related stakeholders to discuss relevant aspects and viable solutions to successfully address their design ideas.

2. BACKGROUND

The literature review relates to a general understanding of existing prisons and prison designs in Thailand, a shared understanding of design education in architectural studios, and appropriate qualitative assessment methods for classroom experiences in socially oriented design education.

2.1 Prisons in Thailand

While current conditions in Thai prisons may not be as critical as prison literature suggests (Fellows, 2015), they can improve. Thai prisons suffer from overcrowding due to the steady increase in prisoners, partly caused by repeat drug-related offenders (Kittayarak, 2010; O'Connor, 2019). The resulting overcrowding further compromises inmates' physical and mental health leading to further deterioration (Awofeso, 2010). Prisons may also lack development as they require sufficient funding to improve malfunctioning or unacceptable conditions effectively. For example, given the tropical climate conditions found in Thailand, adequate natural ventilation and protection from overheating are also prevalent concerns regarding existing building conditions (International Federation of Human Rights, 2017).

Prison quality and the attempt to improve it are typically of little importance to the unaffected public (Furio, 2002). Due to social acceptance of current prison conditions, the public is unlikely to support initiating change (Fransson et al., 2018). While governmental efforts are made to improve prison facilities, upkeep and repair, enhance health or sanitary conditions, provide space for continuous education, vocational training, psychological help, or support social activities (DOC, 2019), they also experience budget limitations.

In Thailand, prison facilities differ in terms of type and management. They range, as practiced internationally, from low-security prisons to medium and high security (Roth, 2006). There are also 'so-called' open prisons, which aim to reintegrate inmates into society during the last phase of their incarceration. Prison architectural design and planning fall under the Ministry of Justice authority. Hiring architects to plan new projects or create updated solutions via a design competition call does not exist. Instead, an internal Planning and Construction Management Division employs pre-designed architectural designs as prototypes for new prison projects (Rujjanawet, 2020). These plans, which are only minimally adapted to their respective locations, may not be technically up-to-date or include strategies to integrate developing detention practices as suggested by Fairweather and McConville (2000) or Nuttall and Jurisic (2016).

In considering prison architectural design, one of the most critical aspects is the built space to which prisoners are inevitably and continuously exposed (Wright, 1991). Confined spaces, concrete walls, sterile surroundings, and a general lack of stimulation can all harm mental health (Morin, 2021) and determine detainees' fate during their time as prisoners and beyond (Wright, 1991). Efforts to improve detainees' mental conditions require improving their surrounding circumstances, including physical spaces (Useem and Piehl, 2008). Although each country has its own jurisdiction and regulations regarding the management and treatment of prisoners, international organizations have been established to guide and standardize all aspects of prison administration, from admission and classification to the prohibition of torture and restrictions on solitary confinement. There are also guidelines on health care, the recruitment and training of prison staff, and disciplinary sanctions. For example, a leading document, known as the Mandela Rules, Democratic Institutions and Human Rights (ODIHR), and Penal Reform International (PRI), was unanimously adopted by the UN General Assembly (United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules), 2015) to guide revised UN Standard Minimum Rules for the Treatment of Prisoners.

Similarly, the Bangkok Rules, formally known as 'The United Nations Rules for the Treatment of Women Prisoners and Non-custodial Measures for Female Offenders,' adopted by the UN General Assembly in 2010, include seventy rules focusing on women prisoners. The International Committee of the Red Cross (ICRC) has also published several guidelines to improve prison conditions worldwide (ICRC, 2018). They also focus on space and infrastructure requirements to ensure the safety and health of those incarcerated (ICRC, 2013). For instance, it sets the minimum space requirement for accommodating prisoners at 3.4 m^2 per person in a shared apartment or dormitory. The Thai Department of Corrections has three different standards for inmate floor space in its prisons. While the distance regulation standard capacity is 2.25 m^2 per prisoner, total capacity reduces this number by half. With this 1.1 m^2 often further reduced, overcrowded conditions in Thai prisons are clear (International Federation of Human Rights, 2017).

