



# JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

## Exploring The Role Of Window Views On Faculty Well-being And Productivity In Educational Institutions

<sup>1</sup>Sonali Walimbe & <sup>2</sup>Lydia Bobby Panakkal

<sup>1</sup>Professor

Manipal School of Architecture and Planning  
Manipal Academy of Higher Education, Manipal,  
Karnataka, India

<sup>2</sup>5<sup>th</sup> year BArch student,

Manipal School of Architecture and Planning  
Manipal Academy of Higher Education, Manipal, Karnataka, India

---

## Exploring The Role Of Window Views On Faculty Well-being And Productivity In Educational Institutions

---

**Abstract:** The importance of well-being in academic settings is often underestimated, but it is crucial to address this issue. It is essential to prioritize the health and job satisfaction of educators who carry heavy workloads to provide high-quality education effectively. This study aims to investigate how views through the window affect faculty well-being and productivity in educational institutions. We conducted the study at two different settings on a university campus, and we found that individuals highly value the positive effects of window views on their overall well-being, stress management, and job satisfaction. Natural light and scenic views significantly improve mood, reduce stress, and enhance productivity, making windows an important asset in office environments. To optimize the well-being and productivity of employees, it is essential to incorporate nature, adequate lighting, ventilation, and soundproofing measures in office design.

**Keywords:** Window views, Well-being, Productivity, Faculty, Office spaces

## 1 Introduction

Educational institutions have experienced significant changes in their operational dynamics because of the global pandemic, especially in terms of faculty responsibilities. Faculty members were also required to adapt to new instructional technologies and methodologies because of the pandemic outbreak, which led to a rapid transition to remote teaching and learning. As a result of this shift, along with the sudden surge in administrative responsibilities, faculty members have been facing more work pressure than ever before. Consequently, educational institutions are concerned about the well-being and productivity of their faculty. The purpose of the study is to find out the role of window views on the well-being and productivity of the faculties in educational institutions.

The well-being of the faculty is essential for their health and job satisfaction. This will help them work more efficiently. The physical environment has a great effect on people's mental and emotional health. Therefore, the presence or absences of windows is important to consider in a built environment.

The well-being of an employee involves physical, mental, emotional, and social well-being. This is dependent to a large extent on work environment, job satisfaction, work-life balance, and organizational support. Looking after the well-being of the employees will result in increased productivity, reduced staff turnover and a healthier work atmosphere.

The "window view" implies the actual scene that is visible to the user from inside a building. This may encompass various elements such as cityscapes, outdoor environments, and even interior courtyards.

Observing vegetation through a window has a positive impact on one's mental state, and the presence of windows seems to aid in the healing process. Being exposed to nature has a greater

positive effect on one's overall well-being. Individuals tend to prefer places with windows over those without, and windows with views of nature are especially crucial for maintaining good psychological and physical health (Ozdemir, 2010) (Farley & Veitch, 2001). Employee welfare is supported by both the utilization of these green areas and visual access to them from within. Therefore, increasing views of soft landscaping and a larger green landscape through building design could aid in promoting prospects for recovery and might be advantageous to both people and organizations by enhancing the productivity and well-being of employees. Office occupants who have access to windows typically rate their comfort levels higher than those who are positioned away from windows (Vischer, 1996; Stone, 1998). It was more reviving to work in an office setting with a glass window that overlooked a natural setting as opposed to the identical office with a blank wall (Kahn et al., 2008). The outside will improve these perceptions by strategically placing windows and using appropriate vegetation. Buildings should be planned and placed to maximize the open and natural vistas that can be seen via workplace windows (Ozdemir, 2010). The results shown here also imply that views from workers' workstations may have a more significant effect on wellbeing than immersion experiences of workplace greenspace (Gilchrist et al., 2015).

People's wellbeing, mental health, and level of environmental pleasure can all be dramatically impacted by the effectiveness of a window view.

This paper helps understand the following research questions:

- What are the aspects that are related to well-being and productivity?
- What is the faculty's perception on the importance of window views for their overall well-being and productivity?
- Is there a relationship between window views and faculty well-being and productivity?

## 2 METHODOLOGY

### 2.1 Literature review

Literature review is intended to gain a deeper understanding of productivity and well-being.

## 2.2 Setting

Two different small-scale settings were selected out of 28 universities for this study in order to conduct the study in a smaller setting. Setting one is a three-floor concrete building surrounded by manmade structures while setting two is surrounded by nature with some portions being two-story and the remaining being three-story structures made using locally available materials and concrete. In both the buildings, the front facing sides have large vertical windows that give a good view from the ground to the sky. These rooms and window views were photographed. These photographs were analyzed on the basis of the room's position with respect to the building and the characteristics of the view.

