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Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency

Fitria Nuraini [a,1,*]

[a] Institut Seni Indonesia Surakarta, Jalan Ki Hajar Dewantara No. 19, Jebres, Surakarta, 57126, Indonesia.
[1] fitriaaini.me@gmail.com*
* Corresponding Author

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ABSTRACT

Floods frequently affect Bekasi Regency, causing significant damage and loss due to low public awareness of flood prevention. The Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi aims to reduce disaster risks by educating the community through various activities, including seminars, disaster exhibitions, video screenings, and flood disaster simulations based on guidelines from the Indonesian National Disaster Management Agency (BNPB). The design methodology follows the Kurtz Design Method, encompassing orientation, basic programming, programming repetition, and design stages. The design approach integrates functional, ergonomic, aesthetic, technical, and pandemic considerations. The outcome is an interior plan that emphasizes safety and comfort through appropriate facility design, space grouping, and zoning. Facilities include a lobby, auditorium, exhibition room, film screening room, disaster simulation room, reading room, souvenir shop, and café. Safety and comfort aspects are ensured through furniture, color selection, materials, lighting, acoustics, and security systems. Additionally, AR technology facilitates flood disaster education, particularly during the COVID-19 pandemic. The design incorporates the local theme of Bekasi, "Barongan" from the "Ngarak Barong" tradition, in a contemporary style.

KEYWORDS

Flood Disaster Mitigation Education Center

1. Introduction

Based on data from the Indonesian National Disaster Management Agency (BNPB), Bekasi Regency stands out as a particularly vulnerable area, with 53 identified flood points. Among these, the highest water level reached an astonishing 6 meters in Pondok Gede, highlighting the severity of the flooding in this region. Such extreme flooding not only disrupts daily life but also poses a serious threat to safety and wellbeing. The Bekasi Regional Disaster Management Agency (BPBD) further recorded that 104,404 families were affected by these floods, suffering both material and non-material losses. Tragically, the floods also resulted in five fatalities due to drowning and electrocution, underscoring the deadly potential of these natural disasters.

The significant impact of floods is exacerbated by the community's low awareness and preparedness for disaster prevention (Kurniawan et al., 2021; Lassa et al., 2023). Many residents, particularly those in the productive age group (25-29 years), lack adequate knowledge and preparation for flood disasters, as highlighted by a study conducted by Akhirianto (2018). This gap in knowledge and preparedness is a critical factor that increases vulnerability during flood events. Without proper understanding and preparation, communities are less likely to take proactive measures that could mitigate the impact of floods, such as creating emergency plans, securing property, or investing in flood insurance.

Efforts to mitigate flood damage can be significantly enhanced if the entire community engages in disaster mitigation practices (Nugraheni et al., 2022). Effective mitigation strategies include a combination of physical development—such as constructing flood barriers, improving drainage systems, and reinforcing infrastructure—and community education to build awareness and capacity to handle potential threats. By fostering a culture of preparedness, communities can reduce the risks associated with flooding and respond more effectively when disasters strike.

According to Soetaryono, early disaster education is essential for fostering a disaster-aware society (Ayuningtyas et al., 2021; Rozaki et al., 2021). Educating communities from a young age about the dangers of floods and the importance of preparedness can instill lifelong habits that contribute to overall safety. The BNPB plays a crucial role in this educational effort by providing guidelines and conducting disaster preparedness simulations for schools. These programs are designed to educate students on how to respond during a flood, thereby equipping the next generation with the knowledge and skills necessary to protect themselves and their families.

Table 1. The Level of Flood Disaster Preparadness (Akhirianto, 2018)

Variable	Percentage (%)
Community knowledge of flood factors:	
Flood as a disaster	46.67
Waste disposal	25
Natural factor	18.33
Flood as a puddle when it rains	10
Efforts to secure assets and investments in anticipating floods:	
Savings	15
Investation	28.33
Insurance	5
None	51.67
Community participation in flood preparedness activities:	
Once	13.33
Never	86.67

The choice of Bekasi Regency for the Flood Disaster Mitigation Education Center is strategic for two reasons. First, it is relatively safer than Bekasi City, which is more prone to flooding. Second, BPBD aims to increase the number of Disaster Response Villages (Destana) and Disaster Response Villages (Katana) to anticipate natural disasters. The following figure illustrates BNPB's data on flood vulnerability in Bekasi.