2.2 Architectural design studio

Teaching architectural design in studio settings is considered the most suitable means to provide education for designers (Corona-Martínez, 2003). As a theory, studio education refers to students working in a selected design studio and focus group with the same participants. Data collection and analysis are conducted through social constructivist and constructionist learning theory (Lueth, 2008). Students socially construct their reality as individual knowledge providers, with instructors familiar with the students' learning process facilitating their learning. The constructivism aspect focuses on the design-construct as externalized and shared, which is built for members based on different criteria, including culture, society, group, and class. This enables rethinking what has been created and designing a new idea based on sharing (Harel and Papert, 1991). With the view that learning experiences are multidimensional and, therefore, can have multiple abstract meanings, a constructionist qualitative approach and a phenomenological methodology are often combined. This is also true for Chickering and Reiser's (1993) student development theory concerning how students perceive, understand, and describe their design studios, including developing competence and autonomy in moving toward interdependence, managing emotions, establishing identity, and developing mature interpersonal relationships, purpose, and integrity.

Practically seen, studio courses introduce students to architectural design to create spatial configurations and develop design strategies for a given design problem and its specific requirements and needs. With a gradually increasing complexity and sensitivity, students learn to discover existing conditions and focus on developing solutions that represent their ideas related to internal and external factors. They also learn design thinking and communication methods and integrate their knowledge into the design process to react to inferred conditions. Since creativity is an essential part of the design process, ensuring a specific design problem finds an adequate answer or solution is developed to integrate theoretical and practical architectural design aspects (Allen, 1997). Accordingly, a team of instructors and lecturers conduct the design studios in which students are divided into smaller groups to work together or individually on a given 'realistic' design problem. In combination with group discussions or individual review sessions, the instructors support the students in the design phases by offering advice, questioning, and exchanging ideas. Blending and networking practices with stakeholders for studio education, such as small seminar sessions or interdisciplinary team configuration, are also provided to secure relevance and enhance the learning experience (Ioannou, 2018). While students assess and synthesize collected data based on their creativity-relevant skills and apply their technical knowledge based on their domain-related experience, an educator's role is to employ motivational methods to initiate the design problem and maintain the design process (Amabile et al., 1996). Mattingly (2011) developed a creativity model that integrates the understanding into five proposed phases: problem-solving, analysis, generation, test, and reflection. The problem-finding is a rather challenging implementation stage initially as it requires critical thinking (Brockbank and McGill, 2007). Thus, educators often introduce these students to a straightforward design problem and gradually transfer responsibility for defining the

design problem to more advanced learners. Students also benefit significantly from peer interaction (McClean and Hourigan, 2013).

However, when looking at studio sessions almost exclusively conducted by architects, this professional approach can also raise doubts and question social acceptability (Broady, 2017). The integration of socially critical thinking is essential for the design process to allow researchers to understand and be aware of undesirable conditions or disadvantage scenarios that might negatively influence them, based on their perceptions and interests, and to guarantee the fair treatment, health, or well-being, or to prevent inequalities with those with whom they hope to support (Richter et al., 2017). Socially oriented architectural thinking is also viewed with skepticism and questioned (Gribat and Meireis, 2017). Many believe that those who make architectural-design decisions are not held responsible for unwanted influences if they have complied with legal frameworks. Ultimately, however, the interaction between physical design and social change is a two-way process in which design aspects and dynamic social concerns influence one another (Ginting et al., 2017).

2.3 Qualitative evaluation techniques

When considering studio work assessment, result analysis is primarily based on instructor evaluation regarding the final design proposal and is a common way to provide feedback to students and assess their work quality and progress (Soliman, 2017). Before a studio project begins, a brief is typically used to describe objectives and expected outcomes. The learning stage and project nature may include a descriptive introduction to the design task, drawings, pictures, and maps. It may also have submission requirements and describe expected outcomes with an overview of how the work will be assessed. A criteria-based approach is often used to support student development in fulfilling the task and avoiding holistic, introverted subjective, or less detailed assessments (Utaberta et al., 2013). Evaluation can occur individually, by the assigned instructor, within a cohort of instructors, or via both. Assessment may evaluate student creativity and ideas, their design and development, the resulting proposal, and respective verbal and visual presentation skills.

