The Evaluation of Interior Design Elements in Nature Interpretation Centre

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ABSTRACT

Interior design is the study of spaces, and spatial experiences at the scale of intimate human experience also operate at the intersect between architecture and industrial design. The interior environment should be started during the design process rather than added after the design finished. Unfortunately, thus far, relative lack of research has focussed explicitly on the role of the physical environment of visitor centres, and the impact of interior and external setting design likewise lack research about media impact on people interaction. Therefore, this study aims to identify the best design elements in interpretation according to visitors perspectives. Two objectives are leading in this study: i) to determine the type of interior physical setting in the interpretation centre, ii) to identify the criteria fulfil the interpretive design element in interpretation centre. This study was conducted at the Nature Interpretation Centre (NIC) Taman Wetland Presint 13, Putrajaya. Based on analysis shows that the particular factor needs a significant change for both elements, interior design physical setting, and interpretive design. There is successful physical setting design such as ventilation, incorporation with nature, texture and universal design and the other which is so critical is the failure function of notices and signage. The interpretive design is symbolic or abstract modality need a new transformation because the management has no initiative to update the latest version of a design. NIC Taman Wetland should offer the latest application on technology and design to build an attractive interpretation centre.

Keywords: Interior design; Interpretive; Nature interpretation centre; Physical setting; Taman Wetland

INTRODUCTION

The interior design industry has focused on research based-design as a license to sustain the profession, expand a body of knowledge, and increase professional attribution [1]. Spaces and spatial experiences at the scale of intimate human experience have been studying in interior design. Interior design functioning at the intersection between architecture and industrial design. The improvement of the environment through design, develop aesthetics, functionality, and productivity. Design a centre; the interior design must be considered, as a solution for interior movement in layout space. Therefore, the element interior design in the building is how visitors experience the three-dimensionalities of a building through the movement of bodies with full consideration of time, sequence and space [2]. Several researchers only defined the interior circulation, while Black in his study defines interior circulation in the buildings as walking areas on all floors of a building required for physical access to some sub-zoning of space, whether physically bounded by partitions or not [3]. Including horizontal and vertical circulation,

which should be but is not limited to, public corridors, exhibition spaces, entrance foyers, elevator lobbies, tunnels, bridges and each floor [3].

It becomes the fact that centre can be more successful if designers apply and implement the principles of circulation to the design process. Visitors tend to be more satisfied when the exhibition designed with full consideration of the factors that determine circulation actions [4]. Thinking about the interior environment, it should be started during the centre design process rather than modified after the design finished. In addition to that, the circulations factors and considerations physical design should be an essential part of the centre design, launching with the planning stage and continuing through design [5]. Elements design should be defined by visitors and adjusted according to the visitor's input and not solely by designers who may not be able to predict the impact of these elements on visitors [6]. It becomes the fact that the efficiency of the interior physical system in the centre determined by the primary shape and form of building itself. Researchers stated that the time needed by a visitor to move from one area within

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the building to another area and the enjoyment of doing this by visitors are affected by the building form and accessible style that is designed [7-9].

However, there is a limitation for discussing design element in interpretation centre [10-12]. Only a few studies have explored the criteria and element interpretive in interpretation centre. Most research has focussed on the role of the physical environment of a visitor centre and the impact of interior and external setting design [13]. Ware explained that the poor design would make one uncomfortable even if they are familiar with it. The interior design needed to learn, so that it can be applied appropriately [14,15]. To develop the centre, element in the design and interpretation centre need to study properly to giving the satisfaction, experience, mood, and ambience to the visitor. Other than that, elements design should be defined by visitors and adjusted according to the visitor's input and not solely by designers who may not be able to predict the impact of these elements on visitors [6]. Besides that, the low level of understanding by visitors is a factor failure of nature management.

At the same time, there is lacking research about interpretive on people interaction. The main issues in the tourism field are interpretation and heritage management [10-12]. The little of research on interpretive design, form the negative impact of experiences the visitors. Meanwhile, Stewart and Poria, Biran and Reichel call for further research in the field of interpretation as a means of exposing the complexities and relationships between interpretation, visitors, and place [16,17]. Poria, Biran and Reichel also suggests investigating visitors preferences and experiences of interpretation methods at 'less serious,' 'less sacred,' or 'less religious' [17]. In the other side, the interpretation issues which Howard emphasizes is the challenge to realize that individuals understand on sites according to their perception, and as a result, the different people characteristic will be a different meaning to the same object [18]. The level of understanding is different even though looking at the same sources, and also be a question of, how the visitor evaluates on the interior physical setting in the interpretation centre. Thus, the objectives of this study are i) To determine the type of interior physical setting in the interpretation centre, ii) To identify the criteria fulfill the interpretive design element in interpretation centre. The contribution of this study will improve interior design elements in the interpretation centre, especially in NIC, Taman Wetland.