## 2.3 Interview and field study

Some of the faculty members had cabins with windows and others without them. All of them were interviewed. The purpose of the study and the procedure involved were explained to the faculty members. They were then given a generic Likert scale questionnaire, in which they were asked to express their opinion on the window views, their well-being and their productivity and rate them on a scale of 5. This was followed by an in-depth one-on-one interview. Interviews with office occupants were conducted to assess users' perceptions of room conditions and window views. These responses were recorded on 5-point Likert scales (1 = strongly disagree, 5 = strongly agree).

## 3. RESULTS

### 3.1 Literature Review

**Table 1**

| Title/Authors/Year/<br>Keyword   | Key findings   |
|--|--|
| <b>Student performance and high school landscapes: examining the links</b> (Matsuoka, 2010)  | Trees and shrubs, as well as being near nature, are positively correlated with standardized test scores, graduation rates, the number of students interested in pursuing a four-year college education, and a decrease in crime. Conversely, large open spaces devoid of natural elements, such as lawns and athletic fields on school campuses, are associated with lower test scores and fewer college plans. Furthermore, being exposed to nature aids in recovering from mental exhaustion and helps reduce stress.  |
| <b>A Room with a View: A Review of the Effects of Windows on Work and Well-Being</b> (Farley & Veitch, 2001)                                   | Windows that provide views of nature can improve work and well-being in various ways. The impact of these interventions includes improving job satisfaction, interest in the job, perceived productivity, working conditions perceptions, and overall life satisfaction, as well as reducing the likelihood of surgical patients quitting and reducing recovery time. Natural views from windows can have several positive impacts on work and well-being, such as enhancing job satisfaction and interest in the job, improving perceptions of productivity and life satisfaction, and reducing the desire to quit. The ability to see the view, however, did not improve student performance or productivity at the workplace. |
| <b>Are windows &amp; views really better? A quantitative analysis of the economic &amp; psychological value of views</b> (Kim & Wineman, 2005) | It discovers that views may have more significance in areas designated for social activities rather than work-related activities. Additionally, the researchers propose that factors like age, structure, design, and location, alongside the type of building, may influence the economic worth of a view. Individuals prefer sitting close to windows and views, resulting in higher occupancy rates for areas in proximity to a view compared to those farther away.  |

|  |   |
|--|---|
| <p><b>Workplace settings and wellbeing: Greenspace use, and views contribute to employee wellbeing at peri-urban business sites</b> (Gilchrist et al., 2015)</p>       | <p>Previous research has discovered that being exposed to greenspace is linked to positive mental health outcomes, such as reduced stress, improved mood, and enhanced cognitive function. The study also revealed that the amount of time spent in workplace greenspace each week predicted wellbeing, but the frequency of greenspace use did not have any impact on wellbeing. Wellbeing was found to be associated with views of trees, lawn, and bushes/flowering plants, but satisfaction with these views did not play a role in the relationship between greenspace and wellbeing. Consequently, incorporating soft landscaping into architectural design could enhance opportunities for restoration and support both employee wellbeing and productivity by supporting the broader green environment.</p> |
| <p><b>Human response to window views and indoor plants in the workspace</b> (Chang &amp; Chen, 2005)</p>   | <p>Simply having a view from a window, whether it be of nature or a cityscape, resulted in higher EEG-a effects, which is another measure of brain activity, when compared to other scenes. The office spaces that had window views of nature had the lowest BVP. In an office workplace, a window view has a more positive effect compared to having indoor plants, and a window view of nature has a greater effect than one of a cityscape. Participants had lower anxiety scores when they viewed scenes with a window view of nature.</p>  |
| <p><b>The nature of the view from home Psychological Benefits</b> (2015)- by RACHEL KAPLAN</p>   | <p>The satisfaction of participants with nature was significantly influenced by the views of nature. The presence of landscaped areas and gardens in the view was the main factor in predicting satisfaction levels. The sight of trees contributed to a sense of tranquility and focus, while views of landscaped areas and gardens promoted a feeling of productivity.</p>  |
| <p><b>The Workplace Window View: A Determinant of Office Workers' Work Ability and Job Satisfaction</b> (Lottrup et al., 2015)</p>                                     | <p>The satisfaction of employees with their window view plays a crucial role in determining the advantages of having access to a green outdoor environment in a workplace setting. This satisfaction is connected to both a positive perception of natural elements and increased satisfaction, which, in turn, leads to improved work ability and job satisfaction.</p>  |
| <p><b>Wellbeing in work environments (2019)</b> -by E. Pagán-Castaño, A. Maseda-Moreno, C. Santos-Rojo</p>   | <p>There exists a positive correlation between the practices of human resource management, the performance of employees, and their overall well-being in the workplace. HRM practices that prioritize employees can yield a more favorable influence on them compared to those that prioritize the organization.</p>  |
| <p><b>A quantitative study for indoor workplace biophilic design to improve health and productivity performance</b> (Lei et al., 2021)</p>                             | <p>The ratios of green coverage at 0.2% and 5% were insufficient to bring about restorative effects and alter psychological response. On the other hand, a ratio of 20% was overly overwhelming. However, ratios of 12% and 20% were capable of inducing a positive change in physiological brain activities.</p>   |
| <p><b>The effect of window views' openness and naturalness on the perception of rooms' spaciousness and brightness: A visual preference study-</b> (Ozdemir, 2010)</p> | <p>The rooms on the upper floor appeared larger because of the wider open window views, while the rooms on the lower floor seemed darker. In winter, occupants of rooms with open and natural window views felt that their rooms were more spacious. Those with greater access to open and natural views tend to rate their satisfaction with their rooms higher.</p>   |
| <p><b>Physiological and cognitive performance of exposure to biophilic indoor environment</b> (Yin et al., 2018)</p>   | <p>Exposure to an indoor environment featuring biophilic design elements was found to result in a reduction in participants' blood pressure and skin conductance, in contrast to the non-biophilic environment. Moreover, the biophilic environment decreased negative emotions and increased positive emotions.</p>  |