When different interest groups join a design studio, their feedback can be used to better understand student achievement, for instance, through survey methods, such as interviews, to extract specific data from a particular target group. Survey research may use various data collection methods, the most common being questionnaires or interviews, including items reflecting the research aims (Fowler, 2013). Used to rate thoughts, opinions, and feelings and employing a given question set, resulting surveys can be specific and limited or have more universal ambitions (Shaughnessy et al., 2011). In addition, they can compare attitudes held by different target groups and look for attitude changes over time. Although a single survey may include a limited sample, this sample can represent a larger population with the same attributes from which the sample was drawn. Therefore, research success depends on the sample group genuinely reflecting the views held by the greater population in areas of interest to the researcher (Fowler, 2013).

Finally, student feedback through reflective writing can also help identify studio task success. Reflective writing is an analytical technique in which an author describes an event while also considering its personal significance. The focus is on descriptive writing and rethinking the situation by providing details, emotions, and meanings, evaluating what went well, or uncovering additional learning needs concerning the specific and universal context (Helyer, 2015). Reflective writing is research that systematically retrieves experiences to redesign the current situation (McCarthy, 2011. The more ones write, the more likely they reflect on their everyday lives, think creatively, and question standard practices. The writing invites the reader and the author to absorb and examine their thoughts, feelings, and beliefs through a closer, less distant relationship (DasGupta and Charon, 2004). Reflective writing usually includes an event description or explanation and its context; an interpretation as to how the experience challenged existing opinions; and the result or how the experience contributed to personal or professional development (Brockbank and McGill, 2007). In scientific papers, reflective writing often supplements the author as external evidence to support their point of view.

3. METHODOLOGY

This study investigated a method for teaching architectural design related to socio-related issues. It encouraged students to integrate themselves as design components and actively improve their critical understanding of contemporary social issues and their effects on architectural design. Thus, the study involved creating architectural design tasks connected with a specific teaching method and a suitable evaluation method to determine success. The expected results were that students would understand and discuss existing social problems and their circumstances and exchange ideas with related interest groups to discuss relevant aspects and viable solutions. In addition, it was anticipated that students would successfully take these into account in

their designs by using a socially oriented design approach and appropriately communicating their suggestions for improvement.

3.1 Project description (Architectural Design Tasks)

In the context of existing needs and requirements, the architectural studio design project is to produce solutions for a prison design to address social aspects for those incarcerated. While functional, economical design features are naturally in the foreground when designing prisons (Moran and Jewkes, 2015), the design tasks presented were chosen to enable human-centered intervention, such as the design of an open prison or a women's prison. Accordingly, the unique open prison design task deals with the expected release of inmates and their reintroduction into society and resulting needs. In contrast, the women's prison design task dealt with gender considerations such as the treatment of pregnant detainees, those with newborns, or general differences in dealing with female inmates.

Studio task instructors agreed that the resulting designs would require creativity in supporting prisoner-related social issues rather than an outdated understanding associated with discipline-oriented correction facilities (Foucault, 1995). However, these facilities must still function as prisons, meaning no compromise in security and safety issues. The instructors aimed to develop their teaching technique to support students in breaking with stereotypes in prison design while maintaining overall needs and function. Accordingly, prisons with medium to low-security requirements allowed for creativity and freed the design task from being overwhelmed with security concerns. Rather than solving more restrictive security demands and prison management tasks, designing these facilities allowed students to better engage with humanitarian

The design exercise objectives were to:
- establish and describe suitable forms of architectural space;
- improve student understanding of visual reading and transformation into spatial design;
- discover existing contemporary social conflicts and their relationship to architectural design;
- propose design solutions conceptually, as well as in realistic terms;
- explore and analyze design variations;
- synthesize and present their ideas and solutions to design problems.