LITERATURE REVIEW

Interpretation is a conversation, interaction, or any communication that enriches the visitor experience, by making meaningful connections between the messages and the emotional-intellectual world of the visitor [19]. The element of design plays an extremely role in communicating the content of interpretation and shaping visitor experiences, design in this context is under-theorized and poorly understood. Interpretation design applies the principles and philosophy of heritage interpretation through diverse media and other methods [20-23]. Design strategies help to form the visitor experience and knowledge, layered messages, ideas, and information, encouraging visitor engagement with topics ranging from natural and cultural heritage to science and social issues [24].

The Physical interior environment setting in interpretation centre

The design of the physical environment should facilitate a child's

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sense of ability (their capacity to explore their physical world with independence), creating opportunities for learning and play [25]. Two specific physical environment design dimensions are believed to be most influential in learning, spatial quality (through space, colour, light, noise, and materials), and integration of outdoors and the indoor environment [13]. In designing a better way of interior physical environments in public interpretation centre, several criteria and parameters need to be taken into account. The physical environment comprises of elements of interior such as space planning, scaled furniture, ceiling height, materials and furnishes, lighting, color, temperature control, ventilation, the selection of theme, acoustic, texture, use of art, ergonomic, universal design, sustainability, incorporation with nature, notices and signage and safety and security [26-28]. These design elements directly impact the dimensions of social, emotional, intellectual, occupational and spiritual wellness.

i. Space planning: The best layout plan of a learning environment is 'modified open plan facilities,' retaining the best of open and closed plan facilities. Space relates to the actual building or room including the walls, floors, ceiling, doors, and windows that the people can work with it. In a follow-up study by ASID employees were asked what they want in their great workplace [29]. Thirty per cent of the employees mentioned access as necessary in the office environment. They related to access to the proximity of spaces that accommodate the tasks they need to execute, access to people. The circulation of space should be considered for systematic traffic flow on a particular area to avoid a crowded situation such as space for play. Crowded will create an uncomfortable feeling and safety.

ii. Scaled furniture: Varieties of comfortable furniture, different zones and places to gather or be alone can provide different types of users with just what they need [3]. Seating space is not a crucial element in interpretation centre, but most centre provides space for seating at specific area liked refresh area and waiting area. Based on the user feedback on seating, they find it convenient to form informal discussion spaces with the movable seats. People are attracted to this area by the striking colour and 'cool' atmosphere [3]. Cabinets designed to store equipment or personal belongings aimed to be accessible to children should be low to promote children's independence. The design of moveable storage units contributes to program flexibility. Refer to specific program areas for recommended dimensions [27].

iii. Ceiling height: Little research has explored vertical space (height), although Read, Sugawara, and Brandt found that continuous bland ceilings had a negative impact on a child's cooperative behavior whereas dissimilarity ceiling height had a positive impact, creating different experiences and social exchange [12]. When a person is in a space with a 10-foot ceiling, they will tend to think more freely, more abstractly [17]. They might process more abstract connections between objects in a room, whereas a person in a room with an 8-foot ceiling will be more likely to focus on specifics [17]. While some of the physical components related to the volume of space, such as the ceiling height giving an impact to the visitor, was perceived as producing a feeling towards creativity and collaboration, a few participants described the feeling of being productive in their workplace.

iv. Materials and furnishes: According to the Ministry of Children and Youth Services, the selection of materials and should consider the existing floor temperature in infant and toddler areas [27]. Refer Table 1 for the type of material and furnishers.

Sl. No	Materials	Furnishes
1	Floor	 Durable, easy to clean, and maintain. The surfaces of ramps, landings and stair treads shall have a finish that is slip resistant and have either a colour contrast or a distinctive, pattern to demarcate the leading edge of the stair tread, landing, as well as, the beginning and end of ramp. In rooms where food or drink are prepared, stored, or served, and in washrooms, floors and floor coverings shall be tight, smooth and non absorbent.
2	Carpet	 Carpets are not recommended throughout a centre, if carpet is desirable, consider carpet tiles. Non-abrasive materials with a non-slip backing. Conducive to high frequency of clean or washing.
3	Wall	 Cement board in all wet areas. Wall protectors and corner guards on the lower half of the wall in high use areas. Materials such as vinyl wall covering for durability and ease of maintenance, vinyl provides a tackable surface from floor to ceiling.

Table 1: The Type of Materials and Furnishes.

Source: Ministry of Children and Youth Services [27].

Table 2: Primaries Colour Result.

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Source: Stewart [30].

v. Lighting: Natural light and views are a significant preference. Operable windows are preferred even when the building is airconditioned, exterior windows promote engagement with the outside world. Windows that open into corridors or between rooms help people to see themselves as part of a larger community. They also permit visual supervision by staff from adjoining rooms. Light can be shared from one room to the others by extending existing windows. Fluorescent light is the most efficient and cost-effective form of artificial lighting [27].

vi. Color: Red, green and blue is an additive primary colour [28]. Combining two primary colours yields a secondary colour, magenta from red and blue, cyan from blue and green and yellow from red and green [28]. Combining all three additive primaries results in a white [14]. Refer Table 2 for primaries of colour.