Table 2. Data recapitulation of the impact of floods and landslides (BNPB Indonesia)

No.	Affected Area	Number Affected		Maximum Water Level (m)	Current Water Level (m)	Number of Evacuees		Deceased	Missing	Number of Evacuation Points
		Subdistrict	Urban Village			Households (KK)	Individuals			
1	Kab. Bekasi	18	34	3	0,25–0,5	800	2.800	1		1
2	Kota Bekasi	12	51	6	0,2-2	34.683	149.537	9		97

The Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency will incorporate ergonomic, functional, aesthetic, technical, and pandemic considerations. The design rationalizes the requirements for educational museums, aligning with BNPB disaster education standards. Ergonomic considerations ensure safety and comfort through appropriate facility design, furniture size, color selection, materials, lighting, acoustics, and security systems. The design adopts the "Barongan" theme from the "Ngarak Barong" tradition, presented in a contemporary style. The goal of this research is to provide a comprehensive interior design plan for the Flood Disaster Mitigation Education Center that meets the community's needs for safety and comfort while enhancing disaster education through innovative methods, including augmented reality (AR) technology. This technology will be particularly beneficial during the COVID-19 pandemic, facilitating remote disaster education.

2. Methods

The methodology for the Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency follows the Kurtz Design Method (Kurtz, 2018; Lessinnes et al., 2023), which is specifically oriented towards addressing the evolving needs of the client. This method is structured into four main stages: orientation, basic program, programming repetition, and design. The orientation stage involves a thorough examination of the client's identity, philosophy, activities, and the goals to be achieved. This stage is crucial for understanding the specific requirements and expectations of the client, ensuring that the design aligns with the client's vision and objectives. Following orientation, the basic program stage encompasses a comprehensive literature review to gather information pertinent to the interior requirements of the planned building. This includes defining the space organization requirements, activity needs, sizes, and relationships between spaces. This stage lays the groundwork for the design by establishing clear and detailed programmatic needs.

In the programming repetition stage, the initial basic program is presented to the client for evaluation. Based on the client's feedback, the program is refined and adjusted. This iterative process involves presenting the initial design, incorporating client input, and developing a revised schematic design. This cycle is repeated until the client approves the final program. The final stage is the design phase, where the approved program is translated into a comprehensive design schematic. This involves detailed planning and development of the interior spaces, focusing on functionality, ergonomics, aesthetics, technical requirements, and pandemic considerations. The design also integrates the use of AR technology to facilitate flood disaster education, particularly during the COVID-19 pandemic.

3. Results and Discussion

3.1 Design Results

The interior is meticulously organized into several key areas, each designed to facilitate a variety of educational activities and services, from immersive exhibitions to hands-on disaster simulations. These spaces are not only functional but also aesthetically pleasing, enhancing the overall learning experience for visitors. For example, the design incorporates thematic elements that reflect the natural environment, using colors, textures, and materials that evoke a sense of connection to the themes of water and disaster mitigation.

The servicing system at the Flood Disaster Mitigation Education Center in Bekasi Regency utilizes a cluster system to manage visitor arrangements during disaster education activities. This system adheres to the health protocols set by the Minister of Health of the Republic of Indonesia, especially in response to the COVID-19 pandemic. The operational time is carefully adjusted to allow for regular disinfection, ensuring both safety and comfort for visitors. Aesthetically, the layout and interior elements are designed to be both visually appealing and conducive to learning. The lobby and exhibition areas feature dynamic displays and interactive elements that capture the attention of visitors, while the simulation rooms are designed with immersive environments that realistically depict flood scenarios. This blend of functionality and aesthetics is crucial in making the educational content more engaging and memorable.

The following is the service time schedule, designed to optimize visitor flow and ensure compliance with health protocols. The first is Lobby, 3D film screening, reading room, staff office, café, and souvenir shop at 09:00–15:40 WIB. Simulation room, on the other hand, opens at 09:00–15:35 WIB, accommodating 9 groups with a 30-minute duration per cluster. Auditorium opens at 09:00–13:00 WIB, limited to one event per day with a duration of 3 hours. Visitors can purchase tickets either directly or through reservations, with virtual tours also available via the Bekasi Regency Flood Disaster Education Center's website.

Table 3. The space requirements of Flood Disaster Mitigation Education Center

Education	
Exhibition	Exhibition, control room
Auditorium	Lobby, seminar room, control room, transit room, warehouse, rest room
3D Film Screenings	Lobby, 3D film screenings, control room
Reading Space	Reception, reading space, warehouse
Simulation room	Lobby, Pre-disaster room (a living room), Disaster room (disasters display, evacuation room), Post-disaster room (an interactive room)
Supporting space (commercial)	
Café and souvenir shop	
Service	
Lobby, clinic, praying room, public rest room, staff restroom, pantry, warehouse, mechanical room, security room, janitor	
Manager	
Director room, manager of education, manager of simulation, manager of maintenance, meeting room	