In addition, the design tasks required solutions that referenced exemplary existing facilities with a focus on human or social concerns, leading to a positive change in the public stigmatization of prisons. Students were briefed to consider the ICRC and UNOPS guidelines to adapt or interpret their proposals. Concerns included how to provide for functional requirements such as dormitory, canteen, or sanitary space design, or the flow and control of inmates in prison, and how students would integrate these special conditions into the architectural design.
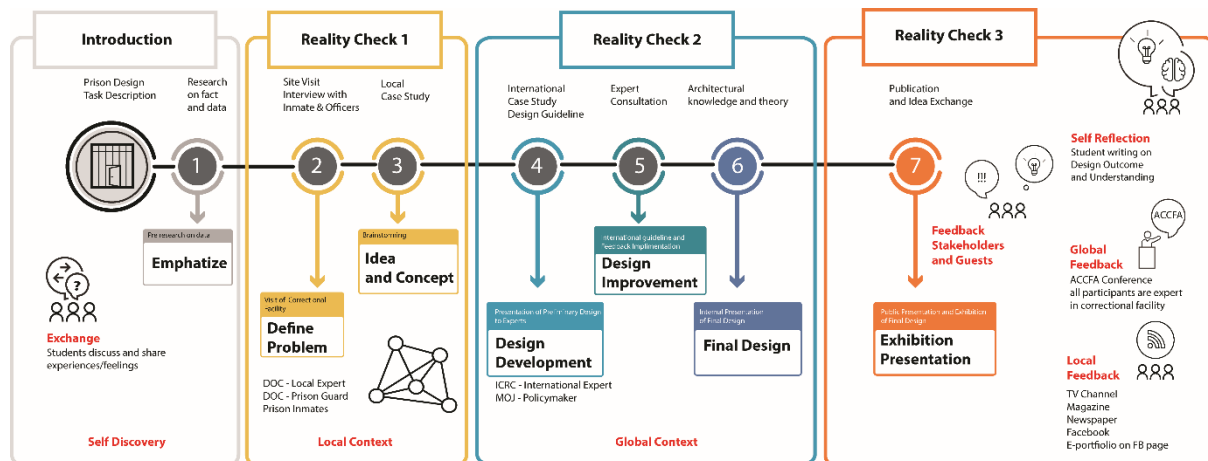
3.2 Teaching method

Figure 1: Methodology for Teaching Humanitarian Design in Architectural Design Studio

A primary instructor concern was to establish teaching methods. It was agreed that it was essential to balance the student design approach between the reality and the existing context in Thailand and adjustments based on international recommendations. In a stepwise approach employing so-called reality checks, teaching segments aimed to ensure sufficient information and feedback for the design development was provided in an organized manner to avoid confusion or overwhelming the students with too much information. These reality checks are illustrated above in Figure 1. To engage students in communication and exchange with others, the

reality checks foresaw discussing ideas and receiving feedback from case studies (Giles, 2017) or related individuals. The resulting encouragement to maintain continuous design development with input from professionals and experts at various stages and the final presentation to the public via conventional and social media platforms aimed to support student critical thinking development and reflect their design rationale argumentation. Figure 1 illustrates the approach, showing how information/feedback from various sources was foreseen at various times in the design stage. Data collection was the first step in contextual research. Students independently listed as much background information and subject-related materials as possible. The fact-finding process was viewed as a moment of awareness and understanding of the uniqueness found in the contextual situation.

A proposed workflow is broken down as follows:
- collection of data related to current conditions, such as demographics, existing ordinances, and regulations;
- extraction and segmentation of factual details required in the design task;
- conversion into visual information and presentation.

In addition to the provided functional requirements and the task description, the existing prison system in Thailand was presented by representatives in lectures. Later discussion groups also contributed to deepening the students' understanding of institutional functional and spatial requirements. The project included an analysis of the existing situation via an online database (official websites and social media forums), excursions and interviews, and relevant architectural designs case studies to clarify program requirements in more detail. Throughout, students were encouraged to use freshly acquired knowledge and experience to formulate designs that described underlying causes impacting decision making and the anticipated design compared to the existing situation.

A planned visit to a local prison aimed to eliminate preconceived notions about prevailing conditions. While prisons are usually not open to the public, first-hand experience was essential in developing understanding. To obtain permission to interview prison officials and inmates, prepared questions had to be submitted to the authorities one week before the planned visit. While instructors presented case studies about selected award-winning designs from overseas prisons, students needed to analyze the functional planning, spatial configuration, and design in one of the cases presented and in a second student-selected case study. Students then presented preliminary proposals, including a problem description and conceptual idea, to an invited audience, including an architect specializing in prison design and a sanitation expert for comments. In addition, students gained insight from invited participants into the role played by each institution in prison management to understand national and international institution roles. Finally, by following their logic and philosophy to ensure and maintain support for prisons in Thailand, students identified and engaged with relevant stakeholders in presenting their designs.