Colour, when applied in the interior space, can have a significant impact on the occupants of that space. Colour mixed with light will alter a person's perception of visual contrast. Visual contrast greatly influences people's notion (mood and behavior) of the interior surrounding. Temperature is the heat or coolness a colour creates psychologically [30,31]. The warm colours red, orange and yellow remind us of fire and sunlight, and so they create a sense of warmth in an image [32]. The cool colours blue and green remind us of water and plants, and so they create a feeling of coolness in images [32]. Colour schemes, or colour harmonies, have been developed to help designers choose colours that work well together [31]. Colour when appropriately applied in the interior environment, it can produce an impact on the residents within that space. Colour mixed with light will alter a person's perception of visual contrast. Visual contrast greatly influences people's perceptions of interior environments. It can positively influence mood and behavior directly.

vii. Temperature control: Temperature is a liability in climates where it is consistently too hot or too cold (Table 3). Where temperatures are predominantly too hot, building for comfortable interior temperatures may include the following suggestions [33].

viii. Ventilation: In a study conducted at the Polaroid Corporation,

the sick leave of employees was measured in relationship to increased ventilation rates. Increasing ventilation rates, while lowering humidity, was shown to reduce the sick leave rate almost as much as workforce flu vaccination. On average, employees took five sick days per year due to illnesses caused by low ventilation in their work area [34]. To control the circulation of ventilation, the pollutants out of the building, the selection furnishings and finish materials carefully, install and correctly maintain the most efficient filters based on the air-handling system capacities. Other than that, the application of exhaust fans to capture and remove pollutants introduced by people, such as perfumes, from equipment, such as copiers and printers and localized sources in storage areas. To control pressures between zones to keep pollutants from migrating to areas of low pressure.

ix. The selection of theme: The key stories or concepts are the definition of themes. Themes provide the foundation for all interpretive programs and media developed in the park. They tell interpreters and designers what the most important ideas or stories are. They do not include everything we may wish to interpret, but they do cover those ideas that are critical to visitors [26]. The use of a single theme as the linking concept or one large idea which connects a set of facts, topics or examples was first proposed by Tilden [35]. A theme is a single message that can be described in an active sentence. An example, the topic is worms, the theme is 'a healthy worm community provides many surprising benefits to humans,' and the displays demonstrate all the soil based functions of a worm colony [26].

x. Acoustic: Noise is inhibiting effective work. Exposure to uncontrollable noise has a negative impact on children's cognitive development, reducing memory, language and reading skills [36]. Locate service and maintenance functions away from public areas. Space interpretive stops so that natural or site-specific sounds dominate. Vegetation to baffle sound between public and private activities, and orient openings toward natural sounds such as the lapping of waves, babbling of streams, and rustling of leaves.

xi. Texture: Actual, or tactile, texture can be felt [32]. In two

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Table 3: The Suggestion of	Temperature Control.
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Where temperatures are predominantly too hot	Where area temperatures are predominantly cold				
• Connect separate rooms and functions with covered breezeways.	• Consolidate functions into the most compact configuration.				
• Maximize wall shading and induce ventilation.	• Insulate thoroughly to minimize heat loss.				
• Provide shaded outdoor living areas such as porches, patios, and decks.	 Minimize air infiltration with barrier sheeting, weather stripping,sealants, and air lock entries. 				
 Capitalize on cool nighttime temperatures, breezes, or ground temperatures. 	• Minimize openings not oriented toward sun exposure.				
	• Avoid negative building pressurization to reduce pounds of force: required to open the door				

Source: US Department of the Interior Bureau of Reclamation Denver [32].

dimensional-design, actual texture is in the feel of the canvas or the surface of the paper. Texture can also be created by the thickness of the paint [32]. The texture will change in interior surfaces because finish materials create interest, shadows, and visual variety within a space. Texture created from natural materials brings a merger of two of the elements in this research study. The texture can be felt with a human body part, rough, smooth, hard or soft. Textures have their most significant impact and effect when used in combination. The contrast of hard and soft, smooth and rough can inject a sense of drama and interest. Texture changes in interior surfaces or finish materials create interest, shadows, and visual variety within a space.

xii. Use of art: The nature imagery, photographs of nature scenes, reduces anxiety and relaxes patients [37]. Art is a diverse range of human activities in creating visual, auditory or performing artifacts (artworks), convey the artist's visionary or technical skill, with an aim to be appreciated for their beauty or emotional power. In their most general form, these art include the making of works of art; it involves the creation of item where the practical considerations of use. Music, film, dance, theatre and other types of performing arts, as well as literature and other media such as interactive media, are included in a broader definition of art or the arts [37].

