

Design of DRR Awareness Campaign Media by Revitalization of Sundanese Oral Culture

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Abstract: Utilization of oral culture as a language and idiom in the mitigation of Sundanese disaster is decreasing. As an area with a high number of hydrometeorological disasters, Disaster Risk Reduction (DRR) campaign aim to raise awareness about these potential disasters is required, by revitalization of Sundanese oral culture. The design was developed by utilizing Sundanese idioms and then developed into a popular design idea for the current generation. The design thinking method developed promotes educational media that are close to the daily life of the flood-prone community in Bojongsoang, Bandung. The educational tools design concept aim to deliver the contents through the media that build knowledge and at the same time, educate the user about disaster. The common media using a physical platforms like information graphic creates the possibility to use virtual content for specific devices. The use of human, animal or mythological creatures is reliable as mascot and communicator in campaign of DRR awareness. Scenes in the disaster-prone area bring uncomfortable memory, but the development of idioms that related to the culture of the audience will help the acceptance of information. The information not only adds knowledge in the cognitive of the audience but also enriches their emotional experiences. As communication reaches the affective level, it would enable us to build the culture and habitual attitude to deal with a disaster or emergency.

Keywords: *campaign, DRR, media design, oral culture, revitalization, Sundanese*

Introduction

The natural disaster that occurred in Indonesia affected infrastructure damage, transportation obstacle in land and sea, insecurity of energy, fluctuation in food production, and declination of economic stability. According to *Badan Nasional Penanggulangan Bencana* (BNPB/The National Agency for Disaster Countermeasure), 92% of disasters in Indonesia recorded from 1815 to 2017 are hydrometeorology disaster. The number predicted to be increased following the phenomenon of climate change and the rise of severe climate on Earth. The hydrometeorology disaster is known as disaster that occurred by the parameters of meteorology such as flood, drought, typhoon or landslide. According to Indeks Resiko Bencana Indonesia (Indonesia Disaster Risk Index) 2013, there are 205 million people of Indonesia lived in the disaster-prone area (Maarif, 2014) That was more than 80% of the whole citizen.

The Citarum River is known as a source of living water in West Java, but it is also known as one of the most polluted rivers in the world. Educational media has been developed by utilizing a cultural approach to the speech of local communities such as traditional songs or folk games as an awareness of their living space. Some areas have traditional mitigation patterns and are not always in line with the methods of modern disasters, including communities on the banks of the Citarum River. This study aims to explore the possibilities of educational media for mitigation in the disaster-prone area by the Citarum River. This research also aims to build an understanding of the concept of designing educational media for disaster mitigation. Cultural variations from one place to another approach planning earthquake handling differently in each culture. Those who geographically live in disaster areas generally have plans to deal with disasters that are carried out traditionally. Patterns in a community and social group can

influence patterns of assistance. Different cultural groups have different beliefs about the concepts of death and life and often respond to a disaster phenomenon in a way that is not expected by modern people (Ehrenreich, 2001). Environmental communication is inspired by general system theory (General System Theory) which states that living systems carry three important functions namely (1) exchange of matter with the environment and with other living systems; (2) energy exchange with the environment and other living systems; and (3) exchange of formations with their environment and other living systems (G. Flor, Alexander, 2018). Environmental ethics we do not just offset the rights and obligations to the environment, but also limit our behavior and efforts to control various activities so that they remain within the limits of our environmental resilience (Anies, 2017)

Since audio and visual media were used in the educational process, many parties consider the effectiveness of multimodal media to be so high because it can stimulate the audience's visual and auditory at the same time and make teaching materials easier to understand (Dale, 1946). The education media for disaster mitigation has been so widely available in a wide range of media and technology. The range starts from text-based such as books, picture books, comics, multimedia such as webcomics, internet pages, interactive media, to 2D and 3D animation. Evaluation of which media has an impact on the process of inculcating disaster response has not been proven. Education about disaster mitigation can be linked to one's motivation to be able to save themselves and others in the event of a disaster. This motivation clarified the purpose of each disaster education media that was created to leave a long-lasting understanding.