With feedback from the preliminary presentations, students continued developing their designs with assistance from their instructors. In addition, lectures on essential prison design management from international guidelines were given, covering basic design guidelines, segmented as prison zoning according to security levels, facility organization in overall site planning, and underlying calculations on space usage such as minimum space requirements for sleeping quarters, toilets, canteens, medical treatment or training facilities, space planning for security checks or needs to do with family visit facilities. Lectures also covered supplementary guidance on technical planning knowledge regarding sanitation, hygiene, and habitat in prisons with references to guidelines from ICRC, UNOPS Technical Guidance for Prison Planning based on the Nelson Mandela Rules, Bangkok Rules, and Architects' Data by Ernst Neufert.

Students then exhibited and presented their final design solutions during their Final Design Presentation and made their statements before guests, including related experts, media representatives, and the public. After receiving feedback in earlier phases, students better understood the role of those involved, existing international agreements, local sensitivity issues, potential conflicts, and the point of view held by prison authorities and administration. This all combined to ensure designs presented were seen and reviewed as a serious proposal for a design solution. Students also learned to remain open to answering critical questions and accepting comments and criticism from guests, especially if they reflected media and public awareness.

3.3 Qualitative assessment

Various qualitative methods were employed to evaluate the project outcome including surveys and self-assessment to assess studio results and student learning outcomes. The studio work was assessed based on instructor comments and collaborating stakeholder observations. In addition, feedback from participating students was collected through their reflective writing about their designs to evaluate learning outcomes.

To evaluate student performance as to their success in including and emphasizing social design aspects, instructors focused on their studio work and conversations and how they related their work to social design criteria, such as inmate well-being, needs recognition, or their success in creating spaces that can

support inmates in their personal development. The final assessment was based on several indicators such as design idea and development, work quality, and presentation by the student groups. The evaluation through stakeholder feedback was based on comments made during the student presentations, later interviews, and invited media responses. Emphasis was given to statements concerning design ideas that appeared different from typical design approaches and discussions about improving prison conditions. In addition to guests, invited media responses related to the student's work were included. Finally, students complied reflective writing reviews detailing their actual position in the design proposal and their sensitivity to solving societal problems they deemed relevant. This helped instructors better understand student opinions and empathy and was also seen as a further means to allow students to reflect on their work and determine whether there was a discernible difference between design expectations and actual design results.

The security and safety aspect in prisons is undoubtedly a primary concern when considering practical architectural prison designs. That does not mean, however, that other requirements should be neglected. It was found that prison designs in Thailand primarily focus on security, safety, and proper prison management. In contrast, efforts to improve conditions to solve prison social issues or integrate international standards seem to have been neglected. Therefore, the following categories were established better to understand prison design criteria as a studio task. The radar chart in Figure 2 illustrates consideration parameters between existing prison designs and expected student design outcomes.

In contrast, the context for existing prisons is undoubtedly practical oriented. The described focus is seen as a 'real' and appropriate solution; it does not mean other consideration categories are less applicable. Eventually, designing prisons that follow the described realistic approach would likely not help future solutions' potential for improvement. Given the studio tasks, it was expected that students would not be creative when dealing with and finding solutions based on such pragmatic constraints. Student designs were expected to lead to more diverse outcomes and reinforce underdeveloped requirements that would enable Thai prisons to develop in the future.
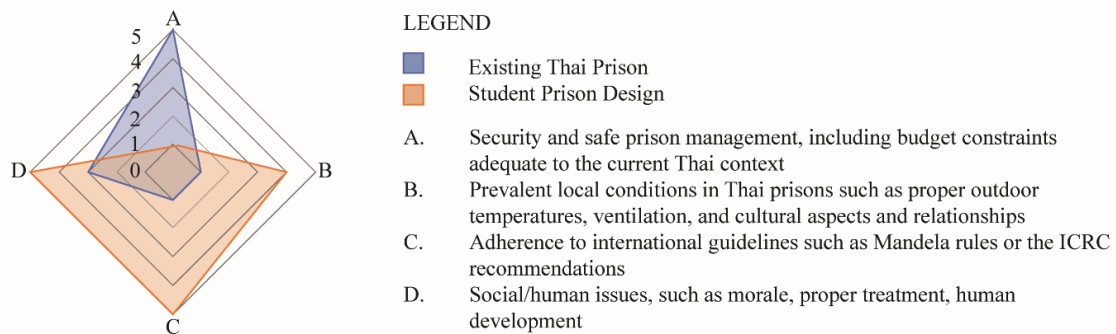
4. RESULTS

Figure 2: Design Consideration of Existing Prison Planning Requirements

On course completion, a project exhibition and final reviews were organized with guests from cooperating institutions who spent a day with students to attend design presentations and to discuss and comment on the proposals. These comments from interviews with lecturers, guests, and students were recorded and examined along with reflective written submissions.