xiii. Ergonomic: Ergonomic in interior design is to develop performance and wellbeing of users. An example, the use of computers demands that the user work within a restricted posture range. When the physical environment not suited to the physical capacity of the person to perform the required tasks, musculoskeletal disorders (MSDs) can result. The effects of these conditions have a significant impact on productivity and cause financial losses for organizations.

xiv. Universal design: An idea to create buildings, products, and environments that are existence accessible to older people, people without disabilities, and people with disabilities. The universal design makes a clear connection between the design of the built environment and wellness. The Center for Universal Design defined the term universal design as the products and environments to be used by all people, to the greatest dimension possible, without the need for adaptation or specialized design [38].

xv. Sustainability: The sustainable design aimed to reduce negative impacts on the environment, and the comfort of building itself, thereby improving building performance. Sustainable design principles include the potential to optimize a site, minimize non-renewable energy consumption, use environmental products, protect and conserve water, enhance indoor and environmental quality. There is some evidence of increased productivity in green buildings, but lack of understanding of the links between design

features and human outcomes [39]. In a case study of the Herman Miller Greenhouse building in Holland, Michigan the links between worker wellbeing and the building features of a green building were tested. The findings indicated significant increases in productivity and quality in product manufacturing, as well as on-time delivery. Forty per cent said the new building was better for their work performance, privacy, and overall work spirit. Workers rated the social environment as better for interaction with coworkers and rated their sense of belonging as better [39].

xvi. Incorporation with nature: The material such as glass mirror and glass partition is one of the medium to connect with nature undirectly. The sense of nature also can bring a freshness and reduce stress to wellbeing. The connections between the inside-outside were vital and felt having a significant and exciting natural outdoor space was critical for people learning. An enhancing the outdoor experience especially the gardens produce colourful and sweet-smelling, and incorporated wind chimes and stepping stones for exploration. Educators also desired more outdoor access, natural spaces and hurdle equipment [29].

xvii. Notices and signage: The access to the building should be through a single point of entry during normal hours of operation, additional required entry or exit doors should remain locked to the exterior, permitting exiting only. The centre needs to provide space for posting license and licensing poster, First Aid Kit and instructions, fire safety plan, emergency phone numbers, menu and program posting and accessible bathrooms [33].

xviii. Safety and security: Safety was overarching issues associated with judgments of quality about the physical environment [29]. The good design enabled this process, giving kids and parents a feeling of confidence and enabling an instructor to focus on teaching, rather than on always keep an eye on potential hazards. Instructor commented that while safety was predominantly for the kids, the physical environment needs to be safe and usable by the visitor. They emphasized opening between rooms for active and secure monitoring and the elimination of design hazards, such as stairs so that the children would feel and safe in the space [29].

The interpretive design element in interpretation centre

Interpretation design is the new way to deliver messages through a visual effect interface in interpretive settings. The designed interface includes the media itself (print, video, audio, digital) as well as the messages presented via this media. Christensen [40], suggests that visitors have a favourite way (or learning modality) of receiving information. Christensen categorizes these into four, learning domains as auditory, visual, kinesthetic and symbolic or abstract modalities, and recommends that elements from each modality be included in an

exhibit to ensure it works to a broad audience and provides choice (Table 4).

METHODOLOGY

Data collection divided into two parts, there are:

Secondary data

A researcher used such as literature review, internet and all the finding that relate to the research. Literature was a collection of printed materials such as textbooks, journals, magazines and other related to this study to gather the relevant information needed for criteria the element of design in a physical setting and interpretive. Besides, some information and data related to this research are taken from the internet web page.

Primary data

A population is a group which consists of individuals, families, groups, organization, and events that are interested. The number of the population in NIC Taman Wetland based on the year 2015 is 65,238 visitors. Therefore, the sample size for this study by using the Krejcie and Mogan table are 381 respondents, and the simple random sampling technique has been used to ensure each member of the population has equal and known chance of being selected.

Questionnaire: The research instrument that has been used for this research is using the questionnaire. A set of question was constructed about the interior physical setting in the interpretation centre and interpretive design element in interpretation center. The design of the questionnaire is to most the research objective and answer the research question. In this research, it is to support the quantitative studies. This questionnaire design divided into five sections. Section A, B, C, D, and E. The questionnaire are designed in two languages, the English version and Malay version (Bahasa Malaysia).

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Actual survey: The total respondents of this study are 381 people. The respondents are the visitors that have been visiting NIC Taman Wetland, Putrajaya. The questionnaire was distributed on 26, 29 and 30 October and 5, 6, 12, 13 and 17 November 2016 at 10.00 am until 4.00pm. After the questionnaire have been distributing, all the valid information gathered were coded, computer and analyzed using Statistic Package for Social Sciences (SPSS) version 6.2. The data have been analyzed by using several methods such as frequency and number of mean and using descriptive analysis. All the data that have been analyzes is to find the visitor evaluation towards element design an interpretation centre. Besides, all this are to achieve the objective of the study.