3.2 Grouping and Zoning

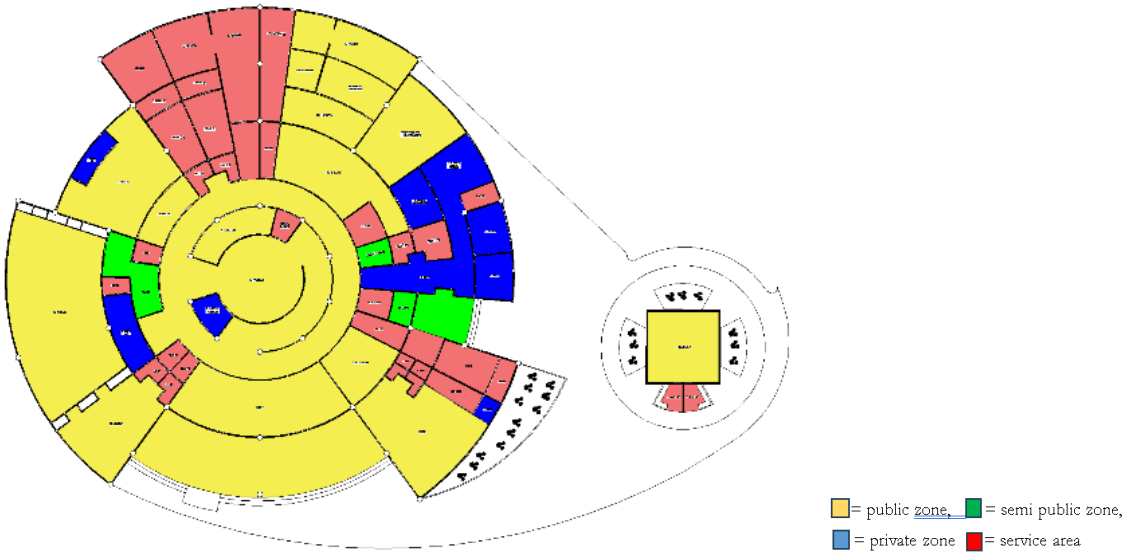


Fig. 1. Grouping and Zoning of Flood Disaster Mitigation Education Center

The design incorporates a grouping and zoning strategy to divide the space based on its nature (fig. 1). The design of the space utilizes a grouping and zoning strategy that divides the area based on its function and accessibility. The Public Zone, marked in yellow, is accessible to everyone, including visitors, guests, and managers. This zone includes spaces like the lobby and exhibition rooms, which are specifically designed to welcome the public and provide education on flood disaster preparedness.

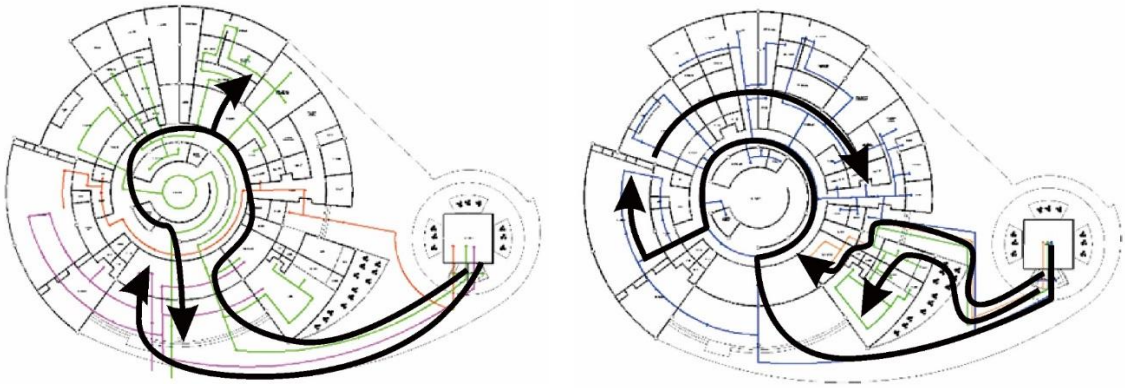
Moving to the Semi-Public Zone, identified by green, this area contains spaces where activities are not directly related to public interaction but involve both managers and guests. It encompasses meeting rooms and administrative offices, where operational and managerial tasks are conducted. The Private Zone, highlighted in blue, is dedicated to spaces that require a high level of privacy and are not accessible to the general public. This zone includes staff offices and maintenance areas, ensuring that

private work and sensitive operations can take place without external interference. Lastly, the Service Zone, shown in pink, consists of service rooms that support user needs and provide essential facilities. This includes restrooms and storage areas, which are crucial for the overall functionality of the space and ensuring the comfort of its users.

