



WORKPLACE STRATEGIES THAT  
ENHANCE HUMAN PERFORMANCE,  
HEALTH AND WELLNESS

## INTRODUCTION

Smart organizations understand that their primary goal is to enhance the performance of their people. In a knowledge work economy, people are the engine that keep companies growing, adapting, improving and innovating.

Not surprisingly, thoughtful workplace design can be a powerful tool for supporting employee performance. And a collateral benefit is that what typically supports productivity also enhances employee health and wellness – it's all interrelated.

Given the nature of today's work processes, how can the workplace better support human performance? How can the workplace support all of the different activities involved with knowledge work – things like collaboration, creativity, innovation, deep thinking and mentorship?

One way to better understand the nature of human performance is through a definition used by organizational psychologists, who believe it is enabled through a blend of ability, motivation and opportunity.

### **Performance = Ability x Motivation x Opportunity**

Performance is a function of the three factors acting together. Ability has to do with whether a person can do a task. Motivation is a measure of whether a person wants to do it. Opportunity is about accessibility; a person can't do a task if she is not given a chance or if she is denied access to necessary resources or amenities.

This framework – looking at human performance as being influenced by multiple factors – reflects the difficult and variable nature of our work today. All of these factors must be supported by

the work environment in order for people's best work to occur. So, how can the workplace help?

According to Judith Heerwagen, a former scientist with the Pacific Northwest National Laboratory who is now a program expert with the General Services Administration, productivity and the workplace are related in these ways:

- "A building can positively affect **ability** by providing comfortable ambient conditions, by enabling individual control and adjustment of conditions, and by reducing health and safety risks. Negative impacts on ability to do work are associated with conditions that are uncomfortable, distracting, hazardous or noxious.
- "A building can positively affect **motivation** by providing conditions that promote positive affective functioning, psychological engagement and personal control. Moods create the 'affective context' for thought processes and behaviors and are directly tied to motivation.
- "A building can affect **opportunity** by providing equitable access to conditions that reduce health and safety risks, equitable access to amenities and compensatory design options where inequities exist and are difficult to eliminate entirely."<sup>1</sup>

What specific workplace strategies provide the right mix of ability, motivation and opportunity to enhance human performance? Best practices in workplace design can help.



# TEN WORKPLACE DESIGN CONSIDERATIONS

Ten fundamental design elements can positively impact the workplace environment and support the work being done:

1. Thermal Comfort and Temperature
2. Access to Nature, Views and Daylight
3. Sensory Change and Variability
4. Color
5. Noise Control
6. Crowding
7. Human Factors and Ergonomics
8. Indoor Air Quality
9. Choice
10. Employee Engagement

## 1. Thermal Comfort and Temperature

Thermal comfort is created through the right combination of temperature, airflow and humidity. A combination of these elements is required for physical comfort in the workplace. When you hear people complaining about temperature in the workplace, chances are that airflow and humidity are part of the reason.

Keys to thermal comfort include:

- The ideal temperature in office environments is 70.88 degrees Fahrenheit (21.6 degrees Celsius) with a 1-2 percent decrease in performance for every 1.8° F (1° C) above or below.<sup>2</sup>
- Slightly lower temperatures are associated with higher accuracy on simulated tasks and reduced sick leave.<sup>3</sup>

- Personal control over ambient conditions, especially temperature, increases productivity. One research study tracked workers in an insurance company as they moved to a new building with advanced thermal controls in their workstations. The study found that productivity increases of 2.8 percent could be attributed to the new workstations.<sup>4</sup>

Workplace strategies:

- Consider underfloor air, which provides individual control of air flow.
- Provide zoned temperature controls or, if possible, individual controls in each enclosed space (offices, conference rooms, etc.).
- Provide operable windows or operable window coverings to maximize sunlight, airflow and temperature control.

## 2. Access to Nature, Views and Daylight

People generally prefer to be surrounded by nature, which provides endless sources of variation and sensory change. The instinctive bond between humans and other living systems, often called biophilia, is important to replicate in interior environments. It is also beneficial for people to spend time outside, even for limited time, during the day.

