

## THE PREFERENCE OF SURROGATE VIEW AMONG DIFFERENT TYPES OF OFFICE WORKERS

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### ABSTRACT

*Surrogate view is an element that helps to improve the indoor quality in a windowless office. This study proposed the preference of surrogate view among different types of office workers as an immediate solution in windowless office. Through the survey the most preferred surrogate view among indoor and outdoor workers are the window with sea view 2.95 and 2.86 in the mean. The preferences among worker who spent less than and more than 3 hours are the view to sea which took 2.89 and 2.95 in the mean. The preferences among worker who with and without usage of computer are the view to sea which took 2.96 and 2.88 in the mean.*

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## **INTRODUCTION**

A healthy working environment is indispensable in maintaining a positive outcome in a stressful atmosphere. An effective working environment can also affect an employees' productivity. There are three types of human comfort, which is acoustic comfort, thermal comfort and visual comfort. This study will focus on the visual comfort. Visual comfort plays an important role in the working space. It can affect not only the productivity, but also the physical and mental health of the occupants in the working space. Visual comfort is also influenced by poor lighting. However, nowadays the view of a workspace is another issue that needs more emphasis. Office in Malaysia is facing problem of lacking window. Windows view which are more attractive can benefit employees to reduce the discomfort in office (Aries et al., 2010). Visual comfort achieved in hospitals using art paintings has brought a positive impact for patients by making them feel happy and are able to heal them emotionally. "People don't have to head for the woods to enjoy nature's restorative effects", as asserted by (Kaplan, 2001). Even a glimpse of nature from a window helps the mood and emotion of an employee (Kaplan, 2001). This shows that people can be affected by what they see. Bazin and Gray (1960) had mentioned that photography is closer to the realistic compare with the art painting. So, this shows that photography can be an element of surrogate view in windowless working environment. This is easier to achieve in windowless offices in Malaysia without changing the layout of office.

## **LITERATURE REVIEW**

Visual comfort is a human perception determined by the amount of radiation energy that enters the eye and the spectrum of light (Saint-Gobain, 2017). Visual comfort can be achieved by attaining an aesthetically pleasing view. Besides, not only does the interior luminance achieve visual comfort, the view of the surrounding also plays its part (Aries, 2005). There are also cases among employees in the offices who have some minor health problems that the management may not take seriously. Most of the employees experience stress and are often fatigued due to daily computer use. The existence of having windows in a working space affects visual comfort of the employees especially the intermediate shop offices with long buildings that have

limited window space which are usually located at the front and at the rear of office, limiting the access to natural light and a pleasant view. However, by replacing with surrogate views, visual comfort can be achieved at the workplace. Figure 1 shows the difference between office with pleasant view and without.



**Figure 1: Office with Window and without Window**  
Source: Yelp- Agile Offices & 9GAG Windowless office

## **Physical Effect**

Having windows and views in office are not just for preferences, but they are important because it affects the health and well-being of employees and other people who are in the office. There are a lot of benefits of viewing nature in the workplace. For instance, by viewing the scene of nature, it can reduce anger, fear, and stress (Maller et al., 2006). This can contribute to development of the physical well-being by reducing blood pressure, cortisol levels, and especially when the emotional state is becoming more positive.

In hospitals, there are healing gardens for patients to rehabilitate, which can speed up the recovery time (Rivasseau Jonveaux et al., 2019). For housing areas, residents used to have a small garden in front of house. These examples suggest that the natural view brings positive effects to human. When a person is mentally positive, the possibility of getting health problems is become less frequent. However, offices in Malaysia do not put emphasis about the importance of views and nature.

Employees need to have interaction with the nature to relieve stress during office hour (Grinde & Patil, 2009). This is an integral part of having a conducive working environment. In addition, a natural view can help to improve the employees' mental health and well-being.