|  |   |
|--|---|
| <p><b>Enhancing employees' performance and well-being with nature exposure embedded office workplace design</b><br/>(Sadick &amp; Kamardeen, 2020)</p> | <p>Exposure to nature indoors contributes to social sustainability by positively affecting the health and motivation of workers. On the other hand, exposure to nature outdoors contributes to economic, environmental, and social sustainability by aiding in the restoration, reduction of stress, and management of stress in workers. Office workers who have access to their preferred indoor nature will experience improved perceptions of their health and motivation, ultimately enhancing their work performance without causing mental stress.</p>   |
| <p><b>Influence of landscape outside the window on the anxiety level of self-separation people during COVID-19</b> (Liu et al., 2022)</p>              | <p>The waterscape outside the window provided the greatest satisfaction (2.98), followed by green plants (2.33) and buildings (0.83). The different types of landscapes had an impact on how often people looked out the window, how long the window was open, and even their level of anxiety. In natural landscapes, anxiety levels averaged 1.36, while in human landscapes, they averaged 1.68.</p>   |
| <p><b>Employee well-being in organizations: Theoretical model, scale development, and cross-cultural validation</b><br/>(Zheng et al., 2015)</p>       | <p>The reliability and validity of the newly created EWB scale were proven by the authors through multiple quantitative studies. Their research concludes that employee well-being in organizations is a combination of three dimensions: life well-being, workplace well-being, and psychological well-being. Additionally, they discovered that the EWB scale maintains consistent measurement standards in both Chinese and American settings. It analysis the importance of the different findings in different cultures and what it means practically.</p> |

### Summary of literature review:

A good window view is very useful for a person's well-being. It breaks the monotony of work, and it helps reduce tension, anxiety, and depression, thus helping to maintain good mental health. This in turn promotes a feeling of positiveness. Giving satisfaction in one's work. This is important for maintaining work life balance. Only then can a person work efficiently and bring out the best from him/her. A good view from the window reminds a person to take breaks and relax intermittently and thus promote mental health and prevent burn outs.

A beautiful view of nature through a window is always enjoyed by all people. The window also lets in natural light, which helps maintain certain hormones in the body, which are needed for normal sleep pattern. This improves the quality of natural nighttime sleep, and the person feels energetic during the day. A person who gets sufficient sleep will have good physical and mental health.

Window views play a crucial role in establishing a balanced and healthy living or working space, as they affect multiple aspects of well-being, including physical, mental, emotional, and social aspects.

### 3.2 Data Analysis

Out of the 19 people surveyed 42% is female and 58% is Male. Their age ranges from 30 to 55 years. 63% of them are assistant Professor, and 21% is Associate professor. 12 out of 19 have a window view and 7 don't. Their views are Natural scenery, parking lot, buildings, water features, courtyard, outdoor recreational areas, footpaths, roads, and sky.

The Likert scale total and the percentage of each question asked is shown in table 2. Where 1 is strongly disagree, 2 is disagree, 3 is neither agree nor disagree, 4 is agree, 5 is strongly agree. More than 70% of the people agree with the fact that having a positive window view is necessary for well-being, reduces stress and makes one more relaxed, it removes the feel of monotony during work, and it improves their job satisfaction and productivity.