RESULT AND DISCUSSION

Visitor evaluation of interior physical setting in interpretation centre

Space planning: Based on Table 5, showed mean 3.93, the visitors agree feeling freedom with the traffic accessibility and circulation of space. The best layout plan of a learning environment is 'modified open plan facilities,' retaining the best of open and closed plan facilities [13]. The result has proved this statement; the respondent said they satisfied with the space planning because the designer was the plan the space planning followed the standard clearance and avoided the crowding situation such as space for play. The visitor also can feel liked walk into real nature trails because of space circulation design so well.

Furniture: For furniture element, the number of results mean is 2.71 (Table 5). Varieties type of comfortable furniture in different zones and either together or be alone can produce different users with just what they need [41]. This statement has been proved that the importance of furniture selection base on the type and function. NIC Taman Wetland provides the same type of seating furniture in every single zone. Respondent feeling not comfortable

Modality	Technique	Intrepretive Elements		
Audiotory Modality	Speech, music and song that may include computer	Those element that foster a welcoming environment.		
Modality Audiotory Modality Visual Modality Kinaesthetic Modality Symbolic or abstract	generated material	i. Interpretive talks		
		ii. Sound to create mood or recall emotion		
		iii. Sound effects that connect people with concepts		
		iv. Music introduces, emphasises or repeats concepts		
Visual Modality	Pictures, props, drawings, film/ video and graphics	The audience needs to understand the visual image.		
Modality Audiotory Modality Visual Modality Kinaesthetic Modality Symbolic or abstract Modality		i. Displays panel		
		ii. Documentations		
		iii. Photographs, slide, paintings, posters, sketches		
Kinaesthetic Modality	Dance, theatrics, gesture, touch and movement	Elements that allow people to participate in physical action.		
Kinaesthetic Modality		i. Guided tours		
		ii. Plays		
		iii. Interactive videos		
		iv. Touch Table		
		v. Children's corner or interpretation/ activities		
		vi. Reflective spaces in which to contemplate		
Symbolic or abstract	Reading, writing and arithmetic	Anything that allows people to read and analyse.		
Modality		i. Brochures and handouts		
		ii. Maps, signs and plans		
		iii.Text displays		
		iv. Poems and readings		

Table 4: Incorporating learning modality into interpretive design.

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Table 5: The evaluation in design element on physical setting.

Description		Percentage (%)			Mean	
	Strongly Unsatisfied	Unsatisfied	Neutral	Satisfied	Strongly Satisfied	
Element Design 1: Space Planning						
Feeling freedom with the traffic assessibility and circulation of space	1 (3)	2.4 (7)	21.3 (62)	52.9 (154)	22.3 (65)	3.93
Element Design 2: Furniture						
Comfortable with the existing furniture provided	6.9 (20)	36.4 (106)	37.1 (108)	18.2 (53)	1.4(4)	2.71
Element Design 3: Ceiling Design						
The level of ceiling height is perceived as producing a feeling towards creativity and collaboration	0.7 (2)	0.3 (1)	28.5 (83)	52.6 (153)	17.9 (52)	3.87
Element Design 4: Materials and Furnishes						
Furnishes that have been applied accordance the function of an area and the surfaces of ramps, landings and stair treads have a slip resistant	1 (3)	18.9 (55)	40.9 (119)	33.3 (97)	5.8 (17)	3.24
Element Design 5: Lighting						
Lighting give an impact to illusion by further illuminating the walls, floor and ceiling of every space	21.3 (62)	41.8 (123)	24.8 (73)	9.5 (28)	1.7 (5)	2.28
Element Design 6: Color						
The color applied positively influence mood and behavior that creates psychologically	7.6 (22)	40.2 (117)	30.6 (89)	20.3 (59)	1.4 (4)	2.68
Element Design 7: Temperature						
The adaption of temperature is appropriate with current climate	5.2 (15)	0	19.9 (58)	53.3 (155)	21.6 (63)	3.91
Element Design 8: Ventilation						
Good indoor air quality to health and wellbeing	0	3.8 (11)	18.6 (54)	48.1 (140)	29.6 (86)	4.03
Element Design 9: Theme						
Theme applied are describe all stories	10.3 (30)	28.9 (84)	36.1 (105)	22.7 (66)	2.1 (6)	2.77
Element Design 10: Acoustic						
Do not heard any discruptive sound especially from outside	15.1 (44)	41.2 (120)	27.8 (81)	15.5 (45)	0.3 (1)	2.45
Element Design 11: Texture						
The natural materials have been feel with human body part and can differentiate the rough, smooth, hard or soft texture	0.3 (1)	2.1 (6)	24.7 (72)	42.6 (124)	30.2 (88)	4
Element Design 12: Use of Art						
Imagery, photographs of nature scenes, reduces anxiety and relaxes of visitor	14.1 (41)	31.6 (92)	33.7 (98)	18.9 (55)	1.7 (50	2.63
Element Design 13: Ergonomic						
The physical environment suited to the physical human capacity	1 (3)	5.4 (16)	30.3 (89)	51.7 (152)	10.5 (31)	3.66
Element Design 14: Universal Design						
People without disabilities and disable people moving without obstruction and can allowed access by different level of ages	0.3 (1)	4.8 (14)	16.2 (47)	37.5 (109)	41.2 (120)	4.14
Element Design 15: Sustainability						
This building had low negative impacts on the environment, the health thereby improving building performance	5.2 (15)	15.1 (44)	27.8 (81)	21.6 (63)	30.2 (88)	3.57
Element Design 16: Incorporation With Nature						
The great view out of applied a large window	0.3 (1)	2.7 (8)	14.8 (43)	50.9 (148)	31.3 (91)	4.1
Element Design 17: Notices and Signage						
Notices and signage clearly displayed also simplify the direction	48.5 (141)	23.4 (68)	16.8 (49)	9.3 (27)	2.1 (6)	1.93
Element Design 18: Safety and Security						
Confidence with the level of safety because security system monitoring potential hazards	0	13.1 (38)	66.7 (194)	19.9 (58)	0.3 (1)	3.08