## **Psychological Effect**

Human beings possess an extraordinary capacity to adapt to their natural environment and immediate surrounding. Human can easily affected by the immediate view that they see. Based on an overall impression, the eyes receive information regarding the aesthetics, material characteristics, and utility of a particular object (Lang & McClain, 2000). A previous study by Kamarulzaman et al., (2011) showed that colour in the interior environment has effects on employees' productivity and their psychological well-being. Offices without a focal point on the wall can easily distract employees during work (Chowdhury, 2019). Employees are easily distracted when people are passing by several times a day to the pantry. This will increase the frequency of the employees to take a break if the workspace does not have any focal point on wall. Interaction with nature can help employees to improve memory and lower the stress hormone cortisol (Berman et al., 2012). Henceforth, it is important to have a natural view for occupants to boost their daily productivity and creativity.

## **Effect of Windowless Working Environment**

Office is a space that people congregate to work, spending many hours in a day. Therefore, it can directly affect employees on health. In the office, not everyone can get a good working space that exit with window. Some of the employees are working in open space and some of them are working in a private room. A study found that workers with workstation views that included green elements were more satisfied at work and had more patience, less frustration, increased enthusiasm for work, and having less health problems (Wolf, Kathleen, Flora, 2015). However, for employees in a windowless office, they cannot choose to change their working space or desk and tend to spend longer time on computer.

## **Responses Towards Windowless Environment**

There are a lot of benefits of having window with access to views on a working space. Windows with views of nature were found to enhance productivity and well-being in a number of ways including increasing job satisfaction, interest value of the job, perceptions of self-productivity, perceptions of physical working conditions and life satisfaction (Veitch et al., 2007). Evaluation of the response to a variety of windowless situations done

by a researcher, Collins,(1975) revealed that although the attitudes toward a windowless space are often somewhat unfavourable, the most adverse reaction occurs in a small, restricted and essentially static environment. Previous research shows that people who stay in a windowless space of long periods of time may experience sadness and stress which will affect the performance and productivity during working time. However, people who are more exposed to nature were less stressed and more satisfied with their work (Speed, 2005). Besides, people who are exposed to nature also will have a better sleeping quality than the employees who did not have interaction with nature (Lee & Maheswaran, 2011) . By not having a good sleep, this situation may further resulted in poor human judgement as well as potentially incur more mistakes during working time.

Quality of life is important to everyone. Although the World Health Organization (WHO) defines health very broadly, health in the United States has traditionally been measured narrowly and from a deficit perspective, often using measures of morbidity or mortality. However, health is seen by the public health community as a multidimensional construct that includes physical, mental, and social domains (Centers for Disease Control and Prevention, 2018). When the workers have more access to the window, it helps to improve their quality of sleep. When the employees get better quality sleep, it improves their metabolism and mood especially during their working hours. When the employees have better quality of sleep, it can raises their productivity in the office.

### **Surrogate View**

Surrogate view is substitutes of windows and access to nature view. A surrogate view is an artificial view with content of nature (e.g. pictures) that can replace windows in a windowless office. In a windowless office, surrogate views are efficient ways to stand as nature windows that able to enhance working environment and boost the productivity of employees while raising their mood.

### **The Effects of Surrogate Views**

Surrogate views, which is considered as an art, adds value beyond a visually aesthetic appeal of a facility. In the office for instance, using a

surrogate view is easier than the other ways to enhance the visual comfort of a workplace (Ping & Majid, 2019). To enhance the visual comfort, surrogate view does not cost more than doing renovation. It can also be changed easily because it is just a supplement tool to enhance the wall. In addition, surrogate views serve as a positive impact on people in various situations.