Method

People who lived in disaster-prone areas mostly have their traditional way and local wisdom of mitigation that are passed on for generations and are not always in line with modern disaster management (Lakoro, Sachari, Waspodo, & Sabana, 2019). The impact of the study is expected (1) to provide an adequate explanation of disaster education media that associated with the characteristics of living space of the Indonesian people; (2) achieving knowledge and technology transfer from universities and R & D institutions to overcome national problems that related to disaster education; (3) to encourage concepts and strategy related to disaster education in product development, innovation and technology that are competitive and sustainable; and (4) to encourage the creation of creative content related to disaster education problems in indigenous Indonesian communities with the approach of Visual Communication Design. The paradigm in design as research, in which the feasibility of testing and reproduction in design research is not more important than its sensitivity to the social context and cultural moments that make the results of the design research resonate with the public or market. Human-centered design research can strengthen the ability of designers to form popular culture and subtly transmit values through design. This is important for designers who want to show their good side in transforming consciousness from conditioned responses to active participation (Lunenfeld, 2003).

The elements consist of aesthetic aspects, content aspect, and technological aspects. The research focus is set to give direction to the research stages according to the given timeframe, among others: (1) Period and Media Edition: this research studied the media of socialization material with periods from 2017 to 2018. One of the most important issues in disaster management is socialization. The policy provides space for producing educational media for disaster mitigation; (2) Material/object: objects studied are all forms of public communication media related to disaster mitigation both printed and electronic, taking into account the aspects

of design, communication and level revealed in the visual culture that influence the media. The general form of media that used for education disaster mitigation so far can be posters, books, films, and animations, to materials used in a disaster simulation. The disaster subjects studied and developed in this research are hydrometeorology disasters; (3) Research area: the study area was taken as a sample in the path of a ring region of fire with different disaster characteristics. The observation and interview conduct in Cisanti Lake and Citarum riverbank, specifically in Bojongsoang, Bandung Residence, West Java. It is expected to give an overview of how the design used as educational media approaches its audience, as well as its ability to articulate local wisdom; (4) Subject: the subjects studied were among the audience targeted by disaster education during this time ranging from pre-school education to primary education by assumption that in this age the audience does not yet have any physical independence in disaster mitigation. Other subjects were interviews and focus group discussions with disaster mitigation activists to obtain an overview of concepts that have been, are and will be developed related to disaster mitigation education; (5) Outputs: this research seeks to understand various aspects of disaster mitigation education, so it is specifically expected to produce theories related to communication in the design of educational media especially starting from local wisdom. The theory is expected to be applied in educational concepts on disaster mitigation.