4.1 Design outcome

Final proposals showed various solutions, such as expanding spaces for gathering or meeting with relatives, including more sublime design aspects such as the appearance of hope in design language. Examples provided by students included:

> advocating green and landscaped features such as trees for shading in semi-outdoor areas, vertical green as façade elements, or gardens on dedicated outdoor area rooftops
> avoiding or transforming characteristic design elements such as vertical steel bars or massive walls with disguised yet functioning shading elements in front of openings
> introducing building shapes to soften the overall appearance and mitigate the overwhelming institutional appearance
> recommending lighting, natural climate features, as well as materials as symbols for acceptance, optimism, and aspiration

The main observation from the resulting designs was that proposed solutions did not necessarily meet strict prison planning requirements. Instead, they displayed conceptual attempts to raise awareness of the need to improve human and social conditions. These then developed into inspiring design solutions, with outcome analysis indicating various approaches towards more human social design consideration had been included. The student work appeared less function-focused, with more design emphasis on social concerns. The most apparent difference to conventional prison designs was that while many designs focused minimally on related functional issues, many recognized different considerations regarding social conditions and improvements for human inmates. Examples include the attempts by the students to improve inmate comfort and well-being with communal areas for social interaction or green spaces to relieve stress and tension. Another unique recognition of student interest in the social design aspect was the examination of prisoner human rights, which were reflected, for example, the need to include sufficient space per prisoner and the need to store personal items. Finally, students also explored and questioned current practices reflected in strict incarceration versus a more optimistic approach to assisting convicts towards acceptance, social inclusion, and behaviour change. A selection of unique and unusual design solutions follows:

4.1.1 Avoiding prisonlike appearance

Figure 3: Building with Smooth Curves Dominating Spatial Experience

The massive and insurmountable prisons' presence is generally understood as an architectural design language that naturally symbolizes authority and psychologically impacts inmates. Many presented student designs avoided a dominant building by circumventing distinct characteristic design elements, high fences, or thick massive walls. Some successful design solutions aimed to keep spatial restrictions visually fading while cultivating a more optimistic, friendly design appearance for a building and its surrounding. Commendable design solutions achieved this through a fragmented building mass and a campus-like atmosphere. Visual references are directed inwards, and walkway orientation is not determined solely by boundaries and control points. Another critical design decision was to avoid an institutional look and to use gentle curves when designing central or massive building volumes to reduce their dominant appearance. An example of such a design approach is shown in Figure 3.

4.1.2 Micro-living / private space

Figure 4: Dormitory with Optimized Space Planning for Inmates

In Figure 4, the design responds to the crowded conditions in Thai prisons. Here students studied micro-living design layout solutions dealing with limited space conditions to improve cell conditions where between 25–30 inmates are forced to be accommodated. Suggested space design solutions borrow from typologies such as low-income housing, dormitories, or monastery designs to introduce more suitable space arrangements. A demonstrated design approach was to identify minimal space requirements first before inspecting prevalent limited space conditions.

4.1.3 Sharing spaces

Figure 5: Design of Courtyard and Semi-Outdoor Spaces for Gathering

Providing social or shared space is another common design aspect in exemplary student work. However, rather than focusing on the central prison functions, the presented designs emphasize concepts to support a sense of community or coexistence and prioritize inmates' need for socializing to build relevant relationships. So-called liminal or neglected spaces become sources for creative intercourse and, with no prescribed use, become iconic design features providing small courtyards as communal areas with space limitations as a concept. An example of a consecutive lineup of semi-outdoor courtyards and spaces is shown in Figure 5.

4.1.4 Friendly cages

Figure 6: Expressive Room and Facade Design that Reduces the Appearance of the Prison

On examining transitions within prisons, their characteristic use of vertical steel bars as actual barriers is among the most distinctive and dominant features of incarceration. Design solutions by several students aimed to maintain their primary function as a barrier yet make their appearance less prevalent and ubiquitous. Accordingly, as demonstrated in Figure 6, steel bar orientations were changed, for example, into a friendlier, decorative boutique-style or via an alternative arrangement. Another solution was to employ these barriers as shadow-creating elements to protect the interior from strong sunlight and appear as an integrated facade element.