because the furniture provide do not support the carrying capacity of the visitor. Especially, for the parents who bring their children. The visitor needs a seating area while waiting for their children playing there.

Ceiling design: The mean for ceiling design element is 3.87 (Table 5). This result showed that the respondent more freely and feeling creativity and collaboration on ceiling design. For info, NIC Taman

Wetland is provided 13-foot ceiling height, and every ceiling has own special design when the visitor looks up at the above an angle such as painting and images by the projector.

Materials and furnishes: Next, for materials and furnishes, the mean result 3.24 (Table 5). Respondent is not sure either the materials and furnishes in a good or bad condition. Based on the researcher view, furnishes that have been applied accordance the

function of an area such as the surfaces of ramps, landings, and stair treads have a slip resistant.

Lighting: Table 5 showed the mean result of lighting is 2.28. Respondent unsatisfied with the existing lighting, especially on impact illusion by further illuminating the walls, floor, and ceiling of every space. This result supports the statement that the fluorescent lighting is the most efficient and cost-effective from of artificial lighting [27]. NIC Taman Wetland provided a dark and dull ambience. This is why the respondents unsatisfied with that. This is because the centre still using an older technology which is using the only projector and that is needed a dark ambience.

Color: Colour combine with light will alter a person's perception of visual contrast. Visual contrast greatly influences people's perceptions of interior environments. It can positively influence mood and behavior. A full range of psychological and emotional effects can be achieved through the use of colour [42]. Based on this statement, is refer that colour application was changed mood and behavior that develop psychologically. Table 5 showed the mean result is 2.68 for colour in the interpretation centre. This result assists the statement which is respondent are unsatisfied with the colour. NIC Taman Wetland offered a dark lighting illumination on exhibition zone and caused of the dark colour, even though applied the brighter colour. The dark lighting was overlapped the bright colour because the power of a dark, black is authoritative and influential because black can evoke strong emotions, too much can be overwhelming [32].

Temperature: The mean result for temperature is 3.91, refer to Table 5. The NIC Taman Wetland provides the appropriate temperature, with adaption current climate and visitor satisfied with the temperature condition. This result is a proving that NIC success in quality temperature control.

Ventilation: Table 5 showing the mean result of ventilation which is 4.03. Visitor satisfied with air ventilation for health and wellbeing because the management was concern about the cleanliness and there is no bad smell and anything that will disturbed the respiration process.

Theme: Table 5 show, the application of theme is unsatisfied for visitors. The score of a mean is 2.77, which is the theme is not described in all the stories. The theme, are the most important ideas or stories [26]. This result is proving that the statement was true and being a one of the value satisfaction for the visitor. This is because the centre had lots of mix theme and did not have a connection between one to another zone.

Acoustic: Mean 2.45 is a result of the acoustic element and show in Table 5. Based on this result, the respondents said their heard disruptive sound especially from outside. Noise is inhibited effective work, exposure to uncontrollable noise has a negative impact on children's cognitive development, reducing memory, language and reading skills [36]. The result supported this statement because respondent is getting confused and with the varieties type of acoustic especially from the outside centre.

Texture: Table 5 is the detail result for texture element. Mean 4.00 showed that visitor is satisfied with the texture, natural materials have been feeling with a human body part and can differentiate the rough, smooth, hard or soft texture. This is support for the existing element, which is NIC Taman Wetland using an artificial material but has the same quality as the real such as tree and camping site. Other than that, the existence of small lake giving a real texture

because the visitor can touch and feel the materials. This result supported the statement, which is the appropriate texture giving a different dimension experience.

Use of art: Imagery, photographs of nature scenes able reduces anxiety and relaxes of the visitor. The result is unsatisfied with a mean of 2.63 (Table 5). This has happened because NIC Taman Wetland does not apply the good quality of art. Music, theatre, film, dance, and other performing arts, as well as literature and other media such as interactive media, are included in a broader definition of art or the arts [37].