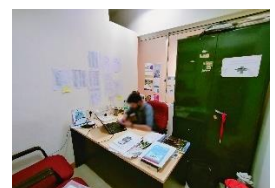
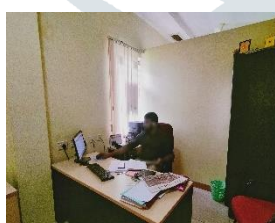
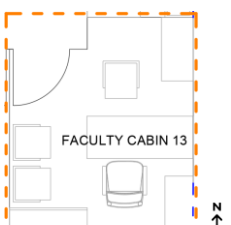
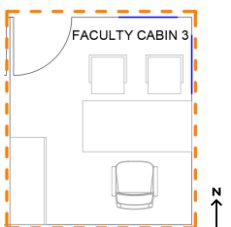
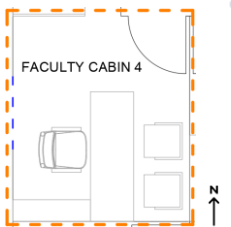
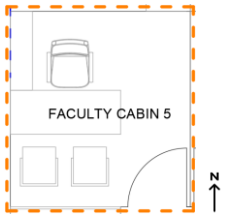
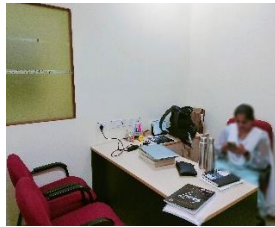
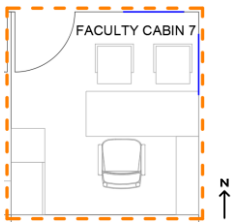
When asked the question- Q1. What type of views would you prefer from the window of your workspace and why? and Q2. Do you think it is important to have a window view in your workspace and why? Above 90% of people prefer having window views of lawns, trees, mountains, forest, garden, etc., with good ventilation and light. Makes them feel more relaxed, happy, gives a positive vibe, and helps to be productive by keeping them attentive and fresh during working hours.

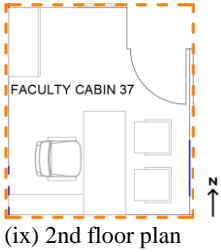
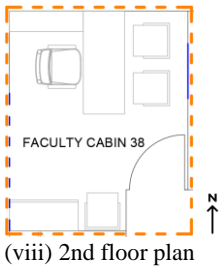
**Table 2:** Likert scale questions and findings (% is for points 4 and above)

| QUESTIONS   | 1 | 2 | 3 | 4  | 5  | %      |
|---|---|---|---|----|----|--------|
| I feel satisfied with the window view I get from my workspace   | 3 | 1 | 4 | 5  | 6  | 78.95% |
| I feel that a window view is necessary for overall well-being.  | 0 | 0 | 3 | 4  | 12 | 84.21% |
| A good window view improves my overall job satisfaction and work engagement.  | 0 | 1 | 5 | 3  | 8  | 84.21% |
| I often take short breaks to view outside the window.   | 3 | 2 | 4 | 4  | 6  | 52.63% |
| Taking little breaks to gaze out of the window during working hours helps me perform my work better.                        | 1 | 2 | 5 | 5  | 6  | 84.21% |
| The view from the window tends to distract me when I am working.  | 6 | 7 | 3 | 1  | 2  | 15.79% |
| The presence of a pleasing window view positively impacts my overall wellbeing  | 1 | 0 | 3 | 7  | 8  | 78.95% |
| I believe that a pleasing window view contributes to a more positive work environment.                                      | 1 | 0 | 1 | 7  | 10 | 89.47% |
| Access to a pleasant window view contributes to a healthier work-life balance for me.                                       | 2 | 1 | 2 | 8  | 6  | 73.68% |
| Looking out of the window during working hours helps me feel more relaxed and less stressed.                                | 2 | 1 | 3 | 5  | 8  | 84.21% |
| Having a positive window view enhances my sense of connection to nature and the environment.                                | 1 | 0 | 2 | 7  | 9  | 84.21% |
| With a positive window view I feel energetic and capable of doing my work.  | 1 | 0 | 4 | 9  | 5  | 73.68% |
| Having access to a pleasant window view reduces feelings of monotony during work.   | 1 | 0 | 0 | 11 | 7  | 94.74% |
| A positive window view enhances my overall sense of well-being, even outside of work.                                       | 1 | 0 | 4 | 9  | 5  | 73.68% |
| I find that days with a pleasant window view led to a more positive outlook on my tasks.                                    | 1 | 0 | 4 | 8  | 6  | 73.68% |
| The type of my window view (landscape, parking areas, buildings, etc) affects my interactions with colleagues and students. | 1 | 3 | 9 | 5  | 1  | 78.95% |

Figure 1 shows the floor plan, the documented faculty cabin and the type of window view for that specific cabin for setting 1. Figure 2 shows the floor plan, the documented faculty cabin and the type of window view for that specific cabin for setting 2. The views include parking lots, footpaths, nature, sky, natural scenery, buildings, roads, outdoor recreational spaces, etc. Some of these cabins didn't have views. They were surrounded by walls with fixed translucent windows.