A growing number of previous research shows that surrogate views (picture of nature) can decrease the followings (Berg et al., 2015):

1. Anxiety and stress of a patient
2. Pain perception as measured by physiological outcomes, such as blood pressure, heart rate, and skin conductivity response, in addition to self-report measures like pain-rating scales and surveys;
3. The need for analgesic medication;
4. Depression associated with chemotherapy, dialysis, and other invasive treatments;
5. Non-operative treatment times;
6. Operative recovery times;
7. Mental healthcare treatment times;
8. Abusive behaviours by mental healthcare patients;
9. Length of hospital stay; and
10. Employee turnover, missed days
11. It also measurably escalates:
12. The satisfaction level of a patient and worker
13. The perception of quality care from a patient, visitor and employee

Another measure of the effectiveness of a particular selection of the view is its ability to maintain the viewers' interests. Surrogate views can be perceived by people as invisible or irrelevant to heal people from being sick or in stress condition.. Surrogate view, when appropriately selected and placed can function well to heal office employees from stress (Ping & Majid, 2019). It manages to let the viewer's engage with the view, transport them to imagination, delight and amuse them, calm and reassure them daily (Alban, 2018).

The process of selecting and placing surrogate view enable to vary the value of view as a positive contributor directly to the satisfaction level of the employees who work in a shop office, and most importantly sustain the healthcare of workers.

## **Influential Factors of View on Preferences**

The work environment design should not only focus on meeting the functional needs of the organization but also the individual needs and preferences of the users. One solution does not fit all. Different people require different environments in order to perform well, depending on personal factors and the task they are performing (Alison , 2019). Thus, demographic background can affect employees on preferences. In this study, there are different types of workers, which are indoor worker, outdoor worker, worker with different duration in office, worker with usage of computer and without usage of computer. Different type of workers might have difference preferences on view.

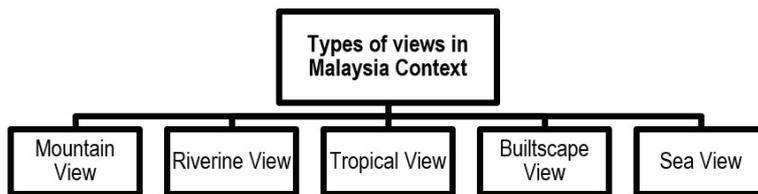
## **METHODOLOGY**

A survey method was used for this study and administered to a selected sample from a specific company based in Johor Bahru and Selangor, Malaysia. The survey involved the administration questionnaire which sought to obtain data on different type of offices. The final part of this survey include a self-administrated questionnaire that was posted through email to prevent consequences of middle-man bias (no verbal or visual clues from an interviewer to influence the respondents). The responses rate for the first attempt was low. Eventually, the second responses rate increased to the total target sample size of 40 within just two weeks. After data filtering, a total number of 40 responses were valid and useable. The response options in the instrument are 4 point ordinary rating scale. Starting from 0= not preferred at all, 1=less preferred, 2=points preferred and 3=points is most preferred. By using the 4 point ordinary rating scale, the researcher can get an accurate answer/results as compared to the choice of 'have no idea'. The respondents are not allowed to choose the statement of 'no idea' in the questionnaire. Therefore, all respondents can make their selection directly based on the categories specified in this questionnaire sheet.

### **Types of Surrogate View**

There are five different types of surrogate view provided in this questionnaire survey. Selected surrogate views are all located in Malaysia due to the place identity. Place identity refers to the place that appears as

familiar scene to people. A familiar environment usually means it is similar to some place in our memory, therefore typicality is discussed with familiarity in some studies (Nasar, 1994; Purcell, 1992). Typicality is defined as the extent of a member of a group that has a similar interest in common and to what extent they are dissimilar to members of the other groups (Rosch & Mervis, 1975). In addition, typicality also demonstrates similarity of visual preferences (Peron, E., Purcell, A. T., Staats, H., Falchero, S., & Lamb, R. J., 1998). Many researchers have suggested that people would prefer landscapes that are more consistent with their mental images (Nasar, 1994); (Purcell, A. T., Nasar, J. L., 1992). In this questionnaire survey, 10 photos were used. 2 photos of each 'view' types were illustrated in this survey to better guide the respondent's selection. Figure 2 shows the surrogate view outlined in this questionnaire.