3.3 Circulation

Fig. 2 illustrates the application of radial circulation in the design of the Flood Disaster Mitigation Education Center. Radial circulation is a strategic layout that facilitates movement from a central point, extending outward to various functional areas. This design approach not only ensures an efficient flow of different user groups, including tour visitors, seminar participants, education center managers, café managers, and shop managers, but also carefully considers the in-out flow of traffic within the center.

The circulation paths are designed to manage the entry and exit points efficiently. The main entrance serves as the primary access point, guiding users into the central hub of the center. From this central point, users are directed outward to specific functional areas, such as exhibition halls, simulation rooms, and seminar spaces. The radial layout ensures that all areas are easily accessible from the center, with clearly defined pathways leading in and out of each space. The exit routes are strategically positioned to ensure a smooth transition from one area to another, minimizing congestion and enhancing the overall user experience. For example, after visiting the exhibition hall, users can easily navigate towards the simulation rooms or exit towards the café and shop areas without backtracking. This organization of entry and exit points is crucial in managing large groups, allowing for a seamless flow of movement throughout the center.



(a) Circulation of tour visitors, seminar participants, and seminar guests

(b) Circulation of education center managers, cafe managers, and shop managers

Fig. 2. Circulation of Flood Disaster Mitigation Education Center

3.4 Functional Approach

According to Feldman, the function of art is divided into three categories: personal, social, and physical functions. The personal function can be defined as the characteristic of a design (Wei et al., 2020). In the context of the Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency, the personal function is represented by the characteristic arch shape and the combination of red and plaid motifs that dominate the wall elements and space fillers. These characteristics are evident in the millwork, chairs, and cashier tables in the café, playing a role in supporting practical and visual functions within the center. The social function of the Interior Planning of the Flood Disaster Mitigation Education Center involves the use of AR technology as a virtual tour learning media. This technology facilitates disaster education for the public, especially during the COVID-19 pandemic, which limits human mobility. The AR technology ensures that educational content is accessible, engaging, and interactive, enhancing the overall learning experience (Iftene & Trandabăţ, 2018).

3.5 Theme, Interior Style, and Technology Integration

The design employs a contemporary style, characterized by its evolving nature and reflection of modern times. This style does not adhere to a specific historical period, making it "timeless" and suitable

for a diverse audience ranging from children to adults. The contemporary approach ensures that the design remains relevant and appealing, incorporating modern aesthetics while respecting traditional elements. To enhance the educational experience, AR (Augmented Reality) technology is integrated into the center's design. This technology is utilized in digital displays that provide interactive and engaging information about flood events in Bekasi. The use of AR allows visitors to access detailed and immersive educational content, making the learning process more effective and enjoyable.

The interior planning of the Mitigation Education Center is also responsive to the current COVID-19 pandemic conditions. The design follows the health protocol standards outlined by the Minister of Health of the Republic of Indonesia (Number Hk.01.07/Menkes/382/2020), ensuring that the space is safe and hygienic for all users. Key measures include:

- Regular room disinfection programs to maintain cleanliness.
- Provision of hand washing facilities throughout the center.
- Implementation of physical distancing through marked stickers and rearranged seating.
- Maze-shaped space organization to manage visitor flow and minimize contact.
- Optimization of natural sunlight by using ceiling skylights to enhance air quality and reduce the reliance on artificial lighting.

These adaptations ensure that the center remains a safe environment for visitors, allowing educational activities to continue effectively even during the pandemic. By integrating local cultural themes, modern technology, and pandemic-responsive design, the Flood Disaster Mitigation Education Center offers a comprehensive and resilient educational platform.

3.6 Layout

The layout follows the Kurtz design method, ensuring that the design is both functional and adaptable to the evolving needs of the Flood Disaster Mitigation Education Center. In this process, it is essential to engage directly with stakeholders who have direct expertise and responsibilities related to the project, rather than relying solely on input from students and academic advisors. This approach ensures that the design solutions are more accurately aligned with the real-world needs and expectations of the institution.

To refine and optimize the spatial arrangement, the design process involves several evaluation stages. The first evaluation stage includes a critical modification: the addition of a door to provide direct access from the lobby to the exhibition hall. This change significantly improves the flow and accessibility for visitors, ensuring a seamless transition between spaces. Furthermore, the layout includes an initial configuration of key areas such as the auditorium, simulation rooms, film screening rooms, and management offices. In subsequent evaluation stages, further adjustments are made, incorporating feedback from stakeholders with direct knowledge and experience in disaster mitigation. These adjustments are aimed at enhancing both the functionality and aesthetics of the space, ensuring that the final design effectively meets the needs of the Flood Disaster Mitigation Education Center (Haque et al., 2022). These include:

- Adding a lobby area adjacent to the auditorium, simulation rooms, film screening rooms, and management offices.
- Introducing sofa furniture in the lobby to create a comfortable waiting area for visitors.
- Reorganizing the café kitchen space to improve operational efficiency.
- Modifying the spatial arrangement between the meeting room and the headroom of the education center.