**Figure 1:** Data collection for setting 1





**Figure 2:** Data collection for setting 2

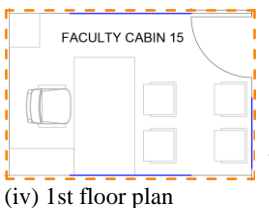
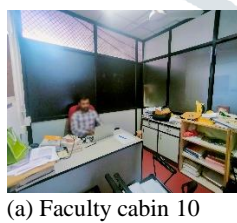
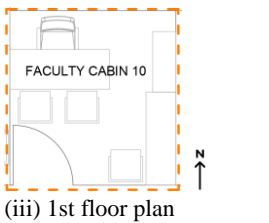
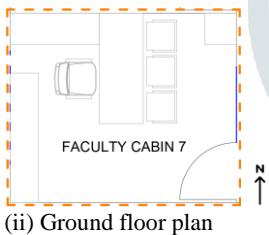
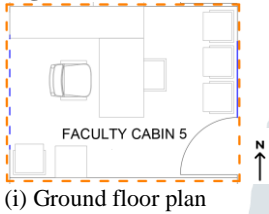
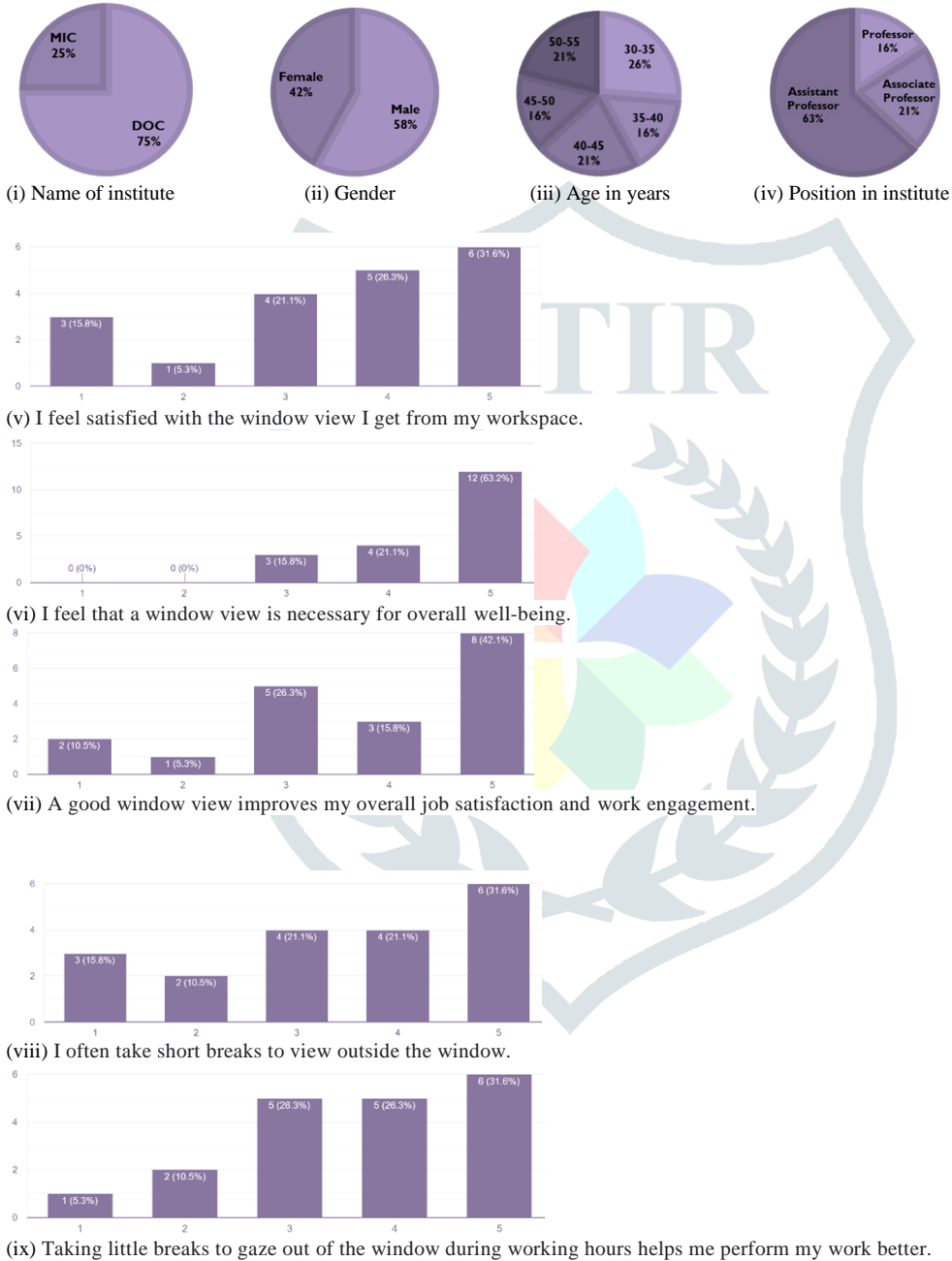
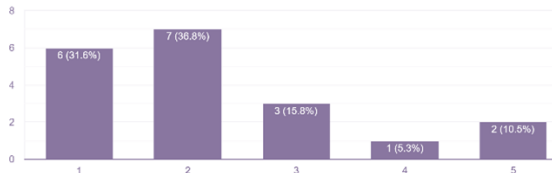