- The presence of daylight and windows, as well as opportunities for active and passive contact with nature, sensory change and variability, positively impact well-being.<sup>5</sup>
- Daylight helps people regulate circadian rhythms, the daily cycles of waking and sleeping hours. When these rhythms are upset, people experience stress.<sup>6</sup>
- Given complete freedom, people want to be on a height looking down. They prefer open, savanna-like terrain with scattered trees and shrubs and they want to be near a body of water, such as a river or lake. They pay enormous prices to have these views.<sup>7</sup>

Workplace strategies:

- Organize the floor plate to maximize natural light penetration onto the floor. For example, place enclosed spaces around the core of the building and open spaces at the perimeter where windows are located.
- Use glass where visual privacy is not required.
- Give preference of “nice views” to shared spaces.
- Provide outdoor areas for use by employees. Encourage employees to go outside for breaks, even if just for a few minutes.

## 3. Sensory Change and Variability

In much the same way that they prefer access to nature, views and daylight, people also prefer sensory change and variability. A lack of visual stimulation during the day can dull the senses and affect a worker’s ability to stay alert. Large expanses of neutral-colored workstations, all with the same height and texture, typically do not support human productivity.

- Sensory change and variability should not include bright lights and noise, but rather, access to daylight, window views to the outdoors, materials selected with sensory experience in mind (touch, visual change, color, pleasant sounds and odors), spatial variability, change in lighting levels and use of highlights, and moderate levels of visual complexity.<sup>8</sup>
- When the work environment is not stimulating, employees lose focus and creative drive. An environment devoid of sensory stimulation and variability can lead to boredom and passivity.<sup>9</sup>

Workplace strategies:

- Consider introducing “texture” into a space by using natural materials such as wood, cork, plants and natural fibers.
- Minimize the appearance of long corridors or paths by introducing color, art, graphics, patterns or texture changes.



Millward Brown  
Chicago, Illinois

#### 4. Color

How people perceive color varies based on their culture and life experiences. However, there are some generalizations about how color is likely to be perceived, either overtly or subliminally, in the workplace.<sup>10</sup>

- Brighter colors (reds, as well as blues and greens) are associated with higher focus and task accuracy.
- Blue is calming and cooling, promoting mental control and clear, creative thinking.
- Pink lessens feelings of irritation, aggression, loneliness, discouragement and burden.
- Red enhances feelings of strength and energy; it is associated with vitality and ambition.
- Yellow makes people feel clear-headed and alert, allowing for clear thinking for decision making.
- Orange helps ease emotions and boost self-esteem. It creates enthusiasm for life.

Workplace strategies:

- Use color strategically to promote desired behaviors and feelings based on psychological reactions, not personal preference.
- Vary color use through the workplace. Use it as a design technique to identify circulation or the changing character of space.

- Use lighter colors to help reflect light through the space and increase the amount of natural light. (See “Access to Nature, Views and Daylight.”)

#### 5. Noise Control

Noise is an issue in most workplace environments. Interestingly, it can enable or disable productivity, depending on individual preferences and the type of work being done. The key is enabling people to control noise by providing access to a room with a door and acoustical separation when needed.

- Perceived noise (discernible by the average human ear) is typically higher in open office environments, but this depends on a space’s organization, the materials and the nature of work being done.
- When employees have a degree of control over the noise in their environment, they are less distracted by it.<sup>11</sup>
- Contrary to popular belief, noise interruptions during simple, mundane tasks can provide the stimulation needed to keep going. Interruptions during complex work, however, require a longer period of time to re-orient, and continued interruptions are likely to have negative effects on mood that reduce the motivation to resume work.<sup>12</sup>
- The U.S. General Services Administration recently published a comprehensive guide to acoustics in the workplace. In it, they claim, “Office acoustics is a key contributor

to work performance and well-being in the workplace. The ability to find quiet times and places is essential to support complex knowledge work, while the ability to have planned or spontaneous interactions without disturbing others is necessary for team work and relationship development. Having speech privacy is necessary for confidential interactions and work processes. 'Acoustical comfort' is achieved when the workplace provides appropriate acoustical support for interaction, confidentiality and concentrative work."<sup>13</sup>