Ergonomic: The physical environment suited to the physical human capacity with the result mean 3.66. Ergonomic in interior design is to improved performance and well-being of users [43]. The respondent agrees that NIC Taman Wetland has a quite good ergonomic system, do not give them an impact of ache on the body part (Table 5).

Universal design: Table 5 show mean 4.14 for universal design in the result. Visitor agrees that people without disabilities and disable people moving without obstruction and can allow access to different level of ages. This is because the centre provides facilities such as lift and ramp and the visitor who is using a wheelchair and a stick easily access the centre. Universal design is a design of products and environments to be usable by all people, to the greatest expanse possible, without the need for adaptation or specialized design [38]. The result from this supported that the statement that a public area should provide facilities for disable visitor.

Sustainability: The result recorded mean 3.57 at Table 5 for the sustainability element in the physical setting. A visitor did not sure either this building had low negative impacts on the environment or not. Sustainable design seeks to reduce negative impacts on the environment, and the health and comfort of building occupants [44]. Based on this statement, NIC Taman Wetland is offered a sustainable building and design from the view of the visitor.

Incorporation with nature: The 4.10 is the mean result of incorporation with nature show at Table 5. Visitor satisfied with the great view by applying a large window. The connections between the inside-outside were significant and felt having a large and interesting natural outdoor space was critical for people learning [29]. This statement also supports the result because NIC Taman Wetland applied a large opening, window and also provide the deck view which means the visitor can take a look of view in Putrajaya lake to feel the nature experience.

Notices and signage: Notices and signage not displayed and simplify the direction. The mean result is 1.93, which is visitor strongly unsatisfied with notices and signage. The centre needs to provide space for instructions, direction, fire safety plan, emergency phone numbers, menu and program posting and accessible bathrooms [29]. This is happening because visitor said they need to turn back when the security guard said there is another zone the visitor did not visit such as Cineplex area. This is also giving an impact on the traffic flow of visitor, especially who are bringing children. Table 5 shows the detail result.

Safety and security: Last but not least is safety and security which recorded 3.08 mean score. Respondents were feeling among unsatisfied and satisfied. Safety was overarching issues associated with judgments of quality about the physical environment [29]. Visitor confidence with the level of safety because of the security

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system monitoring potential hazards. Table 5 shows all detail about visitor evaluation in design element on the physical setting at NIC Taman Wetland.

Visitor evaluation on the interpretive design element in interpretation centre

Audio modality: The higher mean recorded into audio modality about audio talks are helping to understand the information is 3.47. Based on this result, respondents are not sure about the audio modality system. Based on Christensen [40], visitors have a favourite way of learning modality because audio can create a mood or recall emotion. Audio also is being a connection between people and the whole concept. Based on this result, this is because some area on the NIC Taman Wetland has a good audio quality such as a Cineplex zone and bad quality on exhibition zone. Meanwhile, the lower mean was 3.41 where the music introduces with an appropriate welcoming sense. Both results give a neither unsatisfied or satisfied. Refer Table 6 for audio modality evaluation.

Visual Modality: The visual modality on the higher mean is 3.58 which is the whole photo taken with full skilled (Table 7). The visitors need to understand the visual image through pictures,

props, drawings, film or video and graphic [40]. This statement supports the result because the quality of photography is good and visitors satisfied with the element. Display panel, slide, painting, and photo are the type of visual modality at NIC Taman Wetland. Another one mean is 3.19 which is the visitor mark that display are obvious to catch a sight.

Kinaesthetic Modality: Christensen stated the element of kinaesthetic would allow the visitor to participate in physical activities such as dance, theatrics, gesture, touch, and movement [40]. Based on the mean result (Table 8), 3.22 respondents agree that the activity provided, able to make them participate in the activity. NIC Taman Wetland provides a physical activity such as touch table, 3D painting as corner activity and also interactive video. The 3.15 mean visitor said that the technology brings them to participate, this is because the tools provided are the focus for children only such as sand play.

Symbolic or abstract modality: Symbolic or abstract is a material that can allow the visitor to read and analysis. Brochure, handout, maps, and plan is a sample of that [40]. Based on the result in Table 9, the 3.60 mean visitors are choosing that poems and reading

Description	Frequency (N=291)						Standard
	Strongly Unsatisfied	Unsatisfied	Neutral	Satisfied	Strongly Satisfied		Deviation
Interpretive design element 1: Audio Modality							
Interpretive audio talks are helping to understand the information	1 (3)	8.6 (25)	37.8 (110)	47.4 (138)	5.2 (15)	3.47	0.767
Music introduces with a appropriate welcoming sense	1.4 (4)	11.7 (34)	41.2 (120)	36.1 (105)	9.6 (28)	3.41	0.868