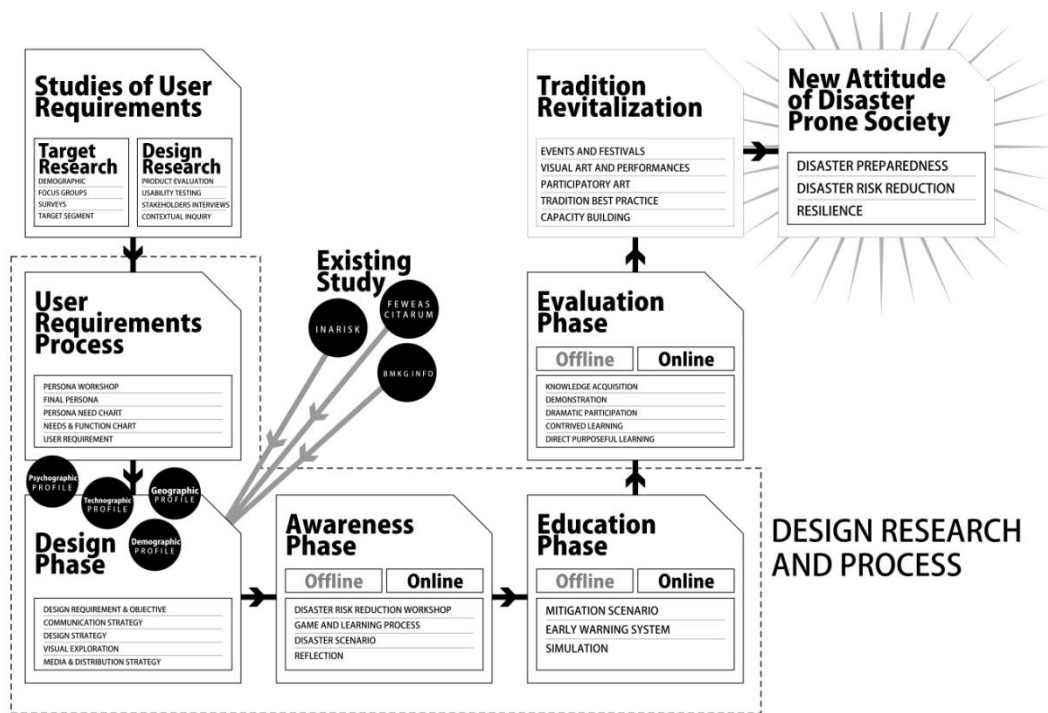


Figure 1. Design research and process for educational media for disaster (source: Lakoro, 2019)

Design Inquiry in Tarumajaya

Interview conducted with children in Tarumajaya, a village near to Cisanti lake to explore their awareness of disaster potential in their living space. The result is that they have not been exposed by disaster education and mitigation. Furthermore, the school and educator usually perceive disaster as something that has to be and it happens naturally. The involvement in participatory art methods would be more interesting because the audiences are set up to get involved with the art-making process. Education with art activities can deliver almost every possibility of educational content in various vernacular art and design approach. The content

also describes the recovery process and how the people resilience with disaster (Lakoro, Sachari, Waspodo, & Sabana, 2018). Image theory as a representation theory becomes a theoretical foundation given that there is always a distance between representation and representamen during the interpretation process, for example, cultural distance. Interpretations that are not free and are closely related to the accumulation of knowledge and experience provide a gap to be studied as a design medium. Disaster-related representations must minimize the range of different interpretations because of their nature related to safety, urgency, and immediacy.



Figure 2. Interview with the children that live around Cisanti Lake to explore the needs of disaster education (Tim Barehands, 2018)

Art Creation in Bojongsoang

The samples of educational media for disaster mitigation demonstrate the use of informative design, but it also shows the lack of strategy to create awareness. It also shows the lack of literacy in the audience according to disaster mitigation. Participatory art creation provides various educational media using various approaches that enable to deliver message and information effectively. The content of disaster education founded in the samples delivers the message of disaster using the first-person view.



Figure 3. Mural that located in Bojongsoang by the Citarum riverbank. Participatory art creation by Tisna Sanjaya with community around the river, army forces, government, students, combine the elements into a sense of belonging and sense of crisis. The results can leverage into public awareness of Citarum River's crisis (Lakoro et al., 2018)

Media is one aspect that needs to be considered in the dissemination of knowledge to provide education related to the disaster. Utilization of Information and Communication Technology provides opportunities to spread massively and simultaneously. Some alternatives are also made by institutions dealing with disaster crises for education efforts for people living in disaster-prone areas that can be started early.

Table 1. Media Analysis of Smartphone application

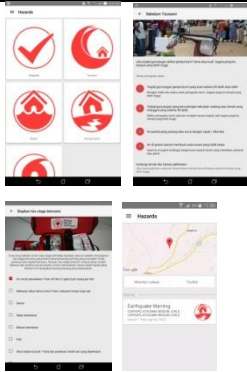
Media	Design Variables	Content
 <p>Siaga Bencana, android application developed by PMI (Indonesia Red Cross). Smartphone application on PlayStore (5000+ downloads)</p>	<p>Compositions use linear compositions with several icons to emphasize accessible information</p> <p>Colors are predominantly white with red accents on icons and some text for legibility and emergency indicators</p> <p>Typography of text from a palette of letters without hooks that have high readability</p> <p>Illustrations apply only to icons and a few pieces of photographs to illustrate a disaster condition. The icon design is simplification of the sign intended but it doesn't have any vernacular elements of design</p> <p>Sound codes are responses to the accessed icons</p>	<p>Interactivity in the content allows the user to test how well understanding the disaster in the quiz-like menu. Users can also report on nearby emergencies. There is also menu info about preparing an emergency bag</p> <p>In-app icons are designed in large sizes on the main menu screen with key info related to tsunamis, floods, earthquakes, hurricanes, and alertness. Users are asked to fill in the location of residence at the beginning of the application used to facilitate the delivery of geographically relevant information.</p>

Table 2. Media Analysis of Game Application (Source: Lakoro, 2008)