4.1.5 Natural surroundings

Figure 7: Green Façade Design for a Positive Attitude and Self-Initiated Gardening

Green spaces were another essential design element students utilized to express the need for a more human-focused environment and saw natural surroundings as a tool to change one's mindset positively. Plants could support inmates' well-being and create a more optimistic view of life for them. Students also felt that nature could express self-discovery and strengthen inmates' need for acceptance. Inmate attitudes, they believed, could be softened by introducing pathways that would reflect nature. Some student work suggested alternative facade solutions with green features where inmates could grow vegetables for their own needs, as demonstrated in Figure 7. Another design presented a phycological viewpoint and suggested that by integrating green, a large, sturdy central courtyard tree would symbolize life.

4.1.6 Climate control

Figure 8: Shading Design to Reduce Solar Radiation and Minimize Prison Bar Installations

While it is unusual in design studios to make environmental considerations a primary concern, students felt sympathy with the inmates, realizing the need for ensuring "normal" living conditions when visiting a prison. Having experienced existing conditions in a prison facility, students better-understood prison life and the need for basic life requirements, resulting in design solutions that minimize heat gain and improve natural ventilation. Furthermore, as it was believed that by using environmental knowledge gained in a tropical climate context and the need to improve health conditions during detention, students considered focusing on passive design solutions, such as natural ventilation, to solve prevailing environmental concerns. An example reflecting this design approach is shown in Figure 8, which integrates natural surroundings and passive climate control.
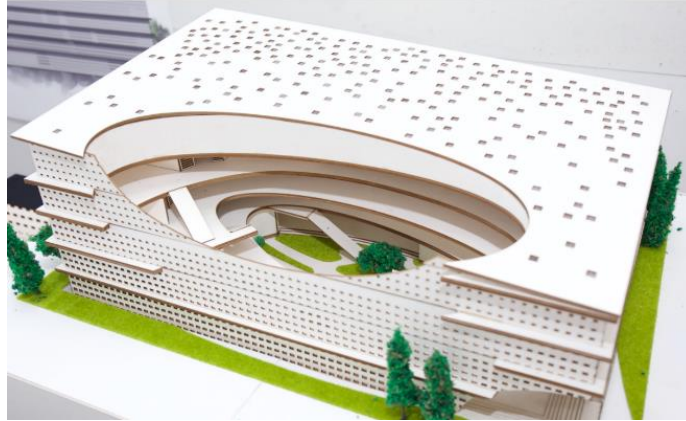
4.1.7 Lighting

Figure 9: Natural Lighting Design with Varied Distribution to Reduce Inmates' Stress

In architecture, natural light is often used psychologically as a sign of hope. With this background and with instructor and the guest ideas incorporated into their designs, students could implement this into their plans with skill. While aware of safety aspects, these solutions aimed to create daylight openings utilizing patterned designs as a barrier. To create these openings, ventilation blocks, perforated steel sheets, or random cavities designed in masonry walls were included in designs. These opening patterns would be smaller than a standard window and placed at reachable levels, for example, at eye level. In contrast, larger openings would only occur in higher, inaccessible areas. The result created by these openings and light patterns on the wall would reinforce a strong sense of space where natural light would create and undergo constant change over time. In the example given in Figure 9, students mentioned natural light as a symbol of life, where the design, like nature, could reach occupants philosophically and spiritually.

4.2 Instructor and stakeholder feedback

Instructors observed a behavioral change in the students reflected in the interest in opinions and information from guests. In addition, student knowledge and perceptions concerning prison design continuously changed over time. The students became familiar with the topic, showed interest, participated in discussions, and allowed for opinions. The instructors identified the main events that provoked new thoughts: the actual visit to a prison facility and interviews with prisoners and correctional officers. In addition, ICRC's special presentation concerning their research and documentation on space requirements and the establishment of prison facilities, along with lectures from experts and related professionals, sparked student interest in human needs. Another pertinent example was the Mandela Rules and Bangkok rules, which students referred to when describing their designs and intentions during the final presentations. The instructors also observed a change in student attitude towards design that showed their sympathy and engagement in improving inmate conditions. They considered prisoners as 'users' or 'occupants' and thus accepted that the design needed to reflect their needs. This is different from how prison designs usually occur, where more concern is shown to incarceration features and the prison staff's safety.