#### Workplace strategies:

- Designers recommend three strategies for achieving a non-intrusive level of speech privacy. They include absorption (through acoustical ceiling, fabrics and carpet), blocking (through furniture system, panels, walls, partitions and screens, and covering (sound masking). To achieve the desired result, all three strategies must be integrated.
- Try to separate energetic, centralized and noisy spaces from quiet areas. Create opportunities for people to come together without disturbing colleagues.
- In open plan environments, ensure that people are sitting near those with similar work patterns or subjects of study.
- Consider a "virtual door" policy in which people sitting in an open workstation aren't necessarily available to talk.
- Provide headsets to tune out noise.

- Define policies for employees to be able to reserve quiet space and collaboration space.

### 6. Crowding

When people feel crowded they often feel stressed, which influences their satisfaction with the workplace. The perception of space and whether a person feels crowded varies greatly by cultural background, individual preferences and gender. The following rules of thumb are from Sally Augustin, an environmental psychologist and expert in how people perceive space.<sup>14</sup>

- Lighter, brighter spaces, as well as rooms with high ceilings or those that have walls with mirrors, are perceived as less crowded.
- In the same conditions, men are more likely to feel crowded than women. Men have better peripheral vision than women, and are more likely to perceive others in the same space.
- People who work in high-rise buildings feel more crowded than people who do not. This effect is reduced for people who reside on the upper stories in tall buildings, likely because they have better views and access to daylight.
- The perception of crowding can be reduced through the use of furniture, plants, decorative elements or pillars. These objects prevent people from feeling crowded or distracted.



Workplace strategies:

- Reduce the impact of “dense” space and the impact of seeing a significant number of people at once by orienting individual workspace openings such as workstation openings or desk positions in an office to minimize views into others’ workstations while seated.
- When possible, provide views to windows to reduce perception of crowding. This could be accomplished by moving circulation to the perimeter of the space and relocating fixed elements such as offices or conference rooms to the interior of the space.

## 7. Human Factors and Ergonomics

Workplaces that are designed for and around people are more likely to be comfortable, flexible and support productivity over time. This is because they take into account the needs and limitations of the people who occupy them. “Human factors” is an area of workplace psychology that focuses on a range of topics including ergonomics, workplace safety, the reduction of human error, product design, human capability and human-computer interaction. The terms “human factors” and “ergonomics” are often used synonymously.

- According to the American Academy of Orthopedic Surgeons, musculoskeletal diseases, which include back pain, arthritis, bodily injuries and osteoporosis, are reported by people in the US more than any other health condition. In 2004, the estimated total cost of treatment and lost wages associated with musculoskeletal

diseases was \$849 billion, equal to 7.7 percent of the gross domestic product.<sup>15</sup>

- Using social media, HOK recently conducted a workplace survey involving 3,600 employees across multiple industries. An overwhelming 82 percent of respondents report experiencing some type of physical ailment at work. The most common complaints – neck, back and shoulder pain – were typical for workers sitting for long periods during the day. About half of those responding complained of pain in the neck, back or shoulders, while a third reported headaches and eye strain. Workers who stand for long periods of time at their job complained of hip, leg and foot pain. The survey comments indicate that most of the complaints result from poor ergonomics or from being overly sedentary.<sup>16</sup>
- The American Cancer Society released a report in the American Journal of Epidemiology stating that men who sat for six hours or more a day in their leisure time had an overall death rate that was nearly 20 percent higher than men who sat for three hours or less in the 14-year follow-up period. Women who sat for more than six hours a day had a death rate that was almost 40 percent higher. Dedicated exercise had no neutralizing effect.<sup>17</sup>

Workplace strategies:

- Provide adjustable furniture such as adjustable chairs, task lights, sit-to-stand desks and keyboard trays, so individuals can adjust their workspaces to meet their needs. To ensure

employees are using furniture properly, provide training as needed.