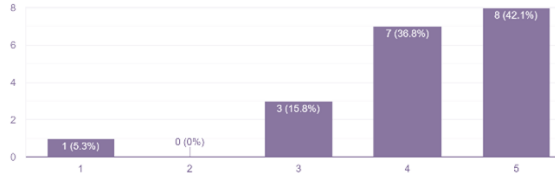
Figure 3 shows the nineteen responses received from both the universities. These includes the answers to generals questions as well as the Likert scale questions.

**Figure 3:** Data collection (19 responses)

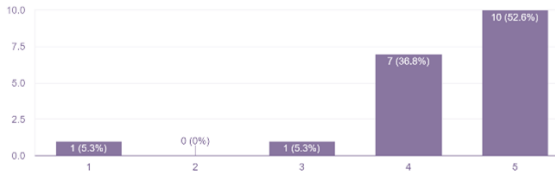




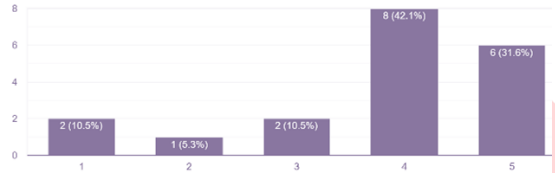
(x) The view from the window tends to distract me when I am working.



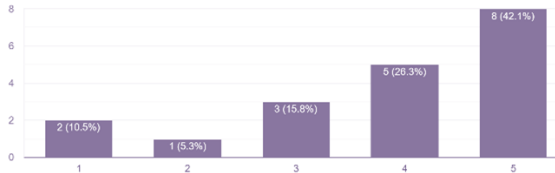
(xi) The presence of a pleasing window view positively impacts my overall well-being.



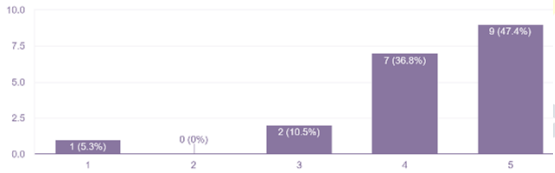
(xii) I believe that a pleasing window view contributes to a more positive work environment.



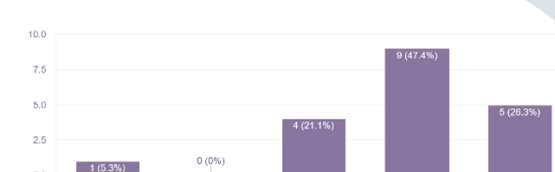
(xiii) Access to a pleasant window view contributes to a healthier work-life balance for me.



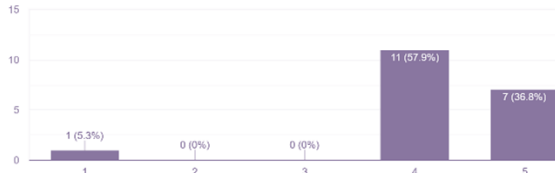
(xiv) Looking out of the window during working hours helps me feel more relaxed and less stressed.



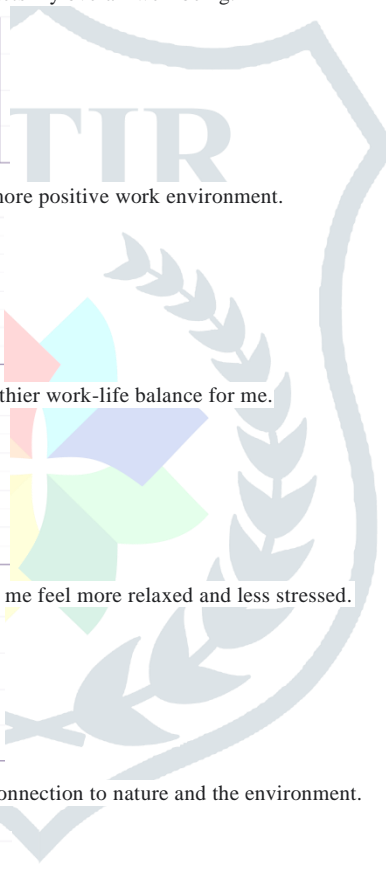
(xv) Having a positive window view enhances my sense of connection to nature and the environment.