**Figure 2: Types of Surrogate View**  
Source: Author

## FINDINGS

There are different types of employees in the offices such as indoor worker and outdoor worker. Besides, the duration of the employees spent in the office are different as well. The questionnaire will set the working duration into two types, which was less than 3 hours and more than 3 hours to find out whether different types of employees have different preferences on view. Table 1 shows the preferences among indoor and outdoor workers.

**Table 1: The Preferences among Indoor and Outdoor Workers**

Types of Surrogate View	Builtscap	Mountain	Sea	Rainforest	Riverine
Indoor Worker (N=33)					

*The Preference of Surrogate View Among Different Types of Office Workers*

Mean	1.09	2.02	2.95	1.09	0.09
S.D.	0.29	0.277	0.21	0.29	0.29
Outdoor Worker (N=7)					
Mean	1	2	2.86	1.07	0.07
S.D.	0	0	0.363	0.267	0.267

Source: Ping & Majid (2019)

Among the respondents, 33 respondents were indoor workers, while there were 7 of them were outdoor workers. From Table 4.4, view to sea was the most preferred view among indoor workers and outdoor workers with 2.95 points and 2.86 points in the mean. The second preferred view chosen by indoor and outdoor workers was the view to mountain with 2.02 and 2 in the mean. Followed by rainforest view which took 1.09 (mean), 1.07 (mean) and builtscape view took 1.09 (mean), 1 (mean). The results of builtscape and rainforest view were similar. The least preferred surrogate view chosen by employees was view to the riverine which took 0.09 (mean) among indoor workers and 0.07 among outdoor workers. Through the result, indoor workers and outdoor workers do not have any differences on preferred surrogate view. This shows that type of workers does not affect the preferences on view. Table 2 shows the preferences among workers who spent less than 3 hours and more than 3 hours in the office daily.

**Table 2: The Preferences among Worker who Spent Less than 3 hours and more than 3 hours**

Types of Surrogate View	Builtscap	Mountain	Sea	Rainforest	Riverine
Worker Spent Less Than 3 Hours in Office (N=9)					
Mean	1	2	2.89	1.11	0.56
S.D.	0	0	0.314	0.314	0.229
Worker Spent More Than 3 Hours in Office (N=31)					
Mean	1.1	2.02	2.95	1.08	0.1
S.D.	0.298	0.286	0.216	0.275	0.298

Source: Ping & Majid (2019)

There were 9 respondents who reported of spending less than 3 hours in the office and another 31 respondents spent more than 3 hours in the office.

The most preferred surrogate view chosen by office workers was the view to sea which took 2.89 (mean) and 2.95 (mean) for workers spent less than 3 hours and more than 3 hours in the office respectively. The second preferred view chosen by workers who spent less than 3 hour and more than 3 hours was view to the mountain which took 2 (mean) and 2.02 (mean). The third preferred view chosen by workers who spent less than 3 hours was view to the rainforest 1.11(mean), while the third preferred view among workers who spent more than 3 hours was view to the built scape which have slightly difference. Although there are some differences, but since that they were not the most preferred view and second preferred view chosen by workers so it is also not included as surrogate view to be placed in the office. The second least preferred surrogate view among workers who spent less than 3 hours were view to the builtscape with 1 (mean), while among workers who spent less than 3 hours were on view to rainforest with 1.08 (mean). The least preferred surrogate view among workers spent less than 3 hours and more than 3 hours were view to the riverine which took 0.56 (mean) and 0.1 (mean) respectively. This shows that riverine view was also not suggested to be placed in the office. Table 3 shows the preferences among workers who have usage and without usage of computer in office.

**Table 3: The Preferences among Worker with and without using Computer During Work**

Types of Surrogate View	Builtscape	Mountain	Sea	Rainforest	Riverine
With Computer (N=28)					
Mean	1.09	2.02	2.96	1.07	0.11
S.D.	0.288	0.301	0.187	0.260	0.312
Without Computer (N=12)					
Mean	1.04	2.00	2.88	1.13	0.04
S.D.	0.204	0	0.338	0.338	0.204

Source: Ping & Majid (2019)

Among the respondents, 28 respondents were using computer during work, while there were 12 of them without using computer during work. From table 4.6, view to sea was the most preferred view among workers who are with and without using computer with 2.96 and 2.88 in the mean.