- Provide efficient and seamless technology to enable mobility and efficient work in all work settings provided.
  - Equip all collaboration areas with similar technology that is intuitive for users moving from space to space.
  - Ensure technology is “user-friendly” and provide instructions clearly visible to the user.
- Equip employees with tools and technologies that encourage mobility in the workplace.
  - Provide employees with laptops and mobile devices.
  - Provide VoIP phones that allow workers to easily move between desks or rooms and still make a call.
- Encourage employees to use the stairs by showing them the number of calories burned or time saved. Use signage to make it easy to find the stairs.
- To encourage them to move around during the day, provide employees with wearable devices such as pedometers that count steps or vibrate at regular intervals.
- Design stairs to be more visually accessible and pedestrian-friendly.
- Provide incentives to encourage movement both in the work environment

and outside of the typical workday. For instance, an employee competition (with prizes) measuring steps taken per day is a fun and healthy way to create buzz.

## 8. Indoor Air Quality

Healthy workplaces are a focus for today’s organizations. The health of the workforce can affect health insurance costs, sick days and productivity. In addition to supporting human factors and ergonomics, the workplace should support good health.

- Americans and occupants of other post-industrial countries spend an enormous amount of time – roughly 90 percent or more – indoors. As a result, the quality of the indoor environment has a significant influence on well-being, productivity and quality of life.<sup>18</sup> Indoor settings often contain levels of pollutants that may be two to five times higher – and occasionally more than 100 times higher – than outdoor levels. Sources of indoor air pollution include combustion, building materials and furnishings, household cleaning, maintenance, personal care or hobby products, central heating and cooling systems, and humidification.
- A recent study found that reduced respiratory illness, allergies and asthma, and sick building syndrome<sup>19</sup> along with increased worker comfort from changes in thermal comfort, lighting, and improved indoor air quality would produce an annual US savings or productivity gain of between \$43 and \$235 billion.<sup>20</sup>



Mediacom Offices  
Toronto, Ontario, Canada

#### Workplace strategies:

- Invest in carpet, paint, furniture and other workplace finishes with low counts of particulates, gases or volatile organic compounds (VOCs) that can trigger illness. Recommended “eco labels” include Greenguard and SCS Indoor Advantage (furniture, seating and furnishings), Green Seal (paints and coatings), Blue Angel (office equipment), Floor Score (hard surface flooring), Green Label Plus (carpet and carpet tile), SCS calCOMpliant (wood).
- Invest in equipment with ENERGY STAR labels.
- Ensure heating, ventilation and air conditioning (HVAC) and other office equipment is checked and maintained on a regular basis.
- Train cleaning staff on how to use cleaning equipment and products such as handling vacuum cleaners with hepa-filters or nontoxic chemical cleaners.
- Add plants to the office to help clean the air, but be sure to keep them clean and healthy so they do not get dusty or contribute mold spores.

#### 9. Choice

Today’s knowledge work requires high levels of concentration, collaboration and everything in between. Well-designed workplaces provide opportunities for both and allow individuals to choose when and how they use them.

- Susan Cain’s book, *Quiet: The Power of Introverts*, has caused a not-so-quiet revolution from knowledge workers everywhere. She said in an interview, “A ‘best office’ is one that would give people a choice of how much stimulation is coming at them at any one time. I would create an office that has lots of nooks and crannies, lots of zones of privacy, but also lots of zones where people can come together and schmooze and hang out. Another thing is that when people work on projects, there should be more of a tolerance for people working on their own. I think it’s okay to work on a team, but within that team, the individual members need to be able to go off by themselves and do their own things and have a lot of autonomy and more privacy.”
- Sally Augustin claims, “When we don’t feel in control of what happens to us in a place, we are stressed, discouraged and frustrated. Feeling in control is the key here; we don’t have to actually exercise control to reap psychological benefits.”<sup>21</sup>

#### Workplace strategies:

- Provide a variety of work settings in the right proportion to support a variety of work functions:

- Focus work: Provide quiet zones or spaces for concentrated work.