Media	Design Variables	Content
 <p>Game Aksi SARbini (web game)</p>	<p>Composition use grid-shaped consisting of icons from the objects that related to safety in emergencies</p> <p>Colors use a tropical color palette according to the game distribution area</p> <p>Typography use headline is game titles and game-related information in the matchless palette of letters</p> <p>Illustrations use an iconic image style with opaque color technique applied. The vernacular design elements could explore more to create further engagement with users</p> <p>Sound code There's sound response on icons, background sounds and comments/responses on player performance</p>	<p>Interactivity in content allows users to collect items related to emergency disaster situations (understanding this item is a life skill living in a disaster area)</p> <p>The in-app icon is designed in an animated 4X3 grid layout as well as a hand-held pointer associated with picking and collecting activities</p> <p>Gamification is required to fill the standby bag according to the requested item and different bag capacity</p>

Table 3. Media Analysis of Infographic (Source: pinterpolitik.com)

Media	Visual Communication Variables
	<p>Composition uses the rules of composition in a vertical infographic panel based on a smartphone application based on the Instagram application in 1: 1 (square) format</p>
	<p>Color uses the principle of high contrast with gray as the base, white as the main info tone. The background is processed vector graphics. Color blocks with darker tones are also used to classify information</p>
	<p>Typography uses different sizes to emphasize the information hierarchy and all use a letter palette without hooks</p>
	<p>The illustrations applied to the background using multilevel city silhouette idioms and water lines, drowning symbols of skulls and fish bones</p>
	<p>The layout is structurally dominant with a 3 column layout, with variations in width to place the proportions of information accordingly</p>

Designer: Tim Grafis Pinter Politik
 Copywriter : berbagai sumber
 Publisher: PinterPolitik.com

Discussion

Educational tools design concept aim to deliver the contents through the media that build knowledge and at the same time, entertain the user. The common media using a physical platform like information graphic panel at the museum, but also create the possibility to use virtual content for specific devices, ie: The use of video platforms or Augmented Reality technology. The technology enables the content to interact intensively with audiences.



Figure 3. The use of character design (mascot), posters, video, merchandise, animation, video, and simulation on the Ikebukuro Life Safety Learning Center enrich the information and strengthen the connection between media and audience. (Source: Lakoro, 2018)

The use of human, animal or mythological creatures is common as mascot and communicator in campaign of DDR awareness. Those animal and mythological creatures found mostly as a metaphor of natural form or identical behavior. In Nias people, the animals that suddenly roaming and appears perceived as a sign of disaster. This local wisdom is confirmed with modern science that animal reacts when sensing danger or disaster symptoms. Javanese people that live surrounding Mt. Merapi has different metaphor of disaster. The pyroclastic ash that erupted by Merapi known as "Wedhus Gembel" (Javanese: messy hair sheep) and it refers to Javanese people, to be specific Yogyakarta people, make a slang to spread the message effectively.



Figure 4. Multimodal of visual devices used as attraction and aid to understand the content. The information enrich with design and invite the audience to interact further (Source: Lakoro, 2018)

Strategize the Message

Local wisdom found in Citarum River, or Sundanese people in general, holds many messages about mitigation, preservation and the sustainability of life with nature, ie: in the proverb "*leuweung ruksak, cai beak, manusa balangsak*" (damaged forests, depleted water, miserable humans). The research found that the utilization of local wisdom oral culture elements in past mitigation education from the sample of sites should start from the values that already have been exposed to the communities. In 2003, Masyarakat Peduli Sumber Air (MPSA/ Community of Water Resource Care) held campaign of topographic-based land arrangement by using local wisdom of Sundanese people: *gunung kaian, gawir awian, lebak caian, legok balongan* (mountain forestation, rock plantation with bamboo, keep the water in reclining soil, watering the pond). The campaign found effective since deforestation at Cisanti, the community built 1,847 ponds and provide water. This local wisdom could be revitalizing in contemporary problems and context (Kurniawan, M., 2018).