The second preferred view chosen by workers with and without using computer was the view to mountain with 2.02 and 2 in the mean. Followed by rainforest view which took 1.07 (mean), 1.13 (mean) and builtscape view took 1.09 (mean), 1.04 (mean). The results of builtscape and rainforest view were similar. The least preferred surrogate view chosen by employees was view to the riverine which took 0.11 (mean) among workers who used computer and 0.04 (mean) among workers without computer. Through the result, workers with or without usage of computer do not have any differences on preferred surrogate view. This shows that the usage of computer does not affect the preferences on view.

## **CONCLUSION**

The awareness of having a natural view in Malaysian offices should be raised. Office employees should have interaction with nature because they undertake computer tasks almost every day. In some circumstances, it may be difficult to fulfil all the factors for visual comfort through surrogate view. For example, the spatial planning settings offices cannot be changed easily. A working space with no windows cannot achieve visual comfort due to the interaction between nature and workers are blocked. Thus, a surrogate view is a medium that is important and can easily be placed in a windowless office to achieve visual comfort. The content of surrogate views should be wisely chosen by following the preference of employees. When the surrogate view is chosen accordingly based on the preferences of employees, the impact it has on employees will be greater. Through the finding, sea view was the most preferred surrogate view chosen by different types of office workers. The background of office workers does not affect the preferences on view.

## **Future Research**

This study only focuses on the preference of employees on surrogate views with limited interaction with the employees. Hence, it is recommended for future researchers to study how the surrogate view can affect the employees' psychological and physical attributes. For example, the employees can be separated into two categories. One is placed in the windowless space with surrogate another in a windowless space without

windows or a surrogate view. The employees can be given the same task and the researchers can calculate the duration to complete the task. This proves that the efficiency of having a surrogate view in a windowless office.

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## **REFERENCES**

- Alban, D. (2018). The Mental Health Benefits of Art are for Everyone. Retrieved from <https://bebrainfit.com/benefits-art/>.
- Alison, D. (2019). Interview Question: "What Type of Work Environment Do You Prefer?". Retrieved from The balance career: <https://www.thebalancecareers.com/what-type-of-work-environment-do-you-prefer-2061291>.
- Aries, M. B. C., Veitch, J. A., & Newsham, G. R. (2010). Windows, view, and office characteristics predict physical and psychological discomfort. *Journal of Environmental Psychology*, 30(4), 533–541. <https://doi.org/10.1016/J.JENVP.2009.12.004>.
- Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., Kaplan, S., Sherdell, L., Gotlib, I. H., & Jonides, J. (2012). Interacting with Nature Improves Cognition and Affect for Individuals with Depression. *Journal of Affective Disorders*. <https://doi.org/10.1016/j.jad.2012.03.012>.
- Centers for Disease Control and Prevention. (2018). Retrieved from Health-Related Quality of Life (HRQOL): <https://www.cdc.gov/hrqol/concept.htm>.
- Chowdhury, M. R. (2019). The Positive Effects of Nature on your Mental Well-Being. Retrieved from PositivePsychology.com: <https://positivepsychology.com/positive-effects-of-nature/>.

