

## 5- CULTURE INCLUSIVE TOILET DESIGN

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**paper text:**

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CULTURE-INCLUSIVE TOILET DESIGN FOR YPAB BLIND SCHOOL IN  
 SURABAYA

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2 3

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**ABSTRACT** Toileting culture affects the toileting design. Adaptive and inclusive design strategy was needed to respond the local unique toileting culture of Surabaya people. After exploring the culture, the adaptive design was produced based on five Inclusive design aspects by Tanuwidjaja, et.all. (2013). The project involved four steps such as: simple literature review, interview and photo documentation, participative design workshop and design development. The final design was found acceptable, inclusive as well as adaptive for Surabaya people. Keywords: adaptive, inclusive, toileting culture, squatting, sitting, UNDK

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## INTRODUCTION The

University Network of Digital [Local] Knowledge (UNDK); a network of

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universities in Indonesia aiming to mainstream priority the local knowledge and equip them with digital tools & resources; is producing a mini project to explore local culture and supported by United Board of Christian Higher Education Association (UBCHEA) (<http://undk.asia/>). The Petra Christian University was involved in the UNDK Mini Project in 2013 with

the title of Portraying the Toileting Culture of Surabaya People: "People Perception and Toilet Design Diversity". The Goals of the Project were: • to find the toilet users of Surabaya in several locations (in the scope) • to find and document the toileting behavior of Surabaya people • to find types of toilets were available in Surabaya (in the Residential and Kampong Settlement, Public Toilets and Private Toilets) • to produce comics or illustration for diverse healthy toileting for Surabaya • to find the design strategy to provide locally friendly toilets but also healthy and accessible

The mini project

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involved the 8 lecturers and 325 students

from 3 Departments such as: Architecture, Visual Communication Design and English Literature

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producing •



Documentation of Toileting Culture with interview, sketches, photo documentation, google

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map and x-banner •

Video of Toileting Culture • Theatre Performance symbolizing the Toileting Culture • Design Model of Inclusive Toilet for Indonesian In the paper, only the

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inclusive design toilet would be explained. Meanwhile the rest of the project could be read in our UNDK Petra Website (<http://undkpetra.wordpress.com/>). The unique toilet design was produced based on the local behavior exploration and participatory design process. METHODOLOGY The inclusive design process was conducted in the project with several steps: •

Simple Literature Review • Interview and Photo Documentation • Participative Design Workshop • Design Development The Literature Review was

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conducted to understand the importance of toileting culture and

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toileting need especially in the design aspect. To implement the Service Learning, two toilet design project were chosen such as: the Toilets for the Blind School and Toilets for the Riverside Villagers. But because of limited paper, only the blind school toilet was discussed in detail. Later on, the toileting culture was explored by the students in their own homes (a senior women, grandfather, and helpers). Furthermore, other users in other places were also interviewed, such as: the blind students in the blind school, the village residents, and the mall visitors. The exploration took 2 months using visual research methods [photo, video and questionnaire]

(<http://undkpetra.wordpress.com/>,  
<http://desaininklusiukpetra.wordpress.com/>).

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Figure 1. The Exploration of Toilets for the Blind (Tanuwidjaja, et.al.2013) Figure 2. The Toilet in Blind School of YPAB (Tanuwidjaja, et.al.2013) A

participative toilet design workshop was conducted in collaboration with C2O Library and Ayorek! It was conducted in the small group; guided by

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the

lecturer, followed by resource persons, students, and common people. Two resource persons were involved such as: Mr Tutus Setiawan SPd. (the blind person) and Mr Ahmad Fauzi M.Hum. (cerebral palsy person). And the workshop enriched the knowledge of inclusive design students. The toilet designs were developed by the students and lecturer, considering

the seven principles of universal design and three principles of inclusive design. The design

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step was conducted in a month, with series of meeting and design process. And the designs were trialed by some suitable students representing the users. Further, the designs were exhibited and published to the people using Surabaya's Toileting Culture Exhibition (Njedhing Nang Suroboyo) held in Petra Christian University Library. Figure 3. The Participative Toilet Design in Petra University (Tanuwidjaja, et.al. 2013) Figure 4. The Participative Toilet Design in Petra University (Tanuwidjaja, et.al. 2013) LITERATURE REVIEW The toileting process was found as an important part in the human live especially related to as described by Greed, C., (2003).

Toilets should be seen as an integral and important component of modern urban design and town planning policy, at city-wide, local area and individual site level.

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The provision of public toilets was related to

range of issues, including (in no particular order): crime and vandalism; sexuality (of all types); the environment, water conservation and global sustainability; health, hygiene and medicine; women's issues, childcare, breastfeeding and sanpro disposal; public transport and private travel; leisure, tourism and sport; continence, disability and ageing; architecture, engineering and design; sewerage, drainage and plumbing; religion, culture and taboo

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(Greed, C., 2003). Cummings, W., (2000) found a closer accounting of the bathroom and the cross-cultural interaction, ethnographic experience, as well as cultural commensurability. In the bathroom, cultural difference was accentuated to the point where the specter of incommensurability arises.