The guests also appreciated the students' work, design development, active participation, and interest in the topic. While the ICRC generally welcomed the proposed solutions and suggestions to improve detention conditions, their representatives also accepted these as a basis for discussing future improvements. Since many existing prisons in Southeast Asia require improvement, it has been suggested that future projects should target prison improvement rather than offering designs for new facilities. TIJ and DOC representatives also welcomed the presented designs as intriguing suggestions to seek improvement. Additionally, they were impressed with students' willingness to show an interest in a normally stigmatic topic area, work on it sincerely and maturely, and discuss improvements.

In addition to the cooperation partners, public media were also invited to follow and report on the event: In addition to the final presentation, TV stations (Thai PBS, 2019) and several digital magazines (ADay, 2018; ICRC, 2019; Kerdsup, 2019; Sunthonchatrawat, 2020) and newspapers (Rojanaphruk and Charuvastra, 2020) presented selected works and interviews with lecturers, guests, and students. As their broadcasts and publications received considerable public attention, discussions, and debates began on social media. These were mainly about whether Thai society should pay attention to prisons and their conditions and whether they should serve as a place for punishment or rehabilitation. The public supported the presented student projects; however, negative comments were also made.

4.3 Reflective writing

Examining submitted reflective writing at the end of the semester, feedback revealed students had gained from their firsthand experiences and showed that they had formed an enthusiastic and inmate-focused perspective in undertaking prison architecture. Like their presentations, their writing also showed a positive and empathetic attitude toward improving prison conditions they had experienced. For example, as one group felt prisoners needed to have good relationships with their families to improve their social behaviour and reintegrate, suitable visiting facilities were designed as a venue to cultivate relationships and reduce prisoner stress. In another example, concerned about inmates' negative attitudes about their limited hope to improve their lives, students believed prisons must also be a place of opportunity and provide conditions to enable a person to have a positive attitude and motivation to strive for self-improvement. Suggestions included providing green spaces to allow prisoners to grow vegetables or ensuring adequate human conditions, such as sufficient cooling and ventilation, adequate personal space, and sanitary facilities.

5. CONCLUSION

A prison design task was assigned to improve undergraduate students' socially oriented design and thinking skills and integrate an open approach to learning and public engagement. To strengthen student knowledge base and clarity in the decision-making process, the task was to provide architectural solutions to improve human conditions in prisons and inspire inmates to develop their social behaviour and improve their attitude toward life. In cooperation with representatives from ICRC, DOC, and TIJ, a stepwise approach to gradually provide students with various information sources and learning experiences through contact with professionals, experts, and affected individuals while their design development was being created. The results analysis was based on instructor feedback on design proposals, presentations, discussions with stakeholders, and student self-reflection.

It was found that the teaching methodology integrated the design studio more closely into existing, design-relevant social issues, with proposed designs suggesting increased awareness and understanding of people-centered needs. Instructors agreed that student designs successfully focused on improving existing situations for prisoners and were able to address relevant questions and discuss their ideas with others critically and in the context of their proposals. In addition, their positive attitude showed their interest in deliberating and discussing such issues and willingness to change their position and attitude. Public accessibility to the results and the prevalent public stigma towards improving conditions for convicted offenders further helped students develop their reasoning skills.

As a result, engaging with societal aspects in architectural design studio education improved students' ability to consider user needs more sensitively and rationally. After the given assessment and feedback from faculty, staff, and students, the controversial topic and collaboration with relevant partners led students to employ critical thinking, discuss human-centric problems willingly, and create alternative design solutions for functional fulfillment. The continuous provision of information with different but respective thematic aspects from various interest groups enabled students to constantly deal with the design topic. This resulted in multiple variants in the resulting proposals that reflected the creative learning process. In addition to the discussed design intentions and effects on users, the need for students to present and discuss with relevant stakeholders and public media for a critical articulation of their designed proposals was seen as a positive and supportive element in the learning process. Anticipated improvements for future teaching practices include exploring a greater variety of relevant, critical, socially-oriented aspects of architectural design tasks while expanding collaboration and engagement with appropriate individuals or groups.

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