Table 7: Visual modality.										
Description	Frequency (N=291)									
	Strongly Unsatisfied	Unsatisfied	Neutral	Satisfied	Strongly Satisfied					
Interpretive design element 1: Visua	nterpretive design element 1: Visual Modality									
Display panels are obvious to catch sight	0.3 (1)	36.1 (105)	13.4 (39)	44.3 (129)	5.8 (17)	3.19	1.009			
Photographs taken with full skilled	0.3 (1)	5.8 (17)	41.2 (120)	40.2 (117)	12.4 (36)	3.58	0.794			

Table 8: Kinaesthetic modality.								
Description	Frequency (N=291)						Standard	
	Strongly Unsatisfied	Unsatisfied	Neutral	Satisfied	Strongly Satisfied		Deviation	
Interpretive design element 3: Kinaesthetic Modality								
Interpretation activity provided, able to make me participate	1 (3)	11.7 (34)	58.1 (169)	22.3 (65)	6.9 (20)	3.22	0.78	
Interactive videos using the high tecnology bring visitor participation	0	15.5 (45)	55.3 (161)	27.8 (81)	1.4 (4)	3.15	0.683	

Table 9: Syn	nbolic or a	ıbstract moda	lity.
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Description	Frequency (N=291)						Standard
-	Strongly Unsatisfied	Unsatisfied	Neutral	Satisfied	Strongly Satisfied		Deviation
Interpretive design element 4: Symbolic or Abstract Modalit	y						
Brochures and handouts provide all the information need by visitor	36.4 (106)	43.6 (127)	8.2 (24)	9.6 (28)	2.1 (6)	1.97	1.01
Poems and reading allowed visitor to understanding the information	1 (3)	7.6 (22)	34.4 (100)	44.7 (130)	12.4 (36)	3.6	0.839

allowed the visitor to understand the information. This is because the text size display is design appropriate and attract visitor to reading. Meanwhile, the brochure and handout are not provided all the information such as direction, plan, and cause of mean 1.97 which is the lowest and poor result because the information that visitor need such as direction and plan did not provide [45,46].

CONCLUSION

Through on this study, it can be concluded that the physical setting and interpretive design was an essential element for creating the interpretation centre. This is because both parameters showed respondents were told that they are satisfied and not satisfied and with a few elements in the design. Under the physical setting, an element of design notices and signage is becoming a poor design and respondents strongly unsatisfied with only 1.93 mean. This is because of the very lack of design on notices and signage inconvenient visitor especially to a group of disabled people and senior citizen also children. They need to turn back to finish the visiting the centre to complete another zone. Next, the element of design such as furniture, lighting, colour, theme, acoustic and use of art getting the range of unsatisfied at mean 2.28 to 2.77. These are represented that element also still at in bad condition and not archive the level of satisfaction by the visitor. The management should change the major design of this element because giving a significant impact on the visitor. Other than that, there is one category which is the respondent neither unsatisfied and satisfied. There are space planning, ceiling design, materials and furnishes, temperature, ergonomic, sustainability and safety and security. The average mean is between 3.08 until 3.93. This is because the seven elements did not give a bad effect to the visitor and not in good circumstances. However, if the management did not take action, it shall be a barrier for visitor get the higher knowledge and experience. Ventilation, texture, universal design and incorporation with nature are in satisfied with mean 4.00 until 4.10. This four-elements able to archive a satisfaction of visitor because the design creates by considering the environment, human, and effect to surrounding such as using a large window and proper air ventilation.

For interpretive design element in interpretation centre, it can be concluded that interpretive design is divided into four categories, audio modality, visual modality, kinaesthetic modality and symbolic or abstract modality. For audio modality, the respondents agree with the audio talks are helping to understand the information with mean 3.47, while the mean 3.41 respondents agree the music introduces with an appropriate welcoming sense. This is because respondent heard a disruptive sound from outside even the audio system have a good quality and getting confused where the sound comes. When the visitor heard many unwanted sounds, they become not comfortable with the surrounding. The application of fabric materials that can absorb sound can reduce this problem. Next, for visual modality, mean 3.19 respondent agree that the display panels are obvious to catch sight while the mean 3.58 respondents agree the photo taken with full of skilled. NIC Taman Wetland has their expert photographer and produces their photo. The visual modality was able to catch an attraction of the visitor. Kinaesthetic modality was getting the mean 3.22 that respondent agrees on the activity provided able to make their participate and mean 3.15 agree interactive video bring visitor participation. NIC still using older technology such as projector and sensor floor, but still attractive and able to bring the visitor to

take apart. Last but not least is symbolic or abstract modality. Refer to the result recorded, mean 3.60 to agree that poem and reading allowed the visitor to understand the information, in contrast with the brochure and handout provide the information need, only mean 1.97. The brochure and handout provided still in an old format and did not renew and redesign with the new information and facilities such as souvenir shop, cafe and prayer room. All the element design in interpretation centre need proper maintenance and being a challenge because of the existence another interpretive.

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