These changes aim to enhance user experience by providing spaces that are both comfortable and easily accessible. The integration of grouping and zoning, circulation pathways, and thematic elements into the design considers not only functional and aesthetic aspects but also operational efficiency and safety. The final evaluation ensures that the layout meets the accessibility and functionality requirements for all users (Tan et al., 2020). This involves a detailed assessment of space usability, furniture placement, and overall design coherence, focusing equally on operational functionality and aesthetic appeal. The iterative process of evaluating and refining the layout ensures that the final design of the Flood Disaster Mitigation Education Center is both practical and visually pleasing, with each stage addressing specific

operational needs and challenges. The result is a comprehensive design that supports the center's educational mission while maintaining a balanced focus on functionality and aesthetics.

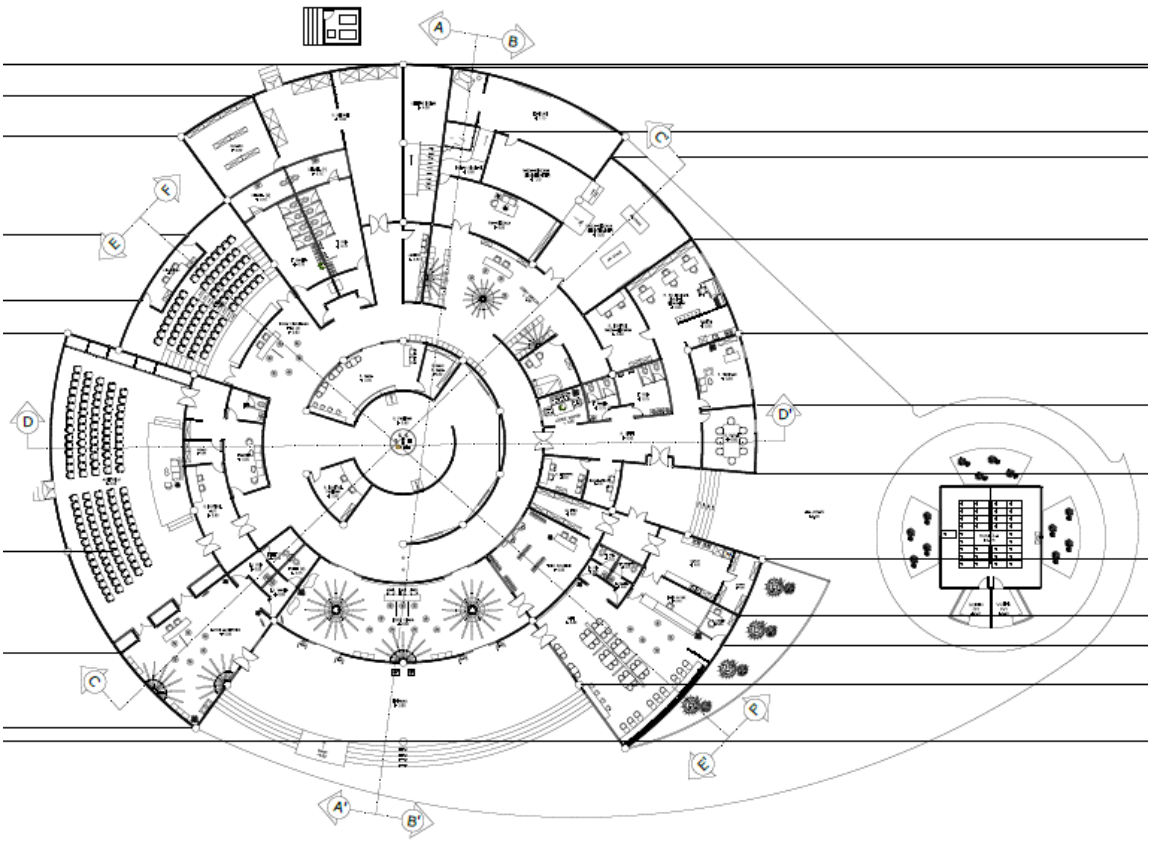


Fig. 3. Final Evaluation

3.7 Space Forming Elements

The interior design incorporates various materials, colors, and textures to enhance the aesthetic and functional aspects of the center. Each element is chosen based on ergonomic considerations, ensuring safety and comfort for users.