Inclusive design is defined as

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"The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible without the need for special adaptation or specialized design." Inclusive design

should be included in the earliest design process (The

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British Standards Institute, 2005,

quoted in <http://www-edc.eng.cam.ac.uk/betterdesign>)

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The users' involvement in the design process becomes crucial because its principles of user centered, population awareness and business focused. A

successful implementation of inclusive design can result in a product that is functional, usable, desirable, and ultimately profitable

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(<http://www-edc.eng.cam.ac.uk/betterdesign/>). To complement the inclusive design

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approach, some universal design principles were also adopted, such as:

equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical efforts, and size and shape for approach and use, would improve livability and quality of life for everyone

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(Preiser, W., Ostroff, E., eds., 2001). **DISCUSSION AND RESULT ANALYSIS** The toileting culture of Surabaya people was found very unique relating to the economic, social, as well environmental context of the city. Poverty caused unhealthy toileting culture, such as direct defecation into the river. But through time, the unhealthy cultures were gradually changed because of Village Improvement Program/ Kampung Improvement Programs (KIP), increase of community awareness, and economic improvement. Squatting – and - wet - toileting culture was found present in Surabaya residents in low income urban villages / kampong and informal sectors of Surabaya. The lower income persons used to the squatting – and - wet toilets because limited economy and the belief of more sacred of the water cleaning method. On the other hand, the sitting – dry – toileting culture was found in the higher income residents. The sitting – dry – toilets were used because of the affordability of them and perception that sitting toilets were more modern. Unfortunately, many public toilets catered only the sitting toilets. On the other hand their poor toilets caused the misuse, such as squatting on the sitting toilets, especially the women. Luckily, some commercials such as Grand City Mall provided equal number of the squatting - and - wet toilets. And its toilets



cleanliness was also kept well. Therefore,

**an inclusive design strategy** is needed **to provide locally friendly toilets,**  
**healthy and accessible. The design facilitated equality and flexible**  
**toileting cultures. Three design inclusive prototypes were produced. They**  
**were the YPAB Blind School' s toilet design, low - cost urban village**  
**(kampong) public toilet and urban village (kampong) private toilets. But**  
because of the

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paper focus only the blind school toilet design is explained further. Related to the Design Aspects,

**the Seven Principles of Universal Design** and **3 Principles of Inclusive**  
**Design**

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were compressed into producing 5 principles by Tanuwidjaja, et.all. such as: ?

**USER CENTERED ? EQUITABLE USE BUT REASONABLE ? SIMPLE**  
**AND INTUITIVE USE ? LOW PHYSICAL EFFORT ? PROHIBITION OF**  
**USAGE ERROR** The

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explanations of the aspects are described further below: **USER CENTERED** principle defined that the design process should involve the user, and create more useable design. It actually comprises the user centered and population awareness principles from Inclusive Design. **EQUITABLE USE BUT REASONABLE** aspect would include provision adequate space usage for users accessibility, but still economically viable. It actually comprises

the equitable use, flexibility in use,

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size and space for approach and use from **Universal Design**; and

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business focused principle from Inclusive Design.

**SIMPLE AND INTUITIVE USE** actually represents **the simple and intuitive**  
**use of the design**

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which os supported by signage or other media such as sound, tactile, etc. It represents the simple and



intuitive use and perceptible information principle from Universal Design. LOW PHYSICAL EFFORT actually represents the easiness of usage by the difable (disabled persons). This comprises the low physical effort principle from Universal Design PROHIBITION OF USAGE ERROR represents that the design should not create hazard to the users. It represents the tolerance for error that suggested by the Universal Design, because the tolerance for error aspect sometimes is perceived as error design. So these 5 aspects were suggested as Inclusive Design aspect in Indonesia. Because of limited pages allowed, only the blind school toilet is further discussed. The limited vision of the blind persons causes problems in interpreting things or environments. The visually impaired person relies

on other senses to obtain information. So in the design, special attentions were needed.