- Collaboration: Emphasize small group collaboration and provide diverse settings (formal and informal).

- Learning: Consider the workplace to be an educational environment that

supports learning and mentoring by providing e-learning and in-person, one-on-one learning.

- Socializing: Provide a variety of informal spaces that accommodate work and casual communication while fostering informal collaboration and innovation.

- Provide technology - headsets, sound masking and white noise - that allows workers to perform focused work when necessary.
- Provide technology that allows workers to connect and collaborate more effectively in person and virtually. Consider a mix of teleconference, video conference, web conference, instant messaging, social media and other tools to enable different teams to communicate in the way they work most easily.

## 10. Employee Engagement

There is a direct correlation between employee engagement and worker satisfaction. This affects productivity and innovation.

- Engaged employees are more productive, more profitable and safer than less engaged employees. They tend to create stronger customer relationships and stay longer with their company. Engaged employees are likely to be a company's best source of new ideas.<sup>22</sup>
- Based on 7,939 business units in 36 companies, Gallup researchers

examined the relationship at the business unit level between employee satisfaction/engagement and the business unit outcomes of customer satisfaction, productivity, profit, employee turnover and accidents. Significant connections were found between unit-level employee satisfaction/engagement and business unit outcomes.<sup>23</sup>

Workplace strategies:

- Provide work spaces that enable visibility, openness and greater employee mobility to foster engagement. When workers are more likely to see each other, they are more likely to connect and collaborate.
- Provide collaborative spaces that incorporate the five "Cs": coffee, CNN (or a "buzz" in the background), circulation nearby, connectivity and comfortable seating. These five characteristics are particularly successful for "hub" or central pantry spaces on the floor.
- Organize a floor plate into team "neighborhoods," with a variety of spaces included in each, to foster team identity and sense of place.
- Incorporate branding, awards and recognition in a visible way to reinforce employee engagement.

### Putting It All Together

The following workplaces are examples of spaces with integrated design strategies that support performance, health and wellness in different ways for diverse user

## WORKPLACE EXAMPLE

### HEALTH INSURANCE COMPANY

Newark, New Jersey



**1 CHOICE** - Touchdown areas on the floor are designed to attract mobile employees by providing light, premium views, a variety of seating types and easy access to support spaces, including the "central hub" and conferencing.

**2 COMMUNITY** - This neighborhood includes enclosed spaces, open space, and informal collaboration. The offices are also the same size as small conference rooms and could be easily reconfigured should the need arise.

**3 ACCESS TO DAYLIGHT** - Blocks of enclosed spaces are located together at the core, allowing light to penetrate the floor. Glass-front offices also allow light into the offices and meeting rooms.

**4 EMPLOYEE ENGAGEMENT** - Informal collaboration spaces dispersed throughout the space provide interesting visual elements and encourage employees to come together in small, informal settings.

**5 VIEWS** - Open individual and collaborative work spaces are located along the exterior window wall with the best views. Views of a river and the New York City skyline enhance the well-being of the majority of occupants on the floor - not just of those in window offices.

**6 EMPLOYEE ENGAGEMENT** - The centralized hub on the floor provides orientation and wayfinding as well as a place to encourage collaboration across the business.

## WORKPLACE EXAMPLE

### PHARMACEUTICAL COMPANY

Research Triangle Park, North Carolina



- Individual Workspace - Open
- Individual Workspace - Enclosed
- Collaboration Space - Open
- Collaboration Space - Enclosed
- Filing / Storage
- Support

**1 CHOICE** - An environment with a variety of work settings allows occupants to be flexible in the way they work, increases opportunities for collaboration and communication, and helps to ensure the space will meet future demands.

**2 EMPLOYEE ENGAGEMENT** - All occupants, including senior staff and executives, are located in an open environment, placing them at the heart of the organization and creating greater access to leadership. Embedding enclosed spaces in the open workspace provides opportunities for confidential conversations and collaboration.

**3 CHOICE** - The floor is divided into three neighborhoods, each with a mix of open workspace, informal collaboration and enclosed collaboration, to support a variety of functions.