Fig. 4. Main Lobby of Flood Disaster Mitigation Education Center

The main lobby of the Flood Disaster Mitigation Education Center is designed to create an inviting and informative environment. The walls of the reception area are covered with millwork made of plywood with HPL Glossy Red Ex finishing, AICA gingham wood stickers, and beige wall tiles. The millwork is a transformation of the male "Barongan" head and body, which gives an impression of alertness, aligning with the center's vision of disaster mitigation. The red color used in the millwork is intended to evoke a sense of urgency and awareness.

The walls in the lobby are also finished with Shoutern Shadown Ex paint by DULUX. The floor is made of Terrazzo Orange Classic 60x60 brush-polished Ex material by TERRAMIX, combined with 30x30 cm ceramics arranged to resemble a chessboard, representing the "Barongan" clothing motif. The ceiling is designed as an up ceiling made of gypsum board with a white wall paint finish. The doff dominant texture of the ceiling provides comfort to the space users, creating a calm and welcoming atmosphere.

Fig. 5. Exhibition room of Flood Disaster Mitigation Education Center

The exhibition room applies a 5 cm Sungkai woodstrip wall covering, combined with Frosty Feeling and Deep Lead Ex wall paint by DULUX and custom wallpapers. The floor is made of Santiago Rec Gray 60x60 ceramic with a matte texture, providing a durable and easy-to-maintain surface suitable for high-traffic areas. The ceiling of the exhibition hall is made of gypsum board with white wall paint and features polycarbonate skylights with clear glass finishing. These skylights allow natural light to flood the space, enhancing the visibility of exhibits and creating a more engaging visitor experience.

Meanwhile, the auditorium lobby is designed to create a welcoming and functional space for visitors. The walls are finished with Shoutern Shadow Ex wall paint by DULUX, custom wallpaper, and beige wall tiles. The floor uses Hilton Cream Tile 50x50 ceramic with a glossy Ex texture by Platinum, which adds a touch of elegance and durability. The ceiling is made of gypsum board with white wall paint finishing, providing a clean and smooth appearance. The auditorium room itself features wall coverings in the form of custom panels that depict the "Kembang Kelape" motif. These panels are finished with HPL Febe Noce Portofino Ex by LAMITAK and Frosty Feeling Ex wall paint by DULUX, creating a visually appealing environment. The floor is covered with Wall to Wall Carpet Beige 02 Ex by Decorindo Perkasa, offering acoustic benefits and comfort. The ceiling is designed with "steps" to reflect noise from loudspeakers, made of multiplex with white wall paint finishing.

The 3D film screening area includes a lobby and the screening room itself. The lobby uses wall coverings made of Hazel Brown Ex wall tiles by KIA and millwork made of plywood finished with HPL Runa Nevada Ex and HPL SHG 1163 Ex by LAMITAK. The ceiling is made of 2 cm thick gypsum board with white wall paint. The floor is made of Terrazzo Orange Classic 60x60 brush-polished Ex by TERRAMIX, providing a durable and easy-to-maintain surface. The 3D film screening room uses wall coverings in the form of Rockwool acoustic walls covered with black cloth. This material is chosen for its sound absorption properties, ensuring an optimal viewing experience. The ceiling features acoustic designs with boxes and steps made of multiplex coated with HPL Febe Noce Portofino WY 1267D Ex by LAMITAK. The floor is an acoustic floor made of multiplex covered with Wall to Wall Carpet Dark Beige 03 Ex by Decorindo Perkasa.

Fig. 6. Lobby Simulation

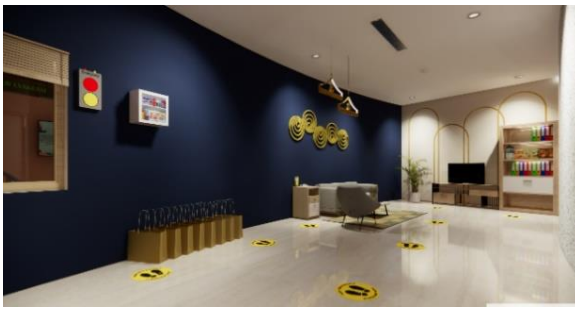


Fig. 7. Pre-Disaster Room

The simulation lobby (fig. 6) is designed to provide a welcoming and functional space for participants in disaster simulations. The walls are covered with Shoutern Shadow wall paint, built-in cabinet finishes with HPL Runa Nevada, and 5 cm Sungkai wood panels. The floor is made of Hazel Brown 50x50 ceramic tiles with a glossy texture, providing durability and ease of maintenance. The ceiling is made of gypsum board with white wall paint, creating a clean and neutral background that highlights the interactive elements of the space. The pre-disaster room (fig. 7), which is part of the simulation area, uses wall coverings made from Deep Sea wall paint, Shoutern Shadow, Frosty Feeling Ex by DULUX, and HPL Terrazzo Ex by LAMITAK. The floor is finished with Hazel Brown 50x50 glossy Ex tiles by Platinum. The ceiling is made of gypsum board with white wall paint. Dark blue colors are used in the pre-disaster room to help visitors focus during simulation activities.