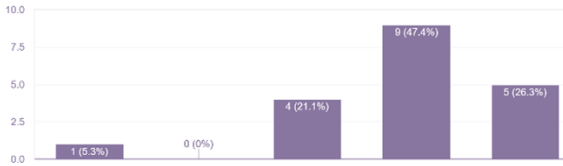


(xvi) With a positive window view I feel energetic and capable to do my work.

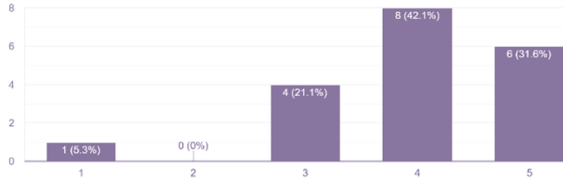


(xvii) Having access to a pleasant window view reduces feelings of monotony during work.

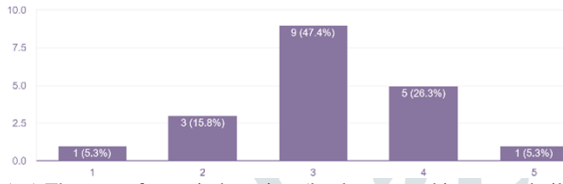




(xviii) A positive window view enhances my overall sense of well-being, even outside of work.



(xix) I find that days with a pleasant window view lead to a more positive outlook on my tasks.



(xx) The type of my window view (landscape, parking areas, buildings, etc) affects my interactions with colleagues and students.

Satisfaction and increased productivity and well-being are experienced by those who have window views. Many individuals who do not have window views believe that having one would enhance their productivity and well-being, as they find nature's elements more appealing. Those who have a window view are more likely to be happy, well-being, and productive. Individuals without window views believe that having access to them, particularly with natural components, would enhance their overall well-being and productivity. People's ability to be effective in their living or working environments is greatly affected by window views.

Table 7 Shows the mean value for well-being and productivity (with window views) with n=12 is 3 to 5. This supports the fact that window views have significant effect on the well-being and productivity of the person. These findings align with previous research highlighting the substantial impact of window views on individuals' overall satisfaction and performance. The Pearson's correlation coefficient (r) indicates the degree of correlation between two variables, with -1 indicating a negative correlation and 1 indicating a positive correlation, with 0 indicating no linear relationship. Table 8 shows the correlation test between well-being (wb) and productivity (p) for faculties with window views in both the settings. "WB" and "P" are positively correlated with a correlation coefficient of approximately 0.6632, indicating a moderate positive relationship between these two variables. In other words, as the values of "WB" increase, the values of "WP" tend to increase as well, and vice versa.

**Table 7:** Mean values of well-being (wb) and productivity (p) for faculties with window views in both the settings

| WB   | P    |
|------|------|
| 4.44 | 4    |
| 5    | 4.33 |
| 3.22 | 2.83 |
| 3.67 | 4.17 |
| 3.56 | 3.17 |
| 4    | 3.83 |
| 3.67 | 3.83 |
| 4.78 | 4    |

|      |      |
|------|------|
| 4.56 | 3.5  |
| 3.33 | 2.83 |
| 4.56 | 3.5  |
| 4.11 | 3.67 |

**Table 8:** Correlation test between well-being (WB) and productivity (P) for faculties with window views in both the settings

| Correlation Test |      |      |
|------------------|------|------|
|                  | WB   | P    |
| WB               | 1.00 | 0.66 |
| P                | 0.66 | 1.00 |

The result of the correlation test suggests a moderate to strong positive correlation between Well-being (WB) and Productivity (P).

#### 4. CONCLUSION

The majority of people think that having a positive view from a window is not just important for their overall health, but it also plays a crucial role in managing stress, promoting relaxation, and increasing job satisfaction. They strongly prefer window views that include natural surroundings, and when combined with proper ventilation and plenty of natural light, these views noticeably improve both their well-being and productivity. Window views have a profound impact on different aspects of people's lives, and there is a clear positive connection between well-being and productivity, showing that both aspects increase together.

Having a view of a window in offices is extremely important because it directly contributes to the overall well-being and productivity of employees. The windows let in natural light. A well-lit workspace encourages a person to work. He doesn't seem confined to the room and doesn't get bored or sleepy. This helps maintain his efficiency and motivates him to do the work. A good window view cannot be called a luxury. It is an effective method to improve the mental and physical health of the employee, which in turn increases productivity.