- Collins, B. L. (1975) 'Windows and People: Psychological Reaction to Environments With and Without Windows', Oxford University, XXX, p. 60.
- Grinde, B., & Patil, G. G. (2009). Biophilia: Does Visual Contact with nature impact on health and well-being? *International Journal of Environmental Research and Public Health*, 6(9), 2332–2343. <https://doi.org/10.3390/ijerph6092332>.
- Human Lighting Demands, Healthy Lighting in an Office Environment. In Technische Universiteit Eindhoven (2005). <https://doi.org/http://dx.doi.org/10.6100/IR594257>.
- Kamarulzaman, N., Saleh, A. A., Hashim, S. Z., Hashim, H., & Abdul-Ghani, A. A. (2011). An overview of the Influence of Physical Office Environments towards Employees. *Procedia Engineering*. <https://doi.org/10.1016/j.proeng.2011.11.164>.
- Kaplan, R. (2001). The Nature of the View from Home Psychological Benefits. *Environment and Behavior*. <https://doi.org/10.1177/00139160121973115>.
- Lang, W., & McClain, A. (2000). Color and Visual Comfort. *Skin Research*, 42(4), 405–409. <https://doi.org/10.11340/skinresearch1959.42.405>.
- Lee, A. C. K. and Maheswaran, R. (2011) 'The Health Benefits of Urban Green Spaces: A Review of the Evidence', *Journal of Public Health*.
- Maller, C., Townsend, M., Pryor, A., Brown, P., & St Leger, L. (2006). Healthy Nature Healthy People: "Contact with Nature" as an Upstream Health Promotion Intervention for Populations. In *Health Promotion International*. <https://doi.org/10.1093/heapro/dai032>.
- Nasar, J. (1994). Urban design aesthetics: The Evaluative Qualities of Building Exteriors. *Environment and Behavior*, 26(3), 377-401.
- Peron, E., Purcell, A. T., Staats, H., Falchero, S., & Lamb, R. J. (1998). Models of Preference for Outdoor Scenes: Some experimental evidence. *Environment and Behavior*, 30(3), 282-305.
- Ping, T. H. And Majid, R. A. (2019) 'Surrogate View As An Alternative Approach to Enhance Visual Comfort in the Windowless Office',

In International Graduate Conference Of Built Environment And Surveying, P. 226.

Purcell, A. T. (1992). Abstract and Specific Physical Attributes and the Experience Of Landscape. *Journal Of Environmental Management*, 34, 159-177.

Purcell, A. T., Nasar, J. L. (1992). Experiencing Other People's Houses: A Model of Similarities and Differences in Environmental Experience. *Journal Of Environmental Psychology*, 12(2), 199-211.

Rivasseau Jonveaux, T., Pop, A., Fescharek, R., Chuzeville, S. B., Jacob, C., Demarche, L., Soulon, L., & Malerba, G. (2019). *Healing Gardens: Recommendations and Criteria For Design*. Gériatrie Et Psychologie Neuropsychiatrie Du Viellissement. <https://doi.org/10.1684/Pnv.2012.0360>.

Rosch, E., & Mervis, C. (1975). Family Resemblances: Studies in the Internal Structure of Categories. *Cognitive Psychology*, 7(4), 573-605.

Saint-Gobain. (2017, July 23). Retrieved From What is Visual Comfort?: <https://multicomfort.saint-gobain.co.uk/what-is-visual-comfort/> Aries, M. B. C. (2005).

Speed, R. (2005) 'The Effect of Adaptation Levels and Daylight Glare on Office Workers' Perception of Lighting Quality in Open Plan Offices', *Architectural Science Review*.

Veitch, J. A., Charles, K. E., Farley, K. M. J. and Newsham, G. R. (2007) 'A Model of Satisfaction With Open-Plan Office Conditions: COPE Field Findings', *Journal Of Environmental Psychology*.

Wolf, Kathleen, Flora, K. (2015) *Mental Health and Function: Green Cities: Good Health*, University Of Washington, College Of The Environment.

Van Den Berg, M. M. H. E., Maas, J., Muller, R., Braun, A., Kaandorp, W., Van Lien, R., Van Poppel, M. N. M., Van Mechelen, W. And Van Den Berg, A. E. (2015) 'Autonomic Nervous System Responses to Viewing Green and Built Settings: Differentiating Between Sympathetic and Parasympathetic Activity', *International Journal of Environmental Research and Public Health*.