Fig. 8. Disaster Display Room

Fig. 9. Evacuation Room

In the disaster simulation room (fig. 8), the walls are covered with flood-themed wallpaper and HPL Febe Noce Portofino Ex by LAMITAK. The floor is made of cast concrete, covered with a custom mural depicting flood water, and custom printing carpet. The ceiling features metal wave corrugated materials to give the impression of being "drowned in water," enhancing the realism of the simulation. The evacuation room, part of the simulation suite, uses San Mateo Ex paint wall covering materials by DULUX, evacuation area-themed wallpaper, and Deep Lead Ex by DULUX. The floor is finished with Hampton Brown 50x50 ceramic tiles with a matte texture. The ceiling is designed using lambersering meranti ceiling 7 cm in fin. Dark Oak and 8 mm transparent polycarbonate, allowing natural light to enter the room.

Fig. 10. Post-Disaster Room

Fig. 11. Reading Space

The post-disaster room (fig. 10) is designed to provide a realistic environment for simulating post-disaster scenarios. The walls are covered with HPL Febe Noce Portofino Ex by LAMITAK, giving the room a polished and professional appearance. The floor is made of Hazel Brown 50x50 ceramic tiles with a glossy finish by Platinum, providing durability and ease of cleaning. The ceiling is made of gypsum board with white wall paint, ensuring a clean and neutral look that complements the other design elements. The reading space (fig. 11) is designed to be a comfortable and inviting area for visitors to engage with educational materials (Freihoefer et al., 2015). The walls are covered with Shoutern Shadow Ex paint by DULUX and beige wall tiles, creating a warm and welcoming atmosphere. The floor is made of Hazel Brown 50x50 ceramic tiles with a glossy texture, providing a cohesive look with the post-disaster room. The ceiling is made of gypsum board with white wall paint, maintaining a consistent and clean aesthetic throughout the space.

The café area is designed with wall coverings made from Shoutern Shadow Ex wall paint by DULUX and millwork finishes with HPL Glossy Red Ex by AICA. The floor uses Isildur White Tile 40x40 ceramic tiles with a matte Ex texture by Cotto, providing a clean and modern look. The ceiling is made of gypsum board with white wall paint, ensuring a consistent design throughout the space. The café is intended to be a relaxing area for visitors to unwind and enjoy refreshments, with a design that complements the overall aesthetic of the center. The souvenir shop features exposed concrete walls and millwork made from 5 cm Sungkai wood panels with HPL Marble ASW 14160 KM Ex by AICA on the walls. The floor is made of Alaska Gray Tile 40x40 ceramic tiles with a matte Ex texture by Platinum. The ceiling is designed with gypsum board and white wall paint, maintaining the cohesive design language of the center. The shop is designed to provide visitors with a variety of souvenirs, enhancing their overall experience at the center.

The interior design of the Flood Disaster Mitigation Education Center in Bekasi Regency successfully combines traditional cultural elements with modern aesthetics to create a functional and engaging environment for disaster education. The thoughtful selection of materials, colors, and textures ensures that each space is both practical and visually appealing, enhancing the overall visitor experience. The integration of ergonomic considerations, cultural themes, and high-quality materials supports the center's mission of disaster education and mitigation, providing a comprehensive and enriching experience for all visitors.

3.8 Space Filling Elements

The Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency adopted the "Barongan" theme from the Bekasi "Ngarak Barong" tradition for the design of space-filling elements. The theme of "Barongan" is transformed into furniture and decorative elements throughout the center, enhancing the cultural relevance and aesthetic appeal of the spaces. The welcoming door at the entrance of the main lobby is a prominent feature designed to greet visitors. The form of a pair of Barongan figures is placed in front of the main lobby door, symbolizing protection and hospitality. This placement aims to create a welcoming atmosphere for guests entering the Flood Disaster Mitigation Education Center.