People who work in the office generally prefer to have good views of nature from the windows near them. Without knowing the scientific basis, they try to select places near windows. Even the airlines know this fact and they charge more for a window seat. Every child prefers a window seat while travelling on a train or a bus. Window views are known to reduce stress levels and promote well-being among the employees. This is an argument to build structures having maximum views from the office windows, so that the efficiency as well as mental health of the people working there are improved. Sound proofing methods should be used to create a peaceful environment and reduce distraction from noises.

The position of the buildings should be so adjusted that window views should not show another concrete building or wall, instead natural views of trees, mountains, water bodies without glare are the preferred view to maintain mental health and well-being and increase the productivity of the people working there. Soundproofing methods have to be used so that the advantage of window view can be obtained without the distraction of outside noise.

## REFERENCES

Are windows & views really better ? A quantitative analysis of the economic & psychological value of views(2005) – Drs. Jong Jin Kim & Jean Wineman

Farley, K. M. J., & Veitch, J. A. (2001). A Room With A View: A Review of the Effects of Windows on Work and Well-Being [Dataset]. In *PsycEXTRA Dataset*. <https://doi.org/10.1037/e668402012-001>

Gilchrist, K., Brown, C., & Montarzino, A. (2015). Workplace settings and wellbeing: Greenspace use and views contribute to employee wellbeing at peri-urban business sites. *Landscape and Urban Planning*, 138, 32–40. <https://doi.org/10.1016/j.landurbplan.2015.02.004>

Kahn PH, Friedman B, Gill B, Hagman J, Severson RL, Freier NG, Feldman EN, Carrere S, Stolyar A. (2008). A plasma display window? The shifting baseline problem in a technologically mediated natural world. *J. Environ. Psychol.*, 28 (2): 192-199

Lei, Q., Yuan, C., & Lau, S. (2021). A quantitative study for indoor workplace biophilic design to improve health and productivity performance. *Journal of Cleaner Production*, 324, 129168. <https://doi.org/10.1016/j.jclepro.2021.129168>

Liu, C., Li, Z., Jing, X., Gao, W., Shi, J., Cai, G., & Wang, Y. (2022). Influence of landscape outside the window on the anxiety level of self-separation people during COVID-19. *International Journal of Low-carbon Technologies*, 17, 678–685. <https://doi.org/10.1093/ijlct/ctac041>

Lottrup, L., Stigsdotter, U. K., Meilby, H., & Claudi, A. G. (2013). The workplace window view: a determinant of office workers' work ability and job satisfaction. *Landscape Research*, 40(1), 57–75. <https://doi.org/10.1080/01426397.2013.829806>

Matsuoka, R. H. (2010). Student performance and high school landscapes: Examining the links. *Landscape and Urban Planning*, 97(4), 273–282. <https://doi.org/10.1016/j.landurbplan.2010.06.011>

Özdemir, A. (2010). The effect of window views openness and naturalness on the perception of rooms spaciousness and brightness: A visual preference study. *Scientific Research and Essays*, 5(16), 2275–2287. <https://doi.org/10.5897/sre.9000903>

Pagán-Castaño, E., Maseda-Moreno, A., & Santos-Rojo, C. (2020). Wellbeing in work environments. *Journal of Business Research*, 115, 469–474. <https://doi.org/10.1016/j.jbusres.2019.12.007>

Sadick, A., & Kamardeen, I. (2020). Enhancing employees' performance and well-being with nature exposure embedded office workplace design. *Journal of Building Engineering*, 32, 101789. <https://doi.org/10.1016/j.jobe.2020.101789>

Veitch JA (2001). Psychological processes influencing lighting quality. *J. Illuminating Eng. Society*. 30 (1): 124-140. *Behavior*. 28 (4): 446-470.

Veitch JA, Geerts J, Charles KE, Newsham GR, Marquardt CJG (2005). Satisfaction with lighting in open-plan offices: COPE field findings.

[Xiaoming Zheng, Weichun Zhu, Haixia Zhao, Chi Zhang https://doi.org/10.1002/job.1990](https://doi.org/10.1002/job.1990). The Nature of the View from Home: Psychological Benefits, [Rachel Kaplan https://doi.org/10.1177/00139160121973115](https://doi.org/10.1177/00139160121973115)

Yin, J., Zhu, S., MacNaughton, P., Allen, J. G., & Spengler, J. D. (2018). Physiological and cognitive performance of exposure to biophilic indoor environment. *Building and Environment*, 132, 255–262. <https://doi.org/10.1016/j.buildenv.2018.01.006>

Zheng, X., Zhu, W., Zhao, H., & Zhang, C. (2015). Employee well-being in organizations: Theoretical model, scale development, and cross-cultural validation. *Journal of Organizational Behavior*, 36(5), 621–644. <https://doi.org/10.1002/job.1990>