Figure 5. Exploration of Sundanese proverb with local wisdom of the environment sustainability messages (Source: Lakoro, 2019)

Conclusion

The involvement in participatory art methods would be more exciting since the audiences are set up to get involved with the art-making process. Education with art activities can deliver almost every possibility of educational content in various vernacular art and design approach. The content also describes the recovery process and how the people resilience with disaster. The use of local spoken language and idiom would help the information delivery and increase the memory and experience. As the emotional elements, it could use as an idea to develop mascot, character or logo to the most visual and or audiovisual media. Disaster brings uncomfortable memory, but the development of idioms that related to the culture of the audience will help the acceptance of information. The information not only adding knowledge in the audience's cognitive but also enrich their emotional experiences. As communication reach the affective level, it would be easier to build the culture and habitual attitude to deal with a disaster or emergency.

Acknowledgments

We would like to thank Museum Geologi Bandung Indonesia, Hanshin-Awaji Earthquake Memorial Museum, Kobe Japan, and The Ikebukuro Life Safety Learning Center ; We also would like to thank all friends at Masyarakat Tangguh Indonesia, Badan Meteorologi, Klimatologi dan Geofisika Kota Bandung, Citarum Care and all discussion partners.

References

- Anies. (2017). *Negara Sejuta Bencana*. Yogyakarta: Ar-Ruuzz Media.
- Bakti, Iriana, et.al. (2016). *Environmental Communication Based on Local Wisdom in Anticipation of Citarum Flood*, Jurnal Mimbar, Vol. 33, No. 1st (June, 2017) pp 208
- Bakti, Iriana et.al.(2017). *Pemberdayaan Pranata Sosial Melalui Komunikasi Lingkungan: Menakar Pelibatan Peran Perempuan Dalam Mitigasi Banjir Citarum*, Kawistara Volume 7 No. 1, 22 April 2017 pp 94-107
- Clerveaux, Virginia et.al (2008) *Using Game Technique as a Strategy in Promoting Disaster Awareness in Carribean Multicultural Societies: The Disaster Awareness Game*, Journal of Disaster Research Vol. 3 No. 5, Department of Civil Engineering, Gunma University
- Dale, E. (1946). *Audio-Visual Methods in Teaching*. New York: Dryden Press.
- Diana, Dian dan Gurniwan Kamil Pasha (2015) *Pelestarian dan Peran Masyarakat di Kawasan Sekitar Situ Cisanti*, Jurnal Pendidikan Sains Sosial dan Kemanusiaan SosioHumanika, 8(2) November 2015
- Ehrenreich, J. H. (2001). *Coping with disasters - A Guidebook to Psychosocial Intervention* (Revised Ed, Vol. 11568). Retrieved from www.mhwwb.org
- Febriyantoko et. al (2012). *Evaluasi Desain Media Sosialisasi Kebencanaan Ditinjau Dari Kemampuan Literasi Visual*, Jurnal Wimba Vol. 04 No. 1, Visual Communication Design Program, Institut Teknologi Bandung
- G. Flor, Alexander, H. C. (2018). *Komunikasi Lingkungan, Penanganan Kasus-kasus Lingkungan Melalui Strategi Komunikasi*. Jakarta: Prenamedia Group.
- Kurniawan, M., ; Didit P.E. Rahardjo. (2018). Seribu Kantong Air di Hulu Citarum. In J. E. Wawa (Ed.), *Ekspedisi Citarum, Laporan Jurnalistik Kompas* (pp. 33–36). Jakarta: Penerbit Buku Kompas.
- Lakoro, R., Sachari, A., Waspada, A. E. B., & Sabana, S. (2018). The Exploration Of Spoken Culture To Create Life-Space Awareness In Educational Media Design. *International Conference Of Art Technology And Humanities 2018*, 385–396. Bandung.
- Lakoro, R., Sachari, A., Waspada, A. E. B., & Sabana, S. (2019). Eksplorasi Media Sebagai Edukasi Kesadaran Ruang Hidup di Daerah Bencana. *Jurnal Idea*, 18(1), 6–10. Retrieved from <http://iptek.its.ac.id/index.php/idea/article/view/5082>
- Lunenfeld, P. (2003). The Design Cluster. In B. Laurel (Ed.), *Design Research, Methods and Perspective*. Massachusetts: The MIT Press.
- Maarif, S. (2014). *National Disaster Management Plan (Rencana Nasional Penanggulangan Bencana 2015-2019)*. Retrieved from https://www.bnpb.go.id/uploads/renas/1/BUKU_RENAS_PB.pdf