The head and body of the Barongan are the upper and middle structures of the figure. The face is red (in males), equipped with handles (crown), has big eyes, and fangs. Checkered clothes complete the traditional look. This form is transformed into millwork in the main lobby, adding a unique and culturally significant touch to the space. The head, body, and legs of the Barongan were transformed into sofas placed in the main lobby and auditorium lobby. These sofas are not only functional pieces of furniture but also serve as artistic representations of the local tradition, making the waiting areas visually interesting and culturally meaningful. The female Barongan's stangan (crown) was transformed into a reception desk in the main lobby, auditorium lobby, film screening lobby, and disaster simulation lobby. This transformation merges traditional aesthetics with modern functionality, creating reception areas that are both stylish and representative of local heritage. The use of "Barongan" elements in the design of the Flood Disaster Mitigation Education Center highlights the importance of integrating local cultural themes into modern spaces. This approach not only preserves cultural heritage but also enhances the aesthetic appeal of the interior spaces.

3.9 Conditioning System

The system of room conditions plays a crucial role in ensuring the comfort and safety of users within the Flood Disaster Mitigation Education Center in Bekasi Regency. The interior planning incorporates comprehensive systems for lighting, air conditioning, acoustics, and security to create an optimal environment for disaster education and preparedness activities (Awada et al., 2021; Helmy Almaz, 2022; Yang et al., 2022). The center employs both natural and artificial lighting to enhance visibility and create an inviting atmosphere. Natural lighting is harnessed through the use of sunlight, particularly in areas such as the lobby, souvenir shops, and cafés. These spaces feature large glass windows and skylights, allowing ample sunlight to penetrate the rooms. The exhibition hall and disaster evacuation room are designed with polycarbonate skylights, which provide a consistent influx of natural light, reducing the need for artificial lighting and creating a bright, open environment. The ventilation system combines natural and artificial methods to ensure a comfortable indoor climate. Natural ventilation is achieved through strategically placed window openings and vents that facilitate airflow. This is complemented by artificial ventilation systems, including AC ducting and exhaust fans, which provide consistent air circulation and temperature control. This dual approach ensures that the indoor environment remains fresh and comfortable, regardless of external weather conditions.

Acoustic design is essential in creating an environment conducive to learning and interaction. The center uses a combination of surround speakers and ceiling speakers to distribute sound evenly throughout the spaces. Rockwool acoustic walls are employed as dampers to minimize noise pollution and enhance sound quality. This setup is particularly important in areas like the auditorium and 3D film screening rooms, where clear audio is crucial for effective presentations and simulations. The conditioning system of the Flood Disaster Mitigation Education Center is meticulously designed to support its educational objectives while ensuring a safe, comfortable, and engaging environment. The integration of natural and artificial lighting enhances the visual appeal and functionality of the spaces (Soden et al., 2021). Effective ventilation systems maintain air quality and comfort, while advanced acoustic solutions ensure clear communication and an immersive experience. The robust security measures provide a safe environment for all activities, aligning with the center's mission of disaster education and preparedness.

The security of the center is maintained through an integrated system that includes smoke detectors, fire sprinklers, and closed-circuit television (CCTV). These systems are strategically installed to ensure comprehensive coverage and rapid response in case of emergencies. Smoke detectors and fire sprinklers are critical for early detection and suppression of fires, while CCTV cameras monitor activity throughout the center, enhancing overall security and safety for visitors and staff

4. Conclusion

The Interior Planning of the Flood Disaster Mitigation Education Center in Bekasi Regency serves as a vital learning and education center focused on flood disaster awareness strategies. Under the auspices of BNPB Indonesia, this center aims to provide essential knowledge and training to the people of Bekasi, helping to mitigate the negative impacts of flood disasters. The center's design rationalizes the interior layout to effectively support its educational objectives. The interior planning of the Flood Disaster Mitigation Education Center in Bekasi Regency has successfully merged functional design with cultural heritage, creating a space that not only serves its educational purpose but also resonates with the local community. By integrating ergonomic, functional, aesthetic, technical, and pandemic-responsive considerations, the design ensures a safe, comfortable, and engaging environment for all users. The incorporation of the "Barongan" theme and the use of Augmented Reality (AR) technology further enhance the educational experience, making the center both a place of learning and cultural preservation.

This research contributes significantly to the field of interior design by demonstrating how traditional cultural elements can be effectively integrated into modern, functional spaces. The use of AR technology in disaster education is particularly innovative, offering new ways to engage and educate the public, especially during times when physical interaction may be limited, such as during the COVID-19 pandemic. Future research and development could focus on further refining the integration of

technology in educational spaces, exploring how immersive and interactive digital tools can enhance learning outcomes. Additionally, expanding the design framework to other disaster education centers across Indonesia could help standardize best practices in creating culturally relevant and functionally robust educational environments.

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