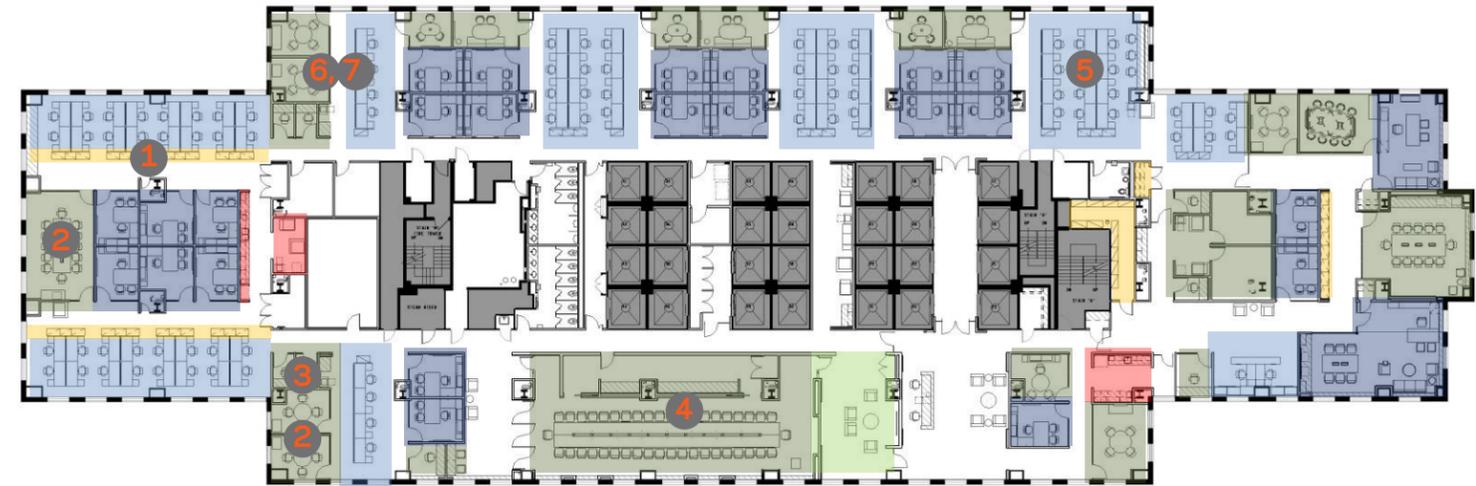
**4 EMPLOYEE ENGAGEMENT** - The centralized hub on the floor includes a variety of small and large collaboration areas, circulation, and a break area. These spaces create a "destination" on the floor and draw occupants together, encouraging mobility and interaction.

**5 DAYLIGHT** - Open space and circulation along the exterior window wall allows the maximum amount of light to infiltrate the space and provide views for those sitting in the open workspace.

## WORKPLACE EXAMPLE

### DELOITTE

New York, New York



- Individual Workspace - Open
- Individual Workspace - Enclosed
- Collaboration Space - Open
- Collaboration Space - Enclosed
- Filing / Storage
- Support

**1 NATURAL LIGHT** - Open spaces at the perimeter of the floor allow light to penetrate deeper into the floorplate, providing access to daylight for interior spaces.

**2 VIEW** - Shared spaces are located along the window wall with access to light and views.

**3 NOISE** - Phone rooms dispersed throughout the workplace support the open environment and provide opportunities for private phone conversations or heads-down work.

**4 NOISE** - High traffic areas by large conference spaces, breakout space, and reception, are located at the entrance to the floor, consolidating activity and noise to minimize disruption to individual workplaces.

**5 NOISE** - Separating open workstations with enclosed spaces helps to maintain noise. Too many open workstations create a feeling of overcrowding and can be too noisy.

**6 CHOICE** - A variety of spaces can support different functional needs. Employees choose from a variety of spaces, depending on the task at hand, as well as when and how to use them.

**7 COMMUNITY** - Organizing space types into "neighborhoods" has many benefits, including minimizing the feel of overcrowding, encouraging informal interaction and supporting a team environment.

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