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Generally, there are two types of blindness which are: total blindness and low-vision blindness. Therefore, all needs of both types should be responded. The total blind person requires the tactile or railings for orientation and mobility, meanwhile the low-vision blind person needs contrasting colors for orientation and does not like the black color for flooring because could be translated as the hole on the ground. Toileting activity the blind caused a unique problem. The blind person in Surabaya could use sitting toilet or a squatting toilet. They prefer the sitting toilet at home, and squatting toilet in public toilets because of usually unclean public toilets. The accessible water container and scoop for bathing or cleaning. The sprinkler is less favorable because could create shock during usage. They also preferred a enclosed toilet design for security and comfort. Dry area is also required in the toilets for clothes' changing. Relating to the Design Aspects of YPAB Blind School's Toilet Design, the 5 aspects are achieved and described below: USER CENTERED aspect is achieved because the toilet design is produced with the user involvement in the interview as well as workshop. EQUITABLE USE BUT REASONABLE aspect is also achieved because the design considers the squatting behavior that found in Surabaya, as well as Indonesia. The sitting behavior is also considered. Therefore, the toilet design can be used by as wide as possible spectrum of people with diverse abilities because using sliding doors. Adequate spatial is provided outside or inside the toilet. The aspect is also achieved because accommodating bathing methods (with water container and scoop or with shower); cleaning methods (wet cleaning or toilet paper) Figure 5. The YPAB Blind School's Toilet Design (Tanuwidjaja,et.all.2013) Figure 6. The Flexible toilet bowl for squatting and sitting for YPAB Blind School's Toilet Design (Tanuwidjaja,et.all.2013) SIMPLE AND INTUITIVE USE is also achieved because the design was easily understood. The red lines are provided in the edges for easier use of low-vision blind persons. And a flush toilet with top flushing is provided for convenient. The placement of the tub, scoop is intuitively easy for the right handed user. The railing, wall and floor texture is also provided to guide the total blind. LOW PHYSICAL EFFORT is achieved because of less stairs or level difference in the toilets. The indifferent floor levels are provided considering the blind person and wheelchair user. All toilet features are also provided within the reach of the main users (the blind students). PROHIBITION OF USAGE ERROR is achieved with the non-slippery floor and wall materials and safety railing. The curved edges also prohibit accidents in the toilets. Figure 7. The curved

-edges of water container and red lines to assist low vision blind colleagues to orient in Toilet Design

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for YPAB Blind School's Toilet Design (Tanuwidjaja,et.all.2013) Figure 8. The railing in the YPAB Blind School's Toilet Design (Tanuwidjaja,et.all.2013) Figure 8. The

**bathing area with non-slippery floor material in Toilet Design**

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for YPAB Blind School's Toilet Design (Tanuwidjaja,et.all.2013) CONCLUSION It could be concluded that toileting culture of Surabaya people was very unique because related to the economic, social, as well environmental context of the city. Squatting – and - wet - toileting culture was found present in Surabaya residents in low income urban villages / kampong and informal sectors of Surabaya. On the other hand, the sitting – dry – toileting culture was found present in the higher income residents. Unfortunately, many public toilets only catered the Western toileting culture. Therefore,

**an inclusive design strategy is needed to provide locally friendly toilets but also healthy and accessible. The**

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YPAB Blind School's Toilet Design shows inclusive design toilets catering 5 aspects of

**user centered, equitable use but reasonable, simple and intuitive use, low physical effort as well as prohibition for error**

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use. And its adaptive design accommodates the wider spectrum of blind users as well as Surabaya toileting preference. ACKNOWLEDGMENT We would like to thank: ? Avron Boretz PhD. (Former Representative of United Boards, Hongkong) ?

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**14**

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**15**

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And Stefanny Irawan, SS. MA.**

**1**

? Service Learning Course C - Inclusive Design Students of Odd Semester in 2013-2014. ? C2O Library ? Ayorek! Platform ? YPAB Blind School (SMP-LB YPAB School) ? Tutus Setiawan SPd. ? Ahmad Fauzi M.Hum. ? Surabaya Riverside Village Residents Association (Paguyuban Warga Strenkali Surabaya) ? All participating parties that could not be mentioned one by one. References Cummings, W., (2000), Squat Toilets and Cultural Commensurability, in Journal of Mundane Behavior, published Interdisciplinary Social Science, University of South Florida. Greed, C., (2003), Inclusive Urban Design: Public Toilets, Architectural Press, An imprint of Elsevier, Linacre House, Jordan Hill, Oxford OX2 8DP Preiser, W., Ostroff, E., eds, (2001) Universal Design Handbook. McGraw Hill, New York, USA. Tanuwidjaja, G., Meilinda, Srisanto, E., Waluyo, H.D., Wicandra, O.B., Christanna, A., Prasetyadi, B., Irawan, S., (2013), Final Report of UNDK Mini Project: Portraying the Toileting Culture of Surabaya People: People Perception, and Toilet Design Diversity, Petra Christian University, for University Network for Digital Local Knowledge Indonesia. The British Standards Institute (2005) British Standard 7000-6:2005. Design Management Systems - Managing Inclusive Design quoted in <http://www-edc.eng.cam.ac.uk/betterdesign/> Visited websites: <http://desaininklusiukpetra.wordpress.com/> <http://undk.asia/> <http://undkpetra.wordpress.com/> <http://www-edc.eng.cam.ac.uk/betterdesigz>